

**UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA**

WILLIAM C. TOTH, JR., et al.,
Plaintiffs,

v.

LEIGH M. CHAPMAN, in her official
capacity as Acting Secretary of the
Commonwealth; JESSICA MATHIS, in
her official capacity as Director for the
Pennsylvania Bureau of Election Services
and Notaries; and TOM WOLF, in his
official capacity as Governor of
Pennsylvania,

Defendants.

No. 1:22 Civ. 208
(Jordan, Shwartz, Wilson, JJ.)

Electronically Filed

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Pennsylvania House of Representatives; Kerry Benninghoff, Majority
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CERTIFICATE OF SERVICE

I hereby certify that on this 25th day of March 2022, a true and correct copy of the foregoing was served upon all counsel of record via the court's CM/ECF electronic filing system.

Dated: March 25, 2022

/s/ John B. Hill
John B. Hill

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464 MD 2021 and additional consolidated case(s)

IN THE COMMONWEALTH COURT OF PENNSYLVANIA

No. 464 M.D. 2021

Carol Ann Carter; Monica Parrilla; Rebecca Poyourow; William Tung; Roseanne Milazzo; Burt Siegel; Susan Cassanelli; Lee Cassanelli; Lynn Wachman; Michael Guttman; Maya Fonkeu; Brady Hill; Mary Ellen Bachunis; Tom DeWall; Stephanie McNulty; and Janet Temin,

Petitioners,

vs.

Veronica Degraffenreid, in Her Capacity as Acting Secretary of the Commonwealth of Pennsylvania; and Jessica Mathis, in Her Capacity as Director of the Bureau of Election Services and Notaries,

Respondents.

No. 465 M.D. 2021

Philip T. Gressman; Ron Y. Donagi; Kristopher R. Tapp; Pamela A. Gorkin; David P. Marsh; James L. Rosenberger; Amy Myers; Eugene Boman; Gary Gordon; Liz McMahan; Timothy G. Feeman; and Garth Isaak

Petitioners,

vs.

Veronica Degraffenreid, in Her Capacity as Acting Secretary of the Commonwealth of Pennsylvania; and Jessica Mathis, in Her Capacity as Director of the Bureau of Election Services and Notaries,

Respondents.

**APPLICATION FOR LEAVE TO INTERVENE BY BRYAN CUTLER,
SPEAKER OF THE PENNSYLVANIA HOUSE OF REPRESENTATIVES;
KERRY BENNINGHOFF, MAJORITY LEADER OF THE
PENNSYLVANIA HOUSE OF REPRESENTATIVES; JAKE CORMAN,
PRESIDENT PRO TEMPORE OF THE PENNSYLVANIA SENATE; AND
KIM WARD, MAJORITY LEADER OF THE PENNSYLVANIA SENATE**

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** Pro Hac Vice application forthcoming*

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Pursuant to Pennsylvania Rules of Appellate Procedure 106 and 1531(b) and Pennsylvania Rules of Civil Procedure 2326 through 2329, Bryan Cutler, Speaker of the Pennsylvania House of Representatives (“Speaker Cutler”); Kerry Benninghoff, Majority Leader of the Pennsylvania House of Representatives (“Leader Benninghoff” and, together with Speaker Cutler, the “House Leaders”); Jake Corman, President *Pro Tempore* of the Pennsylvania Senate (“President Corman”); and Kim Ward, Majority Leader of the Pennsylvania Senate (“Leader Ward” and, together with President Corman, the “Senate Leaders,” and, together with the House Leaders, the “Proposed Intervenors”) hereby respectfully apply for leave to intervene in the above-captioned matters filed by Carol Ann Carter, *et al.* (“Carter Petitioners”) and Philip T. Gressman, *et al.* (“Gressman Petitioners”) (collectively, “Petitioners”).

In support of this Application, the Proposed Intervenors respectfully state as follows:

1. Proposed Intervenors are the highest-ranking officers and majority leaders of the Pennsylvania House of Representatives and Pennsylvania Senate, respectively, and have been authorized by the majority, Republican caucuses of their respective bodies to intervene in redistricting matters to protect legislative interests. Pursuant to Article I, Section 4 of the United States Constitution, the General Assembly has been assigned the authority to set the “Times, Places, and

Manner” of elections to Congress—including the authority to perform congressional redistricting.

2. Petitioners, in their Petitions for Review (their “Petitions”), ask this Court to dilute, abrogate, impair, or abolish the prerogative of the General Assembly—led by the Proposed Intervenors—to enact a congressional redistricting plan for the 2022 elections and beyond. Proposed Intervenors are entitled to intervene under Pa.R.C.P. 2327(3) and (4) to vindicate their enforceable interest to perform redistricting for the Commonwealth, an exclusively legislative function that the U.S. and Pennsylvania Constitutions assign to the General Assembly.

3. Previously, this Court granted Proposed Intervenors’ request to intervene in a similar lawsuit that the Carter Petitioners filed in April 2021, a lawsuit in which those petitioners sought the same relief that they are seeking here. *See Carter v. Degraffenreid*, Dkt. No. 132 M.D. 2021. The Court dismissed that case on October 8, 2021. Proposed Intervenors’ interests have not changed and, as with the prior lawsuit, they are entitled to intervene in these matters.

4. A memorandum of law in support of this application is being filed contemporaneously herewith and is incorporated by reference.

5. Proposed Intervenors’ proposed Answers to the Petitions are attached as **Exhibits “A” and “B,”** respectively, and incorporated by reference.

6. A proposed order granting this application is attached as **Exhibit “C.”**

7. Verifications, affirming the truth of the factual averments set forth in this application, are attached as **Exhibit “D.”**

WHEREFORE, the Proposed Intervenors respectfully request that the Court grant their Application for Leave to Intervene and allow them to intervene as Respondents in these actions.

Dated: December 27, 2021

/s/ Anthony R. Holtzman

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Respectfully submitted,

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CERTIFICATION OF COMPLIANCE

I hereby certify that this filing complies with the provisions of the *Case Records Public Access Policy of the Unified Judicial System of Pennsylvania* that require filing confidential information and documents differently than non-confidential information and documents.

/s/ Anthony R. Holtzman
Anthony R. Holtzman

Exhibit A

IN THE COMMONWEALTH COURT OF PENNSYLVANIA

No. 464 MD 2021

Carol Ann Carter; Monica Parrilla; Rebecca Poyourow; William Tung; Roseanne Milazzo; Burt Siegel; Susan Cassanelli; Lee Cassanelli; Lynn Wachman; Michael Guttman; Maya Fonkeu; Brady Hill; Mary Ellen Balchunis; Tom DeWall; Stephanie McNulty; and Janet Temin,

Petitioners,

vs.

Veronica Degraffenreid, in Her Capacity as Acting Secretary of the Commonwealth of Pennsylvania; and Jessica Mathis, in Her Capacity as Director of the Bureau of Election Services and Notaries,

Respondents.

ANSWER WITH NEW MATTER

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** Pro Hac Vice application forthcoming*

Counsel for Legislative Intervenors Bryan Cutler, Speaker of the Pennsylvania House of Representatives, and Kerry Benninghoff, Majority Leader of the Pennsylvania House of Representatives

Pursuant to Pennsylvania Rules of Appellate Procedure 1516(b) and 1517, Bryan Cutler, Speaker of the Pennsylvania House of Representatives (“Speaker Cutler”); Kerry Benninghoff, Majority Leader of the Pennsylvania House of Representatives (“Leader Benninghoff” and, together with Speaker Cutler, the “House Leaders”); Jake Corman, President *Pro Tempore* of the Pennsylvania Senate (“President Corman”); and Kim Ward, Majority Leader of the Pennsylvania Senate (“Leader Ward” and, together with President Corman, the “Senate Leaders,” and, together with the House Leaders, the “Legislative Intervenors”) hereby answer Petitioners’ Petition for Review (“Petition”) as follows. The numbered paragraphs of the Answer correspond to the numbered paragraphs of the Petition.

1. Paragraph 1 contains Petitioners’ characterization of their action and/or legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 1. Legislative Intervenors deny that Petitioners are entitled to the relief they seek.

2. Legislative Intervenors admit that the U.S. Secretary of Commerce delivered the Census data in August 2020 and that Pennsylvania will be allocated 17 Members in Congress in the next decennium. The remainder of paragraph 2 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in the remainder of paragraph 2.

3. Paragraph 3 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenor deny the allegations in paragraph 3.

4. Legislative Intervenor deny that it is clear that Pennsylvania's political branches will not timely act to pass a congressional redistricting plan and that the judiciary is required to step in. By way of further answer, there is still time for the General Assembly to pass a plan that the Governor will sign for the 2022 election cycle. The remainder of paragraph 4 contains legal conclusions to which no response is required, and the facts and circumstances of the lawsuit in *League of Women Voters v. Commonwealth* ("LWV P"), 178 A.3d 737 (Pa. 2018), are laid out in that opinion, which speaks for itself. To the extent that a responsive pleading is required, Legislative Intervenor deny the allegations in the remainder of paragraph 4.

5. Legislative Intervenor admit that the Pennsylvania General Assembly and the Governor have not yet reached an agreement on a congressional redistricting plan, but deny the remaining allegations in paragraph 5. Further answering, Legislative Intervenor deny that the General Assembly and the Governor do not agree on the basic criteria that a congressional redistricting plan must meet, as those criteria are set forth under federal and state law.

6. Legislative Intervenors admit that the Senate has recessed and the House has adjourned for the remainder of 2021 and that the General Assembly has not passed a congressional redistricting plan. Legislative Intervenors deny the remaining allegations in paragraph 6. Legislative Intervenors further answer that there is still time for the General Assembly to pass a plan. While Legislative Intervenors admit that the Department of State previously indicated that a plan needed to be enacted by the end of 2021 in order for the 2022 elections to proceed timely, after reasonable investigation, Legislative Intervenors are without knowledge or information sufficient to form a belief regarding the basis and truth of those statements and same are therefore denied.

7. The facts and circumstances of *Mellow v. Mitchell*, 607 A.2d 204 (Pa. 1992) and *League of Women Voters of Pa. v. Commonwealth (“LWV II”)*, 181 A.3d 1083 (Pa. 2018) are laid out in those opinions, which speak for themselves. Legislative Intervenors deny that this Court needs to intervene at this time to protect Petitioners’ constitutional rights, as there is still time for a plan to be passed. By way of further answer, the Petition’s request for the Court to usurp the enactment process, if granted, would violate the General Assembly’s authority to conduct congressional redistricting under Article I, Section 4 of the United States Constitution.

8. Admitted.

9. After reasonable investigation, Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the allegations in paragraph 9 and therefore deny them.

10. Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the allegations in the first sentence of paragraph 10 and therefore deny them. The remainder of paragraph 10 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in the remainder of paragraph 10.

11. Admitted.

12. Admitted.

13. Admitted.

14. Paragraph 14 contains legal conclusions to which no response is required, and the opinion in *LWVI* speaks for itself. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 14.

15. Legislative Intervenors admit that the General Assembly was unable to enact a new map following the decision in *LWVI*, because it was given inadequate time to do so.

16. After reasonable investigation, Legislative Intervenors are without knowledge or information sufficient to form a belief about the truth of the allegations in paragraph 16 and therefore deny them.

17. Admitted.

18. Admitted.

19. Admitted. By way of further answer, the release of the Census data was delayed, and the full data set that is needed for redistricting was not received until August 2021.

20. Admitted.

21. Admitted that the 2020 Census report indicates that Pennsylvania's resident population is 13,002,700 and that, based on the 2010 Census, the prior resident population was 12,702,379. Legislative Intervenors deny that this increase is "significant."

22. Admitted.

23. Admitted.

24. Admitted.

25. Denied. By way of further answer, based upon 2020 Census results, the ideal population for each of Pennsylvania's congressional districts under a 17-seat allocation is 764,865, which is 59,177 more persons per district than under the current plan.

26. Admitted.

27. Admitted.

28. Legislative Intervenors admit only that, in light of the 2020 Census data, Congressional Districts 8, 9, 12, 13, 14, 15, 16, and 18 have less population than the ideal district and Congressional Districts 1, 2, 3, 4, 5, 6, 7, 10, 11, and 17 have more population than the ideal district. Legislative Intervenors deny that the districts are “significantly” underpopulated or overpopulated.

29. Paragraph 29 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 29.

30. Paragraph 30 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 30.

31. Admitted.

32. Admitted.

33. Admitted.

34. Admitted.

35. Paragraph 35 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 35. Legislative Intervenors further

answer that there is still time for the General Assembly and the Governor to reach agreement on a plan.

36. Paragraph 36 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 36.

37. Legislative Intervenors admit that the P.L. 94-171 data was released in August 2021 and that the General Assembly and Governor have not yet enacted a congressional redistricting plan. Further answering, Legislative Intervenors state that the process of drawing and reviewing proposed maps, and reaching agreement, generally takes months and, in this instance, this process was shortened due to the delays with the Census data.

38. After reasonable investigation, Legislative Intervenors are without knowledge or information sufficient to form a belief about which criteria the Governor would consider in determining whether to approve a proposed map from the General Assembly. Legislative Intervenors further state that federal law and Pennsylvania law establish the criteria that a congressional map must meet.

39. Denied. Legislative Intervenors deny that the plan approved by the House State Government Committee fails to comply with the criteria that are set forth in *LWVI*. After reasonable investigation, Legislative Intervenors are without knowledge or information sufficient to form a belief as to which criteria the

Governor believes are required other than the criteria set forth under Pennsylvania law and federal law, and whether the plan proposed by the House State Government Committee fails to meet those criteria.

40. Denied. Legislative Intervenors deny that the House State Government Committee's proposed congressional redistricting plan contains irregularly shaped districts, that it unnecessarily splits communities of interest, or that it cracks any minority communities.

41. Admitted that the Senate has recessed and the House as adjourned for the rest of 2021. Legislative Intervenors deny that the General Assembly has jeopardized the ability to conduct timely elections in 2022, because there is still ample time to pass a new congressional redistricting plan.

42. Legislative Intervenors admit the existence of the statements that are contained in the Brief in Support of Preliminary Objections that the State Respondents filed in *Carter v. Degraffenreid*, No. 132 MD 2021 (Sept. 16, 2021), but, after reasonable investigation, they are without knowledge or information sufficient to form a belief as to the truth of those statements.

43. Legislative Intervenors admit that a new congressional redistricting map is unlikely to be enacted in 2021, but deny that this factor will jeopardize Pennsylvania's ability to conduct timely elections in 2022, as there is still time for a map to be passed. By way of further answer, Legislative Intervenors state that

primary election-related deadlines can be extended in Congressional elections, and in the past have been extended.

44. After reasonable investigation, Legislative Intervenors are without knowledge or information sufficient to form a belief about the truth of the allegations in paragraph 44 and therefore deny them.

45. Admitted. Further answering, Legislative Intervenors state that such deadlines can be extended for Congressional elections, and in the past have been extended.

46. Denied. Further answering, Legislative Intervenors state that such deadlines can be extended for Congressional elections, and in the past have been extended.

47. The facts and circumstances of *Mellow v. Mitchell*, 607 A.2d 204 (Pa. 1992) and *LWV II* are laid out in those opinions and speak for themselves. Legislative Intervenors deny any characterization of those opinions.

48. Denied. Legislative Intervenors deny that there is an impasse or stalemate or that this Court needs to intervene at this time.

COUNT I

49. Legislative Intervenors incorporate their responses to paragraphs 1-48 of the Petition as if fully restated herein.

50. Paragraph 50 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 50. Further answering, Legislative Intervenors state that the Pennsylvania Constitution's Free and Equal Elections Clause and the interpretation given to it in *LWVI* speak for themselves.

51. Paragraph 51 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 51. Further answering, Legislative Intervenors state that the Free and Equal Elections Clause in the Pennsylvania Constitution and the opinion in *LWVI* speak for themselves.

52. Paragraph 52 contains legal conclusions to which no response is required and the opinion in *LWVI* speaks for itself. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 52.

53. Legislative Intervenors admit that, in view of the 2020 Census data, Pennsylvania's current congressional district plan would be malapportioned. After reasonable investigation, Legislative Intervenors are without knowledge or information sufficient to form a belief about the truth of the remaining allegations in paragraph 53 and therefore deny them.

54. Paragraph 54 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 54.

COUNT II

55. Legislative Intervenors incorporate their responses to paragraphs 1-54 of the Petition as if fully restated herein.

56. Paragraph 56 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 56.

57. Paragraph 57 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 57.

58. Legislative Intervenors admit that, in view of the 2020 Census data, Pennsylvania's current congressional district plan would be malapportioned.

59. Paragraph 59 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 59.

COUNT III

60. Legislative Intervenors incorporate their responses to paragraphs 1-59 of the Petition as if fully restated herein.

61. Admitted.

62. Legislative Intervenors admit that Pennsylvania is currently allotted 18 Members to Congress but that, in light of the 2020 Census, it will only be allotted 17 Members to Congress. The remaining allegations in paragraph 62 are legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the remaining allegations in paragraph 62.

63. Paragraph 63 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 63.

64. Legislative Intervenors deny each and every factual allegation in the Petition not expressly admitted herein as true.

NEW MATTER¹

FIRST AFFIRMATIVE DEFENSE

65. One or more counts of the Petition fail to state a claim upon which relief can be granted.

SECOND AFFIRMATIVE DEFENSE

66. Petitioners failed to join necessary or indispensable parties.

¹ Legislative Intervenors reserve the right to assert additional affirmative defenses that may arise during the course of this matter.

THIRD AFFIRMATIVE DEFENSE

67. Petitioners lack standing.

FOURTH AFFIRMATIVE DEFENSE

68. Petitioners' claims are not ripe.

FIFTH AFFIRMATIVE DEFENSE

69. The claims asserted in the Petition are non-justiciable.

NOTICE TO PLEAD

Petitioners are notified to plead to this Answer and New Matter within 30 days from service or a judgment may be entered against them.

WHEREFORE, Legislative Intervenors respectfully request that the Court dismiss the Petition for Review in its entirety and grant such other and further relief to them as the Court deems just and proper.

Dated:

Respectfully submitted,

/s/ Anthony R. Holtzman

/s/ Jeffrey Duffy

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** Pro Hac Vice application forthcoming*

Counsel for Legislative Intervenors Bryan Cutler, Speaker of the Pennsylvania House of Representatives, and Kerry Benninghoff, Majority Leader of the Pennsylvania House of Representatives

VERIFICATION

I, _____ hereby verify that the factual averments and denials of factual averments made in the foregoing Answer with New Matter are true and correct to the best of my knowledge and information or belief. I make this verification subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities).

Date: _____

Exhibit B

IN THE COMMONWEALTH COURT OF PENNSYLVANIA

No. 465 MD 2021

Philip T. Gressman; Ron Y. Donagi; Kristopher R. Tapp; Pamela Gorkin; David
P. Marsh; James L. Rosenberger; Amy Myers; Eugene Boman; Gary Gordon;
Liz McMahon; Timothy G. Feeman; and Garth Isaak,

Petitioners,

vs.

Veronica Degraffenreid, in Her Capacity as Acting Secretary of the
Commonwealth of Pennsylvania; and Jessica Mathis, in Her Capacity as Director
of the Bureau of Election Services and Notaries,

Respondents.

ANSWER WITH NEW MATTER

(Counsel List On Next Page)

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** Pro Hac Vice application forthcoming*

*Counsel for Legislative Intervenors
Bryan Cutler, Speaker of the
Pennsylvania House of Representatives,
and Kerry Benninghoff, Majority Leader
of the Pennsylvania House of
Representatives*

Pursuant to Pennsylvania Rules of Appellate Procedure 1516(b) and 1517, Bryan Cutler, Speaker of the Pennsylvania House of Representatives (“Speaker Cutler”); Kerry Benninghoff, Majority Leader of the Pennsylvania House of Representatives (“Leader Benninghoff” and, together with Speaker Cutler, the “House Leaders”); Jake Corman, President *Pro Tempore* of the Pennsylvania Senate (“President Corman”); and Kim Ward, Majority Leader of the Pennsylvania Senate (“Leader Ward” and, together with President Corman, the “Senate Leaders,” and, together with the House Leaders, the “Legislative Intervenors”) hereby answer Petitioners’ Petition for Review (“Petition”) as follows. The numbered paragraphs of the Answer correspond to the numbered paragraphs of the Petition.

1. Paragraph 1 contains Petitioners’ characterization of their action and/or legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 1. After reasonable investigation, Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the allegations that Petitioners are registered voters and leading mathematicians and scientists and therefore deny those allegations. Legislative Intervenors deny that Petitioners are entitled to the relief they seek.

2. Legislative Intervenors admit that Pennsylvania’s congressional map was last drawn in 2018, that, since that time, Pennsylvania has lost a congressional

seat, and that a new map is needed for the 2022 election cycle. Legislative Intervenors further admit that, in view of the 2020 Census results, the current congressional district map is malapportioned. After reasonable investigation, Legislative Intervenors are without knowledge or information sufficient to form a belief about the allegations that unidentified candidates do not know where to run and unidentified voters cannot identify or evaluate their candidates and therefore deny those allegations. Legislative Intervenors deny the remainder of paragraph 2. Legislative Intervenors further answer that there is still time for the General Assembly to pass a congressional redistricting plan.

3. The Free and Fair Elections Clause, the Petition Clause, the equal-protection guarantees of the Pennsylvania Constitution, and the facts and circumstances of *League of Women Voters of Pa. v. Commonwealth* (“*LWVI*”), 178 A.3d 737 (2018) speak for themselves. Legislative Intervenors deny any characterization of these legal authorities. The remainder of paragraph 3 of the contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in the remainder of paragraph 3.

4. Denied that, on December 15, 2021, the General Assembly adjourned. By way of further answer, on that date, the Pennsylvania Senate recessed until January 4, 2021 or the call of the President Pro Tempore. Further denied that the

congressional district plan did not receive first consideration in the House. The remaining allegations in this paragraph are admitted.

5. Admitted that the current schedule allows for the period for collecting nominating petitions to begin on February 15, 2022.

6. Legislative Intervenors admit that the Acting Secretary of the Commonwealth and the Director of the Bureau of Election Services and Notaries made the representations regarding the deadlines to pass a new congressional district map. After reasonable investigation, Legislative Intervenors are without knowledge or information sufficient to form a belief regarding the truth or accuracy of those representations.

7. Denied. By way of further answer, because there is still time for a new congressional redistricting plan to be passed, Legislative Intervenors deny that there is no realistic prospect that such a plan will be adopted by January 24, 2022 and that this Court needs to intervene at this time to protect Petitioners' constitutional rights. Moreover, if the Court took this step, it would usurp the General Assembly's authority to conduct congressional redistricting under Article I, Section 4 of the United States Constitution. Legislative Intervenors further state that the Free and Equal Elections Clause, the Petition Clause, and the equal-protection guarantees of the Pennsylvania Constitution speak for themselves. Legislative Intervenors deny any characterization of these legal authorities.

8. Legislative Intervenors deny that this Court needs to intervene at this time to protect Petitioners' constitutional rights, as there is still time for a plan to be passed. Further answering, Legislative Intervenors state that Petitioners' Application for the Exercise of King's Bench Power or Extraordinary Jurisdiction speaks for itself. Legislative Intervenors deny any characterization of that filing.

9. Admitted.

10. Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional district plan is malapportioned. After reasonable investigation, Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the remaining allegations in paragraph 10 and therefore deny them.

11. After reasonable investigation, Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional district plan is malapportioned. Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the remaining allegations in paragraph 11 and therefore deny them.

12. After reasonable investigation, Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional district plan is malapportioned. Legislative Intervenors lack knowledge or information sufficient

to form a belief about the truth of the remaining allegations in paragraph 12 and therefore deny them.

13. After reasonable investigation, Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional district plan is malapportioned. Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the remaining allegations in paragraph 13 and therefore deny them.

14. After reasonable investigation, Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional district plan is malapportioned. Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the remaining allegations in paragraph 14 and therefore deny them.

15. After reasonable investigation, Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional district plan is malapportioned. Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the remaining allegations in paragraph 15 and therefore deny them.

16. After reasonable investigation, Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional district plan is malapportioned. Legislative Intervenors lack knowledge or information sufficient

to form a belief about the truth of the remaining allegations in paragraph 16 and therefore deny them.

17. After reasonable investigation, Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional district plan is malapportioned. Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the remaining allegations in paragraph 17 and therefore deny them.

18. After reasonable investigation, Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional district plan is malapportioned. Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the remaining allegations in paragraph 18 and therefore deny them.

19. After reasonable investigation, Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional district plan is malapportioned. Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the remaining allegations in paragraph 19 and therefore deny them.

20. After reasonable investigation, Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional district plan is malapportioned. Legislative Intervenors lack knowledge or information sufficient

to form a belief about the truth of the remaining allegations in paragraph 20 and therefore deny them.

21. After reasonable investigation, Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional district plan is malapportioned. Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the remaining allegations in paragraph 21 and therefore deny them.

22. After reasonable investigation, Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional district plan is malapportioned. Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the remaining allegations in paragraph 22 and therefore deny them.

23. Admitted.

24. Admitted.

25. Admitted that Pennsylvania's current congressional district map was adopted in 2018. The remainder of paragraph 25 contains legal conclusions to which no response is required, and the facts and circumstances in *League of Women Voters of Pa. v. Commonwealth* ("LWV II"), 181 A.3d 1083 (2018) are reflected in that opinion, which speaks for itself. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in the remainder of paragraph 25.

26. Admitted.

27. Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the allegation that “[b]ased on the 2020 Census Data, Pennsylvania’s congressional districts vary in population by as much as 95,000 residents” and therefore deny it. The remaining allegations in this paragraph are admitted.

28. Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional district plan is malapportioned. Legislative Intervenors deny that all districts are “significantly” malapportioned. After reasonable investigation, Legislative Intervenors lack knowledge or information sufficient to form a belief about the truth of the remaining allegations in paragraph 28 and therefore deny them.

29. Respondents’ July 1, 2021 filing speaks for itself. Legislative Intervenors deny any characterization of that filing. Further answering, Legislative Intervenors state that there is still time for the General Assembly to pass a plan.

30. Legislative Respondents admit that, under the current schedule, on February 15, 2022, nominating petitions can begin to be circulated and that, on March 8, 2022, they are due. Further answering, Legislative Intervenors state that such deadlines can be extended for Congressional elections, and in the past have been extended. After reasonable investigation, Legislative Intervenors lack

knowledge or information sufficient to form a belief about the allegation regarding what Respondents' deadlines were tethered to and therefore deny it.

31. Legislative Intervenors admit that the Senate recessed and the House adjourned its legislative session on December 15, 2021 without enacting a new congressional district map with 17 districts. Legislative Intervenors admit that, on December 15, 2021, the House State Government Committee voted a preliminary congressional district plan out of committee. Legislative Intervenors deny that this plan has not been brought up for consideration by the House, because it did receive first consideration. It will not be brought up for second consideration by the House until the General Assembly reconvenes, on or after January 4, 2022. Legislative Intervenors deny that there is no realistic prospect that the General Assembly will pass a final congressional redistricting plan that can be approved by the Governor, as there is still time to pass and reach agreement on such a plan.

32. Denied. Legislative Intervenors further answer that there is still time for the General Assembly and the Governor to reach agreement on a plan by the Respondents' January 24, 2022 deadline. That said, after reasonable investigation, Legislative Respondents are without knowledge or information sufficient to form a belief about whether January 24, 2022 is in fact a real deadline.

33. Legislative Intervenors deny that this Court needs to intervene at this time to protect Petitioners' constitutional rights, as there is still time for a plan to be

passed. Further answering, Petitioners' Application for the Exercise of King's Bench Power or Extraordinary Jurisdiction speaks for itself. Legislative Intervenors deny any characterization of that filing.

COUNT I

34. Legislative Intervenors incorporate their responses to paragraphs 1-33 of the Petition as if fully restated herein.

35. Admitted.

36. Paragraph 36 contains legal conclusions to which no response is required, and the opinion in *LWVI* speaks for itself. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 36.

37. Paragraph 37 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 37. Legislative Intervenors deny any characterization of this action, which speaks for itself.

38. Legislative Intervenors admit that, in view of the 2020 Census, the current congressional district plan is malapportioned and the districts vary from the ideal population.

39. Denied. Legislative Intervenors deny that their failure to act is the cause of the imbalance in population. Legislative Intervenors admit that a new

congressional redistricting plan is needed. By way of further answer, there is still ample time to pass such a plan.

40. Paragraph 40 contains a legal conclusion to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 40.

COUNT II

41. Legislative Intervenors incorporate their responses to paragraphs 1-40 of the Petition as if fully restated herein.

42. Admitted.

43. Paragraph 43 contains legal conclusions to which no response is required and the opinions referenced in this paragraph speak for themselves. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 43.

44. Legislative Intervenors admit only that the General Assembly and Governor have not yet enacted a congressional redistricting plan. After reasonable investigation, Legislative Intervenors are without knowledge or information sufficient to form a belief about the truth of the remaining allegations in paragraph 44 and therefore deny them.

45. After reasonable investigation, Legislative Intervenors are without knowledge or information sufficient to form a belief about the truth of the allegations in paragraph 45 and therefore deny them.

46. Legislative Intervenors admit only that the General Assembly and Governor have not yet enacted a congressional redistricting plan. The remainder of paragraph 46 contains legal conclusions to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in the remainder of paragraph 46.

47. Paragraph 47 of the Petition contains a legal conclusion to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 47.

COUNT III

48. Legislative Intervenors incorporate their responses to paragraphs 1-47 of the Petition as if fully restated herein.

49. Admitted.

50. Admitted.

51. Legislative Intervenors admit that, in view of the 2020 Census data, the current congressional districts deviate from the ideal district population. After reasonable investigation, Legislative Intervenors are without knowledge or information sufficient to form a belief about the truth of the allegation regarding how

such population imbalances impact the “weight” of each citizen’s vote and therefore deny it.

52. Paragraph 52 of the Petition contains a legal conclusion to which no response is required. To the extent that a responsive pleading is required, Legislative Intervenors deny the allegations in paragraph 52.

53. Legislative Intervenors deny each and every factual allegation in the Petition not expressly admitted herein as true.

NEW MATTER¹

FIRST AFFIRMATIVE DEFENSE

54. One or more counts of the Petition fail to state a claim as to which relief can be granted.

SECOND AFFIRMATIVE DEFENSE

55. Petitioners failed to join necessary or indispensable parties.

THIRD AFFIRMATIVE DEFENSE

56. Petitioners lack standing.

FOURTH AFFIRMATIVE DEFENSE

57. Petitioners’ claims are not ripe.

¹ Legislative Intervenors reserve the right to assert additional affirmative defenses that may arise during the course of this matter.

FIFTH AFFIRMATIVE DEFENSE

58. The claims asserted in the Petition are non-justiciable.

NOTICE TO PLEAD

Petitioners are notified to plead to this Answer and New Matter within 30 days from service or a judgment may be entered against them.

WHEREFORE, the Legislative Intervenors respectfully request that the Court dismiss the Petition in its entirety and grant such other and further relief to them as the Court deems just and proper.

Dated:

Respectfully submitted,

/s/ Anthony R. Holtzman

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** Pro Hac Vice application forthcoming
Counsel for Legislative Intervenors Bryan Cutler, Speaker of the Pennsylvania House of Representatives, and Kerry Benninghoff, Majority Leader of the Pennsylvania House of Representatives*

VERIFICATION

I, _____ hereby verify that the factual averments and denials of factual averments made in the foregoing Answer with New Matter are true and correct to the best of my knowledge and information or belief. I make this verification subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities).

Date: _____

Exhibit C

IN THE COMMONWEALTH COURT OF PENNSYLVANIA

No. 464 M.D. 2021

Carol Ann Carter; Monica Parrilla; Rebecca Poyourow; William Tung; Roseanne Milazzo; Burt Siegel; Susan Cassanelli; Lee Cassanelli; Lynn Wachman; Michael Guttman; Maya Fonkeu; Brady Hill; Mary Ellen Bachunis; Tom DeWall; Stephanie McNulty; and Janet Temin,

Petitioners,

vs.

Veronica Degraffenreid, in Her Capacity as Acting Secretary of the Commonwealth of Pennsylvania; and Jessica Mathis, in Her Capacity as Director of the Bureau of Election Services and Notaries,

Respondents.

No. 465 M.D. 2021

Philip T. Gressman; Ron Y. Donagi; Kristopher R. Tapp; Pamela A. Gorkin; David P. Marsh; James L. Rosenberger; Amy Myers; Eugene Boman; Gary Gordon; Liz McMahon; Timothy G. Feeman; and Garth Isaak

Petitioners,

vs.

Veronica Degraffenreid, in Her Capacity as Acting Secretary of the Commonwealth of Pennsylvania; and Jessica Mathis, in Her Capacity as Director of the Bureau of Election Services and Notaries,

Respondents.

ORDER

AND NOW, this ___ day of _____, 202__, upon consideration of the Application for Leave to Intervene of the Speaker and Majority Leader of the Pennsylvania House of Representative and the President *Pro Tempore* and Majority Leader of the Pennsylvania Senate, and any response thereto, it is hereby ORDERED that (1) the request for leave to intervene is granted and (2) the Answers that are attached to the Application as Exhibits A & B are deemed filed.

J.

Exhibit D

VERIFICATION

I, Bryan D. Cutler, Speaker of the Pennsylvania House of Representatives, depose and say, subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities, that the factual allegations set forth in the foregoing Application for Leave to Intervene are true and correct to the best of my knowledge, information, and belief.

Dated this 24th day of December, 2021.

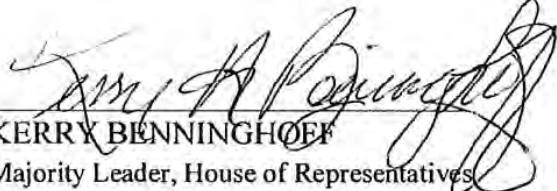


BRYAN D. CUTLER
Speaker of the House of Representatives

VERIFICATION

I, Kerry Benninghoff, Majority Leader of the Pennsylvania House of Representatives, deposes and says, subject to the penalties of 18 Pa. C.S. § 4904, relating to unsworn falsification to authorities, that the factual allegations set forth in the foregoing Application for Leave to Intervene are true and correct to the best of my knowledge, information, and belief.

Dated this 24th day of December, 2021


KERRY BENNINGHOFF
Majority Leader, House of Representatives

VERIFICATION

I, Jake Corman, President *Pro Tempore* of the Pennsylvania Senate, depose and say, subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities, that the factual allegations set forth in the foregoing Application for Leave to Intervene are true and correct to the best of my knowledge, information, and belief.

Dated this 27th day of December, 2021.

A handwritten signature in black ink that reads "Jake Corman". The signature is written in a cursive, flowing style.

JAKE CORMAN
President *Pro Tempore* of the Pennsylvania
Senate

VERIFICATION

I, Kim Ward, Majority Leader of the Pennsylvania Senate, depose and say, subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities, that the factual allegations set forth in the foregoing Application for Leave to Intervene are true and correct to the best of my knowledge, information, and belief.

Dated this 27th day of December, 2021.

A handwritten signature in black ink, appearing to read "Kim Ward", is written in a cursive style.

KIM WARD
Majority Leader of the Pennsylvania Senate

CERTIFICATE OF SERVICE

I hereby certify that I am this day serving the foregoing document upon the persons and in the manner indicated below, which service satisfies the requirements of Pa.R.A.P. 121:

Service by PACFile eService as follows:

All counsel of record

Date: December 27, 2021

/s/ Anthony R. Holtzman
Anthony R. Holtzman

EXPERT REPORT OF JONATHAN RODDEN, Ph.D.

***Carter v. Chapman*, 464 MD 2021, 465 MD 2021 (Pa. Commw. Ct.)
January 24, 2022**

In this report, I describe the Carter Plan, a proposed Pennsylvania congressional redistricting map that I was asked to create and which the *Carter* Petitioners are submitting for consideration pursuant to the Court’s January 14, 2022 Order.

Specifically, I was asked to use the existing court-drawn 18-district plan as a guide, and to draw a new 17-district plan that is as similar as possible to the existing plan, preserving the cores and boundaries of districts where feasible given equal population requirements, and meeting or surpassing its adherence to traditional redistricting criteria, including (1) minimizing splits of counties, municipalities, and vote tabulation districts and (2) drawing compact districts. Moreover, I was asked to be mindful of the residential addresses of congressional incumbents to avoid inadvertent pairings of incumbent legislators. Finally, after completing my map, I was asked to evaluate the districts’ partisan performance.

The most important constraint shaping this task was the demographic change experienced by Pennsylvania since the 2010 census. The metropolitan areas of the state have experienced population growth on par with the United States as a whole, while rural Pennsylvania has experienced a precipitous decline in population. As a result of rural population loss, Pennsylvania lost a congressional seat. Accordingly, it is possible to make relatively small changes to the districts in Southeastern Pennsylvania and the Pittsburgh area, but the geographic size and configuration of districts in the rest of the state, which is more rural, needed to change more substantially to preserve population equality.

This report explains those demographic constraints in greater detail, and then presents a proposed congressional map that maintains continuity with the 2018 plan and adheres to traditional redistricting criteria. Despite the challenges associated with the loss of a district, this map shows that it is possible to preserve a relatively similar level of compactness as the current map, split the same number of counties, and reduce the number of split municipalities and vote tabulation districts. Furthermore, the resulting map is likely to result in a seat share that is consistent with and responsive to Pennsylvania voters’ partisan preferences.

I. QUALIFICATIONS AND EXPERIENCE

I am currently a tenured Professor of Political Science at Stanford University and the founder and director of the Stanford Spatial Social Science Lab—a center for research and teaching with a focus on the analysis of geo-spatial data in the social sciences. I am engaged in a variety of research projects involving large, fine-grained geo-spatial data sets including ballots and election results at the level of polling places, individual records of registered voters, census data, and survey responses. I am also a senior fellow at the Stanford Institute for Economic Policy Research and the Hoover Institution. Prior to my employment at Stanford, I was the Ford Professor of Political Science at the Massachusetts Institute of Technology. I received my Ph.D. from Yale University and my B.A. from the University of Michigan, Ann Arbor, both in political science. A copy of my current C.V. is included as Exhibit A.

In my current academic work, I conduct research on the relationship between the patterns of political representation, geographic location of demographic and partisan groups, and the drawing of electoral districts. I have published papers using statistical methods to assess political geography, balloting, and representation in a variety of academic journals including *Statistics and Public Policy*, *Proceedings of the National Academy of Science*, *American Economic Review Papers and Proceedings*, the *Journal of Economic Perspectives*, the *Virginia Law Review*, the *American Journal of Political Science*, the *British Journal of Political Science*, the *Annual Review of Political Science*, and the *Journal of Politics*. One of these papers was selected by the American Political Science Association as the winner of the Michael Wallerstein Award for the best paper on political economy published in the last year, and another received an award from the American Political Science Association section on social networks. In 2021, I received a John Simon Guggenheim Memorial Foundation Fellowship, and received the Martha Derthick Award of the American Political Science Association for “the best book published at least ten years ago that has made a lasting contribution to the study of federalism and intergovernmental relations.”

I have recently written a series of papers, along with my co-authors, using automated redistricting algorithms to assess partisan gerrymandering. This work has been published in the *Quarterly Journal of Political Science*, *Election Law Journal*, and *Political Analysis*, and it has been featured in more popular publications like the *Wall Street Journal*, the *New York Times*, and *Boston Review*. I recently published a book, published by *Basic Books* in June of 2019, on the relationship between political districts, the residential geography of social groups, and their political representation in the United States and other countries that use winner-take-all electoral districts. The book was reviewed in *The New York Times*, *The New York Review of Books*, *Wall Street Journal*, *The Economist*, and *The Atlantic*, among others. This book included deep analysis of Pennsylvania’s political geography and redistricting.

I have expertise in the use of large data sets and geographic information systems (GIS), and conduct research and teaching in the area of applied statistics related to elections. My PhD students frequently take academic and private sector jobs as statisticians and data scientists. I frequently work with geo-coded voter files and other large administrative data sets, including in recent paper published in the *Annals of Internal Medicine* and *The New England Journal of Medicine*. I have developed a national data set of geo-coded precinct-level election results that has been used extensively in policy-oriented research related to redistricting and representation.

I have been accepted and testified as an expert witness in six election law and redistricting cases: *Romo v. Detzner*, No. 2012-CA-000412 (Fla. Cir. Ct. 2012); *Mo. State Conference of the NAACP v. Ferguson-Florissant Sch. Dist.*, No. 4:2014-CV-02077 (E.D. Mo. 2014); *Lee v. Va. State Bd. of Elections*, No. 3:15-CV-00357 (E.D. Va. 2015); *Democratic Nat’l Committee et al. v. Hobbs et al.*, No. 16-1065-PHX-DLR (D. Ariz. 2016); *Bethune-Hill v. Virginia State Board of Elections*, No. 3:14-cv-00852-REP-AWA-BMK (E.D. Va. 2014); and *Jacobson et al. v. Lee*, No. 4:18-cv-00262 (N.D. Fla. 2018). Just earlier this month, the Ohio Supreme Court credited my expert analysis in *Bennett v. Ohio Redistricting Commission*, No. 2012-1198 (Ohio 2022), and *Adams v. DeWine*, No. 2012-1428 (Ohio 2022), two redistricting cases challenging state legislative and congressional maps. I also worked with a coalition of academics to file Amicus Briefs in the Supreme Court in *Gill v. Whitford*, No. 16-1161, and *Rucho v. Common Cause*, No. 18-422. Much of the testimony in these cases had to do with geography, electoral districts, voting, ballots, and

election administration. I am currently working as a consultant for the Maryland Redistricting Commission.

I am being compensated at the rate of \$550/hour for my work in this case. My compensation is not dependent upon my conclusions in any way.

II. DATA SOURCES

In order to assess statewide partisanship, I have collected statewide election results for selected elections from 2010 to 2020 from the Pennsylvania Department of State.¹ The specific elections and results are detailed in Table 1 below. As part of my analysis of the relationship between population change and partisanship, I also collected county-level results of those same elections from the Pennsylvania Department of State. In order to assess the partisanship of the existing Pennsylvania Congressional districts as well as the proposed Carter Plan, I also accessed precinct-level election results from the Pennsylvania Department of State for statewide elections from 2016 to 2020 that were matched to 2020 Pennsylvania vote tabulation districts by a team at Harvard University called the Algorithm-Assisted Redistricting Methodology Project.² I also used block-level 2020 population estimates produced by the United States Census Department for the purposes of legislative redistricting. Additionally, I accessed the boundaries of current legislative districts and counties, along with data on 2010 and 2020 population, from the National Historical GIS (nhgis.org). I also accessed a file containing addresses of incumbents that was provided to me by counsel.

III. PENNSYLVANIA'S CURRENT CONGRESSIONAL DISTRICTS

Pennsylvania's current congressional plan was adopted in 2018 by an order of the Pennsylvania Supreme Court in *League of Women Voters of Pa. v. Commonwealth*, 645 Pa. 576 (2018) (*LWV*). In explaining its reasons for selecting this map, the Pennsylvania Supreme Court cited the map's superiority, compared with other maps that had been submitted, with respect to the traditional redistricting criteria of compactness and minimization of splits of counties, municipalities, and smaller political subdivisions. Indeed, the map stands out relative to those of many other U.S. states in that its districts are relatively compact and respectful of county and municipal boundaries.

As demonstrated by the elections of 2018 and 2020, the map also produced a congressional delegation that came very close to accurately portraying the partisan preferences of Pennsylvania's voters. In recent years, Pennsylvania has been a competitive but Democratic-leaning state. Table 1 displays results of all statewide elections since the last round of decennial redistricting. The average vote share of Democratic candidates during this period was almost 53 percent. Democratic candidates were victorious in 13 of 17 statewide races.

¹ <https://www.electionreturns.pa.gov/ReportCenter/Reports>

² <https://alarm-redist.github.io/posts/2021-08-10-census-2020/>

Table 1: Pennsylvania Statewide Election Results, 2012-2020

	Democratic votes	Republican votes	Democratic vote share
2012 President	2,990,274	2,680,434	52.73%
2012 Senate	3,021,364	2,509,132	54.63%
2012 Attorney General	3,125,557	2,313,506	57.46%
2012 Auditor General	2,729,565	2,548,767	51.71%
2012 Treasurer	2,872,344	2,405,654	54.42%
2014 Governor	1,920,355	1,575,511	54.93%
2016 Presidential	2,926,441	2,970,733	49.62%
2016 U.S. Senate	2,865,012	2,951,702	49.25%
2016 Attorney General	3,057,010	2,891,325	51.39%
2016 Auditor General	2,958,818	2,667,318	52.59%
2016 Treasurer	2,991,404	2,610,811	53.40%
2018 U.S. Senate	2,792,437	2,134,848	56.67%
2018 Governor	2,895,652	2,039,882	58.67%
2020 Presidential	3,458,229	3,377,674	50.59%
2020 Attorney General	3,461,472	3,153,831	52.33%
2020 Auditor General	3,129,131	3,338,009	48.39%
2020 Treasurer	3,239,331	3,291,877	49.60%
2012-2020 Average			52.85%
2016-2020 Average			52.05%
2018-2020 Average			52.71%

Note: Democratic vote share is the Democratic share of the votes for the two major parties (Democrats and Republicans). The denominator does not include minor parties and write-in candidates.

Table 1 also provides vote share averages for more recent election cycles. From 2016 to 2020—the period for which I have accessed precinct-level election results that allow me to assess the likely partisanship of proposed new redistricting plans—the average Democratic vote share was around 52 percent. During the lifespan of the most recent redistricting plan, which was implemented in 2018, the average Democratic vote share was 52.7 percent.

Given this pattern of statewide election results, a congressional redistricting plan that produces a slight majority of Democratic members of Congress would be an accurate reflection of overall statewide partisanship. After the elections of 2018 and 2020, the Pennsylvania congressional delegation was split evenly between the two parties. In other words, the 2018 congressional plan was, if anything, slightly more favorable to the Republican Party— with 50 percent of the seats and a relatively stable statewide support base between 47 and 48 percent—than the overall statewide vote share.

However, it is important to note that several districts were quite competitive and could plausibly have been won by either party. The district-level results of the 2018 and 2020 elections are

presented on the left-hand side of Table 2 below, along with the average of the two. The districts are sorted from the most Republican to most Democratic, according to the average congressional vote share. Note that Districts 1 (Bucks County), 10 (metro Harrisburg), and 16 (Northwest PA) were very close in 2018—a relatively good year for Democrats—and Districts 7 (Lehigh Valley), 8 (Northeast PA), and 17 (suburban Pittsburgh) were quite close in 2020, which was a relatively good year for Republicans.

Table 2: Actual District-Level Results of 2018 and 2020 Elections and Statewide Election Results Disaggregated by Congressional District

District	Democratic Congressional vote share, 2018	Democratic Congressional vote share, 2020	Average Democratic Congressional vote share, 2018-2020	Average Democratic <i>Statewide</i> vote share, 2018-2020	Over (under) performance of Democratic Congressional candidate
13	29.51%	26.51%	28.01%	29.35%	-1.34%
15	32.16%	26.54%	29.35%	31.56%	-2.21%
12	33.96%	29.16%	31.56%	33.22%	-1.66%
9	40.25%	33.67%	36.96%	37.12%	-0.16%
14	42.09%	35.31%	38.70%	40.66%	-1.96%
11	41.02%	36.88%	38.95%	39.02%	-0.07%
16	47.83%	40.66%	44.25%	43.36%	0.89%
1	48.74%	43.44%	46.09%	53.62%	-7.53%
10	48.68%	46.69%	47.68%	48.74%	-1.06%
8	54.64%	51.78%	53.21%	50.94%	2.27%
7	55.17%	51.87%	53.52%	53.68%	-0.16%
17	56.26%	51.15%	53.70%	53.99%	-0.29%
6	58.88%	56.05%	57.47%	56.71%	0.76%
4	63.52%	59.53%	61.52%	62.41%	-0.88%
5	65.19%	64.70%	64.94%	65.40%	-0.46%
18	Uncontested	69.25%	69.25%	68.06%	1.18%
2	79.02%	72.54%	75.78%	73.54%	2.23%
3	93.38%	91.03%	92.21%	92.34%	-0.14%

Note: Democratic vote share is the Democratic share of the votes for the two major parties (Democrats and Republicans). The denominator does not include minor parties and write-in candidates.

It is useful to make a distinction between actual district-level congressional election results, which are affected by idiosyncratic aspects of candidates' popularity, including strategic decisions by high-quality challengers to avoid running against popular incumbents, and what might be characterized as the underlying partisanship of the district. To capture the latter, political scientists often use precinct-level results of *statewide* elections, where the same candidates are running in each district, and count up the votes within the boundaries of legislative districts. I have also undertaken this approach, using the 6 statewide elections listed in Table 1 for 2018 and 2020 and taking an average for each district. These calculations are presented in the fifth column of Table 2. In the final column, I have subtracted the average statewide Democratic vote share from the

average congressional vote share, which provides an indicator of the extent to which the Democratic congressional candidate outperforms his or her statewide co-partisans (positive numbers), or to which the Republican candidate outperforms his or her statewide co-partisans (negative numbers).

This exercise reveals that while statewide and congressional election results are highly correlated, there are some interesting and sometimes sizable differences between statewide and congressional races. Above all, note that if we focus only on *statewide* races, there are 10 districts with Democratic majorities rather than 9. District 1 has an average Democratic vote share of 53.6 percent, yet the Republican incumbent from the previous Bucks County district, Mike Fitzpatrick, received 51.3 percent of the vote in 2018 and a comfortable 56.6 percent in 2020.

In keeping with a narrow but consistent statewide Democratic majority, the previous plan had 10 of 18 districts where Democratic candidates received majorities in statewide races, though one of these, District 8 in Northeastern Pennsylvania, was very close to evenly divided (less than 51 percent Democratic). Additionally, one of the Republican-leaning districts, number 10 in the Harrisburg area, was also rather evenly divided (a little over 51 percent Republican). When it comes to actual congressional election results, several were quite competitive, and due to a popular Republican incumbent in District 1, the delegation ended up evenly divided between the parties.

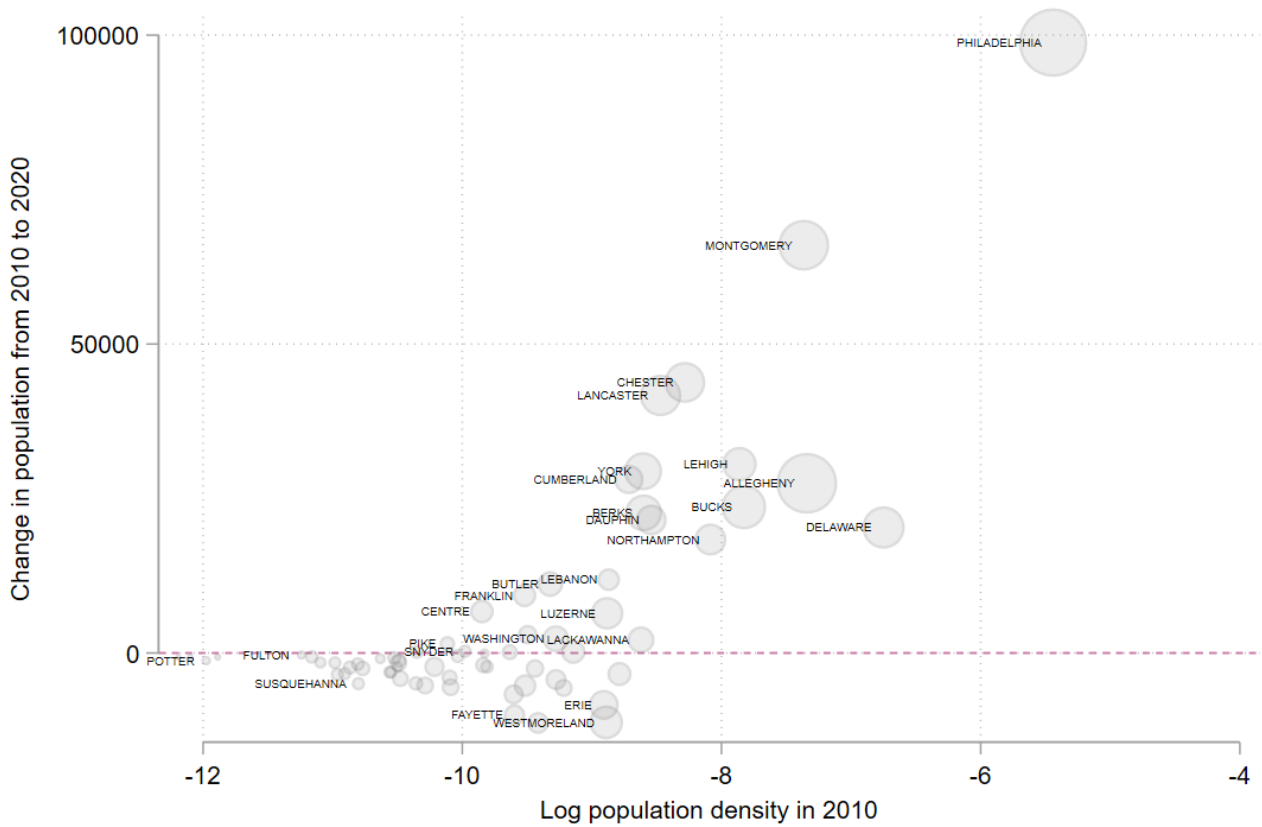
In sum, the existing plan demonstrates several desirable features. In addition to having relatively compact districts with few splits of counties and municipalities, it also produces relatively competitive elections, and outcomes that are roughly in line with overall partisan preferences of Pennsylvania's voters. Thus, it is a very reasonable starting point for the redistricting process in 2022.

IV. DEMOGRAPHIC CHANGE IN PENNSYLVANIA

To understand the constraints shaping a redistricting strategy based on the preservation of existing districts, it is necessary to understand the geography of Pennsylvania's population change over the last decade.

For the most part, places that were sparsely populated in 2010 subsequently lost population and became even sparser, while relatively dense places gained population and grew denser. This simple pattern can be visualized in Figure 1, which displays the log of 2010 population density on the horizontal axis, and the change in population from 2010 to 2020 on the vertical axis. Each data marker is a county, and the size of the data marker corresponds to the overall population of the county. The county that gained the most population, on the right side of the graph, was Philadelphia—the densest county in the state. Other counties experiencing relatively large increases in population were other relatively dense counties in the metro area surrounding Philadelphia County, e.g., Chester and Montgomery. With a few exceptions, e.g., Centre County and Butler County, Pennsylvania's relatively sparse counties lost population.

Figure 1: Population Density and Population Change in Pennsylvania, 2010 to 2020



In other words, metropolitan areas gained significant population, while rural areas experienced substantial population loss. In particular, the counties of Southeastern Pennsylvania experienced sustained population growth. In fact, from the decennial census of 2010 to that of 2020, these counties grew at an average rate of 6.7 percent.³ This is relatively close to the overall growth rate of the U.S. population during the same period, which was 7.3 percent. In fact, the rate of population growth in Chester, Lehigh, and Montgomery Counties surpassed 8 percent. Dauphin County, home to Harrisburg, grew at a rate of 8.1 percent, while Allegheny County, home to Pittsburgh, grew at a rate of 2.2 percent. Meanwhile, the rest of the state *lost* population at a rate of 2.7 percent since 2010.

These patterns can be visualized in Figure 2, which displays raw numbers of population gain and loss by county from 2010 to 2020, along with the boundaries of the current 18 congressional districts.

³ I include the counties of Bucks, Berks, Chester, Delaware, Lancaster, Lehigh, Montgomery, Northampton, and Philadelphia.

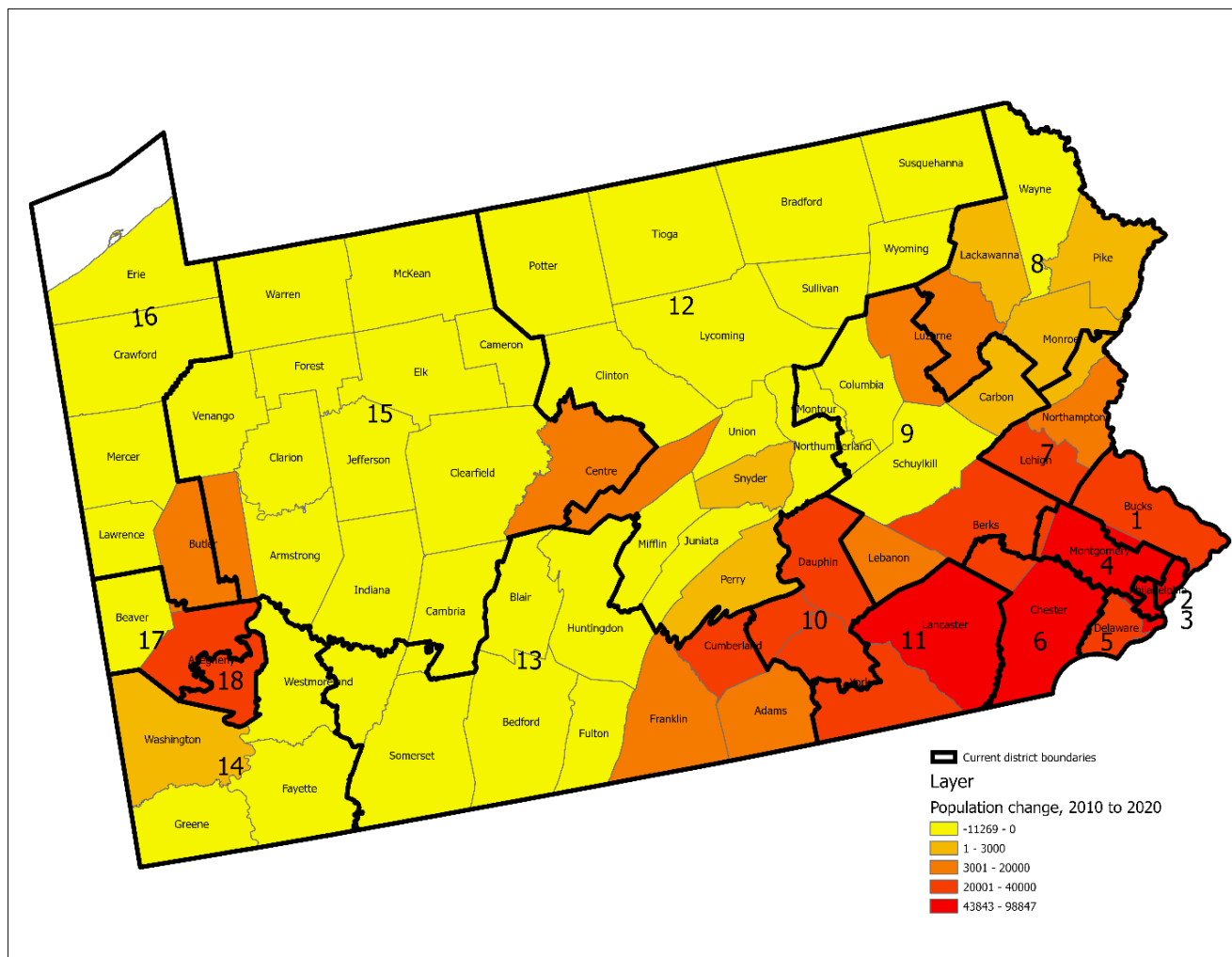
Figure 2: The Geography of Population Shifts, Pennsylvania Counties, 2010 to 2020

Figure 2 makes it clear that Pennsylvania lost a congressional district largely because of population decline outside of metropolitan areas. As a result, major reconfigurations of existing districts are unavoidable in rural Pennsylvania, whereas the districts in metropolitan areas can be fine-tuned based on local variation in the rate of population growth.

In the previous redistricting plan, which was very careful to avoid county splits, Philadelphia County was entirely contained within two congressional districts. Because population growth in Philadelphia was not far off from that of the average national rate, its districts need not change much at all. But because Bucks and Delaware counties experienced lower growth rates, Districts 1 and 5 must expand further beyond the confines of their counties. This is somewhat challenging, since the surrounding counties of Montgomery, Chester, and Lancaster have experienced rapid population growth. The expansions of Districts 1 and 5 must either dig further into Montgomery County, making its district (District 4) narrower and less compact, or completely disrupt the current map's effort to avoid county splits in Chester, Lancaster, Lehigh, and Northampton. In the map presented below, I have elected to maintain the structure of the existing map and reach further into Montgomery County with Districts 1 and 5 (see below for more details).

Moving North from the Philadelphia metro area, moderate population growth in the counties contained in the current version of Districts 7 and 8 makes it possible to leave the basic structure of these districts intact. Likewise, moving West from Philadelphia, District 11 (based in Lancaster County) and District 10 (based in the Harrisburg area) require relatively minor changes due to population growth that is close to the national average.

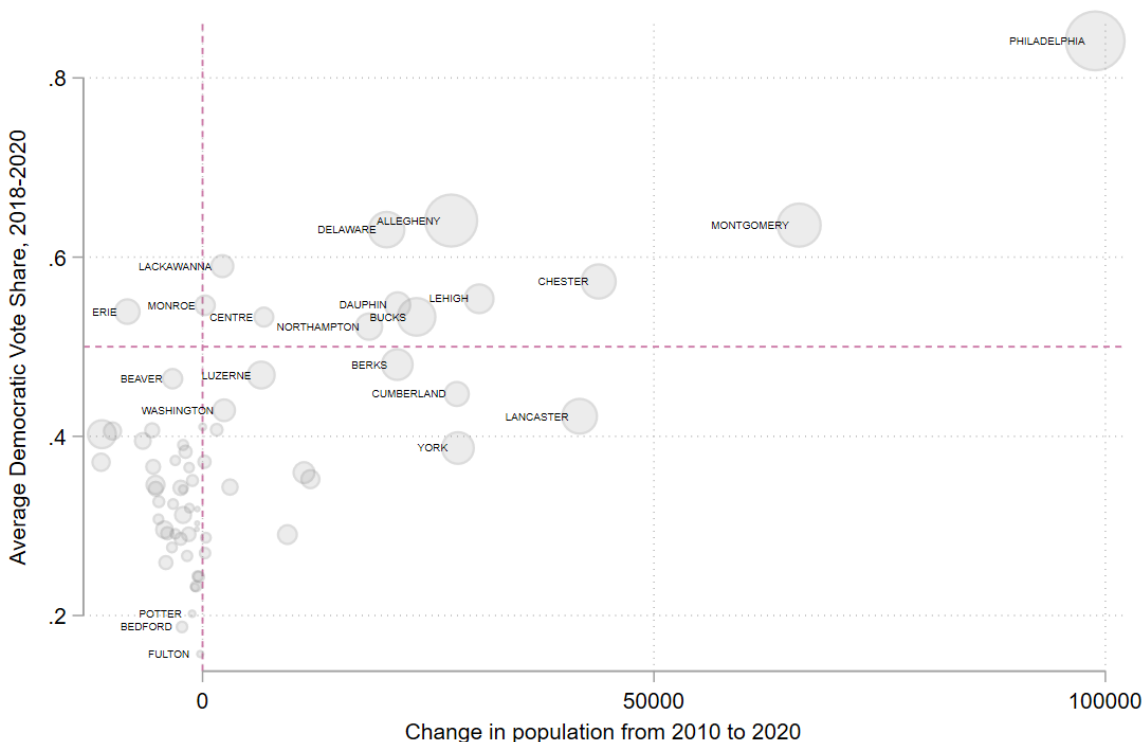
In metro Pittsburgh, the current map places the city of Pittsburgh and its Southern and Eastern suburbs into District 18, with the remainder of Allegheny County and Beaver County placed in District 17. Again, due to moderate population growth, it is straightforward to retain the existing arrangement. This can be achieved by simply moving a small part of suburban Pittsburgh into District 17 and expanding what was formerly called District 18 a bit further into Pittsburgh's exurbs in Westmoreland County.

Due to population loss, the territories of Districts 14 and 16, in the Western corners of the state, must expand toward the central part of the state. In the central part of the state, large population losses, combined with the unavoidable expansion of Districts 14 and 16 into their territory, mean that the area formerly covered by Districts 9, 12, 13, and 15 must now be covered by only three districts rather than four. Each of these districts is currently represented by a Republican incumbent. As a result, unless the map undergoes a more extensive redesign aimed explicitly at protecting these incumbents, two of them will be forced to compete in the same district.

It is worth noting that Pennsylvania's demographic changes are highly correlated with partisanship. In Pennsylvania, as in the rest of the United States, population density is highly correlated with Democratic voting.⁴ In Pennsylvania, as demonstrated in Figure 1, population growth is occurring in relatively dense areas. This means that the places that are gaining population are largely Democratic, and the places that are losing population are largely Republican. This pattern can be visualized in Figure 3, which plots the county-level change in population from 2010 to 2020 on the horizontal axis, and the average Democratic vote share from 2018 and 2020 on the vertical axis.

⁴ See Jonathan Rodden, *Why Cities Lose: The Deep Roots of the Urban-Rural Divide*. New York: Basic Books.

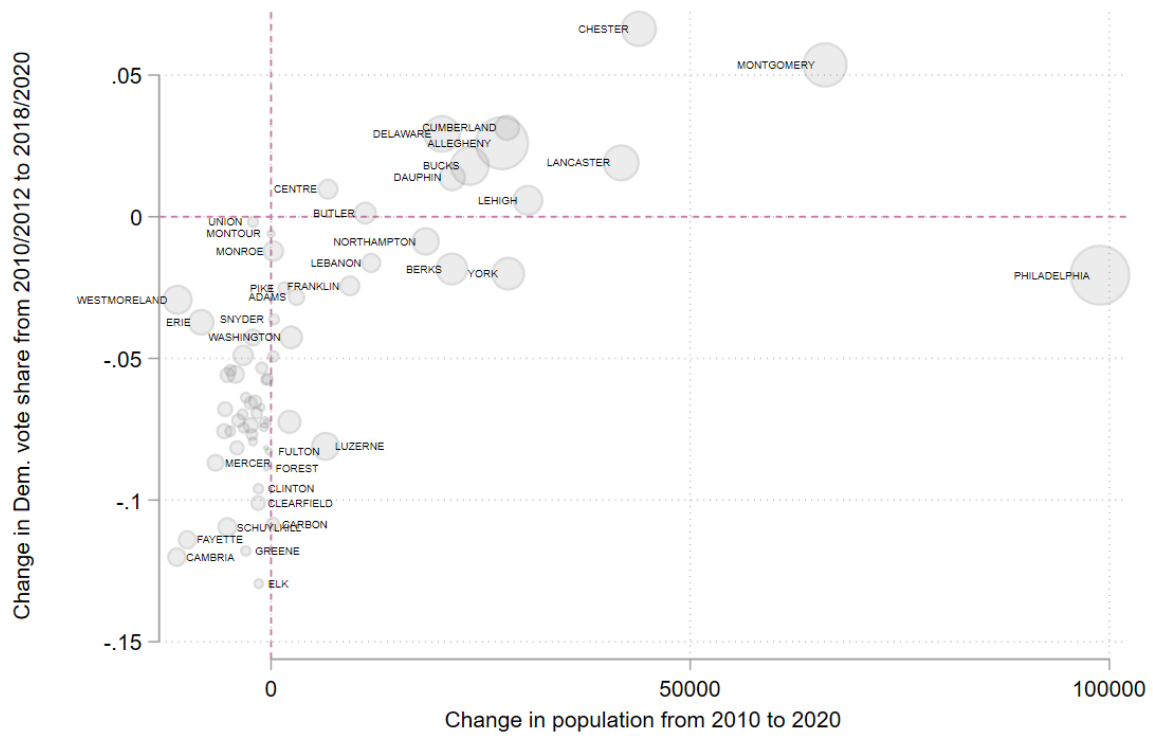
Figure 3: Population Change Since 2010 and Average Democratic Vote Share, Pennsylvania Counties



Moreover, another pronounced trend in Pennsylvania and the rest of the United States is that places that are gaining population are not only more Democratic to begin with, but are becoming *more* Democratic as they gain population. Likewise, places that are losing population are not only relatively Republican to begin with, but are becoming *more* Republican. This can be visualized in Figure 4 below, which, like Figure 3, depicts the change in population from 2010 to 2020 on the horizontal axis, but on the vertical axis, plots the *change* in the Democratic vote share from the average at the beginning of the decade (the 2010 mid-term and the 2012 presidential election) and the average at the end of the decade (the 2018 mid-term and the 2020 presidential election). Figure 4 demonstrates that many of the counties that are gaining the most population—like Chester, Montgomery, and Lancaster—are becoming more Democratic. Philadelphia—already extremely Democratic—is an exception to this pattern.

Note that some of the growing places that are becoming more Democratic, like Montgomery, Chester, and Allegheny Counties, were already quite Democratic. But others, like Lancaster and Cumberland, started out with strong Republican majorities, meaning that they are becoming more competitive over time as they gain population.

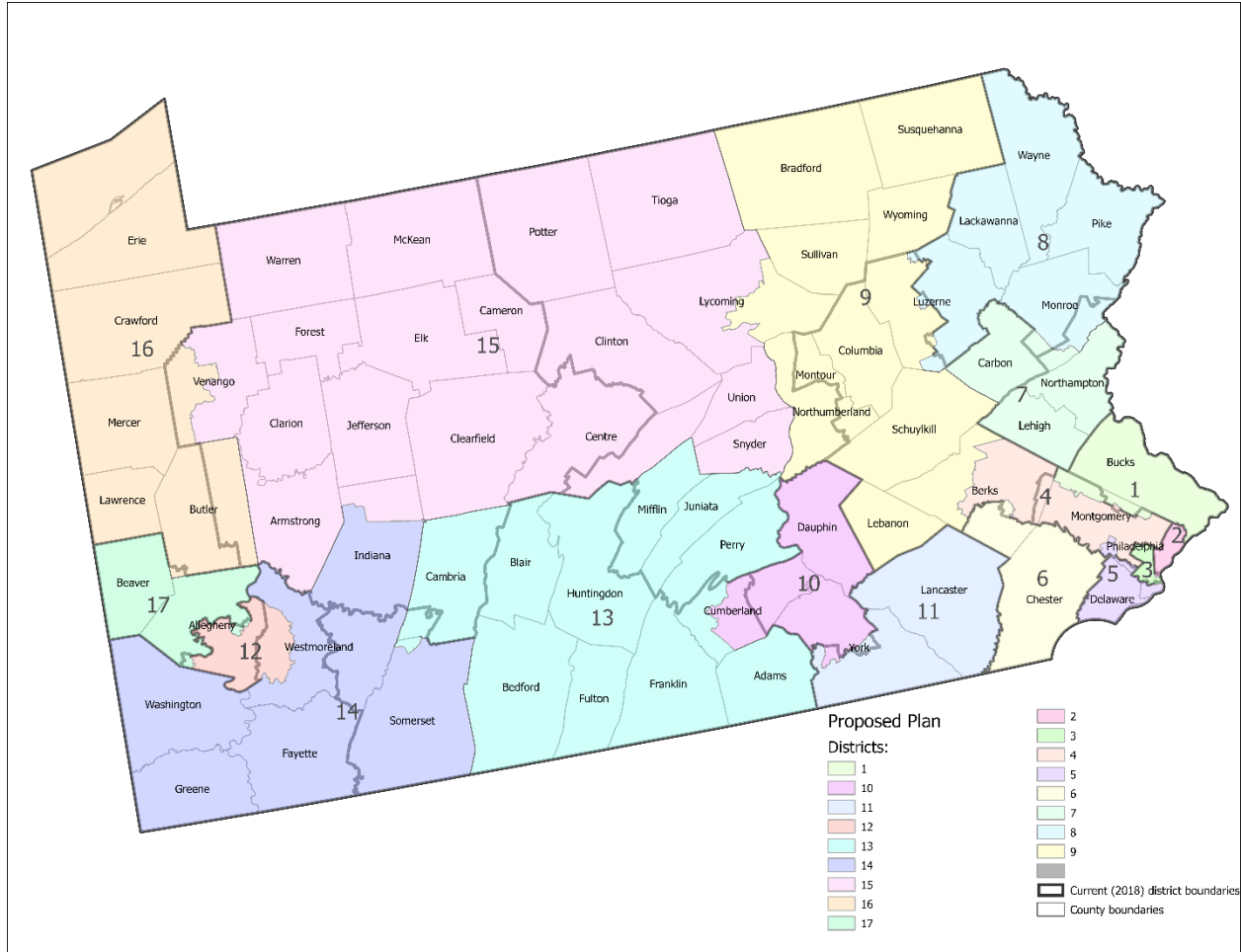
Figure 4: Population Change Since 2010 and Change in Average Democratic Vote Share, Pennsylvania Counties



V. REDISTRICTING PLAN

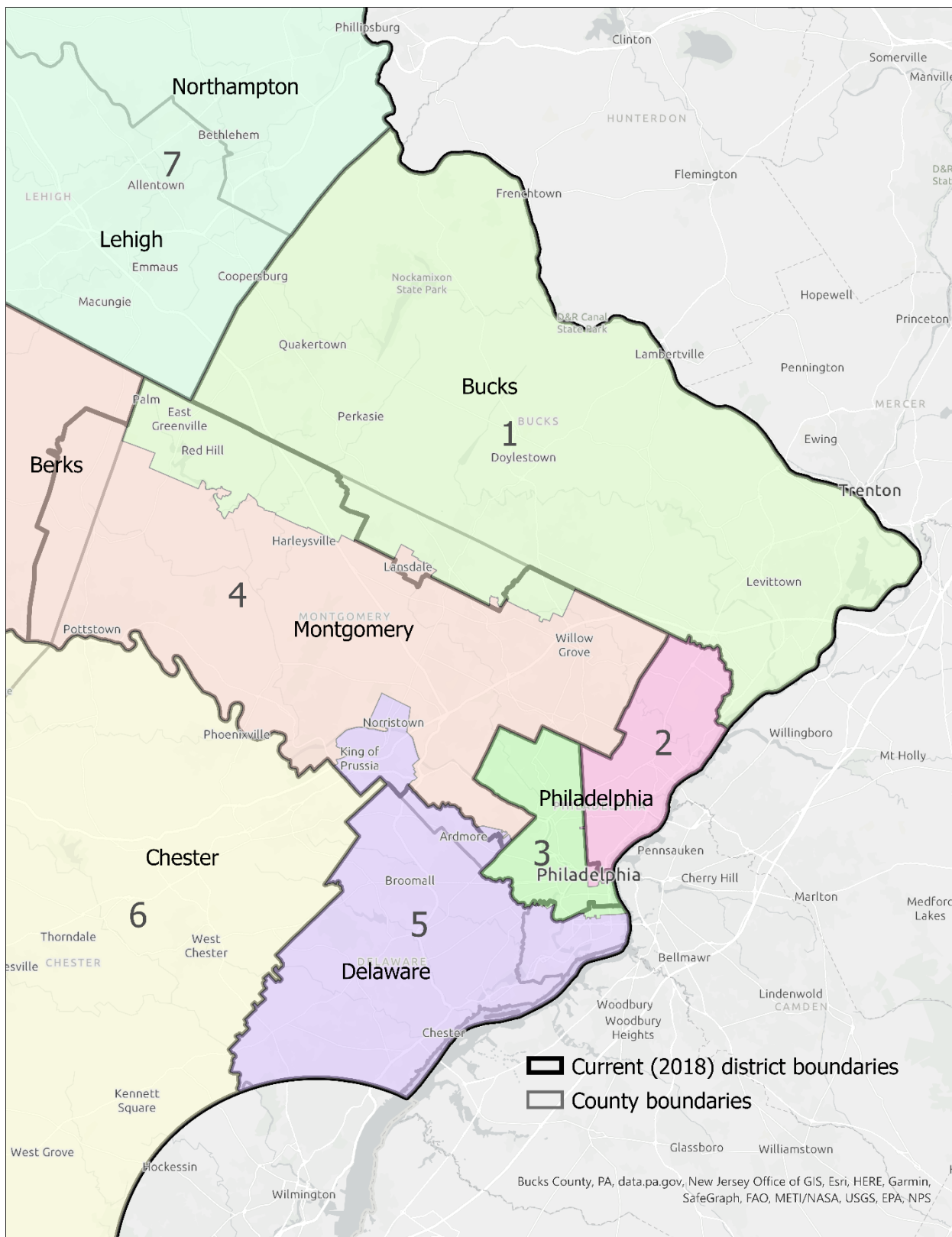
The Carter Plan is depicted in Figure 5, which also includes the boundaries of the previous (2018) plan, in thick gray, as well as the boundaries of Pennsylvania’s counties in thin gray. It is immediately clear that the district boundaries have changed very little in most of Eastern Pennsylvania and the Pittsburgh area, where, as shown in Figure 2, population has grown over the past decade. In contrast, the boundaries in the central part of the state have changed more substantially to accommodate population loss.

Figure 5: Proposed Congressional District Boundaries



Let us begin by taking a closer look at the Philadelphia area, which is displayed in greater detail in Figure 6. First, in the 2018 plan, Philadelphia County was divided into two relatively compact districts, Districts 2 and 3, with a small portion of South Philadelphia spilling into District 5. Since Philadelphia’s population growth has been quite close to overall U.S. population growth, I was able to retain this arrangement, while only slightly altering the boundaries of Districts 2 and 3 in order to achieve population equality.

Figure 6: Philadelphia Area



The previous version of District 1 was comprised mostly of Bucks County, which was kept whole, with a small segment reaching into Montgomery County. Since population growth in Bucks County has been somewhat slow relative to the country as a whole, District 1 required additional population in order to achieve population equality. I followed the same arrangement as before, but simply added additional county subdivisions along the border between Bucks and Montgomery.

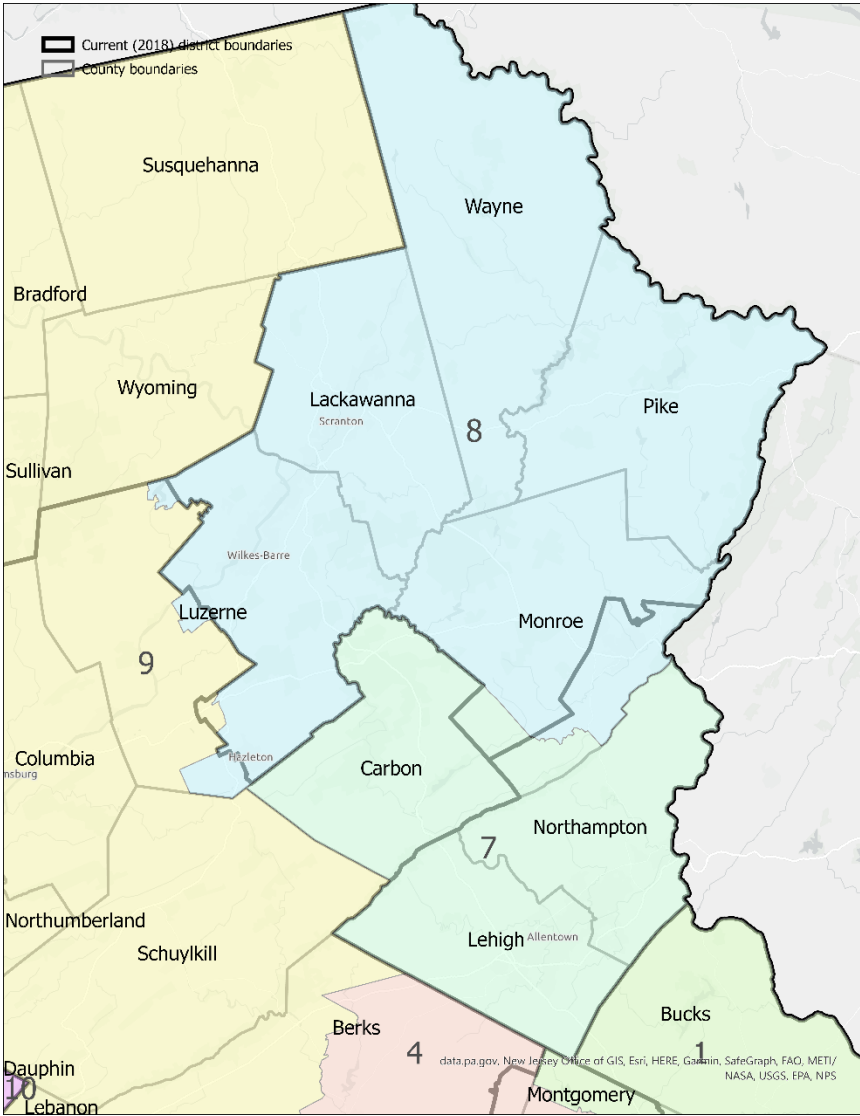
District 5 was based in Delaware County, with a portion reaching into South Philadelphia, and another reaching into Montgomery County. As with Bucks County, population growth was lackluster in District 5, so it was necessary to add population. Reaching into Chester County would have undermined the previous map's respect for several county boundaries to the West, so I elected once again to keep the structure of the existing map, reaching further into Montgomery County and including Norristown in District 5.

The downside of this approach is that it forces Montgomery County-based District 4 much further into Berks County than in the previous map. As quantified below, this makes District 4 less compact than the previous version. I considered alternative configurations that would have expanded District 5 into Chester County, but these approaches inevitably undermined the respect for county boundaries demonstrated by the previous map.

Next, the previous version of District 7 included the Lehigh Valley counties of Lehigh and Northampton and reached its population goal by extending Northward into part of Monroe County. Slow population growth in Northampton County meant that District 7 required additional population. I was able to unify Carbon County with the rest of the Lehigh Valley. The U.S. Census Department recognizes Allentown-Bethlehem-Easton as a metropolitan statistical area consisting of the entirety of Northampton, Lehigh, and Carbon Counties. These counties now constitute the core of District 7 (see Figure 7).

The previous version of District 8 was based in the Northeast corner of the state, including the Scranton-Wilkes-Barre corridor and extending to Hazelton in its Southwest corner. The district needed to add a small amount of population, which was possible to achieve by adding more of Monroe County as well as a couple of municipalities along the district's Western border in Luzerne County.

Figure 7: Districts 7 and 8

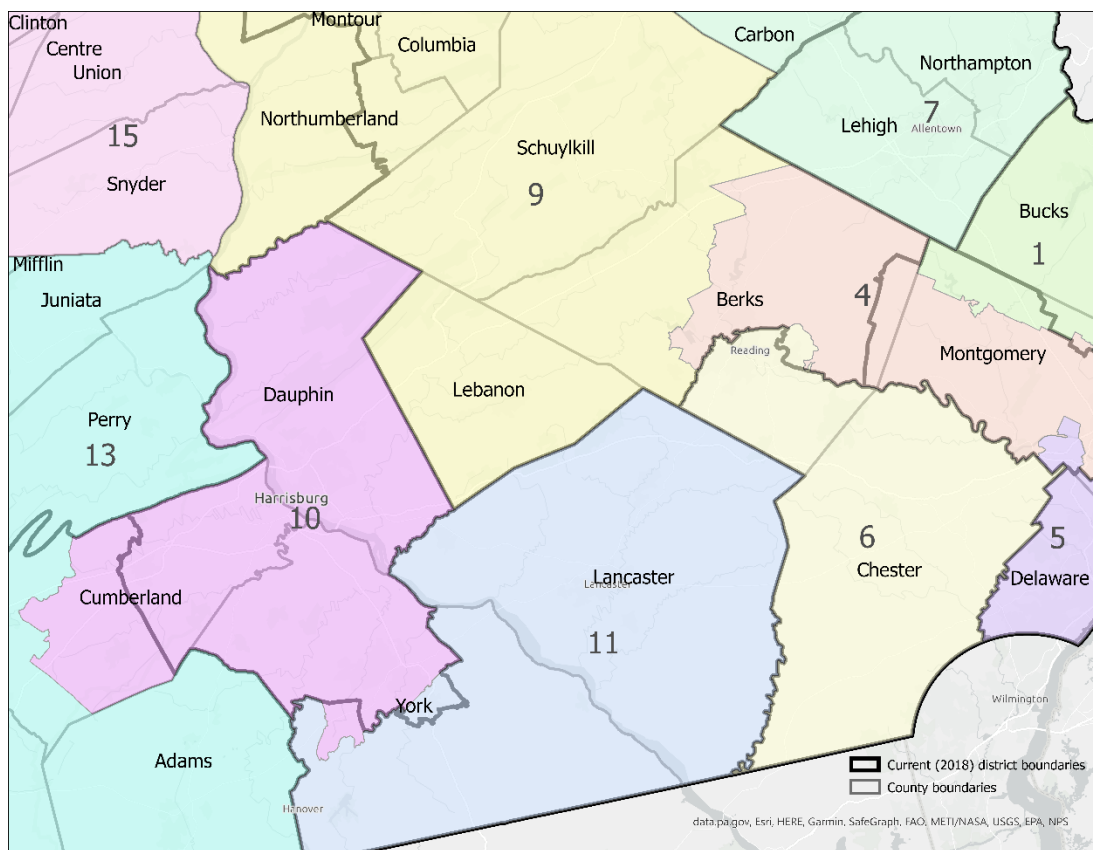


Due to healthy population growth on par with the national average, Districts 6, 10, and 11 required very little alteration (see Figure 8). As before, District 6 contains all of Chester as well as the Southwest corner of Berks County and the city of Reading. It was only necessary to add a small part of Exeter Township.

As in the previous map, District 11 contains all of Lancaster County and the Southern section of York County. It was only necessary to make small changes along the boundary between districts 10 and 11 in order to achieve population equality.

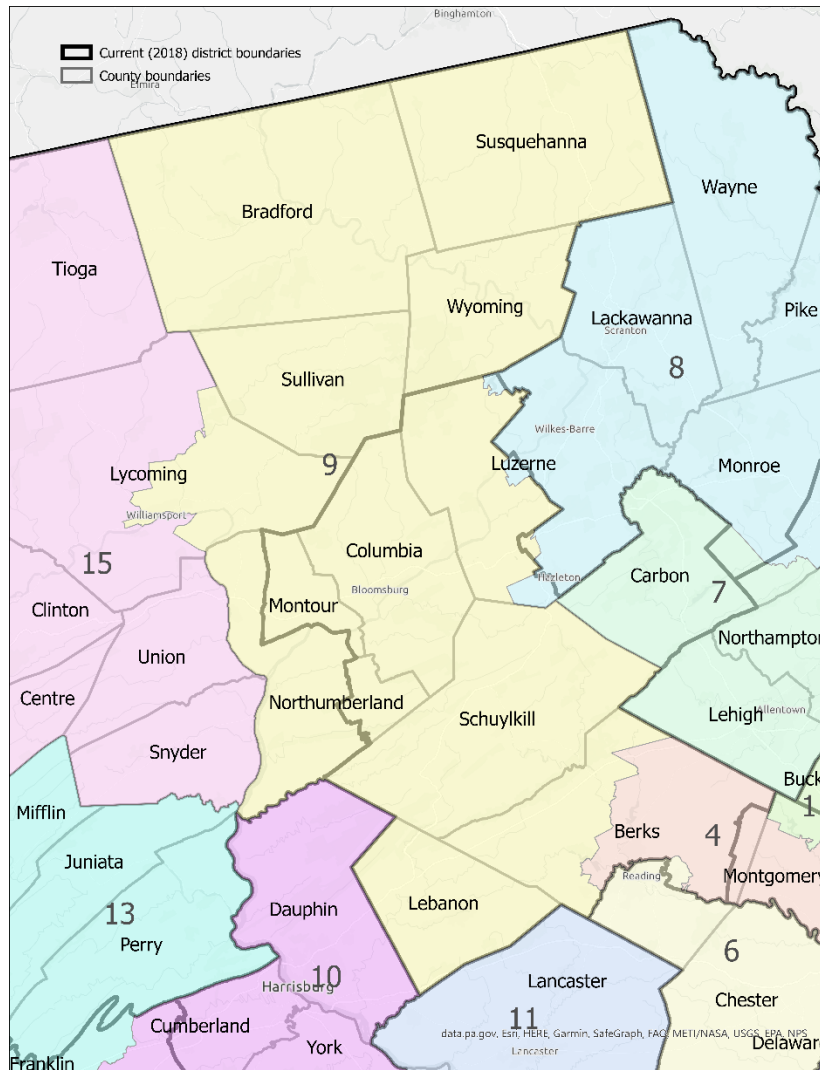
As before, District 10 is centered on the city of Harrisburg, which sits at the confluence of three counties: Dauphin, Cumberland, and York. The only noteworthy change is that the district needed to add a small amount of population by moving somewhat further West into Cumberland County.

Figure 8: Districts 6, 10, and 11



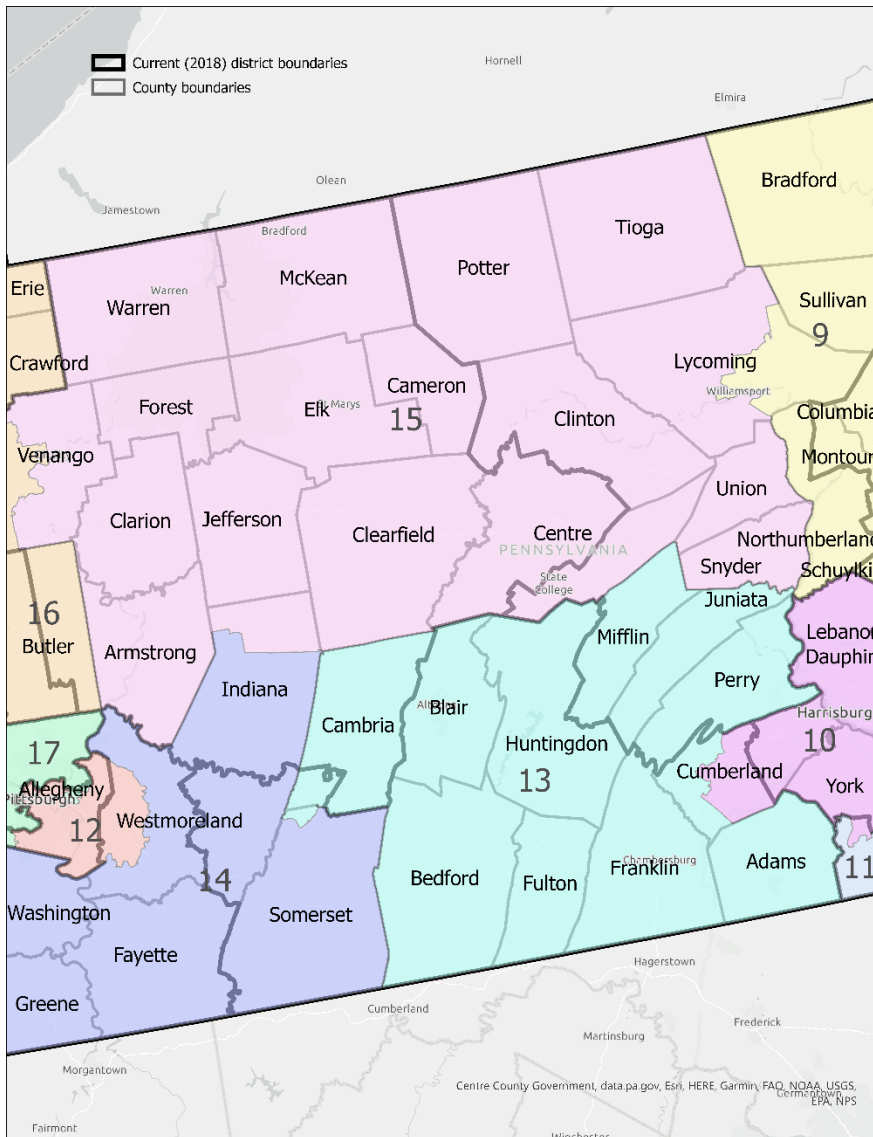
The boundaries of the former District 9 must change somewhat more substantially for a number of reasons (see Figure 9). The old version contained the counties of Columbia, Montour, part of Northumberland, Schuylkill, Carbon, Lebanon, and the rural Northern section of Berks County. However, Eastern counties have nowhere to grow but inwards, and as described above, Carbon County was placed in District 7 to unify a metropolitan statistical area. More importantly, Columbia, Schuylkill, Northumberland, and Montour counties all lost significant population. Thus, in order to achieve the target population, it was necessary for District 9 to grow to the North and West, taking the remainder of Northumberland, all of Bradford, Susquehanna, Sullivan, and Wyoming Counties, as well as part of Lycoming—all areas that had previously been in District 12, which due to severe population loss, cannot be retained.

Figure 9: District 9



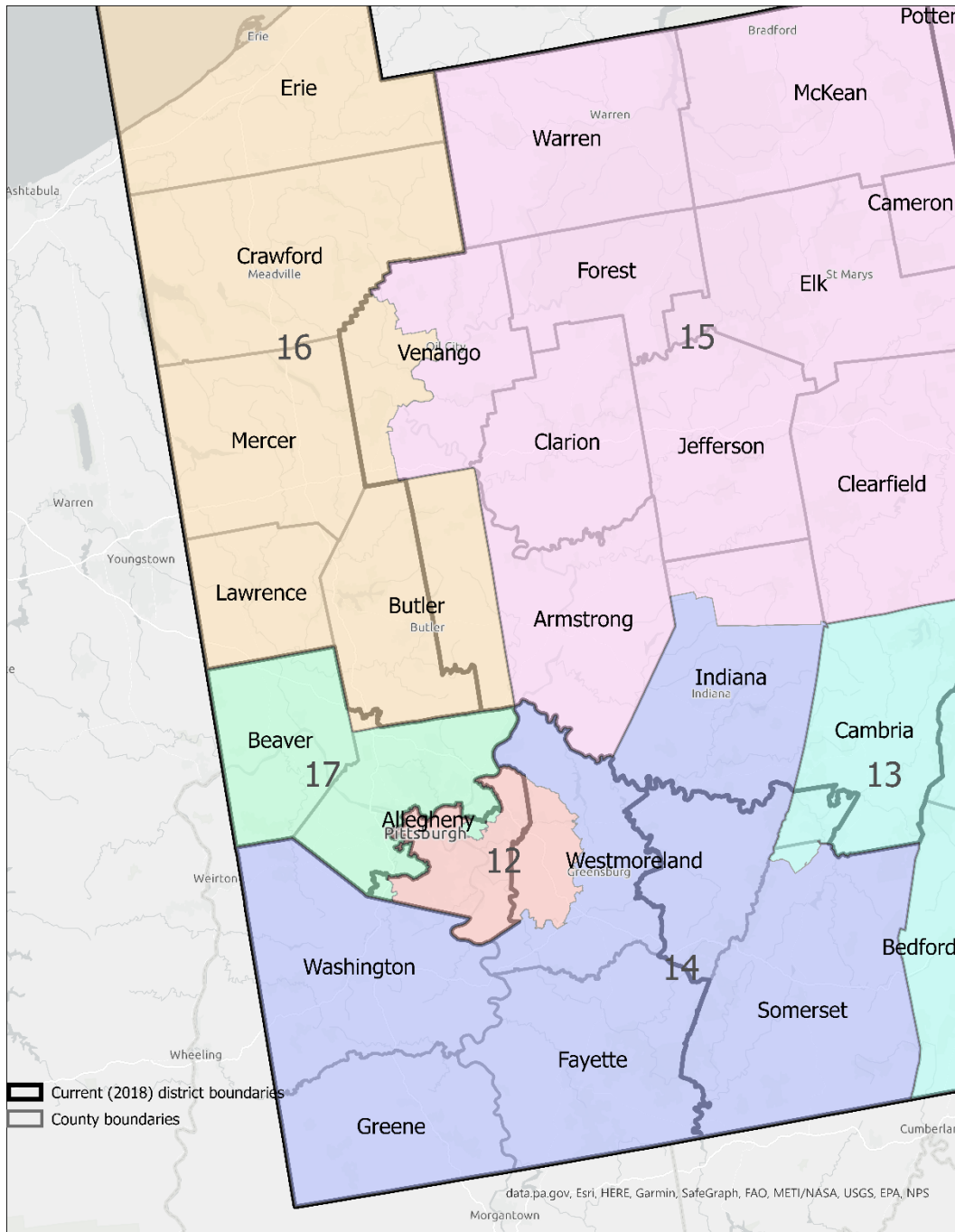
Due to population loss, the old version of District 15 must gain substantial population to its East. As this happens, it necessarily swallows much of the remainder of what was once District 12 (see Figure 10). The new version of District 15 is relatively compact and avoids a split of Centre County that had previously separated State College from some of its suburbs. Like District 15, District 13, which had included a number of rural counties in South-central Pennsylvania that are experiencing population loss, must expand to take the remainder of what was once District 12—the counties of Mifflin, Juniata, and Perry.

Figure 10: Districts 13 and 15



Now, let us consider the Western part of the state. The previous configuration included District 14 in the Southwest corner of the state, and District 16 in the Northwest corner of the state. Due to population loss, both needed to expand to the East. District 16 gained the remainder of Butler County, which had previously been split, and part of Venango County. District 14 expanded Eastward by taking the remainder of Westmoreland County and most of Indiana and Somerset Counties.

Figure 11: Western Pennsylvania (Districts 14, 12, 17, and 16)



Finally, it was straightforward to keep the structure of the metropolitan Pittsburgh districts the same. The previous District 18, now District 12, contained the city of Pittsburgh and its suburbs to the South and East, while District 17 contained the remaining parts of Allegheny County to the North and West of Pittsburgh, along with Beaver County. The boundary between Districts 17 and 18 was largely composed of the Pittsburgh City boundary. District 17 needed to gain a small amount of population. Without violating the boundary of the city of Pittsburgh, it was possible to do this by simply moving a handful of small suburban municipalities from District 18 to District 17. This left Pittsburgh-based District 18 (now 12) somewhat short of population, but it was possible to add this by simply appending suburban and exurban areas in Westmoreland County.

VI. PLAN STATISTICS

Retention of Existing Districts: As described above, I set out to retain the structure of the existing plan to the extent possible. Overall, 87 percent of the population of Pennsylvania falls in the same district as before, though what was formerly called District 18 is called District 12 in the Carter Plan. Table 3 provides information on the share of the population in each individual district in the Carter Plan that remains in the same district. As described above, Districts 9 and 15 changed the most, followed by District 13, as they unavoidably captured what was District 12 in the previous plan due to population loss in Central Pennsylvania. Therefore, it’s unsurprising that residents of these two districts are less likely to have lived in the same district previously.

Table 3: Share of Population in Each Proposed District that Will be in the Same District as in the 2018 Plan

District	Share of population in previous version of district
1	93.26%
2	95.84%
3	94.17%
4	81.65%
5	89.74%
6	98.44%
7	90.56%
8	92.10%
9	65.54%
10	96.20%
11	96.91%
12(18)	85.50%
13	73.39%
14	75.65%
15	59.61%
16	89.95%
17	93.63%

Equal Population: Based on the 2020 Census, the ideal population of each congressional district is 764,865. The Carter Plan includes 4 districts with the ideal population and 13 districts with a deviation of plus or minus one person. District-level details are provided in Table 4.

Table 4: District Population Deviations⁵

District	Population	Deviation from Ideal
1	764866	1
2	764865	0
3	764864	-1
4	764865	0
5	764866	1
6	764864	-1
7	764865	0
8	764866	1
9	764864	-1
10	764864	-1
11	764864	-1
12	764864	-1
13	764864	-1
14	764866	1
15	764864	-1
16	764865	0
17	764864	-1

Contiguity: Each district in the Carter Plan is made up of contiguous territory.

Political Subdivision Splits: Additionally, I have attempted to minimize county splits. The Carter Plan splits 13 counties, 10 of which are split among 2 districts, and 3 of which are split among 3 districts. This amounts to a total of 16 splits. The previous 2018 plan also splits 13 counties, but four of those are split among 3 districts, for a total of 17 county splits. Note that I do not count as a county split a technically non-contiguous fragment of Chester County that contains six people and is marooned in Delaware County due to a bend in Brandywine Creek at the intersection with the Southern state boundary. I also do not count this as a county split in the 2018 redistricting plan, consistent with the Pennsylvania Supreme Court’s approach. The counties in the Carter Plan that are split among three districts are Berks, Philadelphia, and Montgomery. The 2018 plan also split these same counties among three districts, in addition to Butler County, but I was able to eliminate a split contained in the previous plan in the Southwest corner of Butler County.

⁵ The population of each district remains the same whether one uses the 2020 Census redistricting data or the Legislative Reapportionment Commission’s Data Set #1.

The Carter Plan splits the city of Philadelphia between 3 districts and also splits the following 18 county subdivisions between two districts: Horsham and Lower and Upper Marion Townships in Montgomery County; Exeter, Lower Heidelberg, and Perry Townships in Berks County; Ross Township in Monroe County; Newport and Butler Townships in Luzerne County; Jackson Township in York County; North Newton Township in Cumberland County; the city of Williamsport in Lycoming County; Victory Township in Venango County; Swissvale Borough in Allegheny County; Hempfield and South Huntingdon Townships in Westmoreland County; Conemaugh Township in Somerset County; South Mahoning Township in Indiana County. The previous plan also split 19 county subdivisions.

The Carter Plan splits only 14 vote tabulation districts. This is a substantial improvement over the previous 2018 plan, which split 32 VTDs.

Compactness: I also attempted to retain the overall compactness of the previous plan. Table 5 provides compactness statistics for the same measures of compactness relied upon by the Court in its deliberations in 2018. For each of these scores, higher numbers indicate more-compact districts.

Table 5: Compactness Statistics: Previous (2018) Plan and Proposed Plan

District	Reock, Carter	Reock, 2018 plan	Schwartzberg, Carter	Schwartzberg, 2018 plan	Polsby-Popper, Carter	Polsby-Popper, 2018 plan	Population Polygon, Carter	Population Polygon, 2018 plan	Area/Convex Hull, Carter	Area/Convex Hull, 2018 plan
1	0.4	0.43	1.5	1.43	0.4	0.46	0.75	0.78	0.82	0.83
2	0.33	0.37	1.49	1.42	0.42	0.47	0.92	0.96	0.84	0.86
3	0.4	0.43	1.72	1.63	0.32	0.36	0.78	0.8	0.72	0.74
4	0.27	0.41	2.29	1.73	0.17	0.31	0.51	0.64	0.68	0.81
5	0.41	0.44	1.86	1.54	0.27	0.38	0.6	0.69	0.72	0.84
6	0.45	0.45	1.68	1.69	0.29	0.29	0.83	0.82	0.73	0.72
7	0.57	0.41	1.45	1.5	0.42	0.42	0.92	0.95	0.78	0.83
8	0.47	0.49	1.67	1.73	0.28	0.28	0.91	0.88	0.74	0.75
9	0.41	0.55	1.83	1.94	0.28	0.25	0.54	0.53	0.74	0.74
10	0.49	0.49	1.76	1.72	0.27	0.29	0.86	0.88	0.71	0.76
11	0.45	0.45	1.49	1.51	0.37	0.37	0.79	0.78	0.88	0.88
12 (18)	0.63	0.46	2.13	2.21	0.18	0.18	0.75	0.75	0.78	0.72
13	0.56	0.4	1.56	1.81	0.39	0.26	0.68	0.75	0.83	0.79
14	0.47	0.54	1.76	1.63	0.3	0.34	0.35	0.37	0.76	0.77
15	0.57	0.67	1.49	1.46	0.43	0.42	0.74	0.69	0.86	0.86
16	0.36	0.32	1.42	1.43	0.39	0.38	0.92	0.87	0.87	0.8
17	0.51	0.51	1.85	1.8	0.26	0.28	0.6	0.6	0.76	0.76
Average	0.46	0.46	1.7	1.67	0.32	0.33	0.73	0.74	0.78	0.79

Averaging across all districts, the compactness of the Carter Plan is similar to that of the previous plan when examining the Reock score, and slightly more compact when considering the Schwartzberg score. The Carter Plan is very slightly less compact than the existing plan when using the Polsby-Popper, Population Polygon, and Area/Convex Hull scores. Table 5 reveals that this difference is driven largely by Districts 4 and 5, which, as described above, had to become somewhat less compact in order to accommodate asymmetries in the rate of population growth between Montgomery, Delaware, and Bucks counties while minimizing county splits in Southeastern Pennsylvania.

Minority Representation: I did not consider racial data as I was drawing districts or making adjustments for population changes in the map.

Incumbent Addresses: I considered incumbent addresses to confirm that I was not inadvertently double-bunking sitting congressional representatives in the same district. Since I made very minor changes to most districts, as described above, I did not inadvertently remove any incumbents from their existing districts. Note that Representative Dean, the incumbent in District 4, appears to have recently moved to a new address a short distance away from the previous address, both of which are in Montgomery County. However, the new address is also in District 4, both in its previous manifestation and in the Carter Plan's configuration. As described above, it was not possible to avoid placing Rep. Keller from District 12, which was lost due to population loss, with another rural representative. The Carter Plan ends up placing Rep. Keller in District 15, along with incumbent Rep. Thompson. The consideration of these residential addresses had no impact on the Carter Plan's satisfaction of traditional redistricting criteria.

Partisan Performance: I did not consider partisan performance as I was drawing the map. However, upon analysis, the proposed redistricting plan is quite similar to the previous plan in terms of partisanship. Of course, it is not possible to examine results of congressional races that have not yet occurred. To draw inferences about the partisanship of these districts, it is useful to begin by adding up precinct-level results of recent statewide elections within the proposed boundaries. In Table 6, I do this for statewide elections from 2016 to 2020, taking an average for each district, and in order to facilitate comparisons with the previous (2018) plan, presented above in Table 2, I also focus on elections from 2018 to 2020 only.

As in the previous plan, there are 10 metropolitan districts where in statewide races, the average Democratic vote share is above 50 percent. These are the same 10 districts for which this was true in the previous plan. This is not surprising, since as described above, the metropolitan districts required minimal change to equalize population and thus retained many of the same voters.

It should be noted, however, that several of these districts are very evenly divided between the parties and, as described above, incumbent legislators often over- or under-perform relative to their statewide co-partisans—sometimes quite substantially. Fortunately, because there is so much overlap between the old and new districts, and since incumbents are running in each of the highly competitive districts, it is possible to do better than simply relying on the statewide aggregates when assessing the most likely outcomes of future elections.

Table 6: Statewide Election Results Aggregated to the Proposed Congressional Boundaries

District	Average Democratic Statewide vote share, 2016-2020	Average Democratic Statewide vote share, 2018-2020
1	51.81%	53.00%
2	74.57%	74.03%
3	91.11%	91.32%
4	58.59%	60.07%
5	64.67%	65.82%
6	55.01%	56.56%
7	50.88%	51.70%
8	51.01%	51.62%
9	33.42%	33.82%
10	46.81%	48.15%
11	38.37%	39.30%
12	62.03%	63.06%
13	29.12%	29.19%
14	38.39%	38.76%
15	33.51%	33.51%
16	41.55%	42.39%
17	53.99%	55.52%

In two of the districts with nominal Democratic majorities, these majorities are very narrow. In District 7, the average statewide Democratic vote share is between 50.9 percent and 51.7 percent, depending on which elections are included. As conveyed in Table 2 above, on average, the vote share of the Democratic incumbent in District 7 is slightly lower than that of her statewide Democratic co-partisans. As a result, District 7 can be viewed as a tossup district with a very slight Democratic lean.

In District 8, the average statewide Democratic vote share is between 51 percent and 51.6 percent, depending on which elections are used. Since Matt Cartwright, the Democratic incumbent, outperforms his statewide co-partisans by around 2 percentage points, this should be seen as a competitive but Democratic-leaning district. Even a relatively modest pro-Republican wave has the potential to unseat the incumbents in both Districts 7 and 8.

In District 1, the average statewide Democratic vote share is between 51.8 percent and 53 percent. However, as demonstrated above, on average, the incumbent Republican candidate, Representative Fitzpatrick, outperformed his statewide co-partisans by an astounding 7.5 percentage points. There is no reason to anticipate that this advantage will suddenly disappear, especially since 93 percent of the people in District 1 in the Carter Plan already lived in the district

that has repeatedly elected Representative Fitzpatrick in the past. If we use all the information at hand, District 1 should be understood as a very likely Republican district.

The other relatively competitive district is number 10, which contains metro Harrisburg and surroundings. The average Republican statewide vote share in this district is between 51.9 percent and 53.2 percent. The incumbent in this district, where 96 percent of voters are the same as before, outperforms his statewide co-partisans by a little over 1 percentage point. This makes District 10 a likely Republican seat, but one that could potentially change hands in the event of a very large pro-Democratic wave.

In sum, using all the information at our disposal, the proposed plan produces 8 districts where Democrats are expected to win, one of which (District 8) is potentially quite competitive; 8 districts where Republicans are quite likely to win, two of which are at least potentially competitive (1 and 10); and one district (District 7) that is a toss-up with a very slight Democratic lean. This level of partisan balance and competitiveness is similar to that of the existing plan, reflective of Pennsylvania's statewide partisan preferences, and consistent with changes in population as they relate to partisanship.

VII. CONCLUSION

The remedial redistricting plan endorsed by the Pennsylvania Supreme Court in 2018 demonstrated numerous admirable features including adherence to traditional redistricting principles as well as partisan fairness and responsiveness. This report introduces a new redistricting plan, the Carter Plan, that builds on those achievements, preserving the architecture of districts and matching or surpassing the previous plan with respect to compactness, contiguity, population equality, and splits of counties, county subdivisions, and vote tabulation districts. Moreover, this plan is likely to produce a Congressional delegation that reflects the statewide partisan preferences of Pennsylvanians, and one that changes in response to changes in those preferences.

I hereby certify that the foregoing statements are true and correct to the best of my knowledge, information, and belief. This verification is made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.



Jonathan Rodden

January 24, 2022

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464 MD 2021

IN THE COMMONWEALTH COURT OF PENNSYLVANIA

No. 464 M.D. 2021

Carol Ann Carter; Monica Parrilla; Rebecca Poyourow; William Tung; Roseanne Milazzo; Burt Siegel; Susan Cassanelli; Lee Cassanelli; Lynn Wachman; Michael Guttman; Maya Fonkeu; Brady Hill; Mary Ellen Bachunis; Tom DeWall; Stephanie McNulty; and Janet Temin,

Petitioners,

vs.

Leigh Chapman, in Her Official Capacity as the Acting Secretary of the Commonwealth of Pennsylvania; and Jessica Mathis, in Her Official Capacity as Director of the Bureau of Election Services and Notaries,

Respondents.

No. 465 M.D. 2021

Philip T. Gressman; Ron Y. Donagi; Kristopher R. Tapp; Pamela A. Gorkin; David P. Marsh; James L. Rosenberger; Amy Myers; Eugene Boman; Gary Gordon; Liz McMahon; Timothy G. Feeman; and Garth Isaak

Petitioners,

vs.

Leigh Chapman, in her Official Capacity as the Acting Secretary of the Commonwealth of Pennsylvania ; and Jessica Mathis, in Her Official Capacity as Director of the Bureau of Election Services and Notaries,

Respondents.

**CORRECTED OPENING BRIEF OF HOUSE REPUBLICAN
INTERVENORS KERRY BENNINGHOFF, MAJORITY LEADER, AND
BRYAN CUTLER, SPEAKER, OF THE PENNSYLVANIA HOUSE OF
REPRESENTATIVES IN SUPPORT OF PROPOSED CONGRESSIONAL
REDISTRICTING MAP**

I. INTRODUCTION

The map offered by Intervenors Bryan Cutler, Speaker of the Pennsylvania House of Representatives, and Kerry Benninghoff, Majority Leader of the Pennsylvania House of Representatives (collectively “Republican House Leaders”), attached as Exhibit 1 to the Affidavit of Bill Schaller, attached as Exhibit I (the “Schaller Affidavit”), was passed through a transparent and full deliberative legislative process by the Pennsylvania House of Representatives (“House Plan”). Intervenors Jake Corman, President Pro Tempore, and Kim Ward, Majority Leader, of the Pennsylvania Senate are submitting the same map on behalf of the Senate. What’s more, the House Plan was drawn by a Pennsylvania citizen and good government advocate – Amanda Holt – who served as the lead plaintiff in the prior litigation over the state’s legislative map. The House made minimal changes to Ms. Holt’s submission to increase the compactness of certain districts and to address other comments received during this open process. But 95% of the map drafted by Ms. Holt remains the same in the House Plan.

Importantly, the House Plan follows traditional redistricting principles, including the criteria in Pa. Const., Art. II, § 16, which, although applicable to legislative reapportionment, have been adopted as important considerations in

congressional redistricting in *League of Women Voters of Pa. v. Commonwealth*, 645 Pa. 1, 120-21 (2018). The House Plan has a population deviation of at most one person, is compact and contiguous, and splits only 15 counties and 16 municipalities—less than or comparable to the current map adopted by the Pennsylvania Supreme Court in 2018. There can be no dispute that the House Plan adheres to these traditional redistricting criteria.

Moreover, the House did not “use partisan data in [its] consideration of submitted maps, in the selection of Ms. Amanda Holt’s citizen’s map, or in [its] adjustments made to the maps through amendment.”¹ Perhaps unsurprisingly, this honest and fair process produced an honest and fair map: one demonstrably fair to both political parties as measured by numerous partisan fairness metrics. Simulation analysis performed by Dr. Michael Barber demonstrates that the House Plan is predicted to result in 9 Democratic seats and 8 Republican seats using an index of statewide elections from 2012-2020, whereas the most likely outcome in the 50,000 simulated maps without using partisan data is 8 Democratic seats and 9 Republican seats. In other words, the House Plan is more favorable to Democrats than the most likely outcome of 50,000 computer drawn maps using no partisan data. Other

¹ Ltr. from Rep. Grove to Gov. Wolf, Jan. 6, 2022, at 5, copy attached as **Exhibit A**, <http://repgrove.com/Display/SiteFiles/418/OtherDocuments/2022/CongressionalRedistrictingResponseToGovWolf.pdf> (the “Grove Letter”) (last visited Jan. 24, 2022). *See also* Pennsylvania House of Representatives, State Government Committee Meeting, December 15, 2021, at timecode 6:30 (comments of Rep. Grove), at <http://www.pahousegop.com/embed/33680/Voting-meeting-on-HB-2146-and-any-other-business-that-may-come-before-the-committee>.

partisan fairness metrics prove that the House Plan is fair and will allow both parties the opportunity to translate their votes into seats.

It is the General Assembly's prerogative to redraw the state's congressional districts under Article I, § 4 of the United States Constitution and the Pennsylvania Constitution. The Pennsylvania House of Representatives passed a map that meets constitutional criteria and there is still time for the Senate to pass that map and submit it to the Governor before the January 30, 2022 deadline. If, however, the Senate does not pass the map in time, or the Governor vetoes it, the House Plan should be given deference or at least special consideration as it is the only map that truly reflects the will of the people of Pennsylvania. It is the only map that has gone through a transparent and deliberative process by the people's elected representatives.

II. DISCUSSION

A. *League of Women Voters of Pa. v. Commonwealth.*

In *League of Women Voters of Pa. v. Commonwealth* ("LWV"), the Pennsylvania Supreme Court laid out the framework for evaluating the constitutionality of a congressional redistricting plan under the Pennsylvania Constitution's Free and Equal Elections Clause, Art. I, § 5. 645 Pa. 1 (2018). The Pennsylvania Supreme Court interpreted the Free and Equal Elections Clause to require that "an individual's electoral power not be diminished through any law which discriminatorily dilutes the power of his or her vote..." *LWV*, 645 Pa. at 120.

To help assess that question, the Court relied upon the Article II, Section 16 factors applicable for legislative redistricting:

[g]iven the great concern of the delegates over the practice of gerrymandering occasioned by their recognition of the corrosive effects on our entire democratic process through the deliberate dilution of our citizenry's individual votes, the focus on these neutral factors must be viewed, then, as part of a broader effort by the delegates to that convention to establish 'the best methods of representation to secure a just expression of the popular will.' Consequently, these factors have broader applicability beyond setting standards for the drawing of electoral districts for state legislative office.

Id. at 119 (internal citation omitted). It also found that

the use of compactness, contiguity, and the maintenance of the integrity of the boundaries of political subdivisions maintains the strength of an individual's vote in electing a congressional representative. When an individual is grouped with other members of his or her community in a congressional district for purposes of voting, the commonality of the interests shared with the other voters in the community increases the ability of the individual to elect a congressional representative for the district who reflects his or her personal preferences. This approach inures to no political party's benefit or detriment. It simply achieves the constitutional goal of fair and equal elections for all of our Commonwealth's voters.

Id. at 120-21.

The Court relied upon the Article II, Section 16 criteria as a basis to strike down the 2011 congressional plan, finding that when "it is demonstrated that, in the creation of congressional districts, these neutral criteria have been subordinated, in whole or in part, to extraneous considerations such as gerrymandering for unfair partisan political advantage, a congressional redistricting plan violates Article I,

Section 5 of the Pennsylvania Constitution.” *Id.* at 122. This subordination is an effects-based test and does not “require a showing that the creators of congressional districts intentionally subordinated these traditional criteria...” *Id.*

These principles should thus guide this Court in selecting the appropriate congressional plan to govern elections for the next decade.

B. The House Plan Was Passed by the House Following a Transparent and Full Deliberative Process and Is Nearly Identical to the Map Drawn By a Citizen and Good Government Advocate.

In the most open and transparent Congressional redistricting process in recent history, the House State Government Committee held a series of eleven hearings around the Commonwealth from July 22, 2011 to October 28, 2021 to take input from the Commonwealth’s citizens, as well as one joint hearing with the State Senate.² In addition to those hearings, the Pennsylvania State Government Committee Chair established a website with options for citizen input, including input about specific communities of interest as well as the ability to submit maps.³

² See Pennsylvania House Republican Caucus, *Regional Hearings*, copy attached as **Exhibit B**, also available at <http://paredistricting.com/hearingschedule> (last visited Jan. 24, 2022).

³ See Pennsylvania House of Representatives, Republican Caucus, Redistricting Input Site, copy attached as **Exhibit C**, also available at <http://paredistricting.com/input> (last visited Jan. 24, 2022) (providing access to submitted communities of interest, public comments on the 2018 Pennsylvania Supreme Court plan, and publicly submitted maps). See also Pennsylvania House of Representatives, House Republican Caucus, Updated Preliminary Congressional Plan, at https://app.mydistricting.com/legdistricting/pennsylvania/updated_preliminary_map (last visited Jan. 24, 2022) (listing public comments on House Bill 2146); see also 225 Pa. §§ 803(8) and 902(5).

House Bill 2146 was first introduced and referred to State Government Committee on December 8, 2021. The bill introduced, for what might be a first in the history of the Pennsylvania House, a plan proposed by a citizen and good-government advocate, Ms. Amanda Holt, in unaltered form. The State Government Committee selected Ms. Holt's proposal from among 19 submitted by the public because, as Rep. Seth Grove indicated, it was drawn without political influence, met constitutional standards, limited the splits of townships and other municipalities, and offered districts that were compact and contiguous.⁴ These factors "were highlighted as priorities by the majority of testifiers and residents throughout the committee's extensive regional hearings and online public input process."⁵

It was amended into the current form (PN 2541) and reported from the State Government Committee on December 15, 2021. *See Pennsylvania General Assembly, Bill Information – History, House Bill 2146; Regular Session 2021-2022*, attached as **Exhibit E** (the "Bill History").⁶ After it was released and open for public

⁴ *See* Rep. Seth Grove, *Grove Announces Citizen Map Selected As Preliminary Congressional Plan, Invites Public Comment*, Dec. 8, 2021, copy attached as **Exhibit D**, also available at <http://www.repgrove.com/News/22950/Latest-News/Grove-Announces-Citizen-Map-Selected-as-Preliminary-Congressional-Plan,-Invites-Public-Comment-> (last visited Jan. 24, 2022); *see also* 225 Pa. §§ 803(8) and 902(5).

⁵ *Id.*

⁶ The Court can take judicial notice of official records, 225 Pa. Code § 201(b)(2), and this public record falls within a recognized exception to the hearsay rule, *id.* § 803(8) and 902(5).

comments, a total of 399 comments were received from citizens and numerous changes made based upon those requests.⁷

Although several changes were made, the resulting map was 95% the same as the map originally drawn by Ms. Holt in terms of population and surface area.⁸ Many of the changes that were made were to increase the compactness of specific districts or to address comments received during the process.⁹ In particular, certain changes were made to ensure communities of interest were kept whole and to address inclusion of certain communities within particular congressional districts at the request of citizens.¹⁰

HB 2146 received first consideration on December 15, 2021, but did not receive second consideration until January 11, 2022, i.e., almost a month later. Bill History, Ex. E. *See also* Pa. Const. Art. III, § 4 (“Every bill shall be considered on three different days in each House.”). Under the Rules of the Pennsylvania House of Representatives, second consideration of a bill is the opportunity for any House Member to introduce and offer amendments to a bill. House Rules 21 and 23. While Members had ample to time to draft and file amendments to the bill, no amendment was timely filed to House Bill 2146, Printer’s Number 2541. Bill History, Ex. E. It

⁷ *See* Grove Ltr. at 2, Ex. A.

⁸ *See* Video of Pennsylvania House of Representatives State Government Committee Meeting, December 15, 2021 Hearing, at 7:26, at <https://s3.us-east-2.amazonaws.com/pagopvideo/366117649.mp4>.

⁹ *Id.*; *see also* Grove Ltr. at 3, Ex. A.

¹⁰ *Id.*

received third consideration and final passage in the House on January 12, 2021. *Id.* So, from the time the bill was amended in the House State Government Committee on December 15, 2021, until the bill was passed by the House, the public had 28 days to view the contents of the bill and review the House's proposed congressional plan.¹¹ In contrast, the preliminary legislative reapportionment plan produced by the Pennsylvania Legislative Reapportionment Commission, which redistricts Pennsylvania's House and Senate Districts, released its preliminary legislative reapportionment plan on December 13, 2021 and adopted the plan on December 16, 2021, a mere three days later.

HB2146 was referred to the Senate State Government Committee, which passed it on January 12, 2022. *See* Bill History, Ex. E. The Senate gave HB 2146 first consideration on January 18, 2022 and second consideration on January 19, 2022. *Id.* The Senate is scheduled to be in session on January 24, 25, and 26, 2022, and HB 2146 is eligible for third consideration and final passage on any of those dates, or on any future legislative session that may be convened.

¹¹ *See Pennsylvania House of Representatives, House Republican Caucus, Updated Preliminary Plan Page*, copy attached as **Exhibit F**, also available at <http://paredistricting.com/pcplan>. House Bill 2146 was posted immediately to this website and made accessible to the public.

C. It Is the Prerogative of the General Assembly To Perform Congressional Redistricting in the First Instance. To the Extent the House Plan Adheres to Traditional Redistricting Principles, as Enunciated in *LWV v. Commonwealth*, It Should Be Given Special Consideration.

The United States and Pennsylvania Constitutions vest the General Assembly with the authority to redistrict this Commonwealth's congressional districts. Specifically, Article I, Section 4 of the United States Constitution (the "Elections Clause") provides that "[t]he Times, Places and Manner of holding Elections for Senators and Representatives, shall be prescribed in each State by the Legislature thereof..." Pursuant to the Elections Clause, as a matter of federal law, "redistricting is a legislative function, to be performed in accordance with the State's prescriptions for lawmaking." *Arizona State Legislature v. Arizona Indep. Redistricting Comm'n*, 576 U.S. 787, 808 (2015). The Commonwealth's legislative power is vested in the General Assembly. PA. CONST. ART. II, § 1.

As Petitioners concede (*see* Carter Petition ¶ 36), congressional districting plans are legislative enactments of the General Assembly, passed like any other legislation. The Pennsylvania Supreme Court has confirmed that the "primary responsibility and authority for drawing federal congressional legislative districts rests squarely with the state legislature." *League of Women Voters v. Com.*, 178 A.3d 737, 821–22 (Pa. 2018), citing *Butcher v. Bloom*, 216 A.2d 457, 458 (Pa. 1966) (identifying the General Assembly as "the organ of government with the primary

responsibility for the task of apportionment”) and *Grove v. Emison*, 507 U.S. 25, 34 (1993) (“the Constitution leaves with the States primary responsibility for apportionment of their federal congressional and state legislative districts”).

All impasse cases necessarily involve scenarios where the legislature and governor are unable to agree on a redistricting plan. But impasse does not mean that the General Assembly’s plan—despite the failure of the Governor to sign it into law—is entitled to no special consideration when the judiciary must take up the unwelcome obligation of redistricting the Commonwealth. After all,

The task of reapportionment is...a function which can be best accomplished by that elected branch of government. The composition of the Legislature, the knowledge which its members from every part of the state bring to its deliberations, its techniques for gathering information, and other factors inherent in the legislative process, make it the most appropriate body for the drawing of [district] lines...

Butcher v. Bloom, 203 A.2d 556, 569 (Pa. 1964). Because of the legislature’s constitutionally protected role to redistrict, the Court should select a map that reflects “the policy choices of the elected representatives of the people, rather than the remedial directive of a federal court.” *Tallahassee Branch of NAACP v. Leon Cty.*, 827 F.2d 1436, 1439 (11th Cir. 1987).

In *Donnelly v. Meskill*, 345 F. Supp. 962 (D. Conn. 1972), for example, the legislature passed a congressional plan that the governor vetoed. When the job of redistricting was thrust upon the court, three plans were submitted, including a plan from the legislature. The court adopted the legislature’s proposed plan and explained

that “[t]he legislative adoption of Public Act 807 tips the scales in favor of the plan in Exhibit B-1, which provides districts essentially as outlined by the legislature, with adjustments necessary to bring about virtually complete population equality.” *Id.* at 965. Recognizing the constitutionally protected role of the legislature in redistricting, the court emphasized that the plan it adopted had “the added advantage that it is basically the plan adopted by the legislature.” *Id.*

Similarly, in *Skolnick v. State Electoral Bd. of Ill.*, 336 F. Supp. 839 (N.D. Ill. 1971), an impasse occurred after a congressional plan had passed the Illinois House but stalled out in the Senate. The court, in fashioning a remedial plan, considered four proposed plans—including one submitted by three U.S. House Representatives that “was, with one minor exception, the same as the one passed by the Illinois House and introduced into the Senate” but not passed. *Id.* at 842. The court selected that plan because it satisfied the required criteria and, in part, because it had received the “approval of one house of the legislature.” *Id.* at 846.

So too, the House Plan here should receive special consideration, notwithstanding any potential Governor veto, because it best reflects state policies and the people’s preferences. “[T]he fundamental principle is that reapportionment is primarily a legislative function and that the courts should defer to the legislative judgment where constitutional and statutory standards have been satisfied.” *In re Ross Twp. Election Dist. Reapportionment*, 489 A.2d 297, 302–03 (1985), *aff’d*, 514

Pa. 41, 522 A.2d 553 (Pa. 1987); *see also Newbold v. Osser*, 230 A.2d 54, 59 (Pa. 1967) (recognizing “the importance of permitting reapportionment by the Legislature wherever possible”).

The House Plan has been submitted by both the legislative leaders of the Pennsylvania House of Representative and the Senate for adoption by this Court so it has support of the General Assembly. The Pennsylvania House of Representatives passed a plan through a full deliberative and transparent process. And there is still time for the Senate to likewise pass the map as it has already received first and second consideration with time for third consideration before the end of the month. The House Plan, which as discussed more fully below, closely adheres to traditional redistricting principles, best reflects the will of the people as it was passed by their elected representatives. None of the other plans Republican House Leaders are aware of have been subjected to this open and democratic process, and one suspects many of the plans submitted by other parties in this case have been drawn behind closed doors without any opportunity for comment. At a minimum, the House Plan should receive special consideration. And given that the plan adheres to traditional redistricting principles as well as the Governor’s stated principles, any ultimate veto by the Governor can be seen only as a partisan political ploy. This Court should adopt the House Plan regardless of whether it is ultimately vetoed by the Governor.

D. The House Plan Was Drawn Without Partisan Data and Consistent with the Traditional Redistricting Criteria in Pa. Const., Art. II, § 16 and this Court’s Decision in *League of Women Voters of Pa. v. Commonwealth*.

The constitutional criteria in Art. II, § 16 of the Pennsylvania Constitution – equal population, contiguity, compactness, and avoiding political subdivisions splits except where absolutely necessary – were held in *LWV* to be appropriate benchmarks in determining whether a congressional districting plan dilutes the votes of Pennsylvania’s citizens. In addition, the Governor’s Redistricting Advisory Council has recognized that federal and state law require compliance with these same elements.¹² The House Plan does exceptionally well on these traditional redistricting factors.

First, the House Plan has a population deviation of +/- one, as good as can be achieved.¹³ Second, the map contains contiguous and compact districts. Indeed, the average Polsby-Popper score for the proposed map is .324, which is very similar to the plan adopted by the Pennsylvania Supreme Court in 2018 which is .327.¹⁴ In

¹² See Pennsylvania Redistricting Advisory Council, Redistricting Principles, attached as **Exhibit G**; also available at: <https://www.governor.pa.gov/congressional-districts-map-proposals/#fair-maps> (last visited Jan. 24, 2022).

¹³ See Exhibit I, Schaller Aff., at Ex. 2, p. 1 (Report of Legislative Data Processing Center on H.B. 2146).

¹⁴ See Remedial Plan Compactness Report available at: https://www.pacourts.us/Storage/media/pdfs/manual_uploads/file-6844.zip?cb=c50222 (last visited Jan. 24, 2022). See also Exhibit I, Schaller Aff., at Ex. 3 (Report of Compactness Scores for H.B. 2146).

other words, the House Plan is as compact as a map that the Pennsylvania Supreme Court previously adopted.

Finally, the House Plan splits only 15 counties with 18 total splits.¹⁵ This is very similar to the current plan adopted by the Pennsylvania Supreme Court in 2018 that splits 14¹⁶ counties 19 times. It likewise splits fewer municipalities than the current map. The proposed map splits only 16 municipalities with a total of only 18 splits.¹⁷ The current map adopted in 2018, however, splits 18 municipalities a total of 19 times.¹⁸ A certain number of municipal splits are necessary to reach population equality. Thus, it is not only important to examine the total splits, but which municipalities are split.

Philadelphia is the only municipality in the Commonwealth that is larger than the population of a single congressional district. Thus, it must be split into two districts. The remainder of municipalities split in the House Plan are small in population. *See* Report of Michael (“Barber Rep.”) at 16, attached as **Exhibit H**.

¹⁵ *See* Exhibit I, Schaller Aff., at Ex. 2 (Report of Legislative Data Processing Center on H.B. 2146, “Counties Split by Congressional Districts”).

¹⁶ *See* Remedial Plan Split Report, available at: https://www.pacourts.us/Storage/media/pdfs/manual_uploads/file-6844.zip?cb=c50222 (last visited Jan. 24, 2022). In *LWV*, the Pennsylvania Supreme Court recognized that the number of counties split was only 13 because “[a]n additional county split may appear in some GIS program calculations, but that is due to the fact that a non-contiguous Chester County census block with zero population is located inside Delaware County. That census block and its adjoining water is appropriately placed inside the district that contains Delaware County.” 181 A.3d 1083, 1087 n. 10 (2018).

¹⁷ *See* Exhibit I, Schaller Aff., at Ex. 2 (Legislative Processing Data Center Report, “Places Split By Congressional Districts”).

¹⁸ *See id.*

These splits were necessary to reach population equality and have minimal, to zero, impact on the likely partisan outcomes of the map. *See also* Ex. I, Schaller Aff. at Ex. 4, Precinct Split Reports for H.B. 2146 (reflecting precinct population splits).

Additionally, although not a stated goal of HB2146, following traditional redistricting criteria also resulted in the creation of two districts with a minority voting age population greater than 50% including one with a Black voting age population over 50%. Barber Rep. at 35, Table 2.

E. Although Not a Requirement of the Constitution, the House Plan is Demonstrably Fair Under Numerous Partisan Fairness Measures.

In *League of Women Voters*, the Pennsylvania Supreme Court held that “when . . . it is demonstrated that, in the creation of congressional districts, these neutral criteria have been subordinated, in whole or in part, to extraneous considerations such as gerrymandering for unfair partisan political advantage, a congressional redistricting plan violates Article I, Section 5 of the Pennsylvania Constitution.” 645 Pa. at 122. As demonstrated above, the House Plan adheres to traditional redistricting criteria. But as demonstrated further below, it also does not give any unfair political advantage to any party. To the contrary, the House Plan is fair and gives both major political parties an opportunity to translate their votes into seats.

One way to evaluate the partisan fairness of a map is by comparing it to a set of simulated maps that follow only traditional redistricting criteria. This set of simulated districts is helpful because it provides a set of maps to which one can

compare the proposed map that also accounts for the geographic distribution of voters in the state. Because voters are not distributed evenly across Pennsylvania, one cannot evaluate the fairness of a proposed plan without an apples-to-apples comparison. In other words, if a plan is not evaluated against a non-partisan set of maps, then potential issues or red flags in the map may not at all be due to partisan gerrymandering, but rather the geographic distribution of voters in the state. Barber Rep. at 11. This process has been recognized in a variety of redistricting cases including in Pennsylvania. Barber Rep. at 11-12.

Dr. Michael Barber – Associate Professor of Political Science at Brigham Young University – prepared a set of 50,000 simulated maps using only the traditional redistricting criteria of equal population, compactness, contiguity, and minimizing political subdivision splits. Barber Rep. at 13-14. Dr. Barber’s results demonstrate that the House Plan follows these traditional redistricting criteria similar to that of the simulated plans. Barber Rep. at 16, Table 1. Moreover, his analysis demonstrates that, if anything, the House Plan is more favorable to Democrats.

The proposed plan is predicted to result in 9 Democratic-leaning seats and 8 Republican-leaning seats using an index of statewide elections from 2012 to 2020. Barber Rep. at 23, Figure 3. That result occurs in 32.1% of the 50,000 simulated plans. *Id.* The most common outcome, however, is 9 Republican-leaning seats and 8 Democratic-leaning seats, occurring in 34.9% of the 50,000 simulated maps. *Id.*

In other words, using that index of elections, the House Plan is predicted to result in an additional Democratic-leaning seat than the most common outcome in the 50,000 plans simulated created without use of any partisan data. As Dr. Barber concludes:

Recall that in using the simulations we are comparing the proposed map to a set of maps drawn by the computer using only those criteria that I instructed the algorithm to follow - namely the pre-specified nonpartisan criteria of equal population, contiguity, geographic compactness and a preference for fewer county splits. Both the HB2146 plan and the simulations account for the unique political geography of Pennsylvania. Doing so shows us that the HB2146 plan is within the middle portion of simulation results and if anything leans slightly towards the Democratic party by generating 9 Democratic-leaning districts rather than 8, which is the modal outcome in the simulations. By no standard definition would the plan be considered an outlier.

Barber Rep. at 22 (emphasis added). However, using a partisan index of 2014-2020 statewide elections, the House Plan is predicted to result in 8 Democratic-leaning seats and 9 Republican-leaning seats, showing how the House Plan is fair and can flip seats depending on different election outcomes. Barber Rep. at 44 (App'x A).

Dr. Barber also analyzed the House Plan under various other partisan fairness metrics commonly utilized by political scientists to test the partisan fairness of a districting map. The downside with many of these metrics, however, is that they do not take into account the political geography of the state. Barber Rep. at 28, 31. Yet, they still all demonstrate that the House Plan is fair.

Dr. Barber calculates that the House Plan has a mean-median of $-.015$, which is very close to zero. Barber Rep. at 27-28 & Figure 5. "The median-mean measure

is calculated by taking the median value (the value for which half of the observations are smaller and half the observations are larger) of the partisan index across all 17 districts in a plan and subtracting from that the mean (the simple average) from the median.” Barber Rep. at 27. Dr. Barber concludes that

First, without comparing to the simulations, the HB2146 plan is very nearly unbiased. The median-mean value for the HB2146 plan is $-.015$, which is very close to zero. In other words, the median district and the mean district in the HB2146 plan are different by less than two percentage points. Second, when comparing the HB2146 plan to the simulations, the HB2146 plan is more favorable to Democratic voters than the vast majority of the simulated districting plans. The HB2146 plan has a median-mean value that is smaller (in absolute value) than 85 percent of the simulated plans. In other words, using only the non-partisan criteria described above to draw the simulated districts, 85% of them generate districts with a greater median-mean value, indicating a less efficient distribution of Democratic voters than the HB2146 plan contains.

Barber Rep. at 28.

Dr. Barber likewise calculates an efficiency gap for the House Plan. The efficiency gap “looks for the degree to which a party’s votes statewide are translated into seats in each district.” Barber Rep. at 28-29. It analyzes how the parties are wasting votes with any vote for a losing candidate and any vote above 50%+1 considered wasted. Barber Rep. at 29-30. Dr. Barber calculates the efficiency gap for the House Plan is $-.02$, which is also very close to zero. Barber Rep. at 31. But even more telling, the efficiency gap for the House Plan is more favorable to Democratic voters than the majority of the simulated districting plans. Barber Rep.

at 31-32, Figure 6. It is, in fact, smaller than all other outcomes in the simulated plans. Barber Rep. at 32. This demonstrates that the House Plan eliminates at least some of the natural geographic advantage of Republican voters.

Dr. Barber also performs a uniform swing analysis, which considers how a plan performs under a variety of different electoral environments by randomly adding certain percentages from previous elections uniformly to each district in the plan. Barber Rep. at 33-34. Like the other metrics, Dr. Barber's uniform swing analysis demonstrates that the House Plan is fair. The House Plan is nearly exactly in the middle of the distribution, meaning roughly half of the simulations are worse for Democrats and nearly half are better. Barber Rep. at 34, Figure 7.

In addition, and although not a requirement, the House Plan creates a number of competitive districts. Barber Rep. at 18. Based upon the same set of elections from 2012-2020, Dr. Barber concludes that six of the districts in the House Plan will be competitive – over one-third – with five of them having a partisan index between .48 and .52. Barber Rep. at 21, Figure 2. And, of these competitive districts, four of them lean Democratic. Barber Rep. at 19.

By any number of different metrics, the House Plan is demonstrably fair to both political parties. If anything, the House Plan does much to negate the natural geographic disadvantage faced by Democratic voters being packed in urban cities, and is predicted to result in more Democratic seats than the most common outcome

in the 50,000 simulated plans. By several metrics, it has also been shown that the plan fairly allows the political parties to each translate their votes into seats and creates numerous competitive districts.

In 2018, the Pennsylvania Supreme Court adopted a map that was predicted to result in 9 Republican-leaning seats and 9 Democratic-leaning seats. Indeed, that was the outcome following the 2020 election. Pennsylvania is losing one congressional seat following the 2020 Census. Yet, the House Plan is predicted to result in 9 Democratic-leaning seats and 8 Republican-leaning seats. Barber Rep. at 23, Figure 3. Any claim that the House Plan was drawn to somehow benefit Republican voters and candidates belies common sense.

Finally, although Dr. Barber's simulations were drawn without consideration of racial data, his core finding is robust even when the House Plan is compared to "race conscious" simulations under two scenarios. First, Dr. Barber examined the 1,852 simulated plans from his race-blind sample that likewise created two majority-minority districts including one majority Black district. Barber Rep. at 35-36. Second, Dr. Barber also generated another set of 5,000 simulated race conscious maps where he instructed the model to ensure that every simulated plan had at least three districts that have at least 35% non-white voting age population. Barber Rep. at 36. Dr. Barber's analysis reflects that even when using "race conscious" simulations, a map with 9 Democratic-leaning seats—the same as the House Plan—

remains the most common outcome, occurring in 70.6% of the simulations. Barber Rep. at 37-38, Figure 8.

F. This Court Should Reject Maps That Subordinate Traditional Redistricting Criteria in Favor of a Map That Seeks Proportional Representation.

In *LWW*, the Pennsylvania Supreme Court explained:

We recognize that other factors have historically played a role in the drawing of legislative districts... However, we view these factors to be wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts. These neutral criteria provide a “floor” of protection for an individual against the dilution of his or her vote in the creation of such districts.

When, however, it is demonstrated that, in the creation of congressional districts, these neutral criteria have been subordinated, in whole or in part, to extraneous considerations such as gerrymandering for unfair partisan political advantage, a congressional redistricting plan violates Article I, Section 5 of the Pennsylvania Constitution.

645 Pa. at 122. Moreover, in analyzing the constitutional criteria for legislative redistricting in Article II, Section 16, the Pennsylvania Supreme Court has stated that “[t]he constitutional reapportionment scheme does not impose a requirement of balancing the representation of the political parties; it does not protect the ‘integrity’ of any party’s political expectations. Rather, the construct speaks of the ‘integrity’ of political subdivisions, which bespeaks history and geography, not party affiliation or expectations.” *Holt v. 2011 Legislative Reapportionment Commission*, 620 Pa. 373, 413-14 (2013).

The Pennsylvania State Government Committee, and the House Republican Caucus, did not use partisan data in consideration of submitted maps, in the selection of Ms. Amanda Holt’s citizen’s map, or in our adjustments made to the map through amendment. Instead, it focused on traditional redistricting criteria which, as acknowledged by the Court, provide protection against the dilution of votes. The Pennsylvania Supreme Court was very clear: the neutral criteria explicitly provided for by the Pennsylvania Constitution cannot be subordinated to partisan concerns or considerations.

But, a map prioritizing the neutral criteria found in the Pennsylvania Constitution – equal population, compactness and the avoidance of county, municipal, and ward splits unless absolutely necessary – may not result in a proportional congressional delegation due to the spatial dispersion of the political groups throughout the state. That is a fundamental reality of Pennsylvania’s current political geography. According to Dave Wasserman, among the foremost nonpartisan redistricting experts in the country, developing a congressional map that provides proportional election outcomes, in Pennsylvania at least, “requires conscious pro-Dem[ocrat] mapping choices.”¹⁹ Even the *LWW* opinion acknowledged, when discussing the expert testimony presented by Petitioners’

¹⁹ See <https://twitter.com/redistrict/status/965719652188991488>.

expert (Dr. Warshaw), that “historically Democratic voters tend to self-sort into metropolitan areas.” *LWV*, 645 Pa. at 127.

Like many states, Democratic voters in Pennsylvania are clustered in cities and urban areas while Republican voters are more evenly distributed in rural areas. Thus, Democratic voters tend to be more inefficiently packed into homogeneous districts. Political science scholars have thus recognized that to overcome this natural geographic disadvantage “Democrats would need a redistricting process that intentionally carved up large cities like pizza slices or spokes of a wheel, so as to combine some very Democratic urban neighborhoods with some Republican exurbs in an effort to spread Democrats more efficiently across districts.”²⁰ The decision in *LWV*, however, does not allow for such division of cities for political gain in subordination of the traditional redistricting criteria of preserving the lines of political subdivisions.

Thus, any map that prioritizes proportional election outcomes, such as negating a natural geographic disadvantage to achieve proportionality, at the expense of traditional redistricting criteria violates the Pennsylvania Constitution’s Free and Equal Elections Clause. Additionally, the U.S. Supreme Court in *Vieth v. Jubelirer*, a case originating in Pennsylvania, stated that “[t]he Constitution provides

²⁰ Barber Rep. at 10 (quoting Jonathan A. Rodden, *Why Cities Lose: The Deep Roots Of The Urban-Rural Political Divide* 155 (Basic Books 2019)).

no right to proportional representation.” 541 U.S. 267, syllabus ¶ 3 (2004). “It guarantees equal protection of the law to persons, not equal representation . . . to equivalently sized groups. It nowhere says that farmers or urban dwellers, Christian fundamentalists or Jews, Republicans or Democrats, must be accorded political strength proportionate to their numbers.” *Id.* at 288.

Proportionality is neither a requirement nor a goal of redistricting under federal or state law; in fact, the very nature and design of our representative democracy is in many ways at odds with the pursuit of proportionality. This conflict is heightened by Pennsylvania’s constitutional requirement that districts be compact and must avoid county, municipal, and ward splits unless absolutely necessary. Thus, any plan that seeks to achieve proportionality at the expense of traditional redistricting factors should be disregarded.

III. CONCLUSION

For the foregoing reasons, the Republican House Leaders respectfully request that the Court adopt the House Plan, which was passed by the Pennsylvania House of Representatives following a full transparent and deliberative process and therefore reflects the will of the people, complies with traditional redistricting criteria, and has been demonstrated to be fair based upon any number of different metrics.

Dated: January 24, 2022

Respectfully submitted,

/s/ Jeffrey Duffy

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** Admitted Pro Hac Vice*

Counsel for Proposed Intervenors Bryan Cutler, Speaker of the Pennsylvania House of Representatives, and Kerry Benninghoff, Majority Leader of the Pennsylvania House of Representatives

EXHIBIT A

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House of Representatives

Commonwealth of Pennsylvania

January 6, 2022

CHAIR
STATE GOVERNMENT COMMITTEE

COMMITTEES
REPUBLICAN POLICY COMMITTEE

LEGISLATIVE APPOINTMENTS
STATE PLANNING BOARD
YAMPO

The Honorable Tom Wolf
Governor
Commonwealth of Pennsylvania
225 Main Capitol Building
Harrisburg, PA 17120

Dear Governor Wolf,

While I am disappointed you have declined my offer to publicly discuss the congressional districts proposed by HB 2146, P.N. 2541 or the Updated Preliminary Citizens' Congressional Redistricting Map, I wanted to address some serious fallacies in your letter to Speaker Culter and Leader Benninghoff. Further, I wanted to ensure you had factual information presented to you from the prime sponsor of the legislation, which I hope you will read prior to making any decisions. We both agree misinformation and disinformation are dangerous and the people of Pennsylvania deserve to know the truth. I think we can also agree that developing congressional maps is a constitutional mandate placed on the General Assembly and the Governor through legislative duties granted by our state and federal constitutions. Whether you decide to actively participate in the legislative process or to sit on the bench is wholly your decision. But if your goal is for the courts to draw the maps, then you are failing the people of Pennsylvania, your constitutional obligations, and treating the independent judiciary as your personal attorneys for hire.

Myth: The districts have a deviation of 9,000 people between the largest and smallest district, and this discrepancy may be successfully challenged as unconstitutional.

Fact: Fair Districts Pennsylvania¹ loaded the districts created by the Updated Preliminary Citizens' Congressional Redistricting Map to DavesRedistricting.org website^{2 3}. Here is their breakdown of population by district, when using the data set of total population provided by the 2020 Census:

¹ [Preliminary Maps: Review and Offer Comment | Fair Districts PA](#)

² [DRA 2020 \(davesredistricting.org\)](#)

³ [Comments | MyDistricting](#)

District 1	764,865	District 10	764,865
District 2	764,865	District 11	764,865
District 3	764,865	District 12	764,865
District 4	764,865	District 13	764,864
District 5	764,865	District 14	764,865
District 6	764,865	District 15	764,864
District 7	764,864	District 16	764,865
District 8	764,864	District 17	764,865
District 9	764,864		

I can only imagine your claim has been based on an analysis of the bill using the adjusted data set approved by the Legislative Reapportionment Commission for the drawing of General Assembly maps. If that data set is applied to the plan proposed by the Updated Preliminary Citizens' Congressional Redistricting Map, it would result in the nearly 9,000 person 'deviation' you claim.

However, this 'deviation' certainly could not give rise to a claim of unconstitutionality. It has always been the practice of Pennsylvania, as well as nearly every other state, to count prisoners where they reside and where they are counted by the Census. Despite recent changes in some states, it remains obvious that states may continue to constitutionally reapportion districts on the basis of the total population numbers provided by the Census. And in fact, the vast majority of states are continuing to do so.

The unadjusted Census figures provide the data set used by Ms. Amanda Holt in designing her citizen's map, as well as the data set used in making the various improvements enacted through amendment. According to the actual Census numbers, population deviation is zeroed out.

You may wish for the map to use the adjusted data set and you may even decide using an adjusted data set is a litmus test for your approval of a Congressional mapping plan. Those discussions would be a natural part of any dialogue and negotiation between the General Assembly and your office on the basis for an agreed-upon map. That is, if you are willing to engage in any type of honest dialogue.

But you cannot and should not be dishonest with the people of Pennsylvania by claiming that the citizen's map advanced within the Updated Preliminary Citizens' Congressional Redistricting Map contains an unconstitutional population deviation. If anything, it is the constitutionality of adjusted population schemes like the one approved by the Legislative Reapportionment Commission that are more novel, and that present legal and constitutional questions still to be resolved by the courts.

Myth: "When Republican members of the House State Government Committee objected to aspects of the map submitted by Ms. Amanda Holt, Chairman Grove quickly abandoned the pretext of a citizen-selected map and redrew lines in ways that completely undermine the principles that motivated Ms. Amanda Holt's map in the first place. The result is a highly skewed map."

Fact: After the Preliminary Citizens' Congressional Redistricting Map was originally released, it was open for public comment on PaRedistricting.com⁴. There were 399 total comments submitted by citizens. The amendment in committee made changes based on requests by citizens or to increase compactness.:

⁴ [Comments | MyDistricting](#)

Here are the specific changes:

- District 3 went from 49% African American Voting Age Population to 52.49%. In compliance with traditional redistricting principles, precincts were shifted between District 3 and District 2.
- District 5 was adjusted to increase compactness and we received numerous public comments from Williston Township residents requesting to be part of District 6, so while we increased the compactness of District 5, we also moved Williston Township into District 6.
- Districts 6, 10, 11, & 13 were all adjusted to increase compactness. Further, residents of the Camp Hill area filed numerous public comments requesting to be connected with the Capitol region.
- The “left-hand pinky” in District 10 was eliminated to increase compactness.
- District 9 was adjusted to increase compactness, to ensure the Susquehanna River communities were whole, and to eliminate the “zipper” in Potter County.
- District 7 was shifted back into Monroe County to increase compactness and align new boundaries with the current map developed by the PA Supreme Court.
- District 8 was adjusted to increase compactness.
- District 12 was adjusted to increase compactness, notably the zippers in Butler County were eliminated.
- District 17 was adjusted after receiving citizen feedback on Washington Borough not being in District 17. District 17 and District 14 were adjusted to meet constitutional population requirements.

I specifically addressed these changes at the House State Government Committee voting meeting on Wednesday, December 15. I do not know why your staff did not provide you this information or reach out to me to request this information.

During the committee vote on the Updated Preliminary Citizens’ Congressional Redistricting Map, I addressed how the amendment makes overall adjustments to the original map submitted by Ms. Amanda Holt⁵. In both population and land area, the current map is **95%** the same as the original map.^{6 7} Here are tables for your review on comparing the two maps:

⁵ <http://www.paredistricting.com/Video/Redistricting>

⁶ [Preliminary Plan and Updated Plan Comparison by Population.xlsx \(paredistricting.com\)](#)

⁷ [Preliminary Plan and Updated Plan Compactness Comparison.pdf \(paredistricting.com\)](#)

Compactness Comparison									
Citizen's Map Submission				Updated Map - Amendment A03209				Square Miles % Change Between Citizen's Map Submission & Updated Amendment	
District	Square Miles	Polsby-Popper	Reock	District	Square Miles	Polsby-Popper	Reock		
1	713	0.39	0.4	1	713	0.39	0.4	100%	
2	65	0.25	0.32	2	65	0.22	0.3	100%	
3	56	0.25	0.37	3	56	0.23	0.37	100%	
4	399	0.25	0.36	4	399	0.25	0.36	100%	
5	499	0.15	0.21	5	339	0.25	0.34	68%	
6	1,139	0.12	0.26	6	1,246	0.19	0.38	91%	
7	1,038	0.36	0.34	7	1,071	0.37	0.4	97%	
8	5,071	0.36	0.42	8	4,979	0.35	0.41	98%	
9	7,304	0.28	0.38	9	6,984	0.3	0.33	96%	
10	1,825	0.43	0.38	10	1,557	0.44	0.44	85%	
11	1,514	0.21	0.35	11	1,455	0.49	0.49	96%	
12	9,977	0.23	0.57	12	10,301	0.42	0.62	97%	
13	4,932	0.23	0.4	13	5,350	0.29	0.43	92%	
14	5,085	0.24	0.38	14	5,051	0.24	0.38	99%	
15	308	0.29	0.58	15	308	0.29	0.58	100%	
16	4,877	0.4	0.37	16	4,896	0.49	0.38	100%	
17	1,249	0.23	0.44	17	1,284	0.24	0.45	97%	
Citizen's Map Submission				Updated Map - Amendment A03209				Average	95%
Average Compactness Polsby-Popper : 0.27									
Average Compactness Reock: 0.38									
Updated Map - Amendment A03209									
Average Compactness Polsby-Popper : 0.32									
Average Compactness Reock: 0.42									

Difference between Preliminary Map and Updated Preliminary Map by Population			
District	Final Population	Unchanged Population	Preliminary Districts
			that Remains Unchanged
1	764,865	764,865	100.00%
2	764,865	727,974	95.18%
3	764,865	727,974	95.18%
4	764,865	764,865	100.00%
5	764,865	665,110	86.96%
6	764,865	664,660	86.90%
7	764,864	744,414	97.33%
8	764,864	745,298	97.44%
9	764,864	710,269	92.86%
10	764,865	685,726	89.65%
11	764,865	745,299	97.44%
12	764,865	720,103	94.15%
13	764,864	642,606	84.02%
14	764,865	741,290	96.92%
15	764,864	764,864	100.00%
16	764,865	755,133	98.73%
17	764,865	741,290	96.92%
		Average Same	95%

Split Analysis from LDPC					
County		Municipal		Voting Precinct	
Original	Update	Original	Update	Original	Update
14 County Splits	15 County Splits	16 Municipalities Split	18 Municipalities Split	11 Precincts Split	19 Precincts Split
16 Total Splits	18 Total Splits	18 Total Splits	18 Total Splits	11 Total Splits	19 Total Splits

As you can see, the Updated Preliminary Citizens' Congressional Redistricting Map is based upon the same pretext and principles as Ms. Amanda Holt's original map. Further, I would urge you to actually watch the Informational Meeting the House State Government Committee held on Thursday, December 9 with Ms. Amanda Holt: <https://s3.us-east-2.amazonaws.com/pagopvideo/946333055.mp4>. Again, I do not know why your staff did not provide you this information or reach out to me for this information.

Myth: "... the council also recommended that I review proposed maps to determine whether their expected performance is proportional to statewide voter preference. The HB 2146 map falls short on this basic measure of partisan fairness."

Fact: In *League of Women Voters of Pennsylvania et. al. vs. the Commonwealth of Pennsylvania (2018)*, the Pennsylvania Supreme Court gave specific criteria for the development of redistricting maps.⁸ Specifically, the court explained:

"We recognize that other factors have historically played a role in the drawing of legislative districts... However, we view these factors to be wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts. These neutral criteria provide a "floor" of protection for an individual against the dilution of his or her vote in the creation of such districts.

When, however, it is demonstrated that, in the creation of congressional districts, these neutral criteria have been subordinated, in whole or in part, to extraneous considerations such as gerrymandering for unfair partisan political advantage, a congressional redistricting plan violates Article I, Section 5 of the Pennsylvania Constitution."

The Pennsylvania State Government Committee, and the House Republican Caucus, did not use partisan data in our consideration of submitted maps, in the selection of Ms. Amanda Holt's citizen's map, or in our adjustments made to the map through amendment.

Instead, we focused on traditional redistricting criteria which, as acknowledged by the Court, provide protection against the dilution of votes. The Pennsylvania Supreme Court was very clear: the neutral criteria explicitly provided for by the Pennsylvania Constitution cannot be subordinated to partisan concerns or considerations. By demanding a map that is likely to result in a Congressional delegation proportional to some theoretical statewide vote of each party, you are essentially asking us to violate the Constitution as it was interpreted by *League of Women Voters*.

A map prioritizing the neutral criteria found in the Pennsylvania Constitution- compactness and the avoidance of county, municipal, and ward splits unless 'absolutely necessary,' will not, at this time, likely result in a proportional congressional delegation. That is a fundamental reality of Pennsylvania's current political geography. According to Dave Wasserman, among the foremost nonpartisan redistricting experts in the country, developing a congressional map that provides

⁸ [194537-feb.19,2018-opinionandorderadoptingremedialplan.pdf \(pacourts.us\)](https://www.pacourts.us/opinionandorderadoptingremedialplan.pdf)

proportional election outcomes, in Pennsylvania at least, “requires conscious pro-Dem[ocrat] mapping choices⁹.”

By demanding a map that provides proportional outcomes, you are demanding that we violate the Pennsylvania Constitution in developing any map that would be acceptable to you- by ignoring the neutral and explicit criteria found in Article II of the PA Constitution and elevating partisan data, and pro-Democratic mapping choices, above the prioritization of Pennsylvanians’ communities and daily lives.

Additionally, the U.S. Supreme Court in *Vieth v. Jubelirer*, 541 U.S. 267, a case originating in Pennsylvania, already addressed concerns regarding proportionality:

“The Constitution provides no right to proportional representation . . . It guarantees equal protection of the law to persons, not equal representation . . . to equivalently sized groups. It nowhere says that farmers or urban dwellers, Christian fundamentalists or Jews, Republicans or Democrats, must be accorded political strength proportionate to their numbers.”

Proportionality is neither a requirement nor a goal of redistricting under federal or state law; in fact, the very nature and design of our representative democracy is in many ways at odds with the pursuit of proportionality. This conflict is heightened by Pennsylvania’s constitutional requirement that districts be compact and must avoid county, municipal, and ward splits **unless absolutely necessary**. Even the *League of Women Voters* opinion acknowledged, when discussing the expert testimony presented by Petitioners’ expert (Dr. Warshaw), that “historically Democratic voters tend to self-sort into metropolitan areas.” Where the natural political geography of the Commonwealth puts the two in conflict, the pursuit of proportionality cannot prevail over neutral constitutional mandates.

You, as Governor, have constitutional legislative powers and are involved in the mapmaking process. Whether you engage in this process is your decision, but you are constitutionally bound with the General Assembly to administer your powers on an equal basis. Neither the Governor nor the General Assembly can ignore these specific directions by the Pennsylvania Supreme Court to ensure that those involved in the constitutional legislation process adopt acceptable maps.

I would further point out the hypocrisy of demanding proportionality in the name of ‘fairness.’ In 2018, the political data site *Fivethirtyeight* conducted a redistricting analytics project that it referred to as *The Atlas of Redistricting*.¹⁰ This analysis makes clear that, based on Pennsylvania’s recent political geography, a map drawn to pursue proportionality is no different than a map drawn to be the best possible gerrymander to advance Democratic political interests. I encourage you or any Pennsylvanian who has concerns regarding the redistricting process to access this site and see the evidence for themselves.

We have a duty to be honest with the people of Pennsylvania. It is dishonest to claim that our map does not meet your criteria for fairness, when in fact you have established criteria that can only be pursued through an unconstitutional map-making process.

⁹ <https://twitter.com/redistrict/status/965719652188991488>

¹⁰ <https://projects.fivethirtyeight.com/redistricting-maps/pennsylvania/>

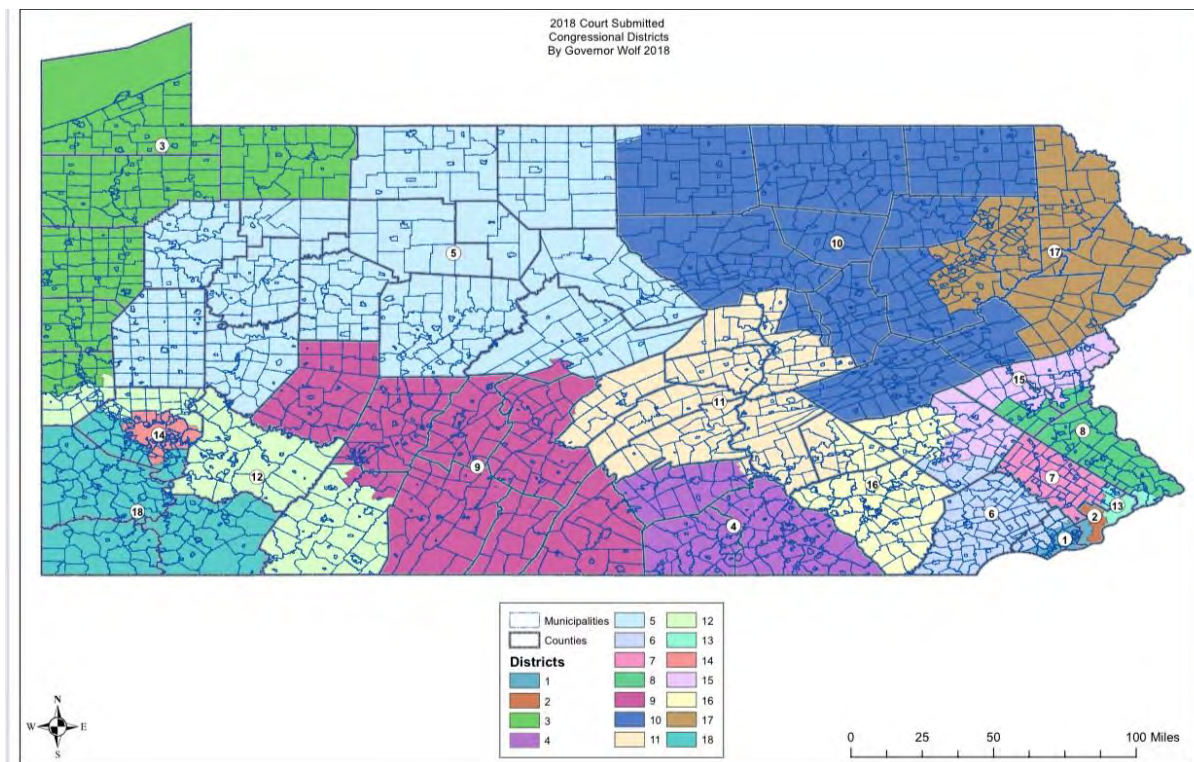
It is even more dishonest to claim that a map may only be ‘fair’ if it has been drawn to neglect the constitutionally required, apolitical criteria of compactness and the preservation of local communities, and instead to pursue a thinly veiled Democratic gerrymander.

That is what the prioritization of proportionality entails: partisan gerrymandering. If you do not want to participate in partisan gerrymandering, then do not base your decisions on partisan data, and certainly do not subordinate the neutral criteria found in Pennsylvania’s Constitution to those partisan concerns. The House Republican Caucus is not doing so, and you should join us in avoiding these mistakes.

Myth: “. . . the revised map splits multiple communities of interest, including splits in Luzerne, Dauphin, Philadelphia, and Chester counties that do not appear to be motivated by compelling legal principles, but rather by a desire to make districts more favorable to Republican Candidates.”

Fact: Neither the House State Government Committee nor the House Republican Caucus have used political data in any portion of developing the Updated Preliminary Citizens’ Congressional Redistricting Map. It is our understanding that this also applies to Ms. Amanda Holt and her development of her original map. The House State Government Committee and the House Republican Caucus will not be involved in any map or development of a map which are in violation of the established principles laid in any court case, the U.S. and Pennsylvania Constitutions, and federal and state laws.

In 2018, you submitted a map to the Pennsylvania Supreme Court.¹¹ Three years later, not only do you not want to participate in the legislative process, but you are also going out of your way to claim that your only recourse is a veto.



¹¹ [League of Women Voters, et al. v. the Commonwealth of Pennsylvania, et al. – 159 MM 2017 | Cases of Public Interest | News & Statistics | Unified Judicial System of Pennsylvania \(pacourts.us\)](#)

Your 2018 map county split analysis:¹²

Gov. Wolf Map County Split Analysis	
Allegheny County – 2	Lehigh County – 2
Beaver County – 2	Luzerne County – 2
Berks County – 3	Mifflin County – 2
Bucks County – 2	Montgomery County – 3
Centre County – 2	Northampton County – 2
Cumberland County – 2	Philadelphia City – 3
Delaware County – 2	Somerset County – 2
Lebanon County - 2	Tioga County – 2
16 Counties Split 35 Times	

The Updated Preliminary Citizens’ Congressional Redistricting Map has a total of 15 counties split with 18 total splits and only one county is split three times, where your 2018 map has three counties split three times. Further, under the Updated Preliminary Citizens’ Congressional Redistricting Map, Philadelphia City is only split twice unlike your 2018 proposed congressional redistricting map. I fail to see how in 2021 you have issues with the county splits contained in the Updated Preliminary Citizens’ Congressional Redistricting Map, when there are fewer splits than in your proposed 2018 congressional redistricting map. Even more puzzling, two of the counties you are questioning, Luzerne County and City of Philadelphia, were also split in your proposed map.

Myth: “. . . the manner in which Chairman Grove has conducted the recent steps of the crucial process has been disgraceful. Despite his promise to conduct the “most open and transparent congressional redistricting process sin PA history,” it is not clear that he consulted with even the Republican members of his own Committee prior to selecting the Ms. Amanda Holt map – much less the Democratic members, who have been completely cut out of the process. And despite Chairman Grove’s attempt make up a narrative as he goes, there is no explanation for the changes that were made beyond the fact that some of them seem to correlate with complaints aired by members of his Committee when the original map was released.”

Fact: If you or your staff took the time to engage in the process, you would find we did institute the most open and transparent congressional redistricting process in the history of the commonwealth. As a matter of fact, it has been so good, you copied it.¹³

The screenshot shows a news article from 'The Center Square' dated September 13, 2021. The headline is 'Pennsylvania governor launches familiar public congressional redistricting effort'. The article is by Christen Smith. The image shows Governor Tom Wolf speaking at a podium. Below the article, there is a social media share button for Facebook and a text description: '(The Center Square) – Pennsylvania Gov. Tom Wolf launched a website on Monday to collect public input about the state’s new congressional district map in an effort that resembles House Republicans’ own strategy for redrawing the boundaries.'

¹² [md-report.pdf \(pa.gov\)](#)

¹³ https://www.thecentersquare.com/pennsylvania/pennsylvania-governor-launches-familiar-public-congressional-redistricting-effort/article_3e9deb4e-14dd-11ec-af4e-8310de694fa1.html

If you or your staff want any information on the House redistricting process, just go to www.PaRedistricting.com. It has all the testimony received from our hearings, citizen drawn communities of interest, public comment, all the verified citizens drawn maps, all the pertinent information on the preliminary map including the testimony from Ms. Amanda Holt, and the voting meeting of the Updated Preliminary Citizens' Congressional Redistricting Map, during which I went into specific detail on the amendment to HB 2146. House Democrats, your Administration and the public had full access to this information. Unfortunately, you and your staff also failed to engage me or the committee at any time thus I am not surprised by these egregious accusations.

As this letter already contains the exact explanation I will not reiterate, but recommend you view these two hearings, both of which are found on www.PaRedistricting.com:

- House State Government Committee Information Hearing with Ms. Amanda Holt: <https://s3.us-east-2.amazonaws.com/pagopvideo/946333055.mp4>
- House State Government Committee Voting Meeting on HB 2146: <http://www.paredistricting.com/Video/Redistricting>

Myth: “. . . I have significant concern about the timeline for the final passage of this map. As Acting Secretary Degraffenreid noted in a June 28, 2021 letter to the leaders of the four legislative caucuses as well as the Chair of the Legislative Reapportionment Commission, the Department of State and county boards of elections have historically needed at least three weeks to prepare the Statewide Uniform Registry of Electors (“SURE”) to facilitate the nomination petition process, which is statutorily mandated to begin on February 15, 2022.”

Fact: When the PA Supreme Court adopted their maps in 2018, it took the Department of State far less time to update the SURE system. I have full confidence we will get a congressional redistricting map to your desk within your department's arbitrary date of January 24th.

In closing, we have a historic opportunity to sign a non-partisan, citizens' Congressional redistricting map into law. We have a historic opportunity to reset how we develop and approve Congressional redistricting maps. I am willing to work with you and hope you are able to put any issues you have with me aside for the greater good of our beloved Commonwealth. The decision is yours. I hope you side with the people of Pennsylvania over political partisanship.

Sincerely,



Seth M. Grove
State Representative
196th District

Cc: Speaker Bryan Cutler
House Majority Leader Kerry Benninghoff
President Pro Tempe Jake Corman
Senate Majority Leader Kim Ward
Geoff Moulton, Court Administrator of Pennsylvania

EXHIBIT B

1/24/22, 1:14 PM

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Regional Hearings

Each hearing link includes video of the completed hearing, schedule and written testimony, and counties included in the region.

Disclaimer: The general geographic regions are being provided for guidance only to help Pennsylvania residents determine the regional hearing(s) in which they want to participate. Generally, testifiers should participate in the hearing(s) most closely associated with their primary place of residence.

COMPLETED HEARINGS

[Congressional Redistricting 101: Harrisburg](#)

Thursday, July 22

[Stakeholder Input: Harrisburg](#)

Thursday, July 22

[Regional Hearing: Northwest](#)

Tuesday, August 24

[Regional Hearing: Allegheny](#)

Wednesday, August 25

[Regional Hearing: Southwest](#)

Thursday, August 26

[Regional Hearing: North Central](#)

Tuesday, Oct. 12

[Regional Hearing: South Central](#)

Wednesday, Oct 13

[Regional Hearing: Northeast](#)

Monday, Oct. 18

[Regional Hearing: Southeast](#)

Tuesday, Oct. 19

[Regional Hearing: Philadelphia](#)

Wednesday, Oct. 20

[Hearing on Congressional Redistricting and Census Data Analysis](#)

Thursday, Oct. 28

[Informational Meeting on Citizen Map](#)

Thursday, Dec. 9

[Voting Meeting on Preliminary Plan](#)

Monday, Dec. 13

[Voting Meeting on Citizens Map](#)

Wednesday, Dec. 15

Sign up for updates [here](#).

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EXHIBIT C

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Thank You for Providing Your Input

Thank you to every resident who submitted their own congressional district map for consideration, shared with the Chair of the House State Government Committee about their community of interest or took the time to comment on the 2018 Supreme Court map with our online mapping tool. Your involvement to date in this once-in-a-decade process has been very much appreciated.

While the window for providing input into map development is closed, residents can view previously submitted maps, communities of interest and public comments at the links below:



[Click here to view validated, publicly submitted maps.](#)



[Click here to view communities of interest identified by Pennsylvanians across the Commonwealth.](#)



[Click here to read the comments received on the current congressional district map, drawn by the PA Supreme Court in 2018.](#)

[Click here](#) to view additional public comments received by the Chair.

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EXHIBIT D

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Grove Announces Citizen Map Selected as Preliminary Congressional Plan, Invites Public Comment | PA State Rep. Seth Grove

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Grove Announces Citizen Map Selected as Preliminary Congressional Plan, Invites Public Comment

DEC. 08, 2021



HARRISBURG – Rep. Seth Grove (R-York), chairman of the House State Government Committee, announced today that following the most open and transparent congressional redistricting process in Pennsylvania history, the committee has selected a citizen map as its preliminary congressional plan. The preliminary plan, submitted through the committee's online mapping tool by Lehigh County resident Amanda Holt, is now posted for public comment.

"Over the last several months, advocates and every-day Pennsylvanians told us they didn't want the process of years' past," Grove said. "The people of Pennsylvania asked for increased public involvement, a map that was drawn by people, not by politicians, and the opportunity to offer comment on a preliminary plan before a final vote was taken."

"Today, I am proud to announce that a citizen's map, not a map drawn by legislators, has been introduced for consideration by the General Assembly, and for the first time in Pennsylvania history is posted for public view and comment."

Holt's map was one of the 19 verified statewide maps submitted to the committee through [its online mapping tool](#). To view the preliminary map, residents should visit [paredistricting.com](#) and click on "Preliminary Map." There, users will be able to view the map and offer public comments.

"The introduction of this map is a starting point, and we look forward to hearing the thoughts of residents across Pennsylvania about how this map would impact their community and how they are represented in Washington, D.C.," Grove said.

Holt's map was introduced by Grove because it was drawn without political influence; complies with constitutionally mandated criteria; satisfies equal population requirements; limits splits of townships, municipalities and other local subdivisions; and is comprised of districts that are compact and contiguous, all of which were highlighted as priorities by the majority of testifiers and residents throughout the committee's extensive regional hearings and online public input process.

"This is a historic step forward in transparency and good government," Grove said.

Grove also announced the House State Government Committee would be holding two meetings in Harrisburg on the preliminary plan:

- **Informational meeting** on Thursday, Dec. 9, at 5:30 p.m. in Room G50, Irvis Office Building.
- **Voting meeting** on Monday, Dec. 13, at 8 a.m. in Room 523, Irvis Office Building.

The meetings will also be livestreamed at [paredistricting.com](#).

"I look forward to kicking off the legislative process and getting a map before the people of Pennsylvania for feedback and consideration," Grove said.

In addition to the ability to comment on the preliminary citizen map, residents can also watch or read testimony from [one of the 12 previously held hearings](#) and view previously [submitted statewide maps, communities of interest and public comments](#).

Representative Seth Grove
 196th District

1/24/22, 1:17 PM

Grove Announces Citizen Map Selected as Preliminary Congressional Plan, Invites Public Comment | PA State Rep. Seth Grove

Contact Rep. Grove



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ggross@pahousegop.com

RepGrove.com / Facebook.com/RepSethGrove

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District Office

2501 Catherine St.
York, PA 17408
717-767-3947
Mon – Fri 8:30 a.m. - 4:30 p.m.

Capitol Office

7 East Wing
PO Box 202196
Harrisburg, PA 17120
717-783-2655

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EXHIBIT E

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Bill Information (History) - House Bill 2146; Regular Session 2021-2022 - PA General Assembly

Pennsylvania General Assembly

https://www.legis.state.pa.us/cfdocs/billinfo/bill_history.cfm?year=2021&sind=0&body=H&type=B&bn=2146

01/24/2022 01:46 PM

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Bill Information - History

House Bill 2146; Regular Session 2021-2022

Sponsors: [GROVE](#)**Printer's No.(PN):** [2541*](#) , [2491](#)**Short Title:** An Act apportioning this Commonwealth into congressional districts in conformity with constitutional requirements; providing for the nomination and election of Congressmen; and requiring publication of notice of the establishment of congressional districts following the Federal decennial census.

Actions:

[PN 2491](#) Referred to [STATE GOVERNMENT](#), Dec. 8, 2021

[PN 2541](#) Reported as amended, [Dec. 15, 2021](#)

First consideration, Dec. 15, 2021

Laid on the table, Dec. 15, 2021

Removed from table, Jan. 10, 2022

Second consideration, Jan. 11, 2022

Re-committed to [APPROPRIATIONS](#), Jan. 11, 2022

Re-reported as committed, [Jan. 12, 2022](#)

Third consideration and final passage, Jan. 12, 2022 ([110-91](#))
(Remarks see House Journal Page), Jan. 12, 2022

In the Senate

Referred to [STATE GOVERNMENT](#), Jan. 12, 2022

Reported as committed, [Jan. 18, 2022](#)

First consideration, Jan. 18, 2022

Second consideration, Jan. 19, 2022

Re-referred to [APPROPRIATIONS](#), Jan. 24, 2022

* denotes current Printer's Number

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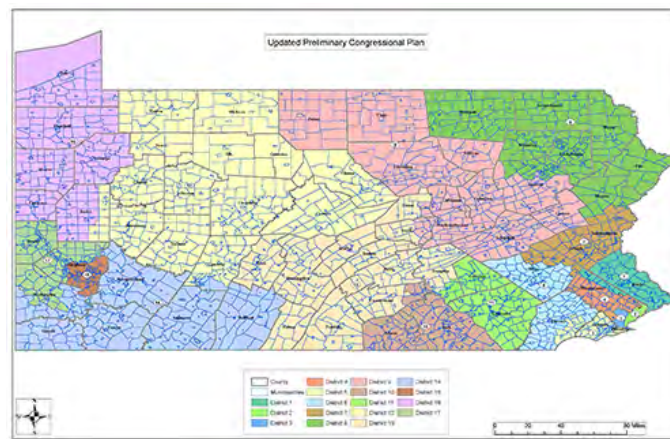
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Updated Preliminary Congressional Plan

On Dec. 8, 2021, Chairman Grove announced a citizen map was selected as the preliminary congressional plan. On Dec. 15, the citizen's map was updated in committee to incorporate additional public feed back.



[Click here for larger map](#)

» **VIEW AND COMMENT ON THE
 UPDATED PRELIMINARY PLAN**

To view and comment on the updated preliminary congressional plan, [click here](#).

[Click here to download the updated preliminary plan shapefiles.](#)

[Click here to download the preliminary plan block equivalency file.](#)

[Click here to view a preliminary plan and updated plan comparison by population.](#)

[Click here to view a compactness comparison between the preliminary plan and the updated plan.](#)

[Click here](#) to view additional public comments received to date on the updated preliminary plan outside of the online mapping tool.

The updated preliminary plan took into consideration input from the citizens across Pennsylvania. To read the comments received on the initial preliminary plan, [click here](#).

[Click here](#) to watch previously held informational meetings and hearings on the preliminary plan.

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PA Congressional - Updated Preliminary Congressional Plan

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EXHIBIT G



Pennsylvania Redistricting Advisory Council

Redistricting Principles

Under existing state law, Pennsylvania’s congressional districts are drawn by the General Assembly and passed as a regular statute, subject to veto by the Governor. On September 13, 2021, Governor Wolf issued Executive Order 2021-05 establishing the Pennsylvania Redistricting Advisory Council and charging the Council with developing recommendations for the Governor in evaluating a congressional district map passed by the General Assembly.


The Council has identified three types of principles that it believes the Governor should adopt in determining the fairness and propriety of any proposed congressional map presented by the General Assembly. The first are legal principles, drawn from settled constitutional and legal requirements, that serve as a minimal floor of protection against improper maps. Second are principles of representation, three in particular, as described below, that are crucial to assuring equal representation and fairness in a resulting map. Finally, there are procedural principles that should be in place to ensure that Pennsylvania’s congressional districts are drawn through a fair and transparent process.

Legal Principles

As an initial step in analyzing a proposed congressional map, the Council believes that the Governor should evaluate the map’s fidelity to traditional neutral criteria that form a “floor” of protection against the dilution of votes in the creation of districts. The Free and Equal Elections Clause of the Pennsylvania Constitution requires that each congressional district be composed of compact and contiguous territory and minimize the division of political subdivisions as practicable.


The Pennsylvania Supreme Court has noted that the goal is to create “representational districts that both maintain the geographical and social cohesion of the communities in which people live and conduct the majority of their day-to-day affairs.” In addition, any proposed map must comply with the requirements of federal law, including most specifically, the constitutional requirement to maintain population equality among congressional districts and the provisions of the Voting Rights Act as they apply in Pennsylvania. *These federal and state legal principles require that, in evaluating a proposed Congressional map, the Governor ensure that these legally mandated elements are complied with, along with other principles noted below.*

- Maintenance of population equality among congressional districts refers to the principle that that each district should be as nearly equal in population as practicable. As a result of the 2020 Census, the ideal Congressional district in Pennsylvania will contain 764,865 residents. *In evaluating a map, the Governor should ensure that the deviations in populations between districts comply with the requirements of the Constitution.*

-
- 
- Assurance of contiguity refers to the principle that all territory within a district connect to the rest of the district. *In evaluating a map, the Governor should ensure that all parts of the district are in contact with another part of the district and should disfavor any proposed map in which territory is only connected at a narrow single point.*
 - Maintaining compactness refers to the principle that the boundaries of a district should not be irregularly shaped or sprawl unnecessarily from a central area. Evaluation of compactness tends to focus formulaically on the relationship of the district's perimeter to its area, or the extent to which the district spreads from a central core. *In evaluating a proposed map, the Governor should prioritize plan level geographic compactness unless dispersion is required to advance another positive districting principle, such as preserving communities of interest or avoiding political-subdivision splits.*
 - Minimization of division of political subdivisions refers to the principle that local political subdivisions—such as counties or, where possible, municipalities and school districts— not be arbitrarily split into multiple districts. *In evaluating a proposed map, the Governor should prioritize fewer subdivision splits unless a division is necessary to preserve a cohesive—and clearly identified—community of interest.*
 - Finally, in certain circumstances, but only in those circumstances, the Voting Rights Act requires the creation of “majority-minority” districts to prevent the denial or abridgement of the right to vote based on race, color, or membership in a language minority. *In evaluating a proposed map, the Governor should independently consider whether the Voting Rights Act requires the creation of proposed majority-minority districts.*

Principles of Representation

Assuming a proposed congressional map from the General Assembly complies with the principles above, the Governor should further evaluate the map to ensure that it does not unfairly dilute the power of a particular group's vote. Essential to this evaluation are three additional principles of representation which contribute to the ultimate fairness of a proposed map: communities of interest should be maintained, the composition of the congressional delegation should be proportional to statewide voter preference, and the map should be responsive to changing voter preference. These principles operate as a further check on the two features of partisan gerrymandering: the splitting of communities of voters across several districts to dilute their voting power (cracking), and squeezing as many voters of one political interest into just one or a few districts, thereby wasting their votes in those districts, which decreases the likelihood of success elsewhere (packing). *In evaluating a proposed map, the Governor should consider the extent to which these principles of representation are met, when compared to other potential maps that could have been drawn.*

-
- 
- Communities of interest are contiguous geographic areas or neighborhoods in which residents share common socio-economic and cultural interests which the residents of the region may seek to translate into effective representation. Examples of shared interests include those common to rural, urban, industrial or agricultural areas, where residents have similar work opportunities, share similar standards of living, use the same transportation facilities, or share common environmental, healthcare, or educational concerns, among others. In statewide listening sessions held by the Council, Pennsylvanians frequently emphasized communities of interest focused around school districts, colleges, industrial corridors, and commuting patterns, and urged particular attention to emerging communities of interest and demographic groups that are growing in Pennsylvania. While a community of interest may be contained within a single political subdivision, they often extend across borders within a region, and may be better represented by regional planning entities such as Councils of Governments. *In evaluating a proposed map, the Governor should consider the extent to which a map preserves cohesive communities of interest, particularly where failure to do so cannot be easily explained by compelling neutral factors outlined above.*
 - Ensuring partisan fairness and proportionality requires that parties have the opportunity to translate their popular support into legislative representation with approximately equal efficiency such that the proportion of districts whose voters favor each political party should correlate to the statewide preferences of the voters. Partisan fairness requires preventing structural advantage from being baked into the map so as to allow one party to more efficiently translate votes into seats in the delegation. *In evaluating a proposed map, the Governor should analyze how it would have performed in a full range of prior statewide elections when compared to other potential maps which could have been drawn. A map with expected performance proportional to statewide voter preference should be favored as comporting with broad principles of fairness.*
 - Responsiveness and competitiveness require that there are enough districts “in play” that changes in electoral sentiment can translate into clear changes in the overall composition of the congressional delegation. A competitive district is one in which the electoral outcome is close enough that the district can change with shifting voter preferences. A responsive map is one with enough competitive districts to allow for changes in the composition of the delegation with changes in proportion of votes for the parties. Voters should not be deprived of their choice and a fair opportunity to elect candidates they support. *In evaluating a proposed map, the Governor should analyze how it would have performed in a full range of prior statewide elections and favor a map with districts where partisan swings were reflected in changes in the congressional delegation.*
-



Principles of Process

Beyond both the floor of protection and the additional checks on a partisan gerrymander endorsed above, it is critical that the map passed by the General Assembly be the result of a process that provides an opportunity for meaningful public input, comment, and participation. In the Council's listening sessions, many participants pointed to the public processes that have accompanied citizen-mapping efforts over the past several months as exemplifying the level of transparency that is expected. Procedural fairness begins with strong engagement with members of the public as to their priorities for the redistricting process, with particular focus on hearing about what ordinary Pennsylvanians identify as their communities of interest.

And when the General Assembly's proposed map is shared publicly, a process of robust public engagement and transparency dictates that there be a public record accompanying the map setting forth why specific decisions were made as they were. For instance, if certain counties were split in the map the public is entitled to know the justification for doing so. Likewise, if the proposed map prioritizes specific communities of interest, the public should be told what those communities are and how they were defined. If majority-minority districts are created, there should be a discussion of the factors that resulted in the minority group's denial of equal opportunity to participate in the political processes. *In evaluating a proposed map, the Governor should disfavor any map that is made public and passed quickly with limited legislative debate or opportunity for public consideration. In addition, the Governor should more closely scrutinize any map that is not accompanied by a public record or narrative which explains the rationale for decisions which were made.*

EXHIBIT H

Report on Proposed
Congressional Redistricting Plan
from the Pennsylvania House Republican
Caucus

Dr. Michael Barber
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724 Spencer W. Kimball Tower
Provo, UT 84604
barber@byu.edu

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1 Introduction and Qualifications

I have been asked by counsel to review the Pennsylvania House of Representatives Republican Caucus' proposed congressional redistricting plan (hereafter, "HB2146 plan") and compare it to a set of simulated redistricting plans across a number of factors commonly considered in the redistricting process and in redistricting litigation. To do this, I implement a publicly available and peer-reviewed redistricting simulation algorithm to generate 50,000 simulated district maps, each containing 17 congressional districts. The redistricting algorithm generates a representative sample of districts by following neutral redistricting criteria without regard to partisan data. In this way, the simulated districts establish a comparison set of plans that use purely non-partisan redistricting inputs. I then compare the simulated plans against the proposed plan using a number of commonly used redistricting criteria to assess whether the proposed plan is consistent with what one would expect to see in a redistricting plan composed without reference to any racial or partisan considerations.¹ Across all measures, the proposed plan is well within the distribution of simulated plans and is unbiased, with a slight lean towards favoring Democratic candidates.

I am an associate professor of political science at Brigham Young University and faculty fellow at the Center for the Study of Elections and Democracy in Provo, Utah. I received my PhD in political science from Princeton University in 2014 with emphases in American politics and quantitative methods/statistical analyses. My dissertation was awarded the 2014 Carl Albert Award for best dissertation in the area of American Politics by the American Political Science Association.

I teach a number of undergraduate courses in American politics and quantitative research methods.² These include classes about political representation, Congressional elections, statistical methods, and research design.

I have worked as an expert witness in a number of cases in which I have been asked

¹In a later section I consider the impact of considering only the simulations that meet certain thresholds with regards to the racial composition of some districts.

²The political science department at Brigham Young University does not offer any graduate degrees.

to analyze and evaluate various political and elections-related data and statistical methods. Cases in which I have testified at trial or by deposition are listed in my CV, which is attached to the end of this report. I have previously provided expert reports in a number of cases related to voting, redistricting, and election-related issues: *Nancy Carola Jacobson, et al., Plaintiffs, vs. Laurel M. Lee, et al., Defendants. Case No. 4:18-cv-00262 MW-CAS (U.S. District Court for the Northern District of Florida)*; *Common Cause, et al., Plaintiffs, vs. Lewis, et al., Defendants. Case No. 18-CVS-14001 (Wake County, North Carolina)*; *Kelvin Jones, et al., Plaintiffs, v. Ron DeSantis, et al., Defendants, Consolidated Case No. 4:19-cv-300 (U.S. District Court for the Northern District of Florida)*; *Community Success Initiative, et al., Plaintiffs, v. Timothy K. Moore, et al., Defendants, Case No. 19-cv-15941 (Wake County, North Carolina)*; *Richard Rose et al., Plaintiffs, v. Brad Raffensperger, Defendant, Civil Action No. 1:20-cv-02921-SDG (U.S. District Court for the Northern District of Georgia)*; *Georgia Coalition for the People's Agenda, Inc., et. al., Plaintiffs, v. Brad Raffensperger, Defendant. Civil Action No. 1:18-cv-04727-ELR (U.S. District Court for the Northern District of Georgia)*; *Alabama, et al., Plaintiffs, v. United States Department of Commerce; Gina Raimondo, et al., Defendants. Case No. CASE NO. 3:21-cv-00211-RAH-ECM-KCN (U.S. District Court for the Middle District of Alabama Eastern Division)*; *League of Women Voters of Ohio, et al., Relators, v. Ohio Redistricting Commission, et al., Respondents. Case No. 2021-1193 (Supreme Court of Ohio)*; *Harper, et al., Plaintiffs, v. Hall et al., Defendants. Case No. 21-CVS-015426 (Wake County North Carolina)*. I have also recently testified before the Pennsylvania Legislative Reapportionment Commission regarding the LRC's proposed map for the Pennsylvania House of Representatives.

In my position as a professor of political science, I have conducted research on a variety of election- and voting-related topics in American politics and public opinion. Much of my research uses advanced statistical methods for the analysis of quantitative data. I have worked on a number of research projects that use "big data" that include millions of observations, including a number of state voter files, campaign contribution lists, and data

from the US Census. I have also used geographic information systems and other mapping techniques in my work with political data.

Much of this research has been published in peer-reviewed journals. I have published nearly 20 peer-reviewed articles, including in our discipline's flagship journal, *The American Political Science Review* as well as the inter-disciplinary journal, *Science Advances*. My CV, which details my complete publication record, is attached to this report as Appendix A.

The analysis and opinions I provide in this report are consistent with my education, training in statistical analysis, and knowledge of the relevant academic literature. These skills are well-suited for this type of analysis in political science and quantitative analysis more generally. My conclusions stated herein are based upon my review of the information available to me at this time. I reserve the right to alter, amend, or supplement these conclusions based upon further study or based upon the availability of additional information. The opinions in this report are my own, and do not represent the view of Brigham Young University.

2 Summary of Conclusions

Based on the evidence and analysis presented below, my opinions regarding the HB2146 plan for congressional districts in Pennsylvania can be summarized as follows:

- The contemporary political geography of Pennsylvania is such that Democratic majorities are geographically clustered in the largest cities of the state while Republican voters dominate the suburban and rural portions of the state.
- This geographic clustering in cities puts the Democratic Party at a natural disadvantage when single-member districts are drawn. Specifically, districts drawn to be contiguous, compact, and contain minimal county and municipal splits will naturally create several districts in the Philadelphia and Pittsburgh areas that contain substantial Democratic majorities with many “wasted votes.”

- Based on a comparison between the HB2146 plan, and a set of 50,000 simulated maps, the HB2146 plan is a fair plan with no evidence of partisan gerrymandering across a number of different measures used to assess the fairness of a map.
- Based on an index of statewide elections from 2012-2020, the HB2146 plan generates nine Democratic-leaning districts and eight Republican-leaning districts.
- Based on the same index of statewide elections from 2012-2020, six of the districts in the HB2146 plan will likely be competitive with candidates from both parties having a realistic possibility of winning the seats. Five of these competitive districts are *extremely* competitive, with a partisan index within two percentage points of an even 50/50 split.
- Compared to a second set of simulations that explicitly consider the creation of minority opportunity districts, the HB2146 plan is similarly unbiased. The race-conscious simulations reduce the variation in Democratic-leaning districts substantially, making nine Democratic-leaning districts the overwhelmingly most likely outcome in the simulations.
- Based on these commonly-used measures of redistricting fairness, the HB2146 plan is unbiased, and when compared to the simulations on these same metrics is balanced between occasionally having a slight Republican benefit and occasionally providing a slight benefit to Democratic voters.

3 Political Geography of Pennsylvania

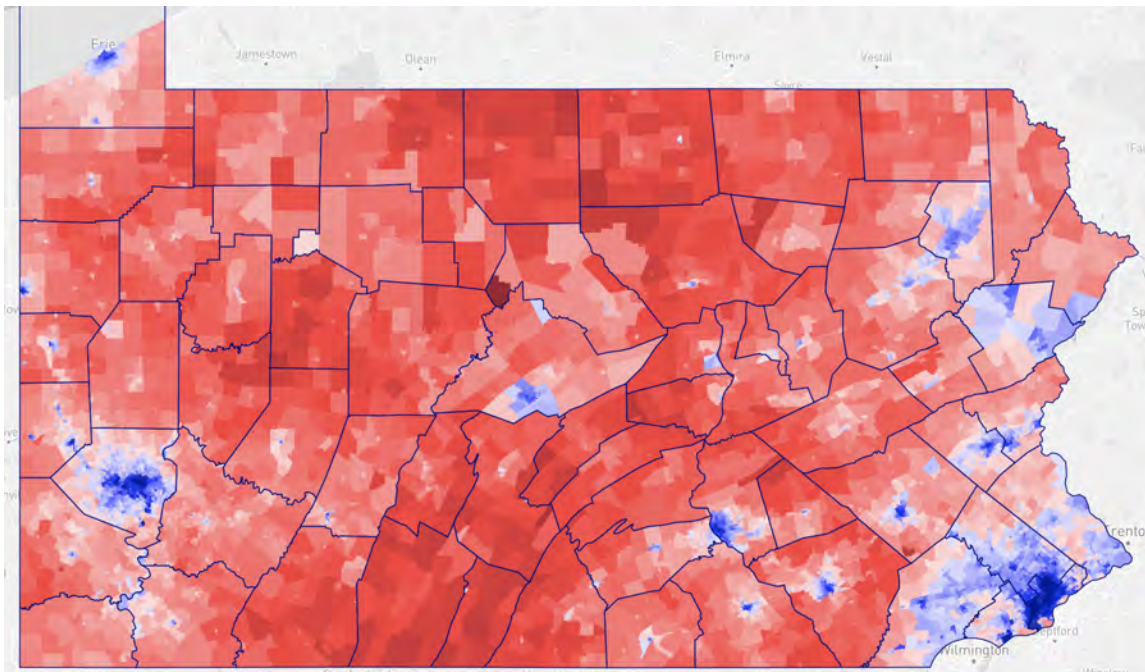
Scholarship in political science has noted that the spatial distribution of voters throughout a state can have an impact on the partisan outcomes of elections when a state is, by necessity, divided into a number of legislative districts. This is largely the case because Democratic-leaning voters tend to cluster in dense, urban areas while Republican-leaning voters tend to be more evenly distributed across the remainder of the state.³ One prominent study of the topic (Chen and Rodden, 2013) finds that “Democrats are highly clustered in dense central city areas, while Republicans are scattered more evenly through the suburban, exurban, and rural periphery...Precincts in which Democrats typically form majorities tend to be more homogenous and extreme than Republican-leaning precincts. When these Democratic precincts are combined with neighboring precincts to form legislative districts, the nearest neighbors of extremely Democratic precincts are more likely to be similarly extreme than is true for Republican precincts. As a result, when districting plans are completed, Democrats tend to be inefficiently packed into homogenous districts” (pg. 241).⁴

The map below confirms that this is the case in Pennsylvania. There are extremely large Democratic majorities shown in dark blue in and around Philadelphia and Pittsburgh. The remainder of the state contains smaller cities that are Democratic-leaning and large swaths of the state that are solidly Republican.

The upshot of this pattern is that a political party stands at a disadvantage when its voters are not “efficiently” distributed across the state. To understand what I mean by efficient, imagine two different scenarios. First, imagine a party with a slim majority of

³See for example Stephanopoulos, N. O. and McGhee, E. M., Partisan Gerrymandering and the Efficiency Gap, *The University of Chicago Law Review* 82: 831-900, (2015); Chen, J. and Rodden, J., Unintentional Gerrymandering: Political Geography and Electoral Bias in Legislatures, *Quarterly Journal of Political Science* 8: 239-269, (2013); Nall, C., The Political Consequences of Spatial Policies: How Interstate Highways Facilitated Geographic Polarization, *Journal of Politics*, 77(2): 394-406, (2015); Gimple, J. and Hui, I., . Seeking politically compatible neighbors? The role of neighborhood partisan composition in residential sorting, *Political Geography* 48: 130-142 (2015); Bishop, B., *The Big Sort: Why the Clustering of Like-Minded America is Tearing Us Apart*, Houghton Mifflin Press (2008); and Jacobson, G. C., and Carson, J. L., *The Politics of Congressional Elections*, 9th ed. Lanham, MD: Rowman and Littlefield (2016).

⁴Chen, J. and Rodden, J., Unintentional Gerrymandering: Political Geography and Electoral Bias in Legislatures, *Quarterly Journal of Political Science* 8: 239-269, (2013)

Figure 1: **Distribution of People and Partisan Preferences in Pennsylvania**

Note: Distribution of Partisan Preferences in Pennsylvania based on the average of statewide partisan elections. Blue = Democratic, Red = Republican

voters statewide in which every precinct's vote share perfectly reflected the overall state. In other words, the party has a slight majority in every precinct that adds up to a slight majority statewide. In this case, this party's voters are extremely efficiently distributed in such a way that the party will win every single district despite only a slim majority statewide. Now imagine a different arrangement: a party that still holds a slim majority statewide, but whose voters are heavily concentrated in a few areas and sparsely populated throughout the rest of the state. In this case, despite holding a majority of votes statewide, the party will only win a few seats where their voters are heavily concentrated. The political geography of Pennsylvania closely resembles this second scenario.

The geographic concentration of a party's voters tends to harm that party when single-member districts are drawn by creating districts that favor that party by very large margins, thus "wasting" many votes by running up large majorities far beyond 50%+1.⁵

⁵McGhee, E. (2017). Measuring Efficiency in Redistricting. *Election Law Journal: Rules, Politics, and Policy*, 16(4), 417–442. doi:10.1089/elj.2017.0453

This occurs in Pennsylvania at the scale of congressional districts in the two largest cities of the state - Pittsburgh and Philadelphia. The overwhelming margins for the Democratic Party in these cities are what drives “wasted votes,” which in turn translate to fewer seats than the statewide proportion of votes would suggest.⁶

For example, Philadelphia is large enough to constitute roughly 2.1 congressional districts. Thus, a plan that attempts to avoid splitting counties will draw two districts entirely within the city of Philadelphia.⁷ In the HB2146 plan Districts 2 and 3 are completely contained in Philadelphia. In the 2020 presidential election, the city of Philadelphia supported the Democratic candidate, Joe Biden, by an 81.4% to 17.9% margin. As a result, the two congressional districts that will be contained within the city, whatever their configuration, will be overwhelmingly Democratic and contain hundreds of thousands of wasted votes that could be used more efficiently if they were geographically distributed more evenly across the state.

The story is very similar in Pittsburgh and Allegheny County as well. Pittsburgh is not large enough to contain a single congressional district. However, its population is roughly 40% of the size required for a congressional district in 2020. Allegheny County’s population is larger than a congressional district (its 2020 population was roughly equal to 1.6 congressional districts), and thus a plan that draws district boundaries that are geographically compact and avoid splitting counties and cities will contain a congressional district within Allegheny County that also contains the city of Pittsburgh. In the HB2146 plan District 15 contains the city of Pittsburgh and is entirely contained in Allegheny County. Both Pittsburgh and Allegheny County are very Democratic leaning. In the 2020 presidential election, the city supported Joe Biden by a 78% to 20.9% margin and Allegheny County supported Biden by a 59.7% to 39.2% margin. As a result, whichever congressional district Pittsburgh

⁶The term “wasted votes” in political science is not to imply that a person’s vote is not important or counted, but rather that the vote is not helpful in gaining an additional seat for their preferred party if it is an additional vote in favor of a candidate that has already won a majority of the votes in their district. Technically, all votes beyond 50%+1 are “wasted”. However, parties are interested in winning by majorities larger than 50%+1, but not by margins beyond the point at which their candidate is quite certain to win.

⁷Philadelphia city and county are coterminous.

is drawn into will be extremely Democratic as a result of the strong support for Democratic candidates in Pittsburgh and its immediate suburbs within Allegheny County.

Taken together, this suggests that any plan that follows the non-partisan criteria of drawing maps that are geographically compact and avoid splitting counties and cities will begin with three districts (2 in Philadelphia and 1 in Allegheny County centered in Pittsburgh) that are extremely Democratic leaning with an abundance of wasted votes. The spillover effect of this natural packing of Democratic voters is that the remaining 14 congressional districts will be more favorable to Republican voters than if the Democratic voters in these two large cities were more evenly distributed across the state.

The inefficient distribution of voters in Pennsylvania would not be a problem for Democrats if district boundaries were able to amble about the state and divide counties and municipalities to create districts that had less overwhelming Democratic support. Rodden (2019) notes this by saying: “Democrats would need a redistricting process that intentionally carved up large cities like pizza slices or spokes of a wheel, so as to combine some very Democratic urban neighborhoods with some Republican exurbs in an effort to spread Democrats more efficiently across districts” (pg. 155).⁸ However, the provisions governing redistricting in Pennsylvania run counter to either of these strategies. The Pennsylvania Supreme Court’s decision in *League of Women Voters of Pa. v. Commonwealth* establishes that congressional redistricting plans must adhere to traditional redistricting rules that require districts to be geographically compact and to avoid county and municipal divisions. It thus prohibits the type of meandering districts that Rodden describes above. In the end, this means that Republicans begin the redistricting process with a natural geographic advantage due to the constraints of where and how districts can be lawfully drawn combined with the particular spatial distribution of their voters.

⁸Rodden, Jonathan A. *Why cities lose: The deep roots of the urban-rural political divide*. Hachette UK, 2019.

4 Methods

To gauge the degree to which the HB2146 plan is a partisan gerrymander, I conduct simulated districting analyses to allow me to produce a large number of districting plans that follow traditional redistricting criteria using small geographic units as building blocks for hypothetical legislative districts. This simulation process ignores all partisan and racial considerations when drawing districts. Instead, the computer simulations are programmed to create districting plans that follow traditional districting goals without paying attention to partisanship, race, the location of incumbent legislators, or other political factors. This set of simulated districts is helpful because it provides a set of maps to which we can compare the HB2146 map that also accounts for the geographic distribution of voters. Because voters are not distributed evenly across the state (as discussed in the previous section), we cannot evaluate the fairness of a proposed plan without an apples-to-apples comparison. In other words if a plan is not evaluated against a comparison set of maps that also use the same political geography of the state, then potential issues or red flags in the map may not at all be due to partisan gerrymandering, but rather the geographic distribution of voters in the state. By comparing a proposed map to a set of alternative maps that are drawn using only non-partisan districting criteria that *also* consider the same geographic distribution of voters, we can identify if oddities or patterns in the proposed plan are due to the political geography of the state because the simulated maps are drawn *using the same political geography*. In other words, by comparing the HB2146 map to the simulated districts, we are comparing the proposal to a set of alternative maps that we know to be unbiased that holds constant the political geography of the state. If the HB2146 map produces a similar outcome as the alternative set of maps, we may reasonably conclude that the HB2146 plan is unbiased. Alternatively, if the HB2146 plan significantly diverges from the set of simulated maps, it suggests that some other criteria that were not used in drawing the comparison set of maps may have guided the decisions made in drawing the proposed map.

The process of simulating districting plans has been recognized and used in a variety

of redistricting litigation, including in Pennsylvania.⁹ While different people employ slightly different methods, the overall process is much the same. For my simulations, I use a program developed by Fifield et al. (2020).¹⁰

A significant advantage of the simulation-based approach is the ability to provide a representative sample of possible districting plans that accounts for the unique political geography of a state, such as the spatial distribution of voters or the location and number of administrative boundaries, such as counties. Simulation methods can also to a degree incorporate each state's unique redistricting rules. The simulation-based approach therefore permits us to compare a particular plan to a large number of representative districting plans in Pennsylvania. In the simulations I run, I instruct the model to generate plans that adhere to the redistricting criteria discussed in the *League of Women Voters* case: equal population, compactness, and minimizing political subdivision splits.

A major factor in the validity of the simulated maps is whether or not they constitute a representative sample of the trillions of possible maps that could be drawn.¹¹ If the sample produced by the simulations is not representative, then we may be comparing the proposed map to a biased selection of alternative maps, which renders the value of the comparison much less useful.

A specific benefit of the particular algorithm I use here is that the authors show math-

⁹See *League of Women Voters of Ohio v. Ohio Redistricting Commission* (2021); *Harper v. Hall* (2021); *Common Cause v. Lewis* (2019); *Harper v. Lewis* (2019); *League of Women Voters of Pennsylvania v. Commonwealth of Pennsylvania* (2018); *City of Greensboro v. Guilford County Board of Elections* (2017); January 6, 2022 testimony for PA LRC from Kosuke Imai and Michael Barber.

¹⁰Fifield, Benjamin, , Michael Higgins, Kosuke Imai, and Alexander Tarr. "Automated redistricting simulation using Markov chain Monte Carlo." *Journal of Computational and Graphical Statistics* 29, no. 4 (2020): 715-728.

Fifield, Benjamin, Kosuke Imai, Jun Kawahara, and Christopher T Kenny. 2020. "The essential role of empirical validation in legislative redistricting simulation." *Statistics and Public Policy* 7 (1): 52-68.

Kenny, Christopher T., Cory McCartan, Benjamin Fifield, and Kosuke Imai. 2020. *redist: Computational Algorithms for Redistricting Simulation*. <https://CRAN.R-project.org/package=redist>.

McCartan, Cory, and Kosuke Imai. 2020. "Sequential Monte Carlo for sampling balanced and compact redistricting plans." arXiv preprint arXiv:2008.06131.

¹¹Tam Cho, Wendy K., and Yan Y. Liu. "Toward a talismanic redistricting tool: A computational method for identifying extreme redistricting plans." *Election Law Journal* 15, no. 4 (2016): 351-366. Cho, Wendy K. Tam, and Bruce E. Cain. "Human-centered redistricting automation in the age of AI." *Science* 369, no. 6508 (2020): 1179-1181. McCartan, Cory, and Kosuke Imai. "Sequential Monte Carlo for sampling balanced and compact redistricting plans." arXiv preprint arXiv:2008.06131 (2020).

ematically and in a small-scale validation study that their method produces a representative sample of maps. With regards to this issue, the authors state:

Yet, until recently, surprisingly few simulation algorithms have existed in the published scholarship. In fact, most of these existing studies use essentially the same Monte Carlo simulation algorithm where a geographical unit is randomly selected as a “seed” for each district and then neighboring units are added to contiguously grow this district until it reaches the pre-specified population threshold (e.g., Cirincione, Darling, and O’Rourke 2000; Chen and Rodden 2013). Unfortunately, no theoretical justification is given for these simulation algorithms, and hence they are unlikely to yield a representative sample of redistricting plans for a target population...Unlike the aforementioned standard simulation algorithms, the proposed algorithms are designed to yield a representative sample of redistricting plans under contiguity and equal population constraints.¹²

Specifically, the model is constrained to conduct 50,000 simulations in which each simulation generates 17 districts that are of roughly equal population (<0.5% deviation above or below the target population of 764,865). While congressional districts are constrained to contain a truly equal population, it is not possible to place such a strict constraint on the model. Because of this, I relax the constraint to allow for a 0.5% deviation, or a roughly 3,800 person deviation. This is common in redistricting simulations of congressional districts, including in litigation presented to, and relied upon by the Pennsylvania Supreme Court in the 2018 *League of Women Voters* case. The process for zeroing out population on any given simulation map would have minimal to no impact on the partisan outcomes.¹³

¹²Cirincione, C., Darling, T. A., and O’Rourke, T. G. (2000), “Assessing South Carolina’s 1990s Congressional Districting,” *Political Geography*, 19, 189–211. DOI: 10.1016/S0962-6298(99)00047-5. Chen, J., and Rodden, J. (2013), “Unintentional Gerrymandering: Political Geography and Electoral Bias in Legislatures,” *Quarterly Journal of Political Science*, 8, 239–269. DOI: 10.1561/100.00012033.

¹³See for example: Expert report of Dr. Wesley Pegden in *League of Women Voters of Pennsylvania* case, whose simulations use a 2% population constraint. Expert report of Dr. Jonathan Mattingly in *Harper v. Hall* in North Carolina, whose congressional simulations use a 1% population constraint and states, “We have verified in previous work in related settings that the small changes needed to make the districting plan

The algorithm generates 17 congressional districts with each run by assembling small geographic units — electoral precincts — into larger groups until a group of precincts is large enough to constitute a new legislative district. It then repeats this process 50,000 times, generating a different set of 17 districts with each run of the model. In each of the 50,000 iterations, the model is instructed to generate geographically compact districts that do not divide cities, boroughs, townships, and other municipal corporations. No city in Pennsylvania is larger than a congressional district aside from Philadelphia. As a result, there are no split precincts or municipalities (aside from the necessity of dividing Philadelphia into multiple districts due to its population) in the simulated districts. I constrain the model to not split municipalities because of the constitutional instructions in Article II, Section 16 that no city, incorporated town, borough, township or ward shall be divided unless “absolutely necessary”. Although Article II Section 16 does not on its face apply to congressional redistricting, the *League of Women Voters* case held that an “essential part” of an inquiry into whether a congressional plan is constitution under the Free and Equal Elections Clause is if the districts created under the plan are: “composed of compact and contiguous territory; as nearly equal in population as practicable; and which do not divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population” (645 Pa. 1, 123, 2018). Later, the court described this principle as the “minimization of the division of political subdivisions” (Id). Thus, if it is possible to generate districts that do not split municipalities and stay within the 0.5% population constraint, it is therefore not “absolutely necessary” to split municipalities aside from Philadelphia when constructing simulated districts. The process for zeroing out population on any given simulation map would, of course, require the division of some municipal corporations, but not many. The model is also instructed to draw districts that cross county boundaries as few times as

have perfectly balanced populations do not change the results.” See also expert report of Daniel Magleby in *Harper v. Hall* in North Carolina. Also, expert report of Kouske Imai in *League of Women Voters of Ohio v. Ohio Redistricting Commission*, who uses a 0.5% population deviation and states, “Although this deviation is greater than the population deviation used in the enacted plan, it only accounts for less than 4,000 people and hence has no impact on the conclusions of my analysis.”

possible. County populations do not always add up to round units of districts, and thus some county boundaries will be need to be traversed. The model is further instructed that when a county boundary needs to be crossed, it should avoid splitting the county more times than necessary.

Once the simulated district plans are complete, only then do I compute the partisan composition of each district in each plan. For the partisan composition of each district I rely on the election results from statewide elections disaggregated to the level of the election precinct. I then reassemble these election results for each of the simulated districts in each of the 50,000 simulations to compute the proportion of votes across all statewide elections conducted between 2012 and 2020 that were won by the Democratic and Republican candidates in those districts.¹⁴ In other words, the partisan index is the average vote share for Democratic candidates in each district for the statewide elections considered between 2012-2020. I choose the period 2012-2020 because it represents an entire decade of elections between decennial censuses when redistricting traditionally occurs. Averages of multiple elections have the benefit of “washing out” the impact of any particular election, since individual elections can vary due to particular idiosyncratic candidate features. Furthermore, particular years can vary due to national electoral waves (i.e. 2018 was an especially good year for Democrats while 2016 was an especially good year for Republicans nationwide). Later in the report I also display the results using a variety of alternative election indices.

¹⁴The particular races are 2020: President, Auditor, Attorney General, Treasurer; 2018: Governor, US Senate; 2016: President, US Senate, Auditor, Attorney General, Treasurer; 2014. I do not include statewide judicial elections in the index. It is uncommon in political science to use judicial elections to measure voters’ partisan preferences as research suggests voters treat judicial elections very differently, even when judges run under party labels, than they do partisan elections to legislative and executive positions. Other commonly used measures indices such as Dave’s Redistricting and PlanScore.com also omit judicial elections from their partisan indices.

5 Results

5.1 Population, Boundary Splits, and Compactness

Table 1 below compares the HB2146 plan to the distribution of simulations for boundary splits, and compactness. The HB2146 plan splits 15 counties, which is within the range of county splits in the simulations. The HB2146 plan divides only 16 municipalities, one of which would be Philadelphia, which is required to be divided because the city’s population is larger than a single congressional district. Furthermore, the requirement that the proposal contain exact population equality will require the division of some municipalities since the combination of cities into districts will not necessarily lead to the exact population needed for a congressional district. Finally, the HB2146 plan has only nine precinct splits. On the whole, the plan performs exceptionally well at having few county, municipal, and precinct splits. With regards to district compactness, the HB2146 plan’s average district compactness score closely aligns with the results of the simulations. District-by-district measures of compactness as well as a list of specific counties and municipalities that are split are contained in the appendix of this report.

Table 1: HB2146 plan and 50,000 Simulations: Subdivision Splits, and Compactness

	HB2146 plan	Simulations Median	Simulations Range
Boundary Splits			
Counties Split:	15	12	[7, 15]
Municipalities Split:	16	1	[1, 1]
Precincts Split:	9	0	[0, 0]
Compactness			
Average Polsby-Popper:	0.32	0.28	[0.22, 0.35]

Note: As described above, the simulations are constrained to not divide municipalities, aside from Philadelphia, which is too large to be contained within one district. However, exact population equality requires some municipalities be split in the proposed plan.

5.2 Partisan Lean of Districts

Before comparing the proposal to the simulations, I first present the results of the partisan index for each district in the HB2146 plan. Figure 2 shows this for the 17 districts in the plan. Districts are ordered from least Democratic at the bottom to most Democratic at the top. Districts with a partisan index less than 0.50 are Republican leaning and districts with a partisan index greater than 0.50 are Democratic leaning. A vertical dashed line is placed at 0.50 for reference. In the plan there are eight Republican-leaning districts with an index less than 0.50 (on the left side of the dashed line at .50) and nine Democratic-leaning districts with an index greater than 0.50 (on the right side of the dashed line at .50). The grey horizontal lines around each point show the range of election outcomes for all of the statewide elections used to generate the index. Districts in which the Republican candidate for statewide elections won the majority of the two-party vote share in all of the statewide races in that district are shown as red squares while districts where the Democratic candidate for statewide elections won the majority of the two-party vote share in all of the statewide races in that district are shown as blue triangles. Districts where both parties have won a majority of the two-party vote share in these statewide races in the district are displayed as green circles. Looking at the range across the index, there are six districts colored red (reliably Republican), five blue districts (reliable Democratic), and six green districts (competitive) in the plan. Using an alternative definition of competitiveness based on the closeness of the index to 0.50, there are five districts with an index between 0.48 and 0.52. A range of two percentage points is a commonly used measure of competitiveness in congressional elections.

A few key points come out of this figure. First, we see the result of the natural clustering of Democratic voters in Philadelphia and Pittsburgh. Districts 3 and 2 are the most Democratic leaning and are entirely contained within Philadelphia in the HB2146 plan. District 15 is the third most Democratic leaning district and contains the entirety of Pittsburgh and some of its surrounding suburbs in Allegheny County. These districts are

overwhelmingly Democratic leaning. In fact, they are much more Democratic than the degree to which the most Republican-leaning districts lean towards Republicans. For example, the most Democratic district (District 3) has a partisan index of 0.92 while the most Republican district (District 13) has a partisan index of 0.35 (0.35 is much closer to .50 than 0.92 is to 0.50). This illustrates the idea that geographic clustering of voters when divided into single member districts that are compact and avoid dividing counties and cities generally lead to more wasted votes for Democrats than for Republicans.

The second major point is that the HB2146 plan generates a significant number of competitive districts. Electoral competitiveness is an essential component of a liberal democracy. The threat of electoral defeat is critical to creating a democratic government in which elected officials are responsive to public opinion and are held accountable for their decisions while in office.¹⁵

I use two different metrics to measure competitiveness.

The first measure considers a district competitive if both a Democratic and Republican candidate for statewide federal office between 2012-2020 have won a majority of the two-party vote share in that district. Figure 2 shows these districts as green circles. Note how the grey line in each of these districts crosses the 0.50 line, indicating that both Republican and Democratic candidates for statewide office have won a majority of votes in that district. This approach has the virtue of considering the candidate-specific characteristics that a partisan average or index would not measure. For example, particular candidates from either party might outperform their party's average candidate performance. This is important to consider because actual elections are determined by which candidate wins the most votes, not the result of an average of votes cast, and individual elections in individual

¹⁵Mayhew, David R., 1974. *Congress: The Electoral Connection*. New Haven, CT: Yale University Press. Gordon, Sanford C., and Gregory Huber. "The effect of electoral competitiveness on incumbent behavior." *Quarterly Journal of Political Science* 2, no. 2 (2007): 107-138. Ansolabehere, Stephen, David Brady, and Morris Fiorina. "The vanishing marginals and electoral responsiveness." *British Journal of Political Science* 22, no. 1 (1992): 21-38. Dropp, Kyle, and Zachary Peskowitz. "Electoral security and the provision of constituency service." *The Journal of Politics* 74, no. 1 (2012): 220-234.

districts are influenced by the characteristics and qualities of individual candidates. Using this metric, there are 6 competitive districts (Districts 16, 8, 17, 7, 6, and 1).

The second measure of competitiveness uses the partisan index and simply looks at districts where the partisan index is within two percentage points of 50% of the two-party vote share. Scholars have often used two percentage points as a heuristic for hyper-close races in which unforeseen or “knife-edge electoral shifts” can change election results.¹⁶ Furthermore, recent studies of the legislative incumbency advantage have suggested a decline in the benefit afforded to incumbents by voters with more recent estimates being between 3 and 4 percentage points, which divided symmetrically would yield roughly 2 points on either side of the 50% vote margin.¹⁷ Using this metric, there are five competitive districts (Districts 8, 17, 7, 6, and 1).

Unlike the first metric described above, this measure of competitiveness is based on the average performance of candidates. Both metrics have their benefits and drawbacks. The virtue of using the average is that it “washes out” the impact of any one particular candidate by aggregating multiple election results together. The virtue of the “bipartisan victories” metric described above is that it captures the fact that particular candidates often perform very differently from what a partisan index would predict. Thus, the virtues of the first are in many ways the drawbacks of the second, and vice versa. As a result, including both presents a more complete picture. In either case, the HB2146 plan creates a substantial number of competitive districts.

A final point to note is that among these competitive districts, four of them lean Democratic. In other words, while both parties will likely win these districts some of the time, Democratic candidates are slightly favored in four of the five (or six depending on the measure of competitiveness) competitive districts in the plan.

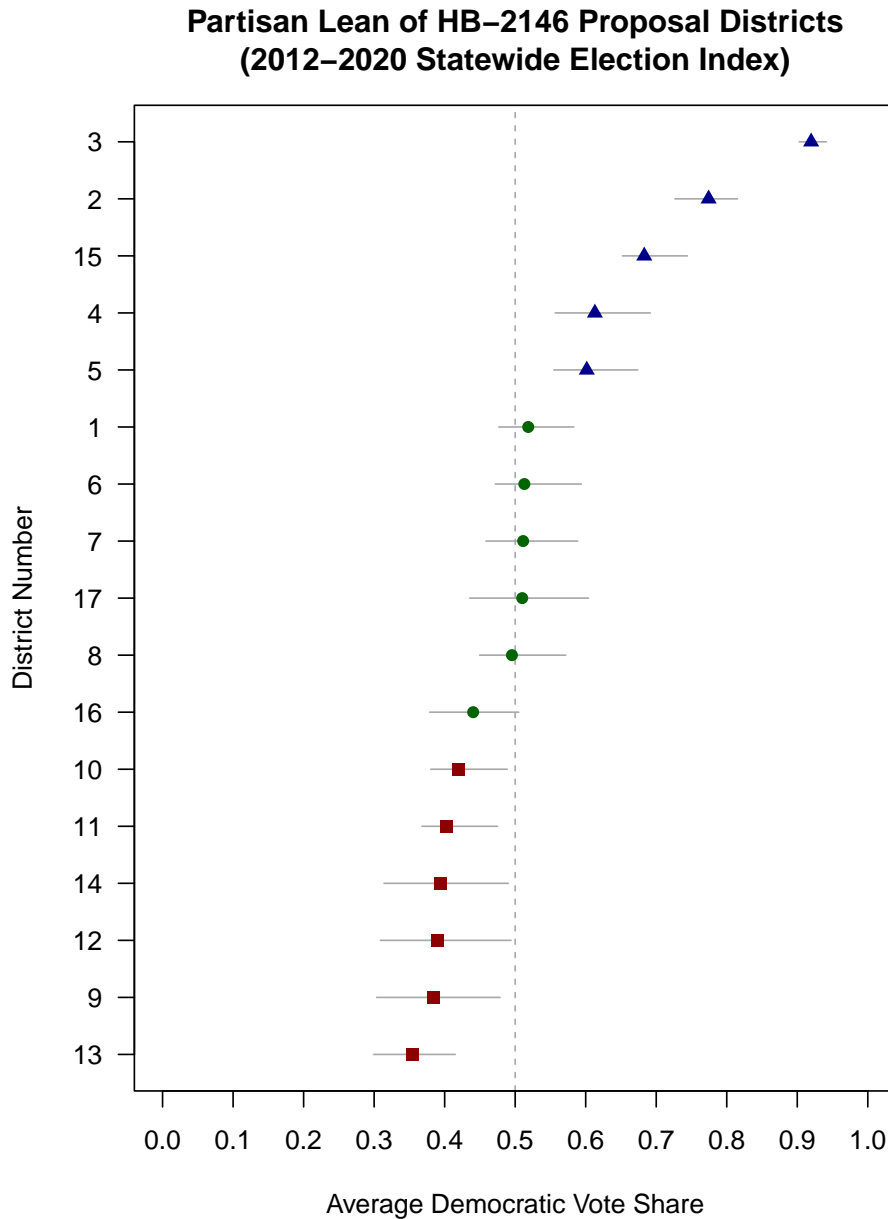
It is important to note that partisan averages — such as the ones I have created here

¹⁶Erikson, Robert S., and Rocío Titiunik. “Using regression discontinuity to uncover the personal incumbency advantage.” *Quarterly Journal of Political Science* 10, no. 1 (2015): 101-119.

¹⁷Jacobson, Gary C. “It’s nothing personal: The decline of the incumbency advantage in US House elections.” *The Journal of Politics* 77, no. 3 (2015): 861-873.

— are useful, but not perfect. Every congressional race is different. Individual candidate factors such as prior elected experience, professional background, gender, and ties to the local community are all important factors in determining candidate success. Campaigns and the issues and policies that candidates choose to emphasize and endorse are also important. These factors all contribute to making each race unique and slightly different from what an index of statewide election results might predict. In other words, no election will perfectly mirror the partisan average for that district based on an index of election results, and in some cases that difference could be quite large.

Figure 2: Partisan Index of HB2146 plan Congressional Districts



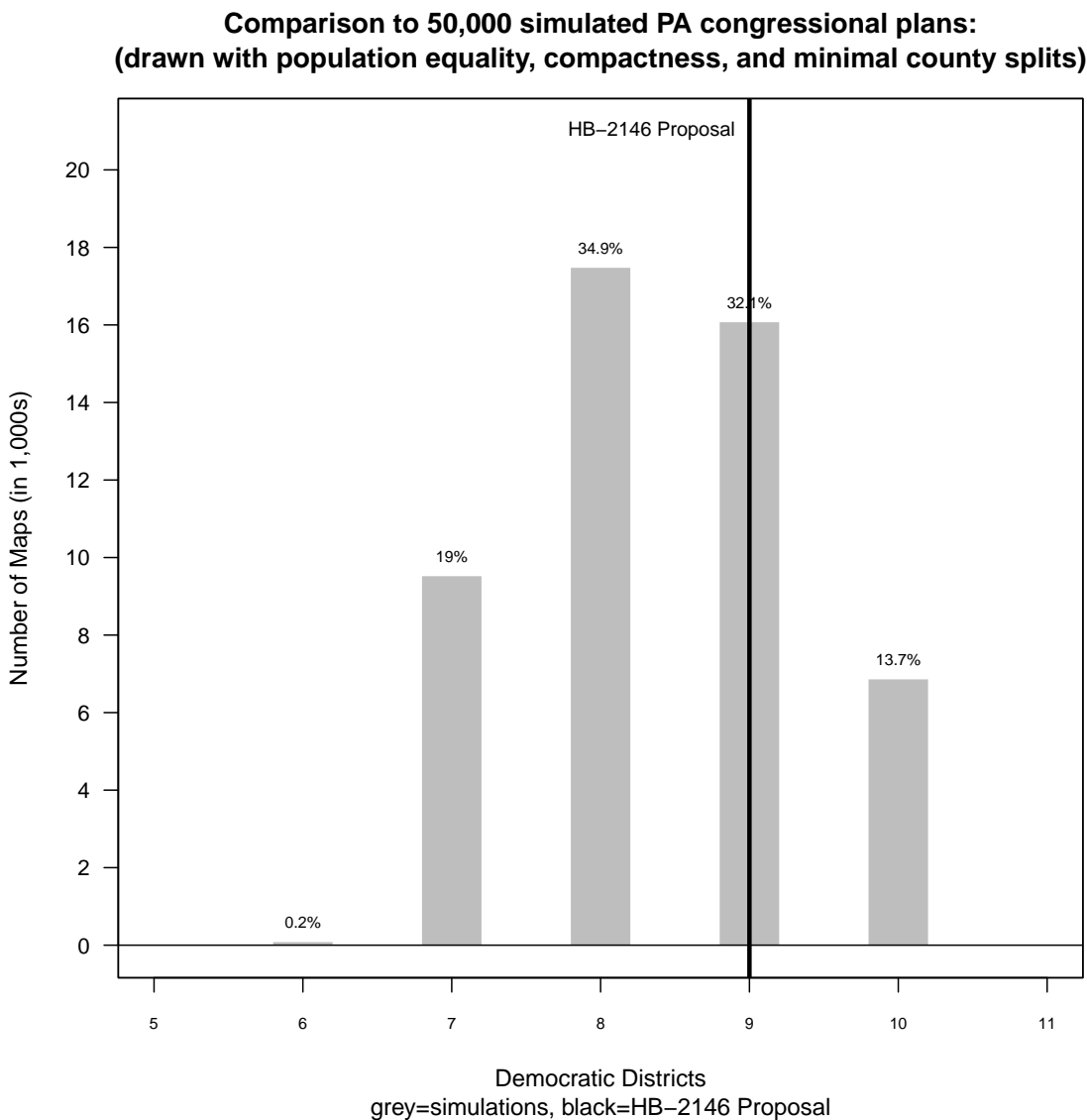
Note: Partisan Index based on the average of statewide partisan races between 2012-2020. Districts with a partisan index less than 0.50 are Republican leaning and districts with a partisan index greater than 0.50 are Democratic leaning. A vertical dashed line is placed at 0.50 for reference. The grey horizontal lines around each point show the range of election outcomes for all of the statewide elections used to generate the index. Districts in which the Republican candidate for statewide elections won the majority of the two-party vote share in all of the statewide races are shown as red triangles (there are 6 of them) while districts where the Democratic candidate for statewide elections won the majority of the two-party vote share in all of the stateside races are shown as blue triangles (there are 5 of them). Districts where both parties have won a majority of the two-party vote share in these statewide races are displayed as green circles (there are 6 of them).

5.3 Partisan Lean of Districts Compared to Simulations

Figure 3 displays the distribution of Democratic-leaning districts in both the simulations and the HB2146 plan using the 2012-2020 partisan index discussed above. If a district in the simulations or in the HB2146 plan has a partisan index greater than 0.50, I call that a Democratic-leaning district. Likewise, if a districts in the simulations has a partisan index less than 0.50, I call that a Republican-leaning district. The grey histogram shows the distribution of Democratic-leaning seats generated by the simulations. The simulations generate between six and ten Democratic-leaning districts, and the numbers above each bar in the histogram display the proportion of simulated maps that generate each outcome. For example, in 34.9% of the simulations there are eight Democratic-leaning districts (and therefore nine Republican-leaning districts). The solid black vertical line shows the results of calculating the partisan index for the HB2146 plan. The HB2146 plan generates nine Democratic leaning districts, which is in line with the distribution of Democratic-leaning seats generated by the simulations (32.1% of the simulations generate this result). As noted above, the most common outcome in the simulations is eight Democratic-leaning seats, which is one less than the HB2146 plan generates.

Recall that in using the simulations we are comparing the proposed map to a set of maps drawn by the computer using only those criteria that I instructed the algorithm to follow - namely the pre-specified nonpartisan criteria of equal population, contiguity, geographic compactness and a preference for fewer county splits. Both the HB2146 plan and the simulations account for the unique political geography of Pennsylvania. Doing so shows us that the HB2146 plan is within the middle portion of simulation results and if anything leans slightly towards the Democratic party by generating nine Democratic-leaning districts rather than eight, which is the modal outcome in the simulations. By no standard definition would the plan be considered an outlier.

Figure 3: Partisan Composition of HB2146 plan and Simulations



Note: The grey distribution is the number of Democratic seats generated from the 50,000 simulations. The vertical black line is the number of Democratic leaning seats in the HB2146 plan. The HB2146 plan generates 9 Democratic leaning districts. The partisan lean of districts in the simulations and the HB2146 plan are calculated as the two-party vote share of statewide partisan elections from 2012-2020.

5.4 District-by-District Comparisons

While Figure 3 shows the position of the HB2146 plan in relation to the simulations overall, it is also instructive to look at a district-by-district level to see if any particular district stands out as an outlier. Figure 4 below does this for each of the 17 districts in

the state. The figure plots the partisan lean of each district across all of the simulations ordered from least Democratic at the top to most Democratic at the bottom of the figure. The simulation results are displayed in grey and generate a “cloud” or range of partisan outcomes for each district. The black dots in the figure show the partisan lean of each of the districts in the HB2146 plan and their relative position within the simulations. Next to each district is text showing the position of the HB2146 plan in relation to the simulations. For example, in the most Republican-leaning district (District 13) at the top of the figure, the HB2146 plan is more Democratic than 64% of the simulations in that district.

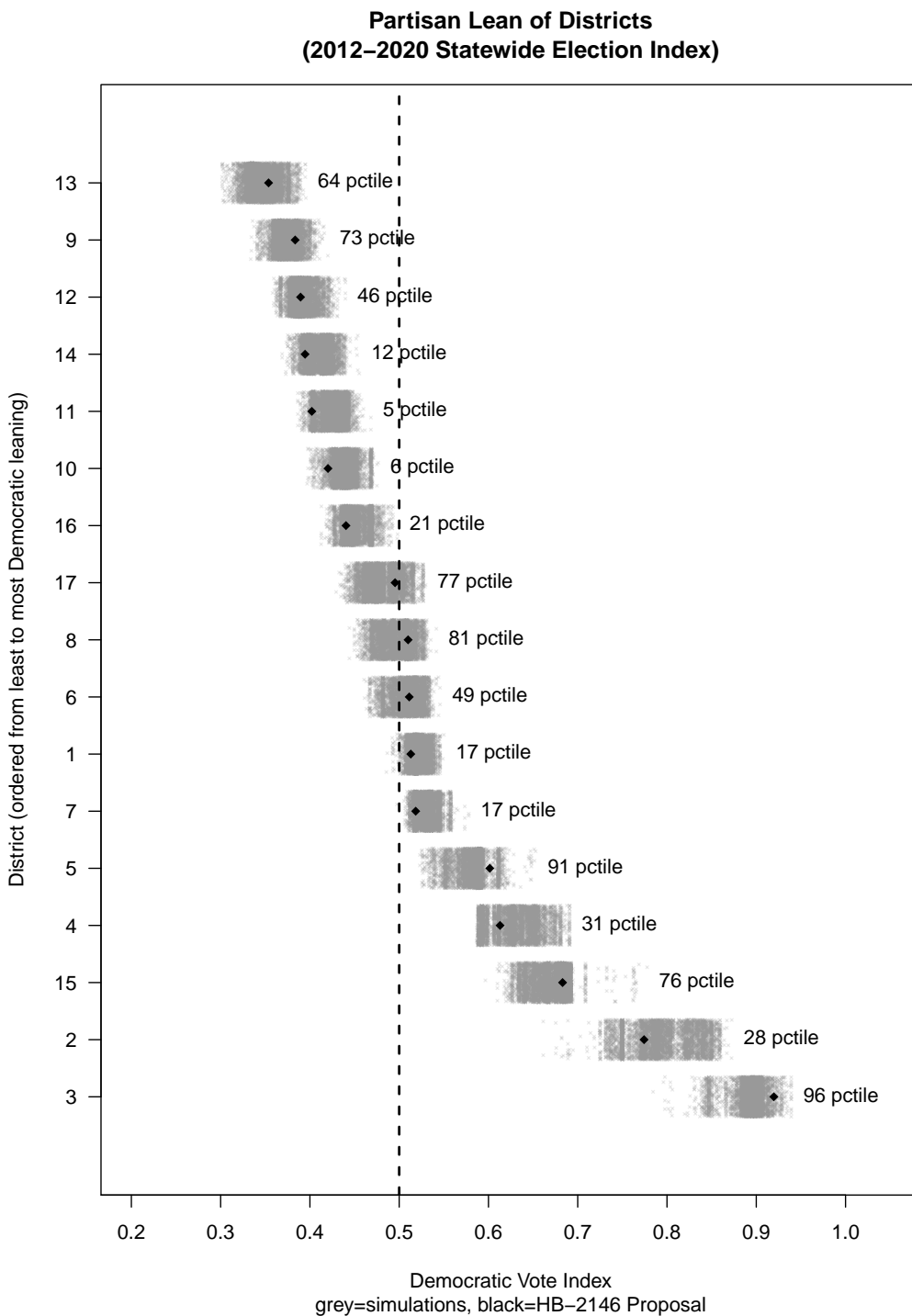
Looking district by district, we see that in most cases the HB2146 plan sits well within the middle of the distribution of simulations. In a few cases it stands out as an outlier, and I consider each of these cases one by one. In the 5th and 6th most Republican districts (Districts 11 and 10 in the HB2146 plan, as labelled on the vertical axis of the figure) the HB2146 plan is at the Republican edge of the simulation results indicating that the HB2146 plan is more Republican than only five and six percent of the simulations in these two districts, respectively. However, both of these districts are squarely Republican leaning, even in the simulations that are more favorable to Democrats.

In the 5th most Republican district (District 11 in the HB2146 plan) the partisan index of the HB2146 plan is 0.40 while the median simulation has a partisan index of 0.42. In other words, District 11 is only two points away from the median simulation in this district, and a partisan index of 0.40 or 0.42 would be a safely Republican districts in either case.

The same is true of the 6th most Republican district in the simulations, which is District 10 in the HB2146 plan. This district has a partisan index of 0.42 in the HB2146 plan while the median simulation has a partisan index of 0.435. In other words, District 10 is only 1.5 percentage points away from the median simulation in this district, and a partisan index of 0.42 or 0.435 would be a safely Republican districts in either case. In other words, in these two districts, the position of the HB2146 plan in relation to the median simulation will have minimal real-world impact on the electoral outcomes in those districts.

As described above, the HB2146 plan produces five districts that are extremely competitive with a partisan index within two percentage points of 0.50 (Districts 17, 8, 6, 1, and 7). In two of those five districts, the proposal is more Democratic than the median partisan index in the simulations (Districts 17 and 8), is very near the median simulation in one of the districts (District 6), and in two of these districts (Districts 1 and 7) the HB2146 plan is more Republican than the median simulation. Thus, in the districts where a shift of a few percentage points really could make a difference in the party that wins a congressional seat, the HB2146 plan is balanced between favoring Democrats in 2 of the districts, Republicans in 2 of the districts, and neither party in 1 of the districts when compared to the distribution of simulation results.

Figure 4: Partisan Composition of HB2146 plan and Simulations



Note: The grey ‘clusters’ show the range of vote margins for each district, ordered from least Democratic to most Democratic in the 50,000 simulations. The black dot inside of each cluster shows the partisan index for the HB2146 plan. Next to each cluster is the percentile, or relative position of the HB2146 plan within each cluster of simulation results for each district.

5.5 Median-Mean Difference

Another common measure of the partisan slant of a districting plan is the median-mean difference.¹⁸ The median-mean measure is calculated by taking the median value of the partisan index across all 17 districts in a plan (the value for which half of the observations are smaller and half the observations are larger) and subtracting from that the mean partisan index (the simple average) of all of the districts from the median. Consider a simple example in which there are three districts in a plan with partisan indices of 0.91, 0.46, and 0.40. To find the median we simply look for the district for which there is one district larger and one district smaller (0.46 in this case). To find the mean, we simply take the average by dividing the sum of the partisan indices by the number of districts. In this case, $(0.91+0.46+0.40)/3 = 0.59$. The median-mean value would then be $0.46-0.59 = -0.13$. As in this example, in Figure 5 I take the Democratic vote share of the median district minus the mean Democratic vote share for all 17 districts in the HB2146 plan. Negative numbers indicate a districting plan that favors Republicans and positive numbers indicate a slant in favor of Democrats.

The median-mean test is essentially a test of skew, or in the context of redistricting packing voters into legislative districts. If voters of one party are packed into few districts, those districts will have very high vote shares for one party and will pull the value of the mean district partisanship away from the district partisan index of the median district.¹⁹ This indicates that the party that is packed into the districts with overwhelming majorities will have a harder time translating their votes into seats.²⁰

¹⁸See Best, Robin E., Shawn J. Donahue, Jonathan Krasno, Daniel B. Magleby, and Michael D. McDonald. "Considering the prospects for establishing a packing gerrymandering standard." *Election Law Journal* 17, no. 1 (2018): 1-20. Warrington, Gregory S. "A comparison of partisan-gerrymandering measures." *Election Law Journal: Rules, Politics, and Policy* 18, no. 3 (2019): 262-281. Wang, Samuel S-H. "Three tests for practical evaluation of partisan gerrymandering." *Stan. L. Rev.* 68 (2016): 1263. McDonald, Michael D., and Robin E. Best. "Unfair partisan gerrymanders in politics and law: A diagnostic applied to six cases." *Election Law Journal* 14, no. 4 (2015): 312-330.

¹⁹A helpful analogy is to imagine a representative group of 100 Americans gathered at a restaurant. The median and mean incomes of the 100 customers are likely quite similar. If Bill Gates walks into the restaurant, the median income of the now 101 patrons will not shift by much at all, but the mean income will jump significantly, possibly by several million dollars.

²⁰McDonald, Michael D., and Robin E. Best. "Unfair partisan gerrymanders in politics and law: A diagnostic applied to six cases." *Election Law Journal* 14, no. 4 (2015): 312-330.

One drawback of the median-mean test is that it does not account for the natural clustering of voters that occurs in Pennsylvania and other states. This can be remedied by also computing the median-mean difference for the simulated districting plans that also consider for the geographic distribution of voters in the state. This allows us to make an apples-to-apples comparison that holds the political geography of the state constant. Figure 5 displays the results of the median-mean measure for the simulations (in grey) and the HB2146 plan (solid black line). The fact that the distribution of results from the simulations is mostly less than zero shows that the geography of Pennsylvania leads to a natural advantage for Republicans due to the dense clustering of Democratic voters in Philadelphia and Pittsburgh even when districts are drawn using strictly non-partisan criteria.

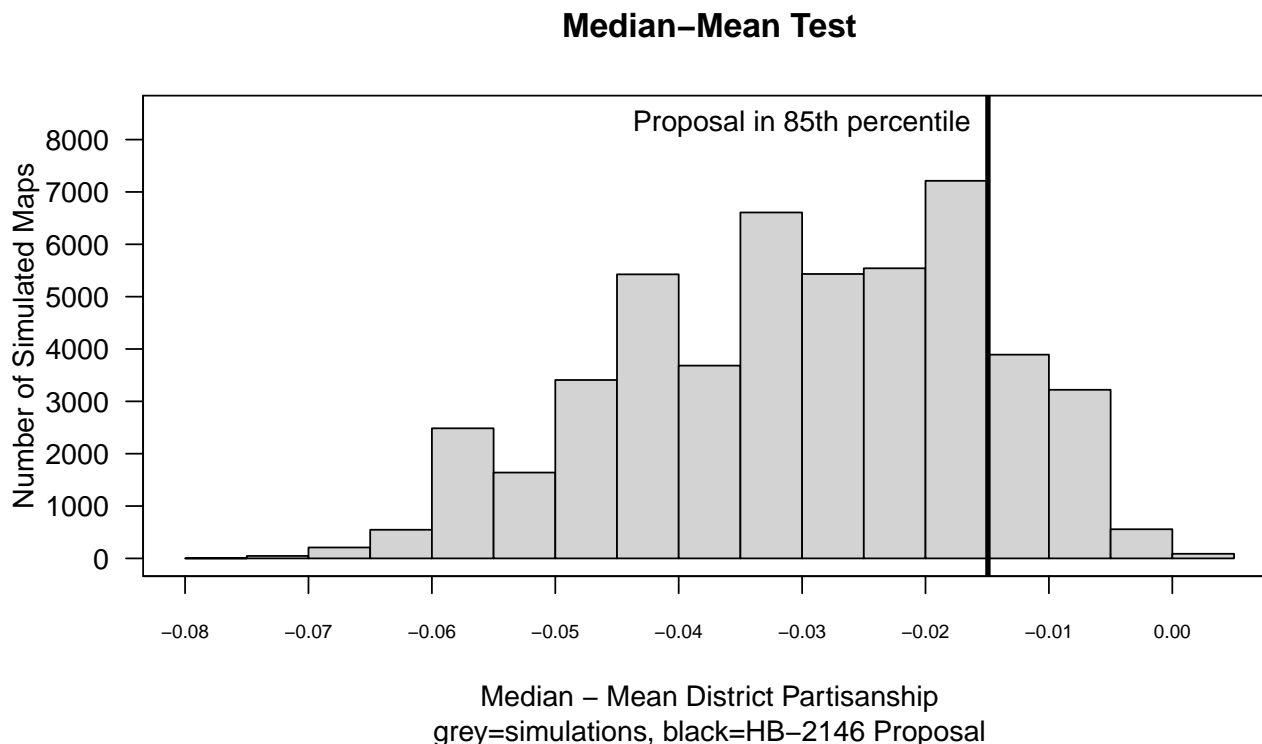
The solid black line shows the results of the HB2146 plan. There are two major points to take away from the results. First, without comparing to the simulations, the HB2146 plan is very nearly unbiased. The median-mean value for the HB2146 plan is -0.015, which is very close to zero.²¹ In other words, the median district and the mean district in the HB2146 plan are different by less than two percentage points. Second, when comparing the HB2146 plan to the simulations, the HB2146 plan is more favorable to Democratic voters than the vast majority of the simulated districting plans. The HB2146 plan has a median-mean value that is smaller (in absolute value) than 85 percent of the simulated plans. In other words, using only the non-partisan criteria described above to draw the simulated districts, 85% of them generate districts with a greater median-mean value, indicating a less efficient distribution of Democratic voters than the HB2146 plan contains.

5.6 Efficiency Gap

The efficiency gap is another common redistricting metric and is similar to the median-mean measure in that it looks for the degree to which a party's votes statewide are translated

²¹For example, the congressional plan that was challenged in the *League of Women Voters of Pennsylvania* case in 2017-2018 showed the congressional district plan had a median-mean difference of -0.059. The post-LWV case 2020 congressional plan had a median-mean difference of tktk.

Figure 5: Median-Mean Measure of HB2146 plan and Simulations



Note: Values calculated by taking the Democratic partisan index of the median district minus the mean of all 17 districts' partisan indices. Negative numbers indicate a districting plan that favors Republicans and positive numbers indicate a slant in favor of Democrats. The grey histogram shows the results for each of the simulations. The black bar shows the results for the HB2146 plan. The proposal shows very little absolute bias (it is very close to zero) and is more favorable to Democrats than 85% of the simulated districts.

into seats in each district.²² A description of this measure provided by the Brennan Center for Justice summarizes it well: “[T]he efficiency gap counts the number of votes each party wastes in an election to determine whether either party enjoyed a systematic advantage in turning votes into seats. Any vote cast for a losing candidate is considered wasted, as are all the votes cast for a winning candidate in excess of the number needed to win.”²³ In other words, the ideal strategy for a political to maximize the impact of their voters is to distribute

²²McGhee, Eric. “Measuring efficiency in redistricting.” *Election Law Journal: Rules, Politics, and Policy* 16, no. 4 (2017): 417-442. Veomett, Ellen. “Efficiency gap, voter turnout, and the efficiency principle.” *Election Law Journal: Rules, Politics, and Policy* 17, no. 4 (2018): 249-263. Plener Cover, Benjamin. “Quantifying partisan gerrymandering: An evaluation of the efficiency gap proposal.” *Stan. L. Rev.* 70 (2018): 1131.

²³https://www.brennancenter.org/sites/default/files/legal-work/How_the_Efficiency_Gap_Standard_Works.pdf

them as evenly as possible across districts so as to win by a narrow margin in the district they win and lose by very large margins in the districts where they lose. Put another way, ‘win by a little, lose by a lot’ is the ideal strategy for a party to maximize their impact of their voters.²⁴

The Brennan Center provides a simple example of how the efficiency gap is calculated:

To understand how the efficiency gap works, consider a hypothetical state with 500 residents that is divided into five legislative districts, each with 100 voters. In the most recent election cycle, Democrats won Districts 1 and 2 by wide margins, while Republicans won Districts 3, 4, and 5 in closer races. Overall, Democratic candidates received 55 percent of the statewide vote but won just 40 percent of the legislative seats, while Republican candidates received 45 percent and won 60 percent of the seats. The table below shows the election results for each district.²⁵

District	D votes	R Votes	Result
1	75	25	D wins
2	60	40	D wins
3	43	57	R wins
4	48	52	R wins
5	49	51	R wins
Total:	275	225	

Once we have the election results, the first step is to consider the number of “wasted votes” in each district. Because the Republican candidate in this example lost in District 1, all 25 of the votes cast for that candidates are wasted. The Democratic candidate in District 1 won, but by 24 more votes than would be necessary (since all that is needed is 51 votes to win). Thus, there are 24 wasted Democratic votes in this district. Taking the difference indicates that there was a net of 1 Republican wasted vote in this district.

²⁴Of course, parties have other priorities and winning by a single vote might not be their ideal scenario in reality.

²⁵https://www.brennancenter.org/sites/default/files/legal-work/How_the_Efficiency_Gap_Standard_Works.pdf

The efficiency gap is then calculated as $\text{Efficiency Gap} = (\text{Total Democratic Wasted Votes} - \text{Total Republican Wasted Votes}) / \text{Total Votes}$. In order to account for uneven turnout across districts and elections, the efficiency gap formula can be re-expressed as the following equation: $\text{Efficiency Gap} = (\text{Seat Margin} - 50\%) - 2(\text{Vote Margin} - 50\%)$ where the seat margin is the fraction of seats won by Democrats minus 0.50 and the vote margin is the fraction of votes won by Democratic candidates statewide minus 0.50.²⁶

In this example and in Figure 5 I use the Democratic seat and vote margins which means that negative efficiency gap numbers indicate a districting plan that favors Republican voters and positive numbers indicate a plan that favors Democratic voters. As with the median-mean test, the efficiency gap has the drawback of not accounting for the natural clustering of Democratic voters in Pennsylvania and other states. However, as before I remedy this by also computing the efficiency gap for the simulated districting plans that also must account for the geographic distribution of voters in the state. This allows us to make an apples-to-apples comparison that accounts for political geography. Figure 6 displays the results of the efficiency-gap measure for the simulations (in grey) and the HB2146 plan (solid black line). The distribution of results from the simulations show that the geography of Pennsylvania leads to a naturally arising advantage for Republicans due to the dense clustering of Democratic voters in Philadelphia and Pittsburgh.²⁷

The solid black line shows the results of the HB2146 plan. There are two major points to take away from the results. First, the HB2146 plan is very nearly unbiased. The efficiency gap for the HB2146 plan is -0.02, which is very close to zero.²⁸ In other words, in the HB2146 plan Democratic votes are not much more likely than Republican votes to be “wasted” across the districts. Second, when comparing the HB2146 plan to the simulations, the HB2146

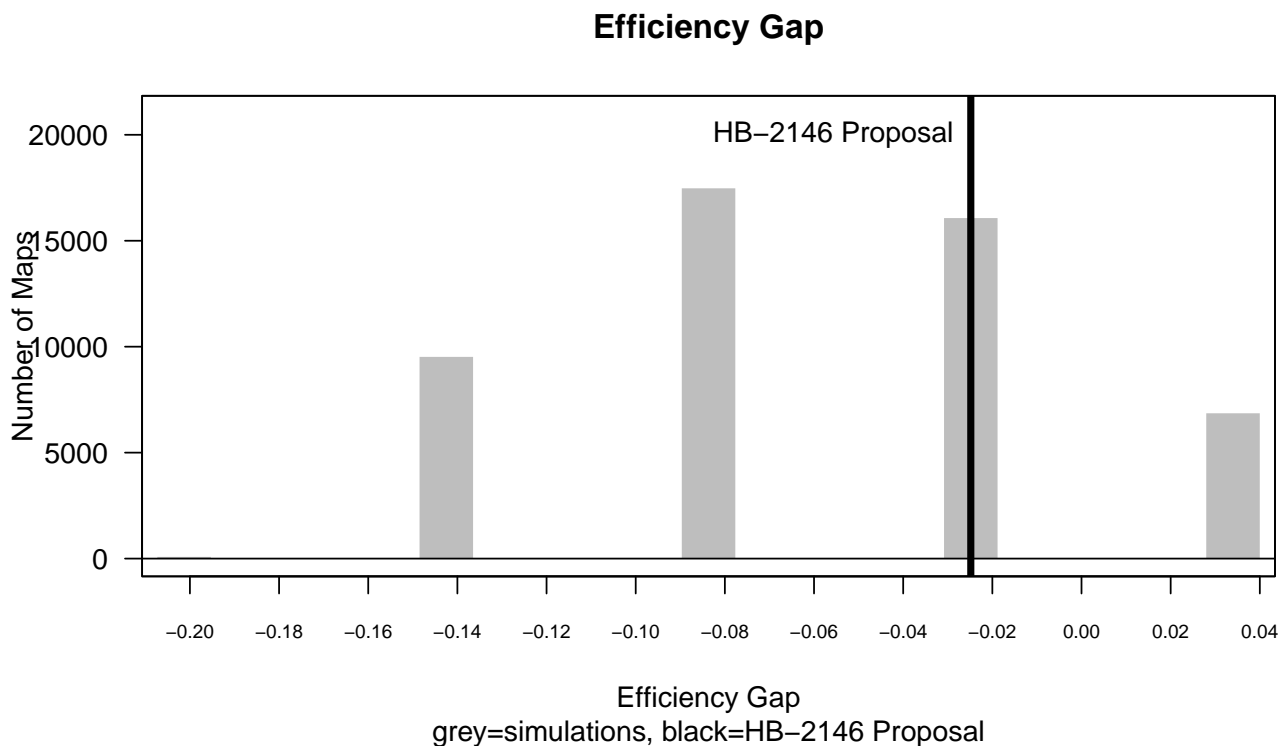
²⁶See McGhee, Eric. “Measuring efficiency in redistricting.” *Election Law Journal: Rules, Politics, and Policy* 16, no. 4 (2017): 417-442.

²⁷Because the efficiency gap is a measure of seat shares, it will be a ‘chunky’ measure with values for each seat won or lost in a plan, unlike the median-mean measure which is a more continuous measure that changes based on small changes in the margin of victory in each district.

²⁸For example, the congressional plan that was challenged in the *League of Women Voters of Pennsylvania* case in 2018 showed the congressional district plan had a pro-Republican efficiency gap of between -0.15 and -0.20. The post-LWV 2020 congressional map had an efficiency gap of tktk.

plan is more favorable to Democratic voters than the majority of the simulated districting plans. The HB2146 plan has an efficiency gap that is smaller (in absolute value) than all other outcomes in the simulated plans. While some of the simulated plans generate pro-Democratic efficiency gaps, they are larger in absolute terms and would be more biased than the HB2146 plan in favor of Democrats instead of the very slight lean towards Republicans exhibited in the HB2146 plan. In other words, using only the non-partisan criteria described above to draw the simulated districts, the HB2146 plan is in agreement with the least biased outcome in the simulations.

Figure 6: **Efficiency Gap Measure of HB2146 plan and Simulations**



Note: Distribution of efficiency gap among simulations shown in grey and the HB2146 plan shown as the solid black line. Negative values indicate plans that have a Republican advantage and positive values indicate plans that have a Democratic advantage. The HB2146 plan has a very small efficiency gap of -0.02 and is more favorable to Democratic voters than the majority of the non-partisan simulations, which have larger (more negative) efficiency gap values.

5.7 Expected Seats from Uniform Swing

Another measure of redistricting considers how a plan performs, on average, under a variety of different electoral environments. While the partisan index does this to a degree by averaging across a number of elections and years, I present another measure here where I report the results of applying a randomly chosen uniform swing to the election results in the HB2146 plan and the simulations. A uniform swing is simply a way of asking what would the election results in the districts look like if a certain percentage were added uniformly to each district in the plan.²⁹ In other words, a uniform swing of 1.3 points in the Democratic direction would simply add 0.013 to the partisan index of each district while a uniform swing of 2.5 points in the Republican direction would simply subtract 0.025 from the partisan index of each district. Of course, a swing of 1 points is more likely than a swing of 5 or 6 points as large wave elections are more rare than elections that perform closer to the average performance of each party. To account for this, I randomly apply 10,000 uniform swings to the simulations and the partisan index of the HB2146 plan and calculate the average of the number of seats that are held by Democrats in the HB2146 plan and each of the 50,000 simulations. The value of the uniform swing is chosen from a normal distribution that is centered at zero with a standard deviation of 3 percentage points.³⁰ Thus, small swings are more likely than large swings, but large swings of 3, 4, 5, and even 6 percentage points are possible, just as we occasionally observe large electoral waves in national politics. This gives us an idea of how a plan performs, on average, under a variety of potential electoral environments.

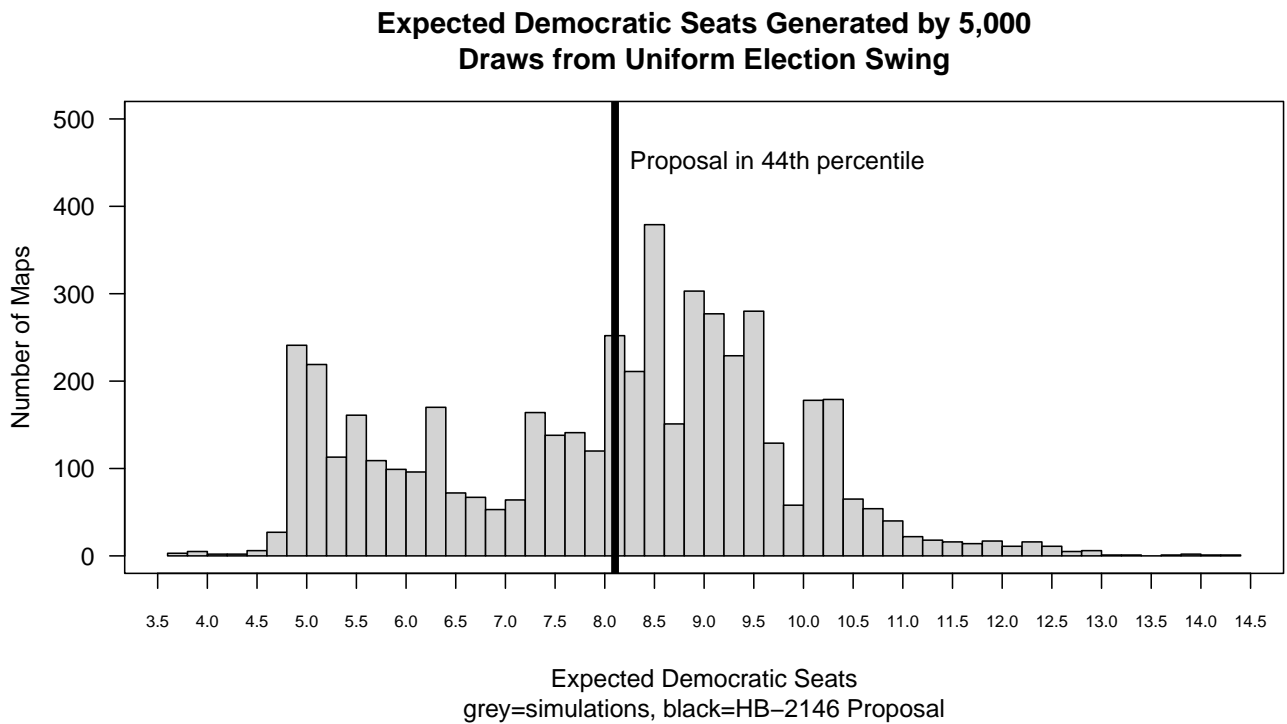
The result of this process is a measure of the expected number of Democratic seats that a plan will produce under a variety of different electoral conditions — some good for

²⁹See Jackman, Simon. "The predictive power of uniform swing." *PS: Political Science & Politics* 47, no. 2 (2014): 317-321 for a discussion of the concept of a uniform swing in elections. See Expert Report of Dr. Wesley Pegden in *Harper v. Hall*, Wake County North Carolina, No. 21 CVS 500085 for another example of using a uniform swing to calculate expected seat shares in redistricting.

³⁰3 percentage points is approximately the standard deviation of all of the statewide election results used in creating the 2012-2020 partisan index.

one party, some good for the other party, and some that are about average for both parties. Figure 7 shows the results of this process. The grey distribution shows the expected number of Democratic seats after applying the 5,000 draws from the uniform swing to the 50,000 simulations. Some of the simulated plans are very favorable to Republicans (with expected Democratic seat shares near 5) while other plans are very favorable to Democrats (with expected seat shares of 12 Democratic seats). The HB2146 plan, however, is nearly exactly in the middle of this distribution. The proposal generates an expected seats of 8.10 and is in the 44th percentile of the distribution of the simulated results. In other words, 44 percent of the simulations are worse for Democrats and 55 percent the simulations are better for Democrats compared to the HB2146 plan. The plan is positioned nearly in the middle of the non-partisan simulations on this measure.

Figure 7: Expected Seats from Uniform Swing of HB2146 plan and Simulations



Note: Distribution of expected seats in the HB2146 plan (black line) and the simulations (grey distribution) after applying 5,000 uniform swings to the partisan index. The value of each uniform swing is chosen from a normal distribution that is centered at zero with a standard deviation of 3 percentage points.

5.8 Considerations of Race

Table 3 shows the non-Hispanic Black voting age population percent of each district and the non-White voting age population percent of each district in the HB2146 plan. The districts are ordered from lowest to highest percentage in each category. The HB2146 plan contains one district (District 3) in Philadelphia that is just shy of being majority Black with a 49.82% non-Hispanic Black voting age population. Additionally, District 2 has a 59.60% non-White voting age population. District 15 has a 32.5% non-White voting age population.

Table 2: District-by-District Racial Composition of HB2146 plan

District rank	District Number	NHBVAP	District Number	Non-White
17	12	2.1%	14	7.2%
16	9	2.3%	12	9.0%
15	14	2.4%	16	10.8%
14	11	3.3%	9	11.6%
13	1	3.8%	17	12.2%
12	17	3.9%	13	13.8%
11	16	3.9%	1	18.1%
10	13	4.9%	11	18.1%
9	7	5.2%	8	18.3%
8	6	5.3%	10	20.0%
7	8	5.4%	4	25.6%
6	10	6.8%	6	26.4%
5	4	9.6%	7	27.5%
4	15	17.5%	15	28.3%
3	5	19.2%	5	32.8%
2	2	21.9%	2	57.1%
1	3	52.2%	3	68.6%

One potential criticism that some may raise of the simulations is that they do not take into account racial data when drawing district boundaries, and that once this constraint is imposed it may shift the partisan composition of the remaining districts in a way that the distribution of simulations may look different when racial factors are explicitly considered. This criticism, however, is unwarranted, as the explicit consideration of race, if anything, actually brings the distribution of simulations more in line with the HB2146 plan.

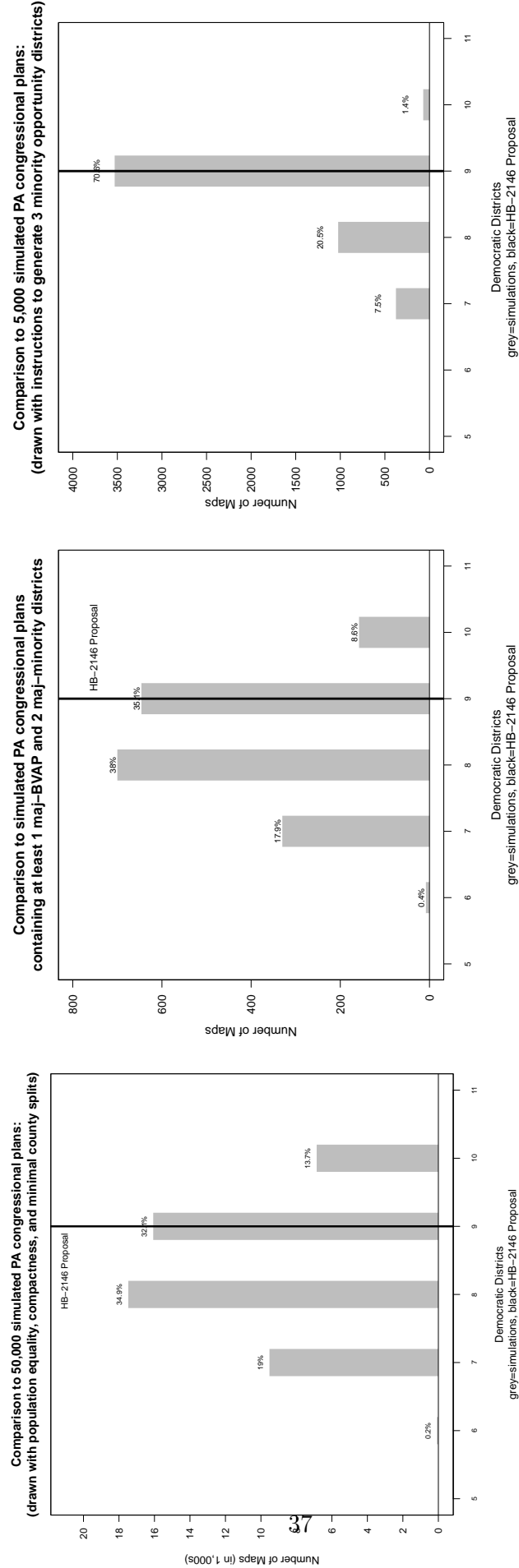
Figure 8 below shows this. The left panel of Figure 8 is the same as Figure 3 in

the earlier section of this report and shows the partisan distribution of the simulations and the location of the HB2146 plan. The middle panel of the figure subsets the race-blind simulations to the 1,842 plans that, while race was not explicitly considered, nevertheless contain both a majority-black district as well as an additional majority-minority district.³¹ Comparing the two panels shows that the distributions are extremely similar. The probability of a 9-D map, which is what the HB2146 plan generates, is nearly identical across the two sets of simulations (35.1% in the race-blind simulations, 32.1% in the race-filtered simulations).

The right panel in Figure 8 is the distribution of Democratic-leaning seats derived from a separate set of simulations that explicitly consider race. In this race-conscious set of simulations I instruct the model to ensure that every plan contains three districts that have at least a 35% non-white voting age population. These districts are often referred to as minority opportunity districts. I choose to instruct the model to generate three of these districts as it is similar to the number of minority opportunity districts generated by the HB2146 plan and the plans put forward recently by Governor Wolf. Other than the use of racial data to inform the construction of minority opportunity districts, the other parameters and data used in the two sets of simulations are identical in every other way. The right panel of Figure 8 shows that the results of the race-conscious simulations is a general reduction in the variation in the number of Democratic-leaning seats generated by the simulations. The probability of a 7-D or 8-D map has decreased substantially while there are no simulations that generate a 6-D map and only 1.4% of the simulations generate a 10-D map. A map with 9 Democratic-leaning districts is now the most common outcome with 70.6% of the simulations generating this result.

³¹While a reduction from 50,000 to 1,842 simulated plans is substantial, 1,842 is still a large number of plans to compare against and is larger than many simulations presented in other expert reports in recent redistricting litigation and is still large enough to provide a sufficient sample of maps to compare to.

Figure 8: Seats Carried by Democrats in Race-Blind and Race-Conscious Simulations



Note: The left panel contains the results of the 50,000 simulations that do not consider race when districts are drawn. The middle panel considers the 1,832 districts that, even though they were drawn without any racial data, nevertheless contain a majority Black district and an additional majority minority district. The right panel is the distribution from 5,000 simulations that are drawn with racial data and instructions to generate three districts with at least a 35% minority voting age population.

6 Conclusion

Based on the evidence and analysis presented above, my opinions regarding the HB2146 plan for congressional districts in Pennsylvania can be summarized as follows:

- The contemporary political geography of Pennsylvania is such that Democratic majorities are geographically clustered in the largest cities of the state while Republican voters dominate the suburban and rural portions of the state.
- This geographic clustering in cities puts the Democratic Party at a natural disadvantage when single-member districts are drawn. Specifically, districts drawn to be contiguous, compact, and contain minimal county and municipal splits will naturally create several districts in the Philadelphia and Pittsburgh areas that contain substantial Democratic majorities with many “wasted votes.”
- Based on a comparison between the HB2146 plan, and a set of 50,000 simulated maps, the HB2146 plan is a fair plan with no evidence of partisan gerrymandering across a number of different measures used to assess the fairness of a map.
- Based on an index of statewide elections from 2012-2020, the HB2146 plan generates nine Democratic-leaning districts and eight Republican-leaning districts.
- Based on the same index of statewide elections from 2012-2020, six of the districts in the HB2146 plan will likely be competitive with candidates from both parties having a realistic possibility of winning the seats. Five of these competitive districts are *extremely* competitive, with a partisan index within two percentage points of an even 50/50 split.
- Compared to a second set of simulations that explicitly consider the creation of minority opportunity districts, the HB2146 plan is similarly unbiased. The race-conscious simulations reduce the variation in Democratic-leaning districts substantially, mak-

ing nine Democratic-leaning districts the overwhelmingly most likely outcome in the simulations.

- Based on these commonly-used measures of redistricting fairness, the HB2146 plan is unbiased, and when compared to the simulations on these same metrics is balanced between occasionally having a slight Republican benefit and occasionally providing a slight benefit to Democratic voters.

I am being compensated for my time in preparing this report at an hourly rate of \$400/hour. My compensation is in no way contingent on the conclusions reached as a result of my analysis.

Michael Jay Barber

A handwritten signature in black ink, appearing to read "Michael Barber". The signature is written in a cursive, flowing style with a large initial "M" and a long, sweeping tail.

7 Appendix A: Additional Statistics

Table 3: District-by-District Compactness - Polsby-Popper

District rank	District Number	Polsby-Popper
17	6	0.20
16	2	0.23
15	3	0.24
14	14	0.24
13	17	0.24
12	4	0.25
11	5	0.26
10	13	0.29
9	15	0.29
8	9	0.30
7	8	0.35
6	7	0.37
5	1	0.40
4	12	0.42
3	10	0.45
2	16	0.49
1	11	0.50

Split Municipalities:

- Philadelphia*
- Stowe Township, Allegheny County
- Centre Township, Berks County
- Summit Township, Butler County
- East Hanover Township, Butler County
- Stonycreek Township, Cambria County
- West Whiteland Township, Chester County
- Pine Creek Township, Clinton County
- Silver Spring Township, Cumberland County
- Stroud Township, Dauphin County
- Luzerne Borough, Luzerne County
- Horsham Township, Montgomery County
- Buffalo Township, Union County
- Amwell Township, Washington County
- Independence Township, Washington County
- North Franklin Township, Washington County

*Population of the city is larger than a single congressional district and therefore will need to be split between multiple districts.

Split Counties:

- Allegheny County*
- Berks County
- Butler County
- Cambria County
- Chester County
- Clinton County
- Cumberland County
- Dauphin County
- Luzerne County
- Monroe County
- Montgomery County*
- Philadelphia County*
- Snyder County
- Union County
- Washington County

*Population of the county is larger than a single congressional district and therefore will need to be split between multiple districts.

Number of Democratic-leaning Districts using Alternative Election Indices:

- All 2012-2020 statewide elections: 9
- All 2014-2020 statewide elections: 8
- 2016-2020 index used by Dave's Redistricting: 9
- Index used by Planscore.com: 8

Appendix B: Curriculum Vitae

Michael Jay Barber

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Brigham Young University
Department of Political Science
724 KMBL
Provo, UT 84602

barber@byu.edu
<http://michaeljaybarber.com>
Ph: (801) 422-7492

ACADEMIC APPOINTMENTS

Brigham Young University, Provo, UT

August 2020 - present Associate Professor, Department of Political Science
2014 - July 2020 Assistant Professor, Department of Political Science
2014 - present Faculty Scholar, Center for the Study of Elections and Democracy

EDUCATION

Princeton University Department of Politics, Princeton, NJ

Ph.D., Politics, July 2014

- Advisors: Brandice Canes-Wrone, Nolan McCarty, and Kosuke Imai
- Dissertation: "Buying Representation: the Incentives, Ideology, and Influence of Campaign Contributions on American Politics"
- 2015 Carl Albert Award for Best Dissertation, Legislative Studies Section, American Political Science Association (APSA)

M.A., Politics, December 2011

Brigham Young University, Provo, UT

B.A., International Relations - Political Economy Focus, April, 2008

- *Cum Laude*

RESEARCH INTERESTS

American politics, congressional polarization, political ideology, campaign finance, survey research

PUBLICATIONS

19. **"Ideological Disagreement and Pre-emption in Municipal Policymaking"**
with Adam Dynes
Forthcoming at *American Journal of Political Science*
18. **"Comparing Campaign Finance and Vote Based Measures of Ideology"**
Forthcoming at *Journal of Politics*
17. **"The Participatory and Partisan Impacts of Mandatory Vote-by-Mail"**, with
John Holbein
Science Advances, 2020. Vol. 6, no. 35, DOI: 10.1126/sciadv.abc7685
16. **"Issue Politicization and Interest Group Campaign Contribution Strategies"**,
with Mandi Eatough
Journal of Politics, 2020. Vol. 82: No. 3, pp. 1008-1025

15. **“Campaign Contributions and Donors’ Policy Agreement with Presidential Candidates”**, with Brandice Canes-Wrone and Sharece Thrower
Presidential Studies Quarterly, 2019, 49 (4) 770–797
14. **“Conservatism in the Era of Trump”**, with Jeremy Pope
Perspectives on Politics, 2019, 17 (3) 719–736
13. **“Legislative Constraints on Executive Unilateralism in Separation of Powers Systems”**, with Alex Bolton and Sharece Thrower
Legislative Studies Quarterly, 2019, 44 (3) 515–548
Awarded the Jewell-Loewenberg Award for best article in the area of subnational politics published in *Legislative Studies Quarterly* in 2019
12. **“Electoral Competitiveness and Legislative Productivity”**, with Soren Schmidt
American Politics Research, 2019, 47 (4) 683–708
11. **“Does Party Trump Ideology? Disentangling Party and Ideology in America”**, with Jeremy Pope
American Political Science Review, 2019, 113 (1) 38–54
10. **“The Evolution of National Constitutions”**, with Scott Abramson
Quarterly Journal of Political Science, 2019, 14 (1) 89–114
9. **“Who is Ideological? Measuring Ideological Responses to Policy Questions in the American Public”**, with Jeremy Pope
The Forum: A Journal of Applied Research in Contemporary Politics, 2018, 16 (1) 97–122
8. **“Status Quo Bias in Ballot Wording”**, with David Gordon, Ryan Hill, and Joe Price
The Journal of Experimental Political Science, 2017, 4 (2) 151–160.
7. **“Ideologically Sophisticated Donors: Which Candidates Do Individual Contributors Finance?”**, with Brandice Canes-Wrone and Sharece Thrower
American Journal of Political Science, 2017, 61 (2) 271–288.
6. **“Gender Inequalities in Campaign Finance: A Regression Discontinuity Design”**, with Daniel Butler and Jessica Preece
Quarterly Journal of Political Science, 2016, Vol. 11, No. 2: 219–248.
5. **“Representing the Preferences of Donors, Partisans, and Voters in the U.S. Senate”**
Public Opinion Quarterly, 2016, 80: 225–249.
4. **“Donation Motivations: Testing Theories of Access and Ideology”**
Political Research Quarterly, 2016, 69 (1) 148–160.
3. **“Ideological Donors, Contribution Limits, and the Polarization of State Legislatures”**
Journal of Politics, 2016, 78 (1) 296–310.
2. **“Online Polls and Registration Based Sampling: A New Method for Pre-Election Polling”** with Quin Monson, Kelly Patterson and Chris Mann.
Political Analysis 2014, 22 (3) 321–335.
1. **“Causes and Consequences of Political Polarization”** In *Negotiating Agreement in Politics*. Jane Mansbridge and Cathie Jo Martin, eds., Washington, DC: American Political Science Association: 19–53. with Nolan McCarty. 2013.
 - Reprinted in *Solutions to Political Polarization in America*, Cambridge University Press. Nate Persily, eds. 2015
 - Reprinted in *Political Negotiation: A Handbook*, Brookings Institution Press. Jane Mansbridge and Cathie Jo Martin, eds. 2015

- AVAILABLE
WORKING PAPERS
- “**Misclassification and Bias in Predictions of Individual Ethnicity from Administrative Records**” (Revise and Resubmit at *American Political Science Review*)
 - “**Taking Cues When You Don’t Care: Issue Importance and Partisan Cue Taking**” with Jeremy Pope (Revise and Resubmit)
 - “**A Revolution of Rights in American Founding Documents**” with Scott Abramson and Jeremy Pope (Conditionally Accepted)
 - “**410 Million Voting Records Show the Distribution of Turnout in America Today**” with John Holbein (Revise and Resubmit)
 - “**Partisanship and Trolleyology**” with Ryan Davis (Under Review)
 - “**Who’s the Partisan: Are Issues or Groups More Important to Partisanship?**” with Jeremy Pope (Revise and Resubmit)
 - “**Race and Realignment in American Politics**” with Jeremy Pope (Revise and Resubmit)
 - “**The Policy Preferences of Donors and Voters**”
 - “**Estimating Neighborhood Effects on Turnout from Geocoded Voter Registration Records.**” with Kosuke Imai
 - “**Super PAC Contributions in Congressional Elections**”
- WORKS IN
PROGRESS
- “**Collaborative Study of Democracy and Politics**” with Brandice Canes-Wrone, Gregory Huber, and Joshua Clinton
 - “**Preferences for Representational Styles in the American Public**” with Ryan Davis and Adam Dynes
 - “**Representation and Issue Congruence in Congress**” with Taylor Petersen
 - “**Education, Income, and the Vote for Trump**” with Edie Ellison
- INVITED
PRESENTATIONS
- “Are Mormons Breaking Up with Republicanism? The Unique Political Behavior of Mormons in the 2016 Presidential Election”
 - Ivy League LDS Student Association Conference - Princeton University, November 2018, Princeton, NJ
 - “Issue Politicization and Access-Oriented Giving: A Theory of PAC Contribution Behavior”
 - Vanderbilt University, May 2017, Nashville, TN

“Lost in Issue Space? Measuring Levels of Ideology in the American Public”

- Yale University, April 2016, New Haven, CT

“The Incentives, Ideology, and Influence of Campaign Donors in American Politics”

- University of Oklahoma, April 2016, Norman, OK

“Lost in Issue Space? Measuring Levels of Ideology in the American Public”

- University of Wisconsin - Madison, February 2016, Madison, WI

“Polarization and Campaign Contributors: Motivations, Ideology, and Policy”

- Hewlett Foundation Conference on Lobbying and Campaign Finance, October 2014, Palo Alto, CA

“Ideological Donors, Contribution Limits, and the Polarization of State Legislatures”

- Bipartisan Policy Center Meeting on Party Polarization and Campaign Finance, September 2014, Washington, DC

“Representing the Preferences of Donors, Partisans, and Voters in the U.S. Senate”

- Yale Center for the Study of American Politics Conference, May 2014, New Haven, CT

CONFERENCE
PRESENTATIONS

Washington D.C. Political Economy Conference (PECO):

- 2017 discussant

American Political Science Association (APSA) Annual Meeting:

- 2014 participant and discussant, 2015 participant, 2016 participant, 2017 participant, 2018 participant

Midwest Political Science Association (MPSA) Annual Meeting:

- 2015 participant and discussant, 2016 participant and discussant, 2018 participant

Southern Political Science Association (SPSA) Annual Meeting:

- 2015 participant and discussant, 2016 participant and discussant, 2017 participant

TEACHING
EXPERIENCE

Poli 315: Congress and the Legislative Process

- Fall 2014, Winter 2015, Fall 2015, Winter 2016, Summer 2017

Poli 328: Quantitative Analysis

- Winter 2017, Fall 2017, Fall 2019, Winter 2020, Fall 2020, Winter 2021

Poli 410: Undergraduate Research Seminar in American Politics

- Fall 2014, Winter 2015, Fall 2015, Winter 2016, Summer 2017

AWARDS AND
GRANTS

2019 BYU Mentored Environment Grant (MEG), American Ideology Project, \$30,000

2017 BYU Political Science Teacher of the Year Award

2017 BYU Mentored Environment Grant (MEG), Funding American Democracy Project, \$20,000

2016 BYU Political Science Department, Political Ideology and President Trump (with Jeremy Pope), \$7,500

2016 BYU Office of Research and Creative Activities (ORCA) Student Mentored Grant x 3

- Hayden Galloway, Jennica Peterson, Rebecca Shuel

2015 BYU Office of Research and Creative Activities (ORCA) Student Mentored Grant x 3

- Michael-Sean Covey, Hayden Galloway, Sean Stephenson

2015 BYU Student Experiential Learning Grant, American Founding Comparative Constitutions Project (with Jeremy Pope), \$9,000

2015 BYU Social Science College Research Grant, \$5,000

2014 BYU Political Science Department, 2014 Washington DC Mayoral Pre-Election Poll (with Quin Monson and Kelly Patterson), \$3,000

2014 BYU Social Science College Award, 2014 Washington DC Mayoral Pre-Election Poll (with Quin Monson and Kelly Patterson), \$3,000

2014 BYU Center for the Study of Elections and Democracy, 2014 Washington DC Mayoral Pre-Election Poll (with Quin Monson and Kelly Patterson), \$2,000

2012 Princeton Center for the Study of Democratic Politics Dissertation Improvement Grant, \$5,000

2011 Princeton Mamdouha S. Bobst Center for Peace and Justice Dissertation Research Grant, \$5,000

2011 Princeton Political Economy Research Grant, \$1,500

OTHER SCHOLARLY
ACTIVITIES

Expert Witness in Nancy Carola Jacobson, et al., Plaintiffs, vs. Laurel M. Lee, et al., Defendants. Case No. 4:18-cv-00262 MW-CAS (U.S. District Court for the Northern District of Florida)

Expert Witness in Common Cause, et al., Plaintiffs, vs. LEWIS, et al., Defendants. Case No. 18-CVS-14001 (Wake County, North Carolina)

Expert Witness in Kelvin Jones, et al., Plaintiffs, v. Ron DeSantis, et al., Defendants, Consolidated Case No. 4:19-cv-300 (U.S. District Court for the Northern District of Florida)

Expert Witness in Community Success Initiative, et al., Plaintiffs, v. Timothy K. Moore, et al., Defendants, Case No. 19-cv-15941 (Wake County, North Carolina)

Expert Witness in Richard Rose et al., Plaintiffs, v. Brad Raffensperger, Defendant, Civil Action No. 1:20-cv-02921-SDG (U.S. District Court for the Northern District of Georgia)

Georgia Coalition for the People's Agenda, Inc., et al., Plaintiffs, v. Brad Raffensberger, Defendant. Civil Action No. 1:18-cv-04727-ELR (U.S. District Court for the Northern District of Georgia)

Expert Witness in Alabama, et al., Plaintiffs, v. United States Department of Commerce; Gina Raimondo, et al., Defendants. Case No. CASE No. 3:21-cv-00211-RAH-ECM-KCN (U.S. District Court for the Middle District of Alabama Eastern Division)

Expert Witness in League of Women Voters of Ohio, et al., Relators, v. Ohio Redistricting Commission, et al., Respondents. Case No. 2021-1193 (Supreme Court of Ohio)

Expert Witness in Regina Adams, et al., Relators, v. Governor Mike DeWine, et al., Respondents. Case No. 2021-1428 (Supreme Court of Ohio)

Expert Witness in Rebecca Harper, et al., Plaintiffs, v. Representative Destin Hall, et al., Defendants (Consolidated Case). Case No. 21 CVS 500085 (Wake County, North Carolina)

ADDITIONAL
TRAINING

EITM 2012 at Princeton University - Participant and Graduate Student Coordinator

COMPUTER
SKILLS

Statistical Programs: R, Stata, SPSS, parallel computing

Updated January 7, 2022

EXHIBIT I

IN THE COMMONWEALTH COURT OF PENNSYLVANIA

No. 464 M.D. 2021

Carol Ann Carter; Monica Parrilla; Rebecca Poyourow; William Tung; Roseanne Milazzo; Burt Siegel; Susan Cassanelli; Lee Cassanelli; Lynn Wachman; Michael Guttman; Maya Fonkeu; Brady Hill; Mary Ellen Balchunis; Tom DeWall; Stephanie McNulty; and Janet Temin,

Petitioners,

vs.

Leigh Chapman, in Her Capacity as Acting Secretary of the Commonwealth of Pennsylvania; and Jessica Mathis, in Her Capacity as Director of the Bureau of Election Services and Notaries,

Respondents.

No. 465 M.D. 2021

Philip T. Gressman; Ron Y. Donagi; Kristopher R. Tapp; Pamela A. Gorkin; David P. Marsh; James L. Rosenberger; Amy Myers; Eugene Boman; Gary Gordon; Liz McMahon; Timothy G. Feeman; and Garth Isaak

Petitioners,

vs.

Leigh Chapman, in Her Capacity as Acting Secretary of the Commonwealth of Pennsylvania; and Jessica Mathis, in Her Capacity as Director of the Bureau of Election Services and Notaries,

Respondents.

AFFIDAVIT OF BILL SCHALLER

I, Bill Schaller, depose and state the following:

1. I am over eighteen years of age and I have personal knowledge of the matters set forth herein.
2. I am employed as Director of Republican Reapportionment Department for the Republican Caucus of the Pennsylvania House of Representatives, and have been employed by the Pennsylvania House of Representatives for 26.5 years.
3. As part of my responsibilities, I am familiar with the congressional redistricting plan passed by the Pennsylvania House of Representatives, House Bill 2146, in the 2021-2022 Session thereof.
4. A true, accurate, and complete rendering of the plan is attached hereto as Exhibit 1.
5. Our office received from the Legislative Data Processing Center (the "LDPC") of the Pennsylvania General Assembly a report that analyzes House Bill 2146. This report was prepared in the ordinary course of business by a person with knowledge, and it is reliable. A true, accurate, and complete copy of the LDPC report is attached hereto as Exhibit 2.
6. A staff member under my direct supervision used our Autobound Edge GIS software to produce a report of the compactness of the House Bill 2146

congressional plan. This report was prepared in the ordinary course of business by a person with knowledge, and it is reliable. A true, accurate, and complete copy of this report is attached hereto as Exhibit 3.

7. A staff member under my direct supervision used our Autobound Edge GIS software to produce a report of the precinct split population breakdowns by district in the House Bill 2146 plan. This report was prepared in the ordinary course of business by a person with knowledge, and it is reliable. A true, accurate, and complete copy of this report is attached hereto as Exhibit 4.

I hereby verify that the foregoing is true and correct to the best of my knowledge, information, and belief. This verification is made subject to the penalties of 18 Pa.C.S. § 4904, relating to unsworn falsification to authorities.

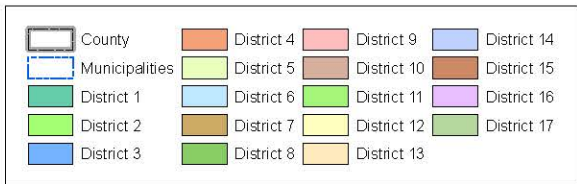
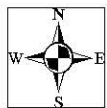
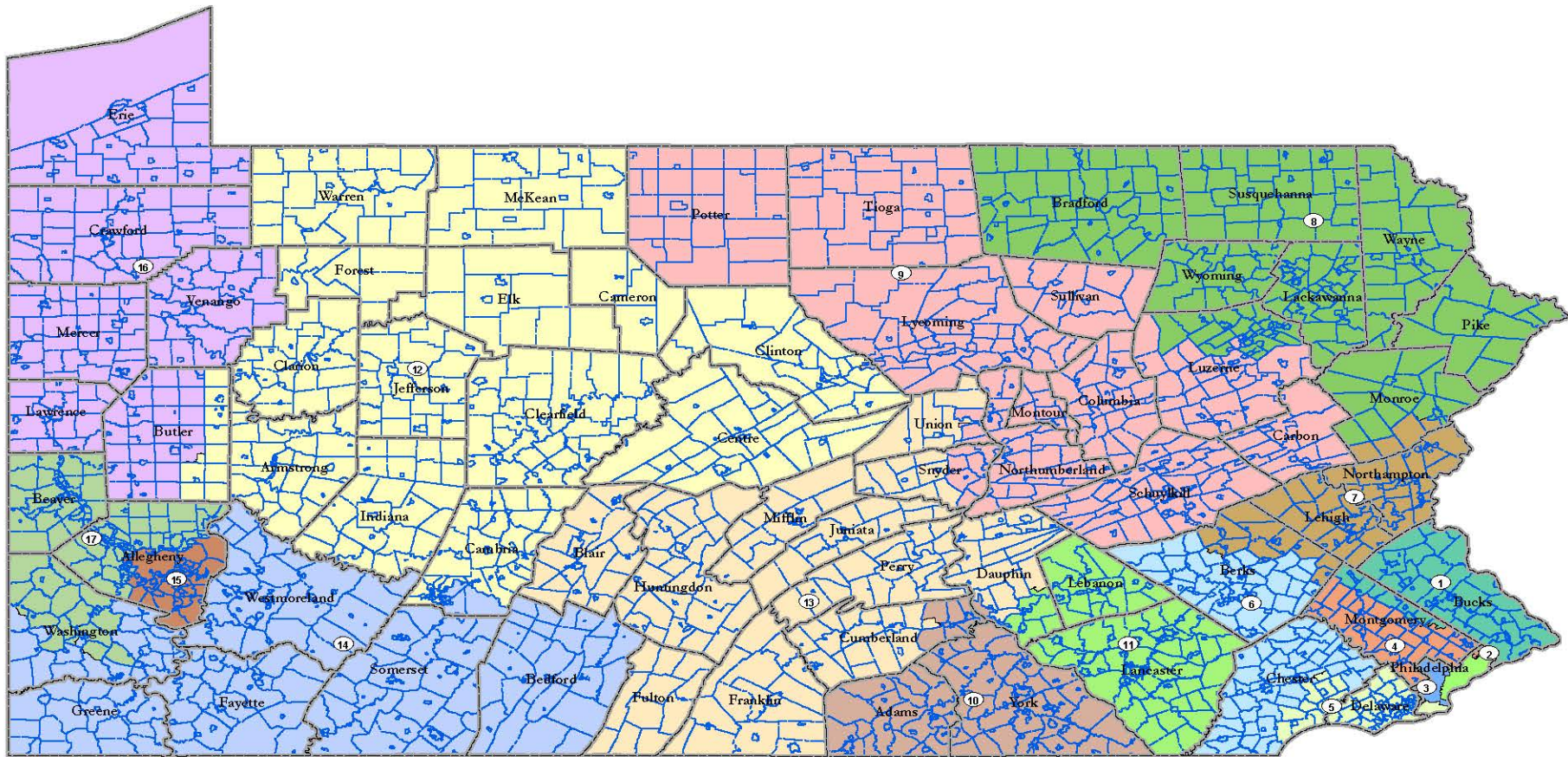
January 24, 2022
Harrisburg, PA

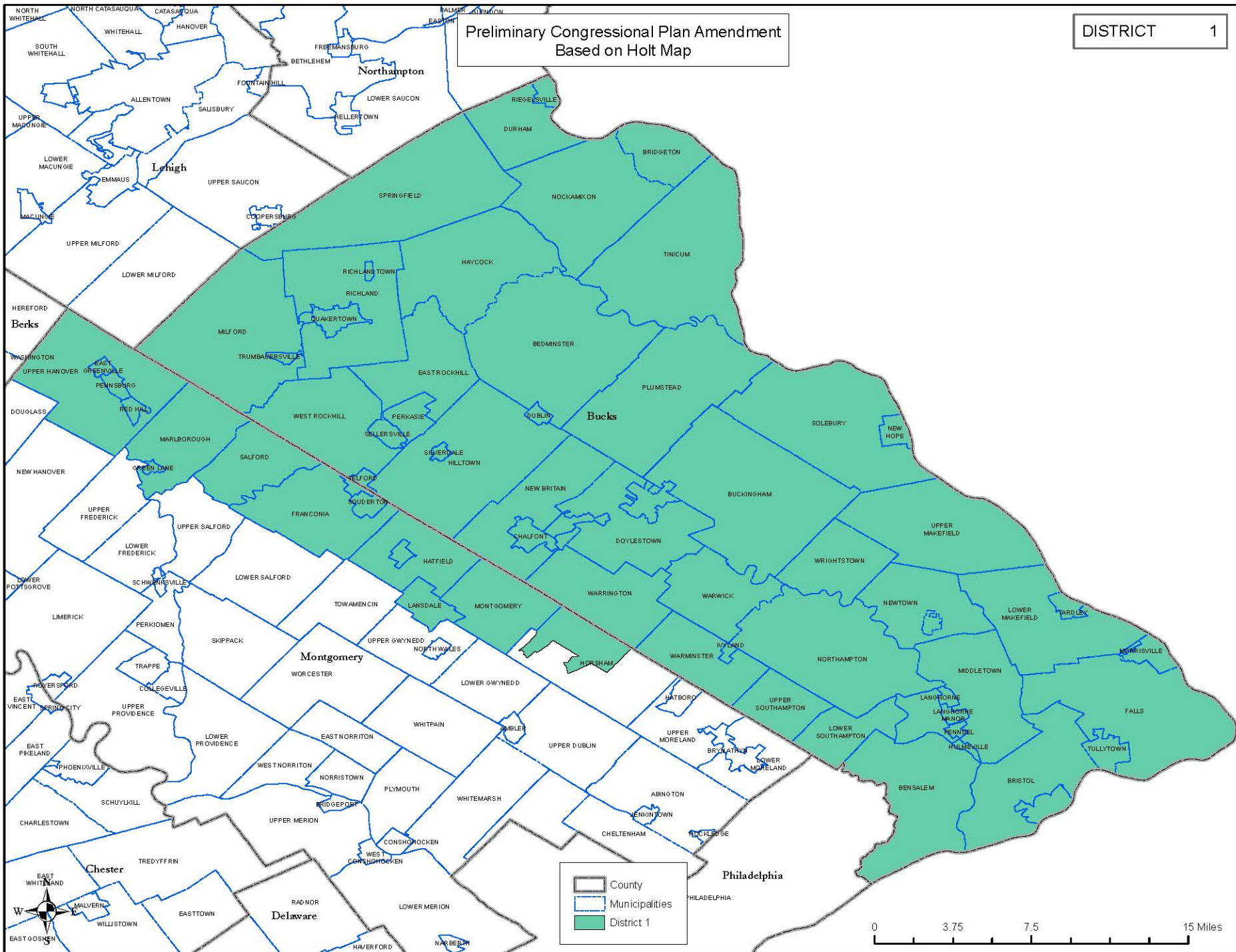
122042.000003 4889-9930-6763


Bill Schaller

Exhibit 1

Preliminary Congressional Plan Amendment
Based on Holt Map



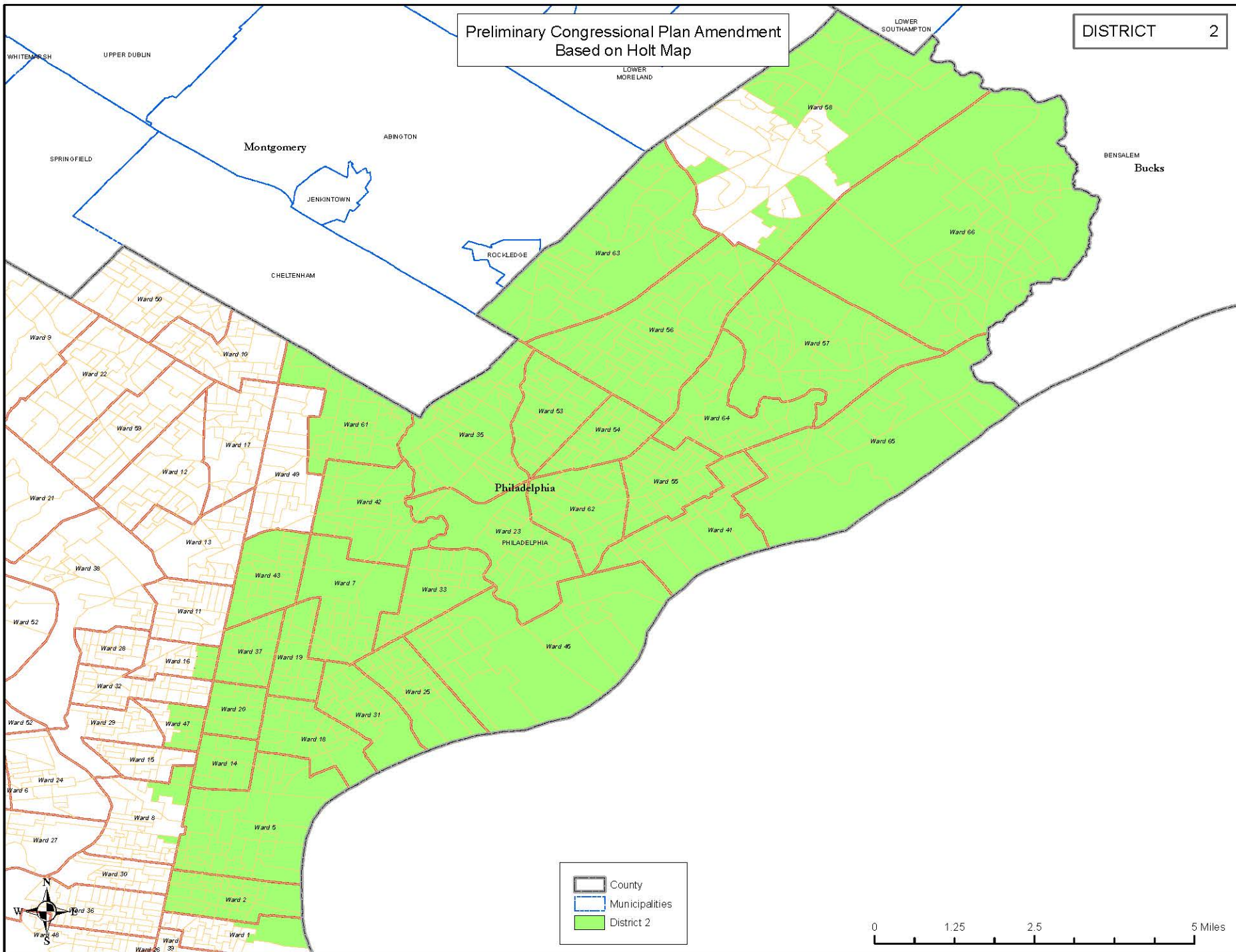


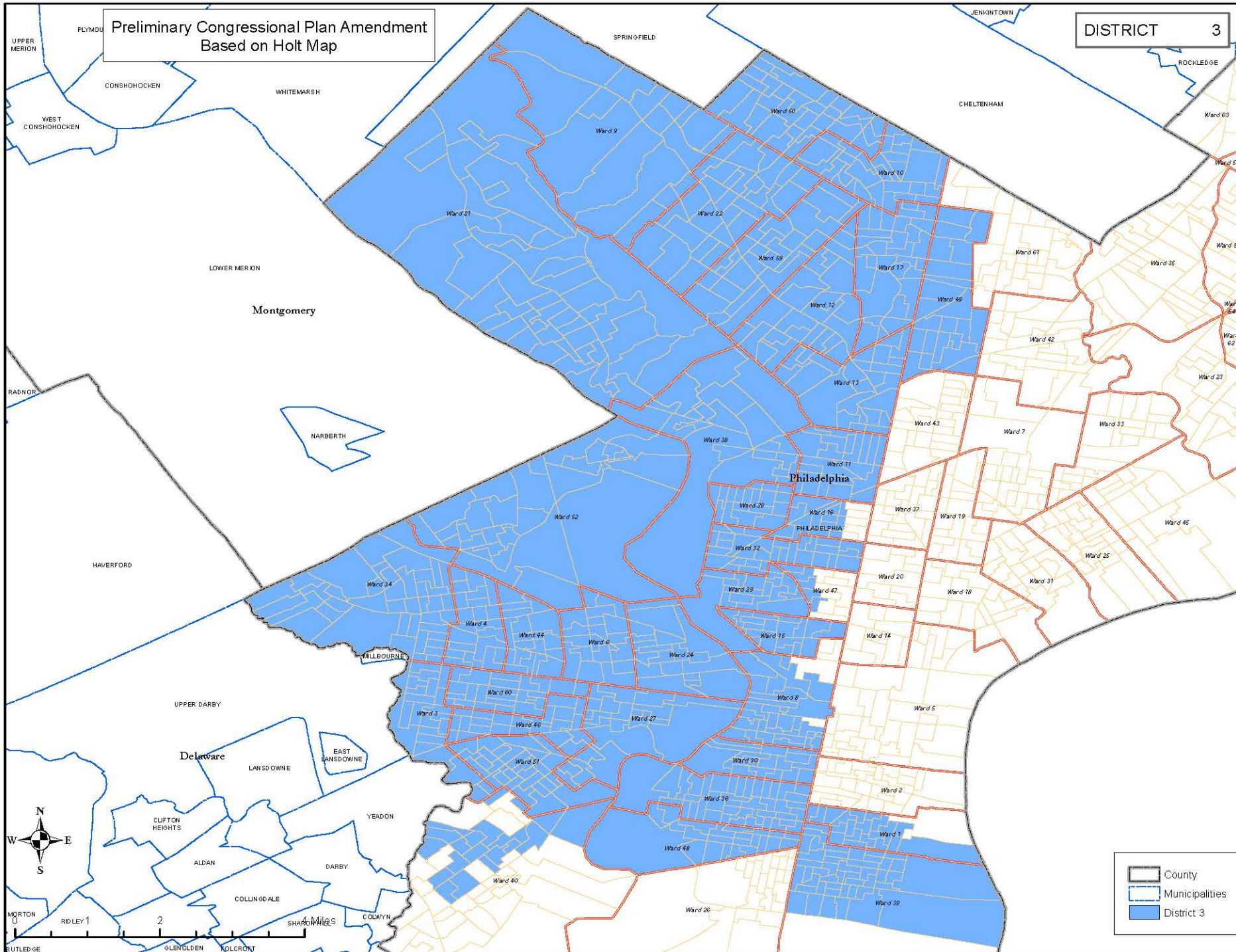
Preliminary Congressional Plan Amendment
Based on Hot Map

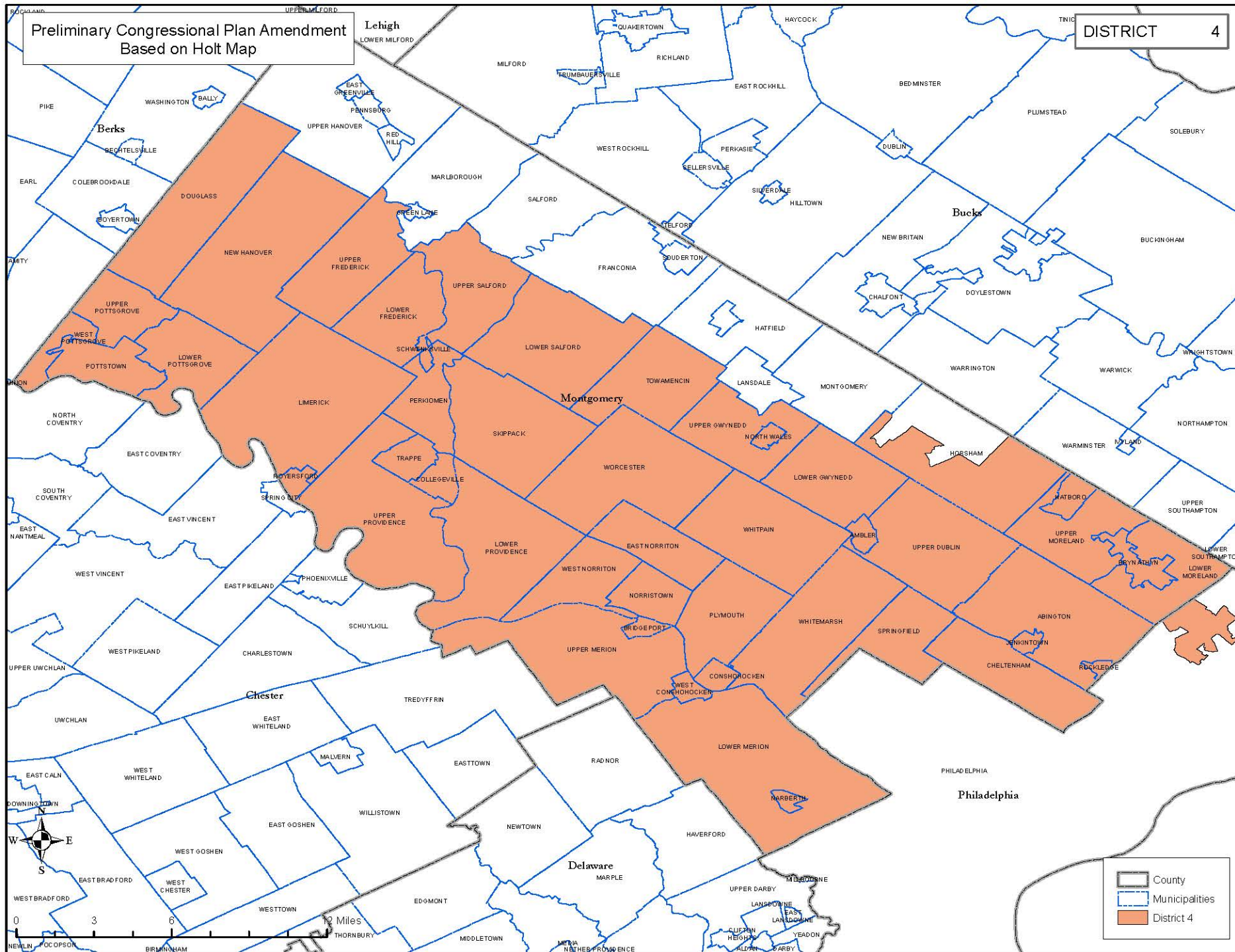
DISTRICT 1

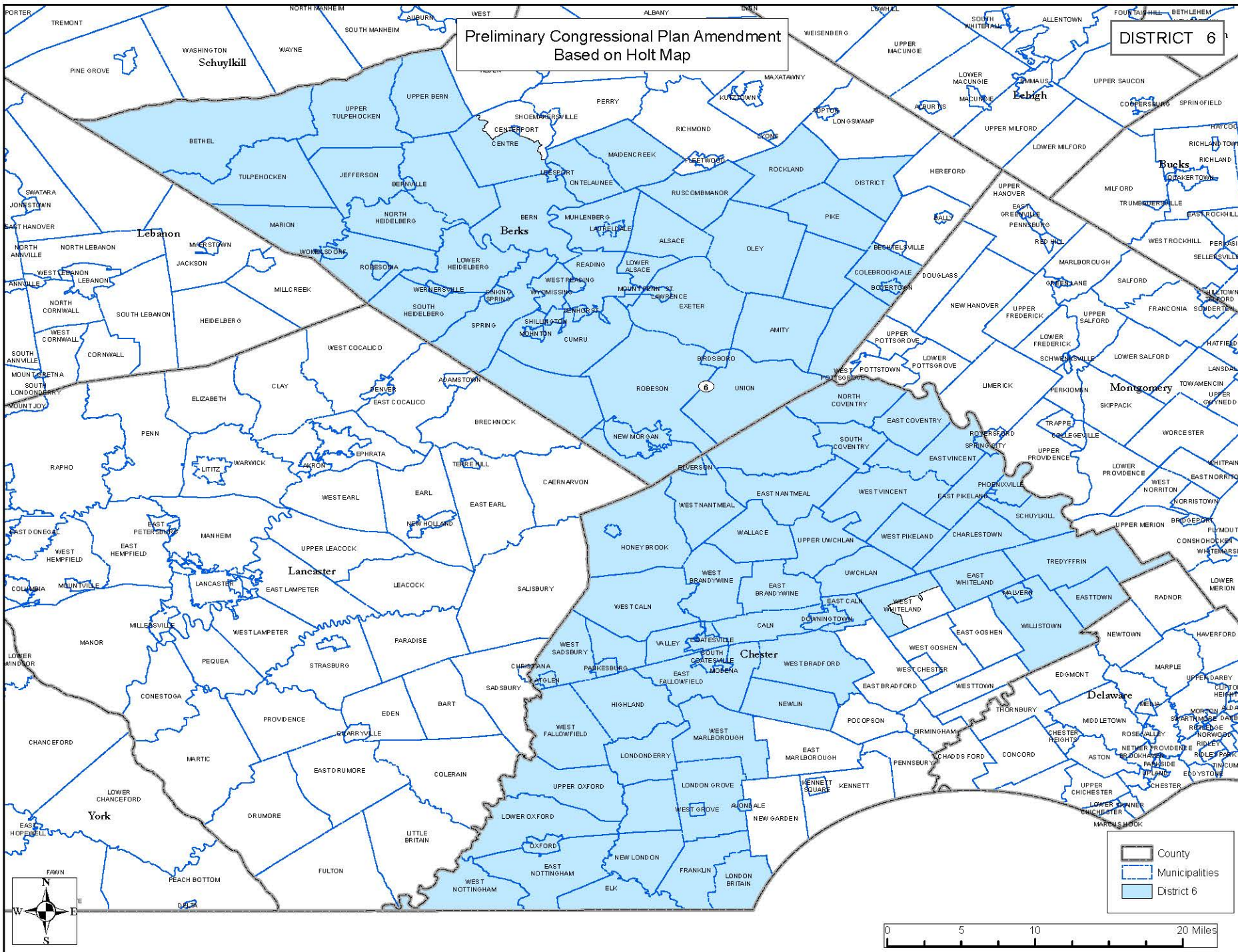
County
 Municipalities
 District 1

0 3.75 7.5 15 Miles



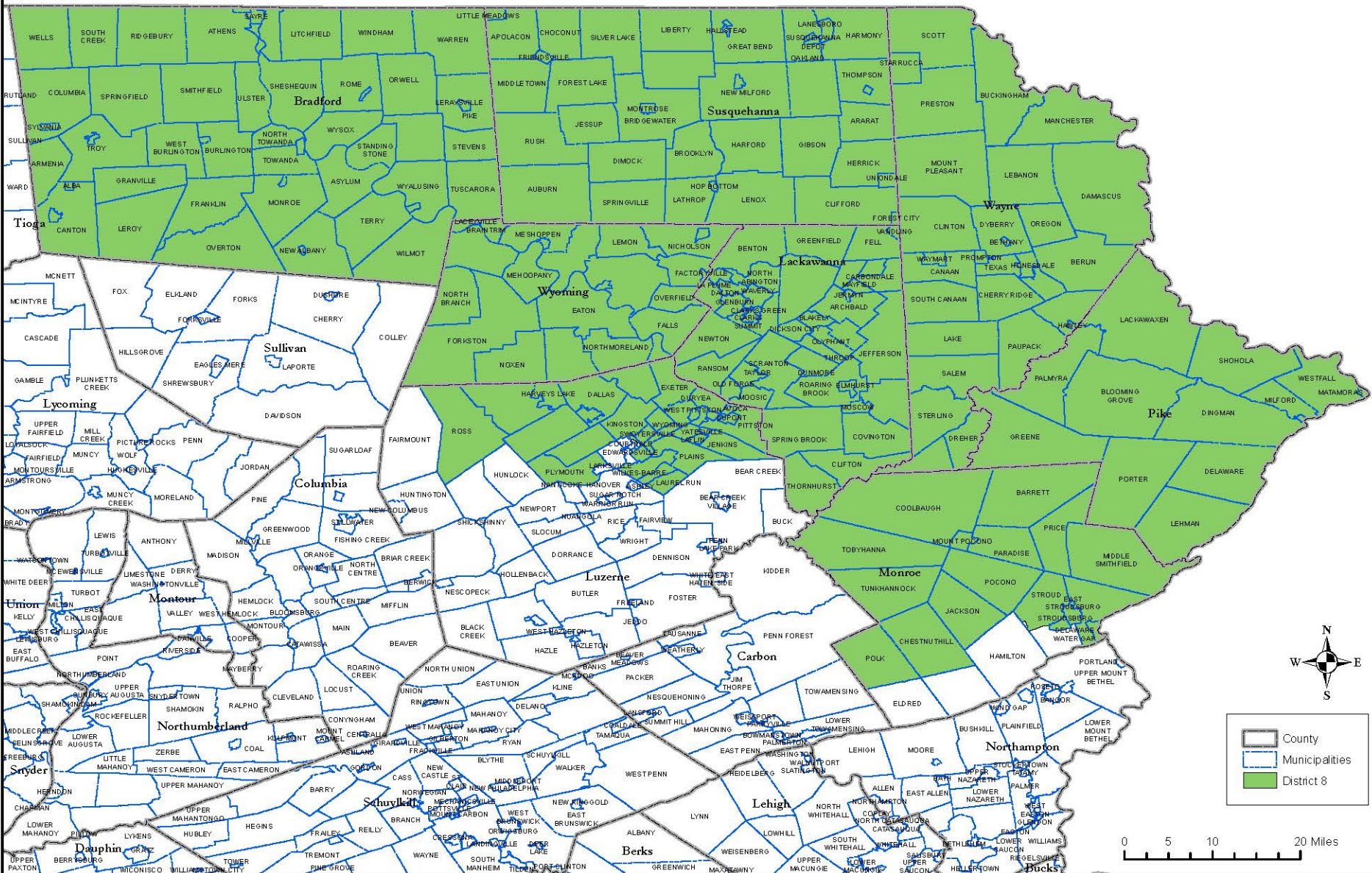


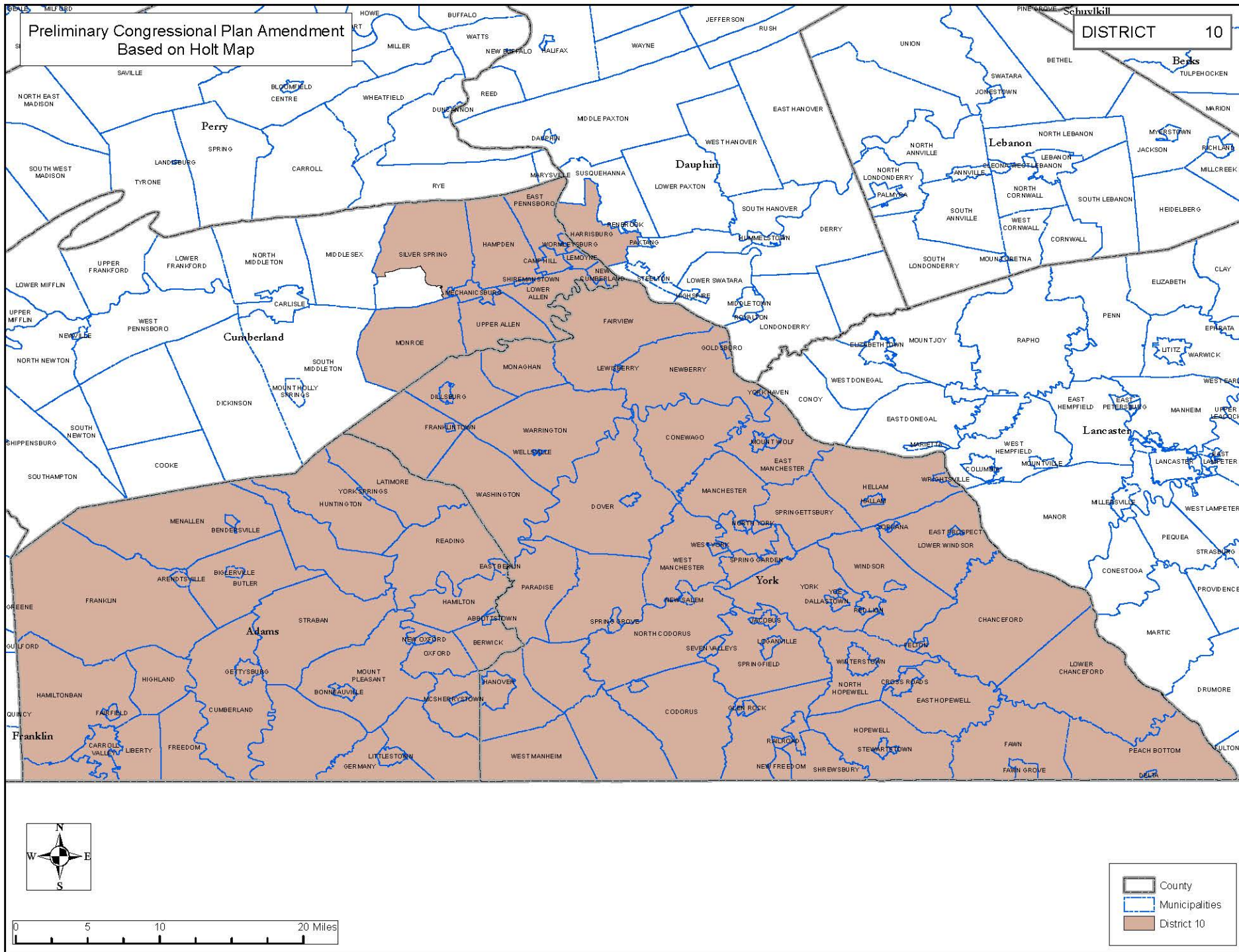




Preliminary Congressional Plan Amendment
Based on Holt Map

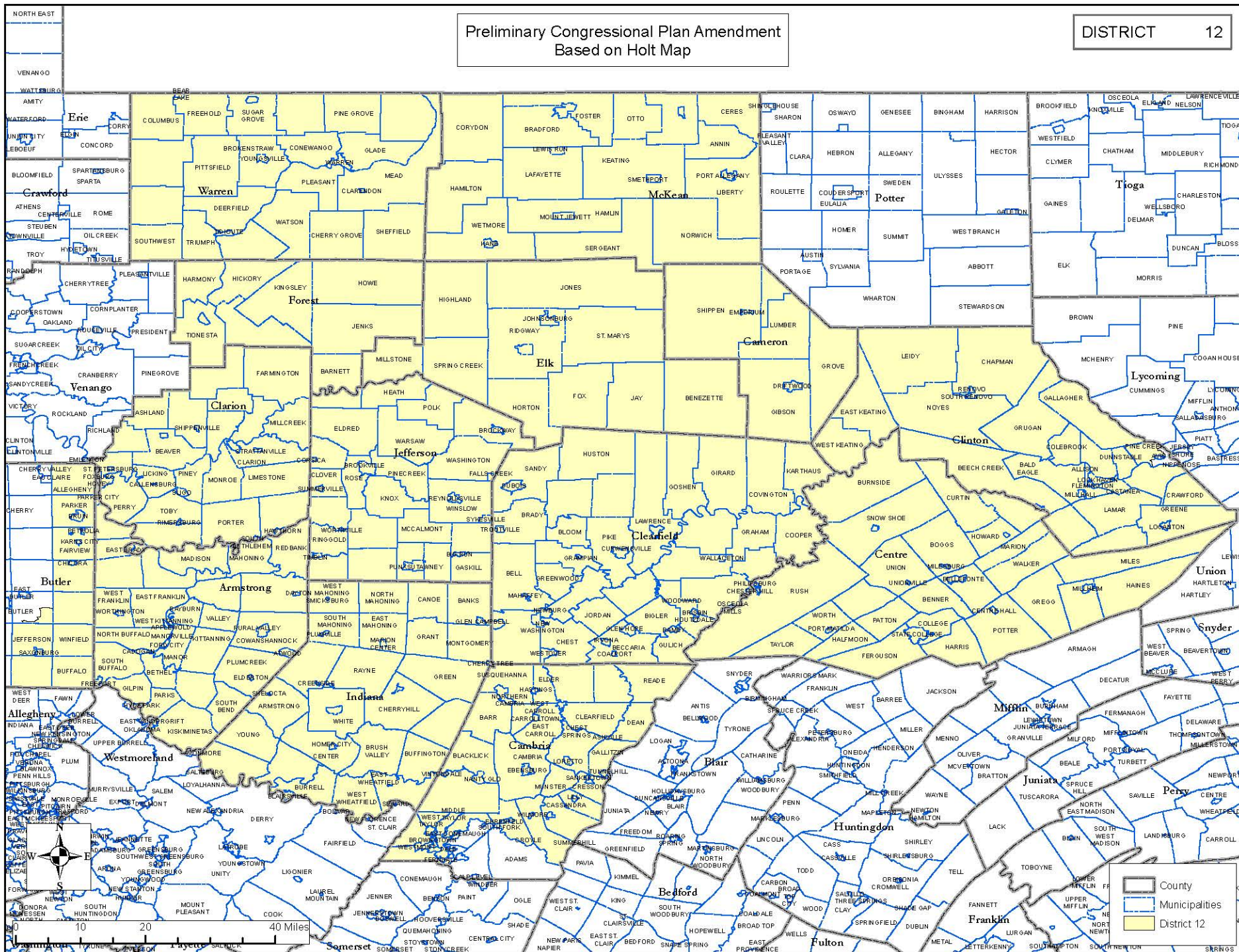
DISTRICT 8

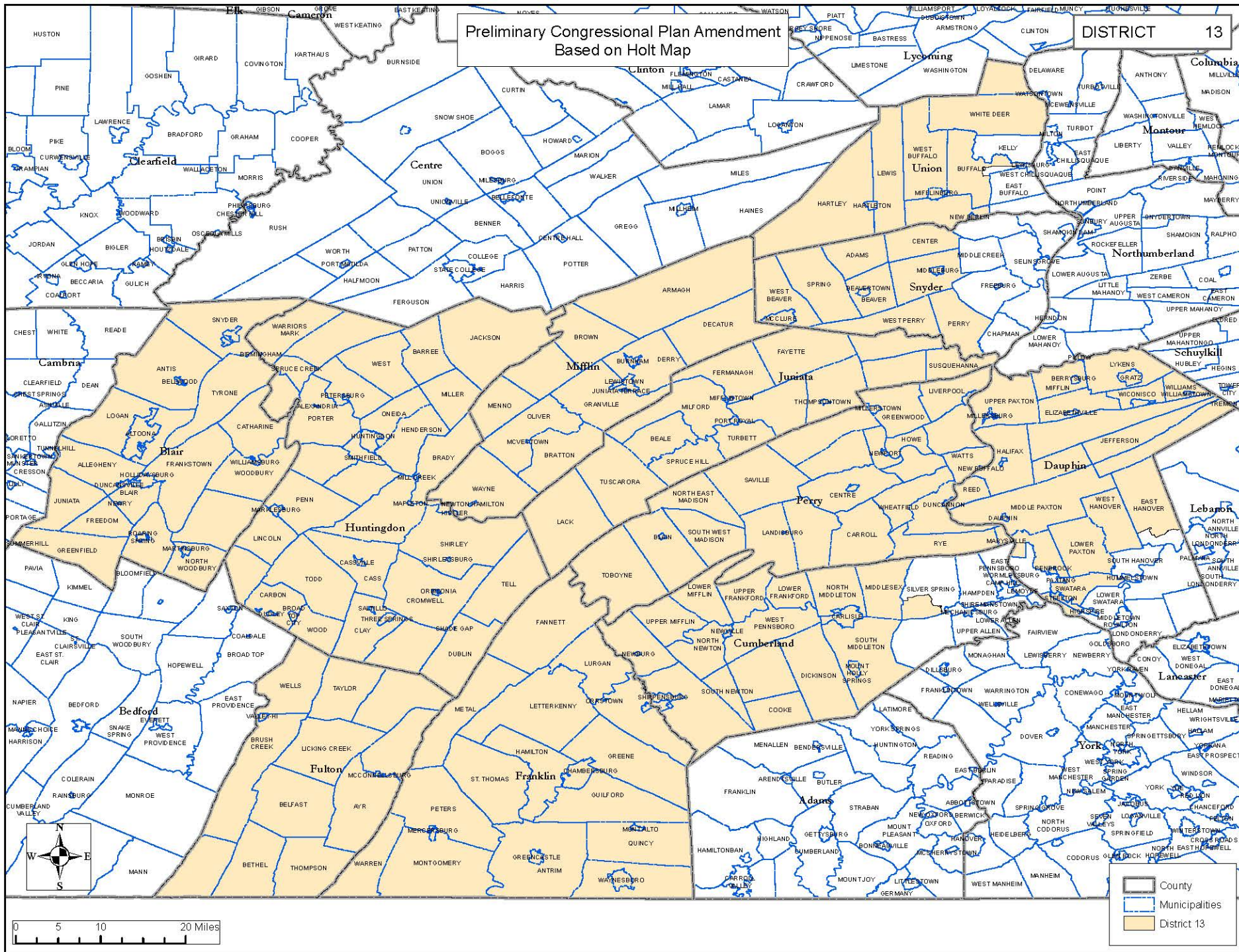


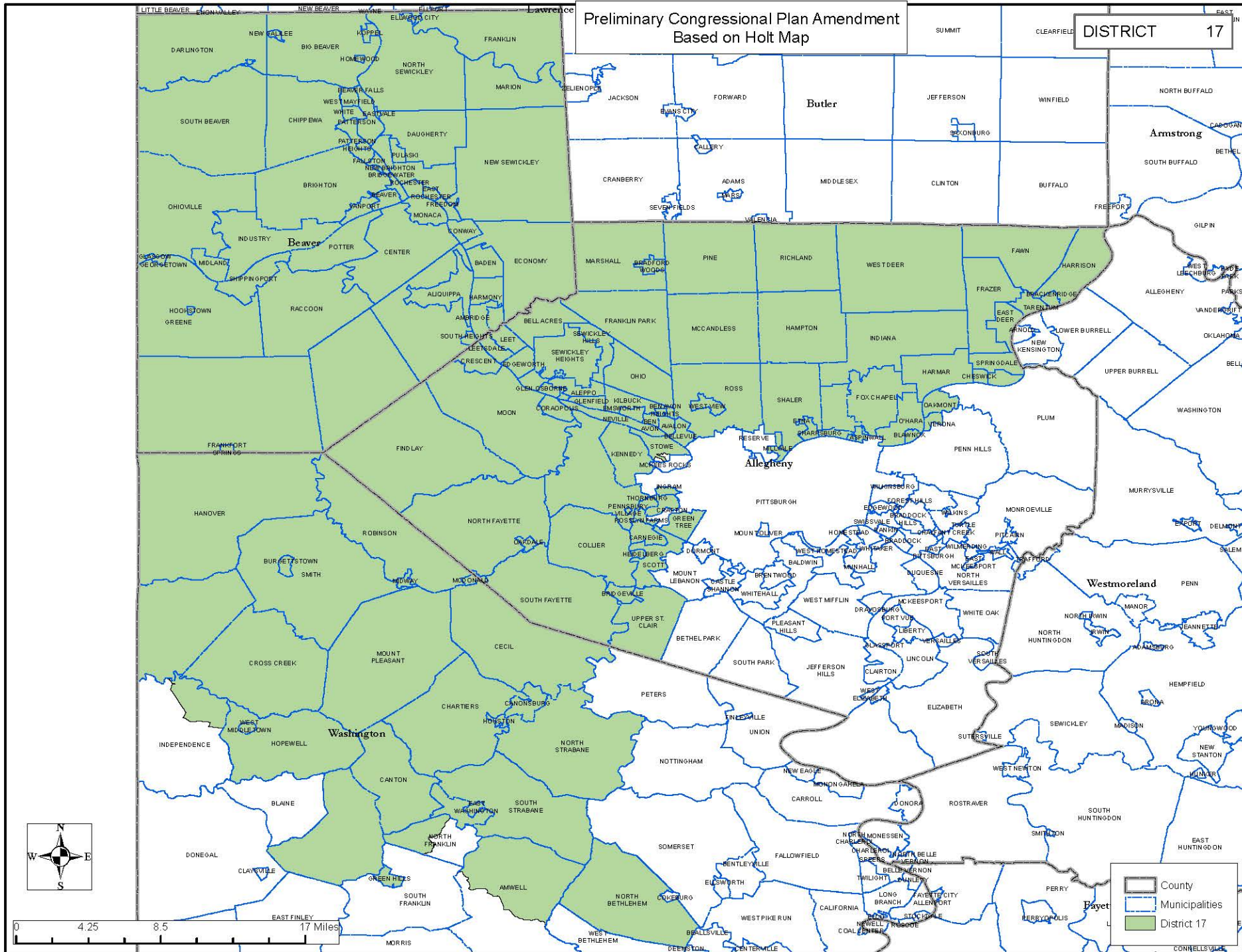


Preliminary Congressional Plan Amendment
Based on Holt Map

DISTRICT 12







Preliminary Congressional Plan Amendment
Based on Holt Map

DISTRICT 17

Exhibit 2

The Statewide population = 13,002,700		
The Average population per district = 764,865		
DISTRICT	POPULATION	DEVIATION
1	764,865	+0 (0.00%)
2	764,865	+0 (0.00%)
3	764,865	+0 (0.00%)
4	764,865	+0 (0.00%)
5	764,865	+0 (0.00%)
6	764,865	+0 (0.00%)
7	764,864	-1 (0.00%)
8	764,864	-1 (0.00%)
9	764,864	-1 (0.00%)
10	764,865	+0 (0.00%)
11	764,865	+0 (0.00%)
12	764,865	+0 (0.00%)
13	764,864	-1 (0.00%)
14	764,865	+0 (0.00%)
15	764,864	-1 (0.00%)
16	764,865	+0 (0.00%)
17	764,865	+0 (0.00%)

Preliminary Plan Amendment 1

LEGISLATIVE DATA PROCESSING CENTER

COMPOSITE LISTING

OF

CONGRESSIONAL DISTRICTS

<u>DISTRICT NUMBER</u>	<u>DESCRIPTION</u>
Dist. 01	<p>BUCKS and MONTGOMERY Counties. All of BUCKS County and Part of MONTGOMERY County consisting of the TOWNSHIPS of Franconia, Hatfield, Horsham (PART, Districts 02 [PART, Divisions 01, 01 and 03] and 04 [PART, Divisions 02 and 03]), Marlborough, Montgomery, Salford and Upper Hanover and the BOROUGHS of East Greenville, Green Lane, Hatfield, Lansdale, Pennsburg, Red Hill, Souderton and Telford (Montgomery County Portion). Total population: 764,865</p>
Dist. 02	<p>PHILADELPHIA County. Part of PHILADELPHIA County consisting of the CITY of Philadelphia (PART, Wards 01 [PART, Division 17], 02, 05, 07, 08 [PART, Divisions 26, 30, 32 and 34], 14, 16 [PART, Divisions 01, 02, 03, 04 and 05], 18, 19, 20, 23, 25, 31, 33, 35, 37, 41, 42, 43, 45, 47 [PART, Divisions 01, 02, 03, 04, 05, 06, 07, 08 and 12], 53, 54, 55, 56, 57, 58 [PART, Divisions 02, 04, 05, 06, 12, 13, 14, 20, 21, 22, 23, 24, 25, 28, 29, 31, 34, 35, 37, 39, 40, 41 and 42], 61, 62, 63, 64, 65 and 66). Total population: 764,865</p>

CONGRESSIONAL DISTRICTS

Dist. 03 PHILADELPHIA County.
Part of PHILADELPHIA County consisting of the CITY of Philadelphia (PART, Wards 01 [PART, Divisions 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20 and 21], 03, 04, 06, 08 [PART, Divisions 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 31, 33 and 35], 09, 10, 11, 12, 13, 15, 16 [PART, Divisions 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17 and 18], 17, 21, 22, 24, 27, 28, 29, 30, 32, 34, 36, 38, 39 [PART, Divisions 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45 and 46], 40 [PART, Divisions 02, 03, 04, 06, 07, 10, 12, 13, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 32 and 33], 44, 46, 47 [PART, Divisions 09, 10, 11, 13 and 14], 48, 49, 50, 51, 52, 59 and 60).
Total population: 764,865

Dist. 04 MONTGOMERY and PHILADELPHIA Counties.
Part of MONTGOMERY County consisting of the TOWNSHIPS of Abington, Cheltenham, Douglass, East Norriton, Horsham (PART, Districts 01, 02 [PART, Divisions 02 and 04], 03 and 04 [PART, Divisions 01, 02 and 04]), Limerick, Lower Frederick, Lower Gwynedd, Lower Merion, Lower Moreland, Lower Pottsgrove, Lower Providence, Lower Salford, New Hanover, Perkiomen, Plymouth, Skippack, Springfield, Towamencin, Upper Dublin, Upper Frederick, Upper Gwynedd, Upper Merion, Upper Moreland, Upper Pottsgrove, Upper Providence, Upper Salford, West Norriton, West Pottsgrove, Whitemarsh, Whitpain and Worcester and the BOROUGHES of Ambler, Bridgeport, Bryn Athyn, Collegeville, Conshohocken, Hatboro, Jenkintown, Narberth, Norristown, North Wales, Pottstown, Rockledge, Royersford, Schwenksville, Trappe and West Conshohocken and Part of PHILADELPHIA County consisting of the CITY of Philadelphia (PART, Ward 58 [PART, Divisions 01, 03, 07, 08, 09, 10, 11, 15, 16, 17, 18, 19, 26, 27, 30, 32, 33, 36, 38, 43 and 44]).
Total population: 764,865

CONGRESSIONAL DISTRICTS

Dist. 05 CHESTER, DELAWARE and PHILADELPHIA Counties.
Part of CHESTER County consisting of the TOWNSHIPS of Birmingham, East Bradford, East Goshen, East Marlborough, Kennett, New Garden, Pennsbury, Pocopson, Thornbury, West Goshen, West Whiteland (PART, Precincts 01, 02, 03 and 04 (all blocks except 1016 and 3000 of tract 302205)) and Westtown and the BOROUGHs of Kennett Square and West Chester; All of DELAWARE County and Part of PHILADELPHIA County consisting of the CITY of Philadelphia (PART, Wards 26, 39 [PART, Division 14] and 40 [PART, Divisions 01, 05, 08, 09, 11, 14, 15, 16, 27, 28, 29, 30, 31, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50 and 51]).
Total population: 764,865

CONGRESSIONAL DISTRICTS

Dist. 06 BERKS and CHESTER Counties.
Part of BERKS County consisting of the CITY of Reading and the TOWNSHIPS of Alsace, Amity, Bern, Bethel, Brecknock, Caernarvon, Centre (PART, Precincts 01 and 02 (only blocks 1029, 1030, 1031, 1033, 1034, 1039, 1044, 1045, 1046, 3010, 3012, 3013, 3014, 3021, 3022, 3023, 3024, 3025, 3026, 3027, 3028, 3029, 3037, 3042, 3050, 3056, 3059 and 3066 of tract 010201)), Colebrookdale, Cumru, District, Douglass, Earl, Exeter, Heidelberg, Jefferson, Lower Alsace, Lower Heidelberg, Maidencreek, Marion, Muhlenberg, North Heidelberg, Oley, Ontelaunee, Penn, Pike, Robeson, Rockland, Ruscombmanor, South Heidelberg, Spring, Tulpehocken, Union, Upper Bern and Upper Tulpehocken and the BOROUGHS of Adamstown (Berks County Portion), Bernville, Birdsboro, Boyertown, Kenhorst, Laureldale, Leesport, Mohnton, Mount Penn, New Morgan, Robeson, Shillington, Sinking Spring, St. Lawrence, Wernersville, West Reading, Womelsdorf and Wyomissing and Part of CHESTER County consisting of the CITY of Coatesville and the TOWNSHIPS of Caln, Charlestown, East Brandywine, East Caln, East Coventry, East Fallowfield, East Nantmeal, East Nottingham, East Pikeland, East Vincent, East Whiteland, Easttown, Elk, Franklin, Highland, Honey Brook, London Britain, London Grove, Londonderry, Lower Oxford, New London, Newlin, North Coventry, Penn, Sadsbury, Schuylkill, South Coventry, Tredyffrin, Upper Oxford, Upper Uwchlan, Uwchlan, Valley, Wallace, Warwick, West Bradford, West Brandywine, West Caln, West Fallowfield, West Marlborough, West Nantmeal, West Nottingham, West Pikeland, West Sadsbury, West Vincent, West Whiteland (PART, Precincts 04 (only blocks 1016 and 3000 of tract 302205), 05, 06 and 07) and Willistown and the BOROUGHS of Atglen, Avondale, Downingtown, Elverson, Honey Brook, Malvern, Modena, Oxford, Parkesburg, Phoenixville, South Coatesville, Spring City and West Grove.
Total population: 764,865

CONGRESSIONAL DISTRICTS

Dist. 07 BERKS, LEHIGH, MONROE and NORTHAMPTON Counties.
Part of BERKS County consisting of the TOWNSHIPS of Albany, Centre (PART, Precinct 02 (all blocks except 1029, 1030, 1031, 1033, 1034, 1039, 1044, 1045, 1046, 3010, 3012, 3013, 3014, 3021, 3022, 3023, 3024, 3025, 3026, 3027, 3028, 3029, 3037, 3042, 3050, 3056, 3059 and 3066 of tract 010201)), Greenwich, Hereford, Longswamp, Maxatawny, Perry, Richmond, Tilden, Washington and Windsor and the BOROUGHs of Bally, Bechtelsville, Centerport, Fleetwood, Hamburg, Kutztown, Lenhartsville, Lyons, Shoemakersville and Topton; All of LEHIGH County; Part of MONROE County consisting of the TOWNSHIPS of Eldred, Hamilton, Ross and Stroud (PART, Districts 05 (only blocks 2015, 2016, 2017 and 2018 of tract 301002), 06 and 07) and All of NORTHAMPTON County.
Total population: 764,864

CONGRESSIONAL DISTRICTS

Dist. 08 BRADFORD, LACKAWANNA, LUZERNE, MONROE, PIKE, SUSQUEHANNA, WAYNE and WYOMING Counties.
All of BRADFORD County; All of LACKAWANNA County; Part of LUZERNE County consisting of the CITIES of Pittston and Wilkes-Barre and the TOWNSHIPS of Dallas, Exeter, Franklin, Jackson, Jenkins, Kingston, Lake, Lehman, Pittston, Plains, Plymouth, Ross and Wilkes-Barre and the BOROUGHs of Avoca, Dallas, Dupont, Duryea, Exeter, Forty Fort, Harveys Lake, Hughestown, Kingston, Laflin, Laurel Run, Luzerne (PART, (all blocks except 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 3003, 3004, 3005, 3006, 3007, 3008, 3009, 3010, 3011, 3012, 3013, 3018, 3019, 3026, 3027 and 3028 of tract 212300)), Swoyersville, West Pittston, West Wyoming, Wyoming and Yatesville; Part of MONROE County consisting of the TOWNSHIPS of Barrett, Chestnuthill, Coolbaugh, Jackson, Middle Smithfield, Paradise, Pocono, Polk, Price, Smithfield, Stroud (PART, Districts 01, 02, 03, 04 and 05 (all blocks except 2015, 2016, 2017 and 2018 of tract 301002)), Tobyhanna and Tunkhannock and the BOROUGHs of Delaware Water Gap, East Stroudsburg, Mount Pocono and Stroudsburg; All of PIKE County; All of SUSQUEHANNA County; All of WAYNE County and All of WYOMING County.
Total population: 764,864

CONGRESSIONAL DISTRICTS

Dist. 09 CARBON, CLINTON, COLUMBIA, LUZERNE, LYCOMING, MONTOUR, NORTHUMBERLAND, POTTER, SCHUYLKILL, SNYDER, SULLIVAN, TIOGA and UNION Counties.
All of CARBON County; Part of CLINTON County consisting of the TOWNSHIP of Pine Creek (PART, District 01 (all blocks except 1007, 1008, 1010, 1011, 1037, 1064, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2013, 2015, 2016, 2022, 2023, 2024, 2025, 2027, 2028, 2057, 2059, 3000 and 3021 of tract 030400)) and the BOROUGH of Avis; All of COLUMBIA County; Part of LUZERNE County consisting of the CITIES of Hazleton and Nanticoke and the TOWNSHIPS of Bear Creek, Black Creek, Buck, Butler, Conyngham, Dennison, Dorrance, Fairmount, Fairview, Foster, Hanover, Hazle, Hollenback, Hunlock, Huntington, Nescopeck, Newport, Rice, Salem, Slocum, Sugarloaf, Union and Wright and the BOROUGHS of Ashley, Bear Creek Village, Conyngham, Courtdale, Edwardsville, Freeland, Jeddo, Larksville, Luzerne (PART, (all blocks except 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1024, 3000, 3001, 3002, 3014, 3015, 3016, 3017, 3020, 3021, 3022, 3023, 3024 and 3025 of tract 212300)), Nescopeck, New Columbus, Nuangola, Penn Lake Park, Plymouth, Pringle, Shickshinny, Sugar Notch, Warrior Run, West Hazleton and White Haven; All of LYCOMING County; All of MONTOUR County; All of NORTHUMBERLAND County; All of POTTER County; All of SCHUYLKILL County; Part of SNYDER County consisting of the TOWNSHIPS of Chapman, Jackson, Middlecreek, Monroe, Penn, Union and Washington and the BOROUGHS of Freeburg, Selinsgrove and Shamokin Dam; All of SULLIVAN County; All of TIOGA County and Part of UNION County consisting of the TOWNSHIPS of Buffalo (PART, District 01 (only blocks 2034, 2035, 2036, 2037, 2044, 2045, 2047, 2056, 2057, 2058, 2059, 2060, 2061, 2062 and 2063 of tract 090502)), East Buffalo, Kelly and Union and the BOROUGH of Lewisburg.
Total population: 764,864

CONGRESSIONAL DISTRICTS

- Dist. 10 ADAMS, CUMBERLAND, DAUPHIN and YORK Counties.
All of ADAMS County; Part of CUMBERLAND County consisting of the TOWNSHIPS of East Pennsboro, Hampden, Lower Allen, Monroe, Silver Spring (PART, Precincts 02 (all blocks except 2020, 2021, 2026, 2027, 2028, 2029 and 2030 of tract 011806), 03, 04, 05, 06, 07, 08 and 09) and Upper Allen and the BOROUGHS of Camp Hill, Lemoyne, Mechanicsburg, New Cumberland, Shiremanstown and Wormleysburg; Part of DAUPHIN County consisting of the CITY of Harrisburg and All of YORK County.
Total population: 764,865
- Dist. 11 DAUPHIN, LANCASTER and LEBANON Counties.
Part of DAUPHIN County consisting of the TOWNSHIPS of Conewago, Derry, East Hanover (PART, Precinct 01 (only blocks 2077, 2078, 2081, 2082, 2083, 2084, 3013, 3014, 3016, 3017, 3018, 3019, 3020, 3021, 3022, 3023, 3024, 3025, 3026, 3027, 3028, 3029, 3030, 3031, 3032, 3033, 3034, 3035, 3036, 3037, 3038, 3039, 3040, 3041, 3042, 3043 and 3044 of tract 024502)), Londonderry, Lower Swatara and South Hanover and the BOROUGHS of Highspire, Hummelstown, Middletown and Royalton; All of LANCASTER County and All of LEBANON County.
Total population: 764,865

CONGRESSIONAL DISTRICTS

Dist. 12 ARMSTRONG, BUTLER, CAMBRIA, CAMERON, CENTRE, CLARION, CLEARFIELD, CLINTON, ELK, FOREST, INDIANA, JEFFERSON, MCKEAN and WARREN Counties.

All of ARMSTRONG County; Part of BUTLER County consisting of the TOWNSHIPS of Allegheny, Buffalo, Clearfield, Clinton, Donegal, Fairview, Jefferson, Parker, Summit (PART, District South (only blocks 1012, 1013, 1015, 1016, 1020, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 3042, 3049, 3050 and 3051 of tract 911200)) and Winfield and the BOROUGHS of Bruin, Chicora, Fairview, Karns City, Petrolia and Saxonburg; Part of CAMBRIA County consisting of the CITY of Johnstown and the TOWNSHIPS of Allegheny, Barr, Blacklick, Cambria, Chest, Clearfield, Cresson, Croyle, Dean, East Carroll, East Taylor, Elder, Gallitzin, Jackson, Lower Yoder, Middle Taylor, Munster, Portage, Reade, Stonycreek (PART, District 02), Summerhill, Susquehanna, Upper Yoder, Washington, West Carroll, West Taylor and White and the BOROUGHS of Ashville, Brownstown, Carrolltown, Cassandra, Chest Springs, Cresson, Daisytown, Dale, East Conemaugh, Ebensburg, Ehrenfeld, Ferndale, Franklin, Gallitzin, Hastings, Lilly, Lorain, Loretto, Nanty Glo, Northern Cambria, Patton, Portage, Sankertown, South Fork, Southmont, Summerhill, Tunnelhill (Cambria County Portion), Vintondale, Westmont and Wilmore; All of CAMERON County; All of CENTRE County; All of CLARION County; All of CLEARFIELD County; Part of CLINTON County consisting of the CITY of Lock Haven and the TOWNSHIPS of Allison, Bald Eagle, Beech Creek, Castanea, Chapman, Colebrook, Crawford, Dunnstable, East Keating, Gallagher, Greene, Grugan, Lamar, Leidy, Logan, Noyes, Pine Creek (PART, Districts 01 (only blocks 1007, 1008, 1010, 1011, 1037, 1064, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2013, 2015, 2016, 2022, 2023, 2024, 2025, 2027, 2028, 2057, 2059, 3000 and 3021 of tract 030400) and 02), Porter, Wayne, West Keating and Woodward and the BOROUGHS of Beech Creek, Flemington, Loganton, Mill Hall, Renovo and South Renovo; All of ELK County; All of FOREST County; All of INDIANA County; All of JEFFERSON County; All of MCKEAN County and All of WARREN County.

Total population: 764,865

CONGRESSIONAL DISTRICTS

Dist. 13 BLAIR, CUMBERLAND, DAUPHIN, FRANKLIN, FULTON, HUNTINGDON, JUNIATA, MIFFLIN, PERRY, SNYDER and UNION Counties.

All of BLAIR County; Part of CUMBERLAND County consisting of the TOWNSHIPS of Cooke, Dickinson, Hopewell, Lower Frankford, Lower Mifflin, Middlesex, North Middleton, North Newton, Penn, Shippensburg, Silver Spring (PART, Precincts 01 and 02 (only blocks 2020, 2021, 2026, 2027, 2028, 2029 and 2030 of tract 011806)), South Middleton, South Newton, Southampton, Upper Frankford, Upper Mifflin and West Pennsboro and the BOROUGHS of Carlisle, Mount Holly Springs, Newburg, Newville and Shippensburg (Cumberland County Portion); Part of DAUPHIN County consisting of the TOWNSHIPS of East Hanover (PART, Precincts 01 (all blocks except 2077, 2078, 2081, 2082, 2083, 2084, 3013, 3014, 3016, 3017, 3018, 3019, 3020, 3021, 3022, 3023, 3024, 3025, 3026, 3027, 3028, 3029, 3030, 3031, 3032, 3033, 3034, 3035, 3036, 3037, 3038, 3039, 3040, 3041, 3042, 3043 and 3044 of tract 024502) and 02), Halifax, Jackson, Jefferson, Lower Paxton, Lykens, Middle Paxton, Mifflin, Reed, Rush, Susquehanna, Swatara, Upper Paxton, Washington, Wayne, West Hanover, Wiconisco and Williams and the BOROUGHS of Berrysburg, Dauphin, Elizabethville, Gratz, Halifax, Lykens, Millersburg, Paxtang, Penbrook, Pillow, Steelton and Williamstown; All of FRANKLIN County; All of FULTON County; All of HUNTINGDON County; All of JUNIATA County; All of MIFFLIN County; All of PERRY County; Part of SNYDER County consisting of the TOWNSHIPS of Adams, Beaver, Center, Franklin, Perry, Spring, West Beaver and West Perry and the BOROUGHS of Beavertown, McClure and Middleburg and Part of UNION County consisting of the TOWNSHIPS of Buffalo (PART, Districts 01 (all blocks except 2034, 2035, 2036, 2037, 2044, 2045, 2047, 2056, 2057, 2058, 2059, 2060, 2061, 2062 and 2063 of tract 090502) and 02), Gregg, Hartley, Lewis, Limestone, West Buffalo and White Deer and the BOROUGHS of Hartleton, Mifflinburg and New Berlin.

Total population: 764,864

CONGRESSIONAL DISTRICTS

Dist. 14 BEDFORD, CAMBRIA, FAYETTE, GREENE, SOMERSET, WASHINGTON and WESTMORELAND Counties.
All of BEDFORD County; Part of CAMBRIA County consisting of the TOWNSHIPS of Adams, Conemaugh, Richland and Stonycreek (PART, Districts 01, 03 and 04) and the BOROUGHS of Geistown and Scalp Level; All of FAYETTE County; All of GREENE County; All of SOMERSET County; Part of WASHINGTON County consisting of the CITY of Monongahela and the TOWNSHIPS of Amwell (PART, District 02), Blaine, Carroll, Donegal, East Bethlehem, East Finley, Fallowfield, Independence (PART, District 01), Morris, North Franklin (PART, District 01), Nottingham, Peters, Somerset, South Franklin, Union, West Bethlehem, West Finley and West Pike Run and the BOROUGHS of Allenport, Beallsville, Bentleyville, California, Centerville, Charleroi, Claysville, Coal Center, Cokeburg, Deemston, Donora, Dunlevy, Elco, Ellsworth, Finleyville, Long Branch, Marianna, New Eagle, North Charleroi, Roscoe, Speers, Stockdale, Twilight and West Brownsville and All of WESTMORELAND County.
Total population: 764,865

Dist. 15 ALLEGHENY County.
Part of ALLEGHENY County consisting of the CITIES of Clairton, Duquesne, McKeesport and Pittsburgh and the TOWNSHIPS of Baldwin, Elizabeth, Forward, Mount Lebanon, North Versailles, Penn Hills, Reserve, South Park, South Versailles, Stowe (PART, Wards 01, 02 [PART, Division 01], 06 and 09) and Wilkins and the BOROUGHS of Baldwin, Bethel Park, Braddock, Braddock Hills, Brentwood, Castle Shannon, Chalfant, Churchill, Dormont, Dravosburg, East McKeesport, East Pittsburgh, Edgewood, Elizabeth, Forest Hills, Glassport, Homestead, Jefferson Hills, Liberty, Lincoln, McKees Rocks, Monroeville, Mount Oliver, Munhall, North Braddock, Pitcairn, Pleasant Hills, Plum, Port Vue, Rankin, Swissvale, Trafford (Allegheny County Portion), Turtle Creek, Versailles, Wall, West Elizabeth, West Homestead, West Mifflin, Whitaker, White Oak, Whitehall, Wilkinsburg and Wilmerding.
Total population: 764,864

CONGRESSIONAL DISTRICTS

Dist. 16 BUTLER, CRAWFORD, ERIE, LAWRENCE, MERCER and VENANGO Counties.
Part of BUTLER County consisting of the CITY of Butler and the TOWNSHIPS of Adams, Brady, Butler, Center, Cherry, Clay, Concord, Connoquenessing, Cranberry, Forward, Franklin, Jackson, Lancaster, Marion, Mercer, Middlesex, Muddycreek, Oakland, Penn, Slippery Rock, Summit (PART, Districts North and South (all blocks except 1012, 1013, 1015, 1016, 1020, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 3042, 3049, 3050 and 3051 of tract 911200)), Venango, Washington and Worth and the BOROUGHS of Callery, Cherry Valley, Connoquenessing, East Butler, Eau Claire, Evans City, Harmony, Harrisville, Mars, Portersville, Prospect, Seven Fields, Slippery Rock, Valencia, West Liberty, West Sunbury and Zelianople; All of CRAWFORD County; All of ERIE County; All of LAWRENCE County; All of MERCER County and All of VENANGO County.
Total population: 764,865

CONGRESSIONAL DISTRICTS

Dist. 17 ALLEGHENY, BEAVER and WASHINGTON Counties.
Part of ALLEGHENY County consisting of the TOWNSHIPS of Aleppo, Collier, Crescent, East Deer, Fawn, Findlay, Frazer, Hampton, Harmar, Harrison, Indiana, Kennedy, Kilbuck, Leet, Marshall, McCandless, Moon, Neville, North Fayette, O'Hara, Ohio, Pine, Richland, Robinson, Ross, Scott, Shaler, South Fayette, Springdale, Stowe (PART, Wards 02 [PART, Division 02], 03, 04, 05, 07 and 08), Upper St. Clair and West Deer and the BOROUGHS of Aspinwall, Avalon, Bell Acres, Bellevue, Ben Avon, Ben Avon Heights, Blawnox, Brackenridge, Bradford Woods, Bridgeville, Carnegie, Cheswick, Coraopolis, Crafton, Edgeworth, Emsworth, Etna, Fox Chapel, Franklin Park, Glen Osborne, Glenfield, Green Tree, Haysville, Heidelberg, Ingram, Leetsdale, McDonald (Allegheny County Portion), Millvale, Oakdale, Oakmont, Pennsbury Village, Rossllyn Farms, Sewickley, Sewickley Heights, Sewickley Hills, Sharpsburg, Springdale, Tarentum, Thornburg, Verona and West View; All of BEAVER County and Part of WASHINGTON County consisting of the CITY of Washington and the TOWNSHIPS of Amwell (PART, District 01), Buffalo, Canton, Cecil, Chartiers, Cross Creek, Hanover, Hopewell, Independence (PART, District 02), Jefferson, Mount Pleasant, North Bethlehem, North Franklin (PART, Districts 02 and 03), North Strabane, Robinson, Smith and South Strabane and the BOROUGHS of Burgettstown, Canonsburg, East Washington, Green Hills, Houston, McDonald (Washington County Portion), Midway and West Middletown.
Total population: 764,865

Population of all districts: 13,002,700

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COUNTIES SPLIT BY CONGRESSIONAL DISTRICTS

15 TOTAL COUNTIES

18 TOTAL SPLITS

ALLEGHENY	015 017
BERKS	006 007
BUTLER	012 016
CAMBRIA	012 014
CHESTER	005 006
CLINTON	009 012
CUMBERLAND	010 013
DAUPHIN	010 011 013
LUZERNE	008 009
MONROE	007 008
MONTGOMERY	001 004
PHILADELPHIA	002 003 004 005
SNYDER	009 013
UNION	009 013
WASHINGTON	014 017

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PLACES SPLIT BY CONGRESSIONAL DISTRICTS

16 TOTAL PLACES

18 TOTAL SPLITS

ALLEGHENY COUNTY

STOWE TOWNSHIP 015 017

BERKS COUNTY

CENTRE TOWNSHIP 006 007

BUTLER COUNTY

SUMMIT TOWNSHIP 012 016

CAMBRIA COUNTY

STONYCREEK TOWNSHIP 012 014

CHESTER COUNTY

WEST WHITELAND TOWNSHIP 005 006

CLINTON COUNTY

PINE CREEK TOWNSHIP 009 012

CUMBERLAND COUNTY

SILVER SPRING TOWNSHIP 010 013

DAUPHIN COUNTY

EAST HANOVER TOWNSHIP 011 013

LUZERNE COUNTY

LUZERNE BOROUGH 008 009

MONROE COUNTY

STROUD TOWNSHIP 007 008

MONTGOMERY COUNTY

HORSHAM TOWNSHIP 001 004

PHILADELPHIA COUNTY

PHILADELPHIA CITY 002 003 004 005

UNION COUNTY

BUFFALO TOWNSHIP 009 013

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PLACES SPLIT BY CONGRESSIONAL DISTRICTS

WASHINGTON COUNTY

AMWELL	TOWNSHIP	014	017
INDEPENDENCE	TOWNSHIP	014	017
NORTH FRANKLIN	TOWNSHIP	014	017

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WARDS SPLIT BY CONGRESSIONAL DISTRICTS

19 TOTAL WARDS		19 TOTAL SPLITS
ALLEGHENY COUNTY		
STOWE	TOWNSHIP	
WARD 02		015 017
BERKS COUNTY		
CENTRE	TOWNSHIP	
WARD 02		006 007
BUTLER COUNTY		
SUMMIT	TOWNSHIP	
WARD SOUTH		012 016
CHESTER COUNTY		
WEST WHITELAND	TOWNSHIP	
WARD 04		005 006
CLINTON COUNTY		
PINE CREEK	TOWNSHIP	
WARD 01		009 012
CUMBERLAND COUNTY		
SILVER SPRING	TOWNSHIP	
WARD 02		010 013
DAUPHIN COUNTY		
EAST HANOVER	TOWNSHIP	
WARD 01		011 013
LUZERNE COUNTY		
LUZERNE	BOROUGH	
WARD		008 009
MONROE COUNTY		
STROUD	TOWNSHIP	
WARD 05		007 008
MONTGOMERY COUNTY		
HORSHAM	TOWNSHIP	
WARD 02		001 004
WARD 04		001 004

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WARDS SPLIT BY CONGRESSIONAL DISTRICTS

PHILADELPHIA COUNTY

PHILADELPHIA

CITY

WARD 01	002 003
WARD 08	002 003
WARD 16	002 003
WARD 39	003 005
WARD 40	003 005
WARD 47	002 003
WARD 58	002 004

UNION COUNTY

BUFFALO

TOWNSHIP

WARD 01	009 013
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Exhibit 3

Compactness Report

HB2146

[For more information on compactness calculations Click Here](#)**Compactness measure: Polsby-Popper**

District	District Area (SQM)	Perimeter (Miles)	Area of Circle with Same Perimeter	Perimeter of	Compactness Value
1	713	151	1,807	95	0.39
2	65	61	291	29	0.22
3	56	55	241	27	0.23
4	399	142	1,606	71	0.25
5	339	129	1,331	65	0.25
6	1,246	284	6,424	125	0.19
7	1,071	192	2,921	116	0.37
8	4,979	421	14,125	250	0.35
9	6,984	539	23,120	296	0.30
10	1,557	211	3,536	140	0.44
11	1,455	193	2,954	135	0.49
12	10,301	557	24,711	360	0.42
13	5,350	483	18,585	259	0.29
14	5,051	520	21,491	252	0.24
15	308	116	1,070	62	0.29
16	4,896	354	9,979	248	0.49
17	1,284	260	5,383	127	0.24

Most Compact: 0.49 For District: 16

0.32

Least Compact: 0.19 For District: 6**Compactness measure: Schwartzberg**

District	District Area (SQM)	Perimeter (Miles)	Area of Circle with Same Perimeter	Perimeter of	Compactness Value
1	713	151	1,807	95	0.63
2	65	61	291	29	0.47
3	56	55	241	27	0.48
4	399	142	1,606	71	0.50
5	339	129	1,331	65	0.50
6	1,246	284	6,424	125	0.44
7	1,071	192	2,921	116	0.61
8	4,979	421	14,125	250	0.59
9	6,984	539	23,120	296	0.55
10	1,557	211	3,536	140	0.66
11	1,455	193	2,954	135	0.70
12	10,301	557	24,711	360	0.65
13	5,350	483	18,585	259	0.54
14	5,051	520	21,491	252	0.48
15	308	116	1,070	62	0.54
16	4,896	354	9,979	248	0.70
17	1,284	260	5,383	127	0.49

Most Compact: 0.7 For District: 16

0.56

Least Compact: 0.44 For District: 6**Compactness measure: Reock Score**

District	District Area	Perimeter	Area of Circle with	Perim	Compactness
----------	---------------	-----------	---------------------	-------	-------------

District	District Area (SQM)	Perimeter (Miles)	Area of Circle with Same Perimeter	Perimeter of	Compactness Value
1	713	151	1,807	95	0.40
2	65	61	291	29	0.30
3	56	55	241	27	0.37
4	399	142	1,606	71	0.36
5	339	129	1,331	65	0.34
6	1,246	284	6,424	125	0.38
7	1,071	192	2,921	116	0.40
8	4,979	421	14,125	250	0.41
9	6,984	539	23,120	296	0.33
10	1,557	211	3,536	140	0.44
11	1,455	193	2,954	135	0.49
12	10,301	557	24,711	360	0.62
13	5,350	483	18,585	259	0.43
14	5,051	520	21,491	252	0.38
15	308	116	1,070	62	0.58
16	4,896	354	9,979	248	0.38
17	1,284	260	5,383	127	0.45

Most Compact: 0.62 For District: 12

Least Compact: 0.3 For District: 2

0.42

Report Date: 12/13/2021 12:20:24 PM

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Exhibit 4

Precinct Splits Population Breakdowns by District

Summit Township, Butler County, Population Total: 4,504

District 12	District 16
3,678	826

Pine Creek Township, Clinton County, Population Total: 3,416

District 9	District 12
1,289	2,127

Buffalo Township, Union County, Population total: 3,593

District 9	District 13
340	3,253

Silver Spring Township, Cumberland County. Population Total: 19,557

District 10	District 13
17,009	2,548

East Hanover Township, Dauphin County, Population Total: 6,019

District 11	District 11
1,370	4,649

Luzerne Borough, Luzerne County, Population Total: 2,711

District 8	District 9
1,196	1,515

Stroud Township, Monroe County, Population total: 19,834

District 7	District 8
2,898	16,936

Centre Township, Berks County, Population: 3,938

District 6	District 7
2,678	1,260

West Whiteland Township, Chester County, Population total: 19,632

District 5	District 6
10,509	9,123

CERTIFICATE OF COMPLIANCE

I hereby certify that this filing complies with the provisions of the Case Records Public Access Policy of the Unified Judicial System of Pennsylvania that require filing confidential information and documents differently than non-confidential information and documents.

/s/ Jeffry Duffy

Jeffry Duffy (PA No. 081670)

CERTIFICATE OF SERVICE

I hereby certify that on January 24, 2022, a copy of the foregoing filing was served on all counsel of record via PACFile.

/s/ Jeffry Duffy
Jeffry Duffy (PA No. 081670)

122042.000003 4882-3764-9163

Report on Proposed
Congressional Redistricting Plan
from the Pennsylvania House Republican
Caucus

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1 Introduction and Qualifications

I have been asked by counsel to review the Pennsylvania House of Representatives Republican Caucus' proposed congressional redistricting plan (hereafter, "HB2146 plan") and compare it to a set of simulated redistricting plans across a number of factors commonly considered in the redistricting process and in redistricting litigation. To do this, I implement a publicly available and peer-reviewed redistricting simulation algorithm to generate 50,000 simulated district maps, each containing 17 congressional districts. The redistricting algorithm generates a representative sample of districts by following neutral redistricting criteria without regard to partisan data. In this way, the simulated districts establish a comparison set of plans that use purely non-partisan redistricting inputs. I then compare the simulated plans against the proposed plan using a number of commonly used redistricting criteria to assess whether the proposed plan is consistent with what one would expect to see in a redistricting plan composed without reference to any racial or partisan considerations.¹ Across all measures, the proposed plan is well within the distribution of simulated plans and is unbiased, with a slight lean towards favoring Democratic candidates.

I am an associate professor of political science at Brigham Young University and faculty fellow at the Center for the Study of Elections and Democracy in Provo, Utah. I received my PhD in political science from Princeton University in 2014 with emphases in American politics and quantitative methods/statistical analyses. My dissertation was awarded the 2014 Carl Albert Award for best dissertation in the area of American Politics by the American Political Science Association.

I teach a number of undergraduate courses in American politics and quantitative research methods.² These include classes about political representation, Congressional elections, statistical methods, and research design.

I have worked as an expert witness in a number of cases in which I have been asked

¹In a later section I consider the impact of considering only the simulations that meet certain thresholds with regards to the racial composition of some districts.

²The political science department at Brigham Young University does not offer any graduate degrees.

to analyze and evaluate various political and elections-related data and statistical methods. Cases in which I have testified at trial or by deposition are listed in my CV, which is attached to the end of this report. I have previously provided expert reports in a number of cases related to voting, redistricting, and election-related issues: *Nancy Carola Jacobson, et al., Plaintiffs, vs. Laurel M. Lee, et al., Defendants. Case No. 4:18-cv-00262 MW-CAS (U.S. District Court for the Northern District of Florida)*; *Common Cause, et al., Plaintiffs, vs. Lewis, et al., Defendants. Case No. 18-CVS-14001 (Wake County, North Carolina)*; *Kelvin Jones, et al., Plaintiffs, v. Ron DeSantis, et al., Defendants, Consolidated Case No. 4:19-cv-300 (U.S. District Court for the Northern District of Florida)*; *Community Success Initiative, et al., Plaintiffs, v. Timothy K. Moore, et al., Defendants, Case No. 19-cv-15941 (Wake County, North Carolina)*; *Richard Rose et al., Plaintiffs, v. Brad Raffensperger, Defendant, Civil Action No. 1:20-cv-02921-SDG (U.S. District Court for the Northern District of Georgia)*; *Georgia Coalition for the People's Agenda, Inc., et. al., Plaintiffs, v. Brad Raffensberger, Defendant. Civil Action No. 1:18-cv-04727-ELR (U.S. District Court for the Northern District of Georgia)*; *Alabama, et al., Plaintiffs, v. United States Department of Commerce; Gina Raimondo, et al., Defendants. Case No. CASE NO. 3:21-cv-00211-RAH-ECM-KCN (U.S. District Court for the Middle District of Alabama Eastern Division)*; *League of Women Voters of Ohio, et al., Relators, v. Ohio Redistricting Commission, et al., Respondents. Case No. 2021-1193 (Supreme Court of Ohio)*; *Harper, et al., Plaintiffs, v. Hall et al., Defendants. Case No. 21-CVS-015426 (Wake County North Carolina)*. I have also recently testified before the Pennsylvania Legislative Reapportionment Commission regarding the LRC's proposed map for the Pennsylvania House of Representatives.

In my position as a professor of political science, I have conducted research on a variety of election- and voting-related topics in American politics and public opinion. Much of my research uses advanced statistical methods for the analysis of quantitative data. I have worked on a number of research projects that use "big data" that include millions of observations, including a number of state voter files, campaign contribution lists, and data

from the US Census. I have also used geographic information systems and other mapping techniques in my work with political data.

Much of this research has been published in peer-reviewed journals. I have published nearly 20 peer-reviewed articles, including in our discipline's flagship journal, *The American Political Science Review* as well as the inter-disciplinary journal, *Science Advances*. My CV, which details my complete publication record, is attached to this report as Appendix A.

The analysis and opinions I provide in this report are consistent with my education, training in statistical analysis, and knowledge of the relevant academic literature. These skills are well-suited for this type of analysis in political science and quantitative analysis more generally. My conclusions stated herein are based upon my review of the information available to me at this time. I reserve the right to alter, amend, or supplement these conclusions based upon further study or based upon the availability of additional information. The opinions in this report are my own, and do not represent the view of Brigham Young University.

2 Summary of Conclusions

Based on the evidence and analysis presented below, my opinions regarding the HB2146 plan for congressional districts in Pennsylvania can be summarized as follows:

- The contemporary political geography of Pennsylvania is such that Democratic majorities are geographically clustered in the largest cities of the state while Republican voters dominate the suburban and rural portions of the state.
- This geographic clustering in cities puts the Democratic Party at a natural disadvantage when single-member districts are drawn. Specifically, districts drawn to be contiguous, compact, and contain minimal county and municipal splits will naturally create several districts in the Philadelphia and Pittsburgh areas that contain substantial Democratic majorities with many “wasted votes.”

- Based on a comparison between the HB2146 plan, and a set of 50,000 simulated maps, the HB2146 plan is a fair plan with no evidence of partisan gerrymandering across a number of different measures used to assess the fairness of a map.
- Based on an index of statewide elections from 2012-2020, the HB2146 plan generates nine Democratic-leaning districts and eight Republican-leaning districts.
- Based on the same index of statewide elections from 2012-2020, six of the districts in the HB2146 plan will likely be competitive with candidates from both parties having a realistic possibility of winning the seats. Five of these competitive districts are *extremely* competitive, with a partisan index within two percentage points of an even 50/50 split.
- Compared to a second set of simulations that explicitly consider the creation of minority opportunity districts, the HB2146 plan is similarly unbiased. The race-conscious simulations reduce the variation in Democratic-leaning districts substantially, making nine Democratic-leaning districts the overwhelmingly most likely outcome in the simulations.
- Based on these commonly-used measures of redistricting fairness, the HB2146 plan is unbiased, and when compared to the simulations on these same metrics is balanced between occasionally having a slight Republican benefit and occasionally providing a slight benefit to Democratic voters.

3 Political Geography of Pennsylvania

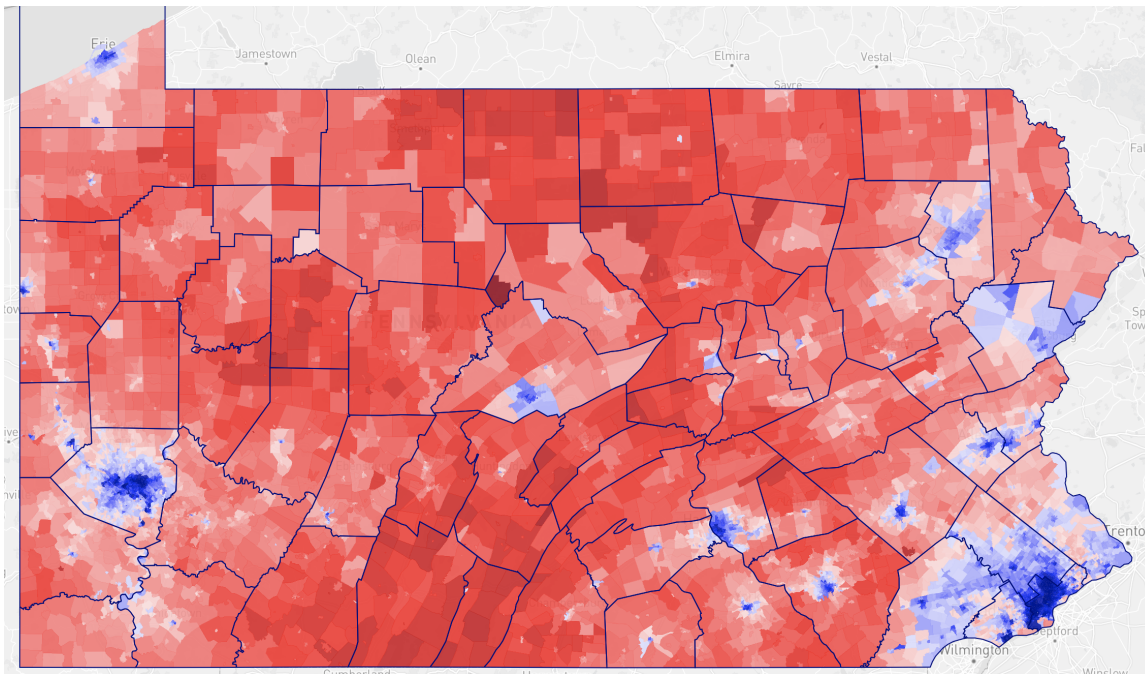
Scholarship in political science has noted that the spatial distribution of voters throughout a state can have an impact on the partisan outcomes of elections when a state is, by necessity, divided into a number of legislative districts. This is largely the case because Democratic-leaning voters tend to cluster in dense, urban areas while Republican-leaning voters tend to be more evenly distributed across the remainder of the state.³ One prominent study of the topic (Chen and Rodden, 2013) finds that “Democrats are highly clustered in dense central city areas, while Republicans are scattered more evenly through the suburban, exurban, and rural periphery...Precincts in which Democrats typically form majorities tend to be more homogenous and extreme than Republican-leaning precincts. When these Democratic precincts are combined with neighboring precincts to form legislative districts, the nearest neighbors of extremely Democratic precincts are more likely to be similarly extreme than is true for Republican precincts. As a result, when districting plans are completed, Democrats tend to be inefficiently packed into homogenous districts” (pg. 241).⁴

The map below confirms that this is the case in Pennsylvania. There are extremely large Democratic majorities shown in dark blue in and around Philadelphia and Pittsburgh. The remainder of the state contains smaller cities that are Democratic-leaning and large swaths of the state that are solidly Republican.

The upshot of this pattern is that a political party stands at a disadvantage when its voters are not “efficiently” distributed across the state. To understand what I mean by efficient, imagine two different scenarios. First, imagine a party with a slim majority of

³See for example Stephanopoulos, N. O. and McGhee, E. M., Partisan Gerrymandering and the Efficiency Gap, *The University of Chicago Law Review* 82: 831-900, (2015); Chen, J. and Rodden, J., Unintentional Gerrymandering: Political Geography and Electoral Bias in Legislatures, *Quarterly Journal of Political Science* 8: 239-269, (2013); Nall, C., The Political Consequences of Spatial Policies: How Interstate Highways Facilitated Geographic Polarization, *Journal of Politics*, 77(2): 394-406, (2015); Gimple, J. and Hui, I., . Seeking politically compatible neighbors? The role of neighborhood partisan composition in residential sorting, *Political Geography* 48: 130-142 (2015); Bishop, B., *The Big Sort: Why the Clustering of Like-Minded America is Tearing Us Apart*, Houghton Mifflin Press (2008); and Jacobson, G. C., and Carson, J. L., *The Politics of Congressional Elections*, 9th ed. Lanham, MD: Rowman and Littlefield (2016).

⁴Chen, J. and Rodden, J., Unintentional Gerrymandering: Political Geography and Electoral Bias in Legislatures, *Quarterly Journal of Political Science* 8: 239-269, (2013)

Figure 1: **Distribution of People and Partisan Preferences in Pennsylvania**

Note: Distribution of Partisan Preferences in Pennsylvania based on the average of statewide partisan elections. Blue = Democratic, Red = Republican

voters statewide in which every precinct's vote share perfectly reflected the overall state. In other words, the party has a slight majority in every precinct that adds up to a slight majority statewide. In this case, this party's voters are extremely efficiently distributed in such a way that the party will win every single district despite only a slim majority statewide. Now imagine a different arrangement: a party that still holds a slim majority statewide, but whose voters are heavily concentrated in a few areas and sparsely populated throughout the rest of the state. In this case, despite holding a majority of votes statewide, the party will only win a few seats where their voters are heavily concentrated. The political geography of Pennsylvania closely resembles this second scenario.

The geographic concentration of a party's voters tends to harm that party when single-member districts are drawn by creating districts that favor that party by very large margins, thus "wasting" many votes by running up large majorities far beyond 50%+1.⁵

⁵McGhee, E. (2017). Measuring Efficiency in Redistricting. *Election Law Journal: Rules, Politics, and Policy*, 16(4), 417–442. doi:10.1089/elj.2017.0453

This occurs in Pennsylvania at the scale of congressional districts in the two largest cities of the state - Pittsburgh and Philadelphia. The overwhelming margins for the Democratic Party in these cities are what drives “wasted votes,” which in turn translate to fewer seats than the statewide proportion of votes would suggest.⁶

For example, Philadelphia is large enough to constitute roughly 2.1 congressional districts. Thus, a plan that attempts to avoid splitting counties will draw two districts entirely within the city of Philadelphia.⁷ In the HB2146 plan Districts 2 and 3 are completely contained in Philadelphia. In the 2020 presidential election, the city of Philadelphia supported the Democratic candidate, Joe Biden, by an 81.4% to 17.9% margin. As a result, the two congressional districts that will be contained within the city, whatever their configuration, will be overwhelmingly Democratic and contain hundreds of thousands of wasted votes that could be used more efficiently if they were geographically distributed more evenly across the state.

The story is very similar in Pittsburgh and Allegheny County as well. Pittsburgh is not large enough to contain a single congressional district. However, its population is roughly 40% of the size required for a congressional district in 2020. Allegheny County’s population is larger than a congressional district (its 2020 population was roughly equal to 1.6 congressional districts), and thus a plan that draws district boundaries that are geographically compact and avoid splitting counties and cities will contain a congressional district within Allegheny County that also contains the city of Pittsburgh. In the HB2146 plan District 15 contains the city of Pittsburgh and is entirely contained in Allegheny County. Both Pittsburgh and Allegheny County are very Democratic leaning. In the 2020 presidential election, the city supported Joe Biden by a 78% to 20.9% margin and Allegheny County supported Biden by a 59.7% to 39.2% margin. As a result, whichever congressional district Pittsburgh

⁶The term “wasted votes” in political science is not to imply that a person’s vote is not important or counted, but rather that the vote is not helpful in gaining an additional seat for their preferred party if it is an additional vote in favor of a candidate that has already won a majority of the votes in their district. Technically, all votes beyond 50%+1 are “wasted”. However, parties are interested in winning by majorities larger than 50%+1, but not by margins beyond the point at which their candidate is quite certain to win.

⁷Philadelphia city and county are coterminous.

is drawn into will be extremely Democratic as a result of the strong support for Democratic candidates in Pittsburgh and its immediate suburbs within Allegheny County.

Taken together, this suggests that any plan that follows the non-partisan criteria of drawing maps that are geographically compact and avoid splitting counties and cities will begin with three districts (2 in Philadelphia and 1 in Allegheny County centered in Pittsburgh) that are extremely Democratic leaning with an abundance of wasted votes. The spillover effect of this natural packing of Democratic voters is that the remaining 14 congressional districts will be more favorable to Republican voters than if the Democratic voters in these two large cities were more evenly distributed across the state.

The inefficient distribution of voters in Pennsylvania would not be a problem for Democrats if district boundaries were able to amble about the state and divide counties and municipalities to create districts that had less overwhelming Democratic support. Rodden (2019) notes this by saying: “Democrats would need a redistricting process that intentionally carved up large cities like pizza slices or spokes of a wheel, so as to combine some very Democratic urban neighborhoods with some Republican exurbs in an effort to spread Democrats more efficiently across districts” (pg. 155).⁸ However, the provisions governing redistricting in Pennsylvania run counter to either of these strategies. The Pennsylvania Supreme Court’s decision in *League of Women Voters of Pa. v. Commonwealth* establishes that congressional redistricting plans must adhere to traditional redistricting rules that require districts to be geographically compact and to avoid county and municipal divisions. It thus prohibits the type of meandering districts that Rodden describes above. In the end, this means that Republicans begin the redistricting process with a natural geographic advantage due to the constraints of where and how districts can be lawfully drawn combined with the particular spatial distribution of their voters.

⁸Rodden, Jonathan A. *Why cities lose: The deep roots of the urban-rural political divide*. Hachette UK, 2019.

4 Methods

To gauge the degree to which the HB2146 plan is a partisan gerrymander, I conduct simulated districting analyses to allow me to produce a large number of districting plans that follow traditional redistricting criteria using small geographic units as building blocks for hypothetical legislative districts. This simulation process ignores all partisan and racial considerations when drawing districts. Instead, the computer simulations are programmed to create districting plans that follow traditional districting goals without paying attention to partisanship, race, the location of incumbent legislators, or other political factors. This set of simulated districts is helpful because it provides a set of maps to which we can compare the HB2146 map that also accounts for the geographic distribution of voters. Because voters are not distributed evenly across the state (as discussed in the previous section), we cannot evaluate the fairness of a proposed plan without an apples-to-apples comparison. In other words if a plan is not evaluated against a comparison set of maps that also use the same political geography of the state, then potential issues or red flags in the map may not at all be due to partisan gerrymandering, but rather the geographic distribution of voters in the state. By comparing a proposed map to a set of alternative maps that are drawn using only non-partisan districting criteria that *also* consider the same geographic distribution of voters, we can identify if oddities or patterns in the proposed plan are due to the political geography of the state because the simulated maps are drawn *using the same political geography*. In other words, by comparing the HB2146 map to the simulated districts, we are comparing the proposal to a set of alternative maps that we know to be unbiased that holds constant the political geography of the state. If the HB2146 map produces a similar outcome as the alternative set of maps, we may reasonably conclude that the HB2146 plan is unbiased. Alternatively, if the HB2146 plan significantly diverges from the set of simulated maps, it suggests that some other criteria that were not used in drawing the comparison set of maps may have guided the decisions made in drawing the proposed map.

The process of simulating districting plans has been recognized and used in a variety

of redistricting litigation, including in Pennsylvania.⁹ While different people employ slightly different methods, the overall process is much the same. For my simulations, I use a program developed by Fifield et al. (2020).¹⁰

A significant advantage of the simulation-based approach is the ability to provide a representative sample of possible districting plans that accounts for the unique political geography of a state, such as the spatial distribution of voters or the location and number of administrative boundaries, such as counties. Simulation methods can also to a degree incorporate each state's unique redistricting rules. The simulation-based approach therefore permits us to compare a particular plan to a large number of representative districting plans in Pennsylvania. In the simulations I run, I instruct the model to generate plans that adhere to the redistricting criteria discussed in the *League of Women Voters* case: equal population, compactness, and minimizing political subdivision splits.

A major factor in the validity of the simulated maps is whether or not they constitute a representative sample of the trillions of possible maps that could be drawn.¹¹ If the sample produced by the simulations is not representative, then we may be comparing the proposed map to a biased selection of alternative maps, which renders the value of the comparison much less useful.

A specific benefit of the particular algorithm I use here is that the authors show math-

⁹See *League of Women Voters of Ohio v. Ohio Redistricting Commission* (2021); *Harper v. Hall* (2021); *Common Cause v. Lewis* (2019); *Harper v. Lewis* (2019); *League of Women Voters of Pennsylvania v. Commonwealth of Pennsylvania* (2018); *City of Greensboro v. Guilford County Board of Elections* (2017); January 6, 2022 testimony for PA LRC from Kosuke Imai and Michael Barber.

¹⁰Fifield, Benjamin, , Michael Higgins, Kosuke Imai, and Alexander Tarr. "Automated redistricting simulation using Markov chain Monte Carlo." *Journal of Computational and Graphical Statistics* 29, no. 4 (2020): 715-728.

Fifield, Benjamin, Kosuke Imai, Jun Kawahara, and Christopher T Kenny. 2020. "The essential role of empirical validation in legislative redistricting simulation." *Statistics and Public Policy* 7 (1): 52-68.

Kenny, Christopher T., Cory McCartan, Benjamin Fifield, and Kosuke Imai. 2020. *redist: Computational Algorithms for Redistricting Simulation*. <https://CRAN.R-project.org/package=redist>.

McCartan, Cory, and Kosuke Imai. 2020. "Sequential Monte Carlo for sampling balanced and compact redistricting plans." arXiv preprint arXiv:2008.06131.

¹¹Tam Cho, Wendy K., and Yan Y. Liu. "Toward a talismanic redistricting tool: A computational method for identifying extreme redistricting plans." *Election Law Journal* 15, no. 4 (2016): 351-366. Cho, Wendy K. Tam, and Bruce E. Cain. "Human-centered redistricting automation in the age of AI." *Science* 369, no. 6508 (2020): 1179-1181. McCartan, Cory, and Kosuke Imai. "Sequential Monte Carlo for sampling balanced and compact redistricting plans." arXiv preprint arXiv:2008.06131 (2020).

ematically and in a small-scale validation study that their method produces a representative sample of maps. With regards to this issue, the authors state:

Yet, until recently, surprisingly few simulation algorithms have existed in the published scholarship. In fact, most of these existing studies use essentially the same Monte Carlo simulation algorithm where a geographical unit is randomly selected as a “seed” for each district and then neighboring units are added to contiguously grow this district until it reaches the pre-specified population threshold (e.g., Cirincione, Darling, and O’Rourke 2000; Chen and Rodden 2013). Unfortunately, no theoretical justification is given for these simulation algorithms, and hence they are unlikely to yield a representative sample of redistricting plans for a target population....Unlike the aforementioned standard simulation algorithms, the proposed algorithms are designed to yield a representative sample of redistricting plans under contiguity and equal population constraints.¹²

Specifically, the model is constrained to conduct 50,000 simulations in which each simulation generates 17 districts that are of roughly equal population (<0.5% deviation above or below the target population of 764,865). While congressional districts are constrained to contain a truly equal population, it is not possible to place such a strict constraint on the model. Because of this, I relax the constraint to allow for a 0.5% deviation, or a roughly 3,800 person deviation. This is common in redistricting simulations of congressional districts, including in litigation presented to, and relied upon by the Pennsylvania Supreme Court in the 2018 *League of Women Voters* case. The process for zeroing out population on any given simulation map would have minimal to no impact on the partisan outcomes.¹³

¹²Cirincione, C., Darling, T. A., and O’Rourke, T. G. (2000), “Assessing South Carolina’s 1990s Congressional Districting,” *Political Geography*, 19, 189–211. DOI: 10.1016/S0962-6298(99)00047-5. Chen, J., and Rodden, J. (2013), “Unintentional Gerrymandering: Political Geography and Electoral Bias in Legislatures,” *Quarterly Journal of Political Science*, 8, 239–269. DOI: 10.1561/100.00012033.

¹³See for example: Expert report of Dr. Wesley Pegden in *League of Women Voters of Pennsylvania* case, whose simulations use a 2% population constraint. Expert report of Dr. Jonathan Mattingly in *Harper v. Hall* in North Carolina, whose congressional simulations use a 1% population constraint and states, “We have verified in previous work in related settings that the small changes needed to make the districting plan

The algorithm generates 17 congressional districts with each run by assembling small geographic units — electoral precincts — into larger groups until a group of precincts is large enough to constitute a new legislative district. It then repeats this process 50,000 times, generating a different set of 17 districts with each run of the model. In each of the 50,000 iterations, the model is instructed to generate geographically compact districts that do not divide cities, boroughs, townships, and other municipal corporations. No city in Pennsylvania is larger than a congressional district aside from Philadelphia. As a result, there are no split precincts or municipalities (aside from the necessity of dividing Philadelphia into multiple districts due to its population) in the simulated districts. I constrain the model to not split municipalities because of the constitutional instructions in Article II, Section 16 that no city, incorporated town, borough, township or ward shall be divided unless “absolutely necessary”. Although Article II Section 16 does not on its face apply to congressional redistricting, the *League of Women Voters* case held that an “essential part” of an inquiry into whether a congressional plan is constitution under the Free and Equal Elections Clause is if the districts created under the plan are: “composed of compact and contiguous territory; as nearly equal in population as practicable; and which do not divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population” (645 Pa. 1, 123, 2018). Later, the court described this principle as the “minimization of the division of political subdivisions” (Id). Thus, if it is possible to generate districts that do not split municipalities and stay within the 0.5% population constraint, it is therefore not “absolutely necessary” to split municipalities aside from Philadelphia when constructing simulated districts. The process for zeroing out population on any given simulation map would, of course, require the division of some municipal corporations, but not many. The model is also instructed to draw districts that cross county boundaries as few times as

have perfectly balanced populations do not change the results.” See also expert report of Daniel Magleby in *Harper v. Hall* in North Carolina. Also, expert report of Kouske Imai in *League of Women Voters of Ohio v. Ohio Redistricting Commission*, who uses a 0.5% population deviation and states, “Although this deviation is greater than the population deviation used in the enacted plan, it only accounts for less than 4,000 people and hence has no impact on the conclusions of my analysis.”

possible. County populations do not always add up to round units of districts, and thus some county boundaries will be need to be traversed. The model is further instructed that when a county boundary needs to be crossed, it should avoid splitting the county more times than necessary.

Once the simulated district plans are complete, only then do I compute the partisan composition of each district in each plan. For the partisan composition of each district I rely on the election results from statewide elections disaggregated to the level of the election precinct. I then reassemble these election results for each of the simulated districts in each of the 50,000 simulations to compute the proportion of votes across all statewide elections conducted between 2012 and 2020 that were won by the Democratic and Republican candidates in those districts.¹⁴ In other words, the partisan index is the average vote share for Democratic candidates in each district for the statewide elections considered between 2012-2020. I choose the period 2012-2020 because it represents an entire decade of elections between decennial censuses when redistricting traditionally occurs. Averages of multiple elections have the benefit of “washing out” the impact of any particular election, since individual elections can vary due to particular idiosyncratic candidate features. Furthermore, particular years can vary due to national electoral waves (i.e. 2018 was an especially good year for Democrats while 2016 was an especially good year for Republicans nationwide). Later in the report I also display the results using a variety of alternative election indices.

¹⁴The particular races are 2020: President, Auditor, Attorney General, Treasurer; 2018: Governor, US Senate; 2016: President, US Senate, Auditor, Attorney General, Treasurer; 2014. I do not include statewide judicial elections in the index. It is uncommon in political science to use judicial elections to measure voters’ partisan preferences as research suggests voters treat judicial elections very differently, even when judges run under party labels, than they do partisan elections to legislative and executive positions. Other commonly used measures indices such as Dave’s Redistricting and PlanScore.com also omit judicial elections from their partisan indices.

5 Results

5.1 Population, Boundary Splits, and Compactness

Table 1 below compares the HB2146 plan to the distribution of simulations for boundary splits, and compactness. The HB2146 plan splits 15 counties, which is within the range of county splits in the simulations. The HB2146 plan divides only 16 municipalities, one of which would be Philadelphia, which is required to be divided because the city’s population is larger than a single congressional district. Furthermore, the requirement that the proposal contain exact population equality will require the division of some municipalities since the combination of cities into districts will not necessarily lead to the exact population needed for a congressional district. Finally, the HB2146 plan has only nine precinct splits. On the whole, the plan performs exceptionally well at having few county, municipal, and precinct splits. With regards to district compactness, the HB2146 plan’s average district compactness score closely aligns with the results of the simulations. District-by-district measures of compactness as well as a list of specific counties and municipalities that are split are contained in the appendix of this report.

Table 1: HB2146 plan and 50,000 Simulations: Subdivision Splits, and Compactness

	HB2146 plan	Simulations Median	Simulations Range
Boundary Splits			
Counties Split:	15	12	[7, 15]
Municipalities Split:	16	1	[1, 1]
Precincts Split:	9	0	[0, 0]
Compactness			
Average Polsby-Popper:	0.32	0.28	[0.22, 0.35]

Note: As described above, the simulations are constrained to not divide municipalities, aside from Philadelphia, which is too large to be contained within one district. However, exact population equality requires some municipalities be split in the proposed plan.

5.2 Partisan Lean of Districts

Before comparing the proposal to the simulations, I first present the results of the partisan index for each district in the HB2146 plan. Figure 2 shows this for the 17 districts in the plan. Districts are ordered from least Democratic at the bottom to most Democratic at the top. Districts with a partisan index less than 0.50 are Republican leaning and districts with a partisan index greater than 0.50 are Democratic leaning. A vertical dashed line is placed at 0.50 for reference. In the plan there are eight Republican-leaning districts with an index less than 0.50 (on the left side of the dashed line at .50) and nine Democratic-leaning districts with an index greater than 0.50 (on the right side of the dashed line at .50). The grey horizontal lines around each point show the range of election outcomes for all of the statewide elections used to generate the index. Districts in which the Republican candidate for statewide elections won the majority of the two-party vote share in all of the statewide races in that district are shown as red squares while districts where the Democratic candidate for statewide elections won the majority of the two-party vote share in all of the statewide races in that district are shown as blue triangles. Districts where both parties have won a majority of the two-party vote share in these statewide races in the district are displayed as green circles. Looking at the range across the index, there are six districts colored red (reliably Republican), five blue districts (reliable Democratic), and six green districts (competitive) in the plan. Using an alternative definition of competitiveness based on the closeness of the index to 0.50, there are five districts with an index between 0.48 and 0.52. A range of two percentage points is a commonly used measure of competitiveness in congressional elections.

A few key points come out of this figure. First, we see the result of the natural clustering of Democratic voters in Philadelphia and Pittsburgh. Districts 3 and 2 are the most Democratic leaning and are entirely contained within Philadelphia in the HB2146 plan. District 15 is the third most Democratic leaning district and contains the entirety of Pittsburgh and some of its surrounding suburbs in Allegheny County. These districts are

overwhelmingly Democratic leaning. In fact, they are much more Democratic than the degree to which the most Republican-leaning districts lean towards Republicans. For example, the most Democratic district (District 3) has a partisan index of 0.92 while the most Republican district (District 13) has a partisan index of 0.35 (0.35 is much closer to .50 than 0.92 is to 0.50). This illustrates the idea that geographic clustering of voters when divided into single member districts that are compact and avoid dividing counties and cities generally lead to more wasted votes for Democrats than for Republicans.

The second major point is that the HB2146 plan generates a significant number of competitive districts. Electoral competitiveness is an essential component of a liberal democracy. The threat of electoral defeat is critical to creating a democratic government in which elected officials are responsive to public opinion and are held accountable for their decisions while in office.¹⁵

I use two different metrics to measure competitiveness.

The first measure considers a district competitive if both a Democratic and Republican candidate for statewide federal office between 2012-2020 have won a majority of the two-party vote share in that district. Figure 2 shows these districts as green circles. Note how the grey line in each of these districts crosses the 0.50 line, indicating that both Republican and Democratic candidates for statewide office have won a majority of votes in that district. This approach has the virtue of considering the candidate-specific characteristics that a partisan average or index would not measure. For example, particular candidates from either party might outperform their party's average candidate performance. This is important to consider because actual elections are determined by which candidate wins the most votes, not the result of an average of votes cast, and individual elections in individual

¹⁵Mayhew, David R., 1974. *Congress: The Electoral Connection*. New Haven, CT: Yale University Press. Gordon, Sanford C., and Gregory Huber. "The effect of electoral competitiveness on incumbent behavior." *Quarterly Journal of Political Science* 2, no. 2 (2007): 107-138. Ansolabehere, Stephen, David Brady, and Morris Fiorina. "The vanishing marginals and electoral responsiveness." *British Journal of Political Science* 22, no. 1 (1992): 21-38. Dropp, Kyle, and Zachary Peskowitz. "Electoral security and the provision of constituency service." *The Journal of Politics* 74, no. 1 (2012): 220-234.

districts are influenced by the characteristics and qualities of individual candidates. Using this metric, there are 6 competitive districts (Districts 16, 8, 17, 7, 6, and 1).

The second measure of competitiveness uses the partisan index and simply looks at districts where the partisan index is within two percentage points of 50% of the two-party vote share. Scholars have often used two percentage points as a heuristic for hyper-close races in which unforeseen or “knife-edge electoral shifts” can change election results.¹⁶ Furthermore, recent studies of the legislative incumbency advantage have suggested a decline in the benefit afforded to incumbents by voters with more recent estimates being between 3 and 4 percentage points, which divided symmetrically would yield roughly 2 points on either side of the 50% vote margin.¹⁷ Using this metric, there are five competitive districts (Districts 8, 17, 7, 6, and 1).

Unlike the first metric described above, this measure of competitiveness is based on the average performance of candidates. Both metrics have their benefits and drawbacks. The virtue of using the average is that it “washes out” the impact of any one particular candidate by aggregating multiple election results together. The virtue of the “bipartisan victories” metric described above is that it captures the fact that particular candidates often perform very differently from what a partisan index would predict. Thus, the virtues of the first are in many ways the drawbacks of the second, and vice versa. As a result, including both presents a more complete picture. In either case, the HB2146 plan creates a substantial number of competitive districts.

A final point to note is that among these competitive districts, four of them lean Democratic. In other words, while both parties will likely win these districts some of the time, Democratic candidates are slightly favored in four of the five (or six depending on the measure of competitiveness) competitive districts in the plan.

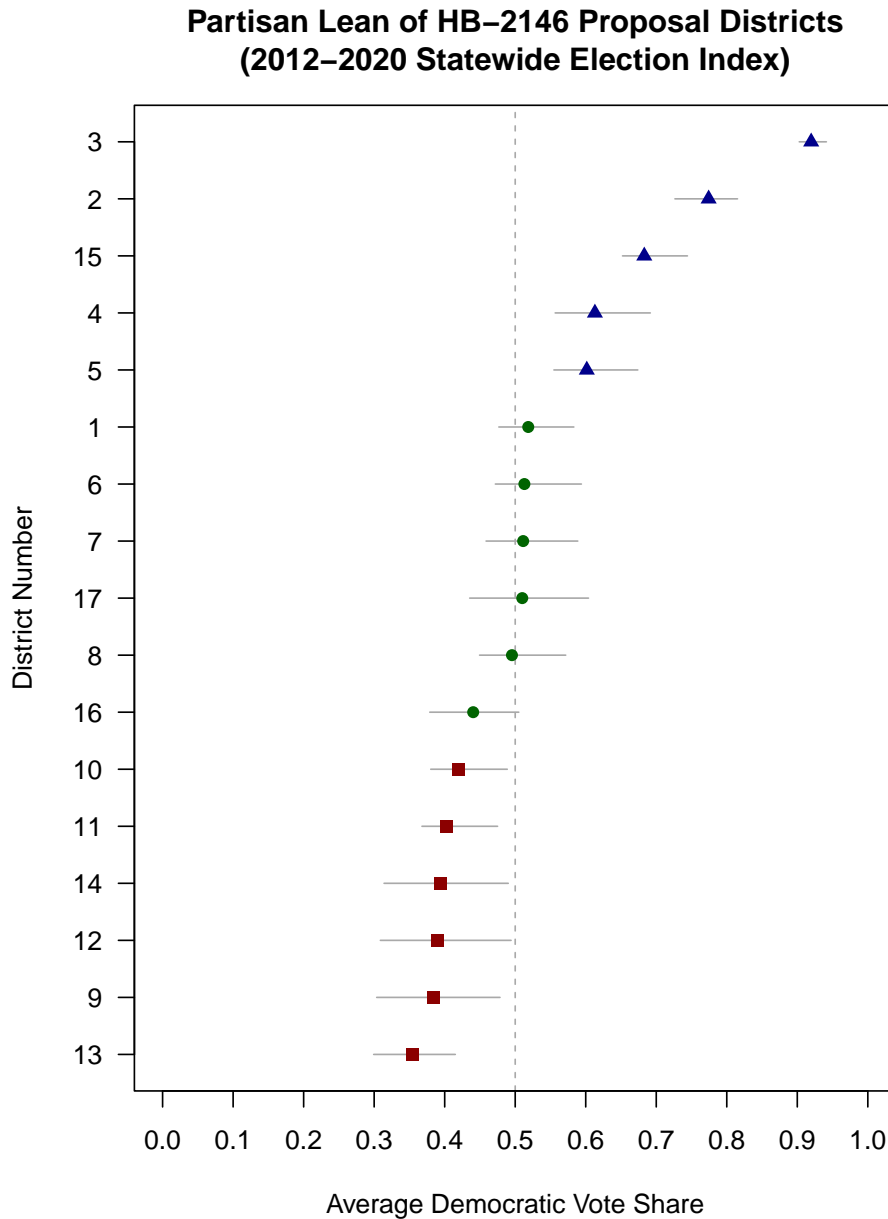
It is important to note that partisan averages — such as the ones I have created here

¹⁶Erikson, Robert S., and Rocío Titiunik. “Using regression discontinuity to uncover the personal incumbency advantage.” *Quarterly Journal of Political Science* 10, no. 1 (2015): 101-119.

¹⁷Jacobson, Gary C. “It’s nothing personal: The decline of the incumbency advantage in US House elections.” *The Journal of Politics* 77, no. 3 (2015): 861-873.

— are useful, but not perfect. Every congressional race is different. Individual candidate factors such as prior elected experience, professional background, gender, and ties to the local community are all important factors in determining candidate success. Campaigns and the issues and policies that candidates choose to emphasize and endorse are also important. These factors all contribute to making each race unique and slightly different from what an index of statewide election results might predict. In other words, no election will perfectly mirror the partisan average for that district based on an index of election results, and in some cases that difference could be quite large.

Figure 2: Partisan Index of HB2146 plan Congressional Districts



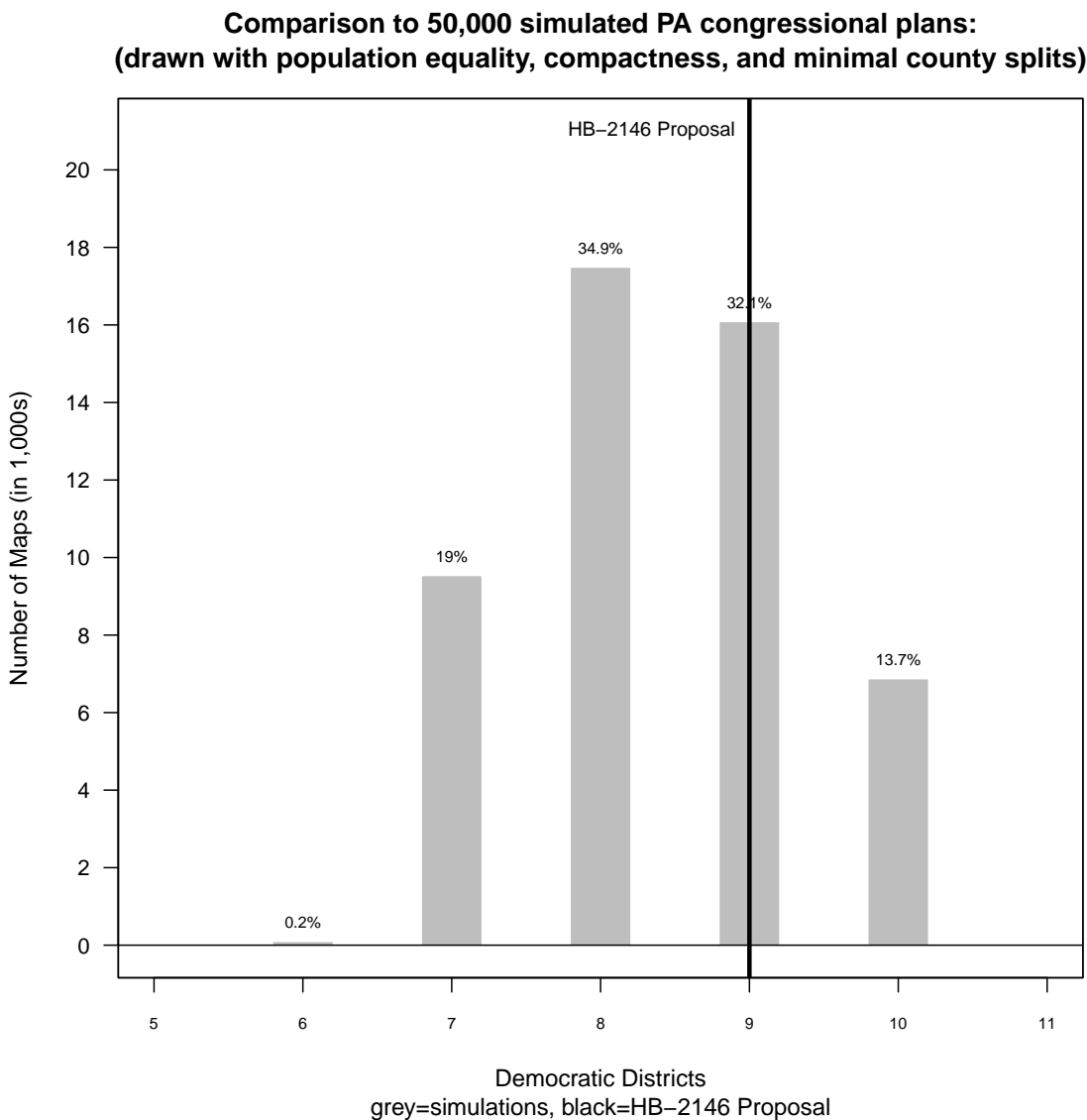
Note: Partisan Index based on the average of statewide partisan races between 2012-2020. Districts with a partisan index less than 0.50 are Republican leaning and districts with a partisan index greater than 0.50 are Democratic leaning. A vertical dashed line is placed at 0.50 for reference. The grey horizontal lines around each point show the range of election outcomes for all of the statewide elections used to generate the index. Districts in which the Republican candidate for statewide elections won the majority of the two-party vote share in all of the statewide races are shown as red triangles (there are 6 of them) while districts where the Democratic candidate for statewide elections won the majority of the two-party vote share in all of the stateside races are shown as blue triangles (there are 5 of them). Districts where both parties have won a majority of the two-party vote share in these statewide races are displayed as green circles (there are 6 of them).

5.3 Partisan Lean of Districts Compared to Simulations

Figure 3 displays the distribution of Democratic-leaning districts in both the simulations and the HB2146 plan using the 2012-2020 partisan index discussed above. If a district in the simulations or in the HB2146 plan has a partisan index greater than 0.50, I call that a Democratic-leaning district. Likewise, if a districts in the simulations has a partisan index less than 0.50, I call that a Republican-leaning district. The grey histogram shows the distribution of Democratic-leaning seats generated by the simulations. The simulations generate between six and ten Democratic-leaning districts, and the numbers above each bar in the histogram display the proportion of simulated maps that generate each outcome. For example, in 34.9% of the simulations there are eight Democratic-leaning districts (and therefore nine Republican-leaning districts). The solid black vertical line shows the results of calculating the partisan index for the HB2146 plan. The HB2146 plan generates nine Democratic leaning districts, which is in line with the distribution of Democratic-leaning seats generated by the simulations (32.1% of the simulations generate this result). As noted above, the most common outcome in the simulations is eight Democratic-leaning seats, which is one less than the HB2146 plan generates.

Recall that in using the simulations we are comparing the proposed map to a set of maps drawn by the computer using only those criteria that I instructed the algorithm to follow - namely the pre-specified nonpartisan criteria of equal population, contiguity, geographic compactness and a preference for fewer county splits. Both the HB2146 plan and the simulations account for the unique political geography of Pennsylvania. Doing so shows us that the HB2146 plan is within the middle portion of simulation results and if anything leans slightly towards the Democratic party by generating nine Democratic-leaning districts rather than eight, which is the modal outcome in the simulations. By no standard definition would the plan be considered an outlier.

Figure 3: Partisan Composition of HB2146 plan and Simulations



Note: The grey distribution is the number of Democratic seats generated from the 50,000 simulations. The vertical black line is the number of Democratic leaning seats in the HB2146 plan. The HB2146 plan generates 9 Democratic leaning districts. The partisan lean of districts in the simulations and the HB2146 plan are calculated as the two-party vote share of statewide partisan elections from 2012-2020.

5.4 District-by-District Comparisons

While Figure 3 shows the position of the HB2146 plan in relation to the simulations overall, it is also instructive to look at a district-by-district level to see if any particular district stands out as an outlier. Figure 4 below does this for each of the 17 districts in

the state. The figure plots the partisan lean of each district across all of the simulations ordered from least Democratic at the top to most Democratic at the bottom of the figure. The simulation results are displayed in grey and generate a “cloud” or range of partisan outcomes for each district. The black dots in the figure show the partisan lean of each of the districts in the HB2146 plan and their relative position within the simulations. Next to each district is text showing the position of the HB2146 plan in relation to the simulations. For example, in the most Republican-leaning district (District 13) at the top of the figure, the HB2146 plan is more Democratic than 64% of the simulations in that district.

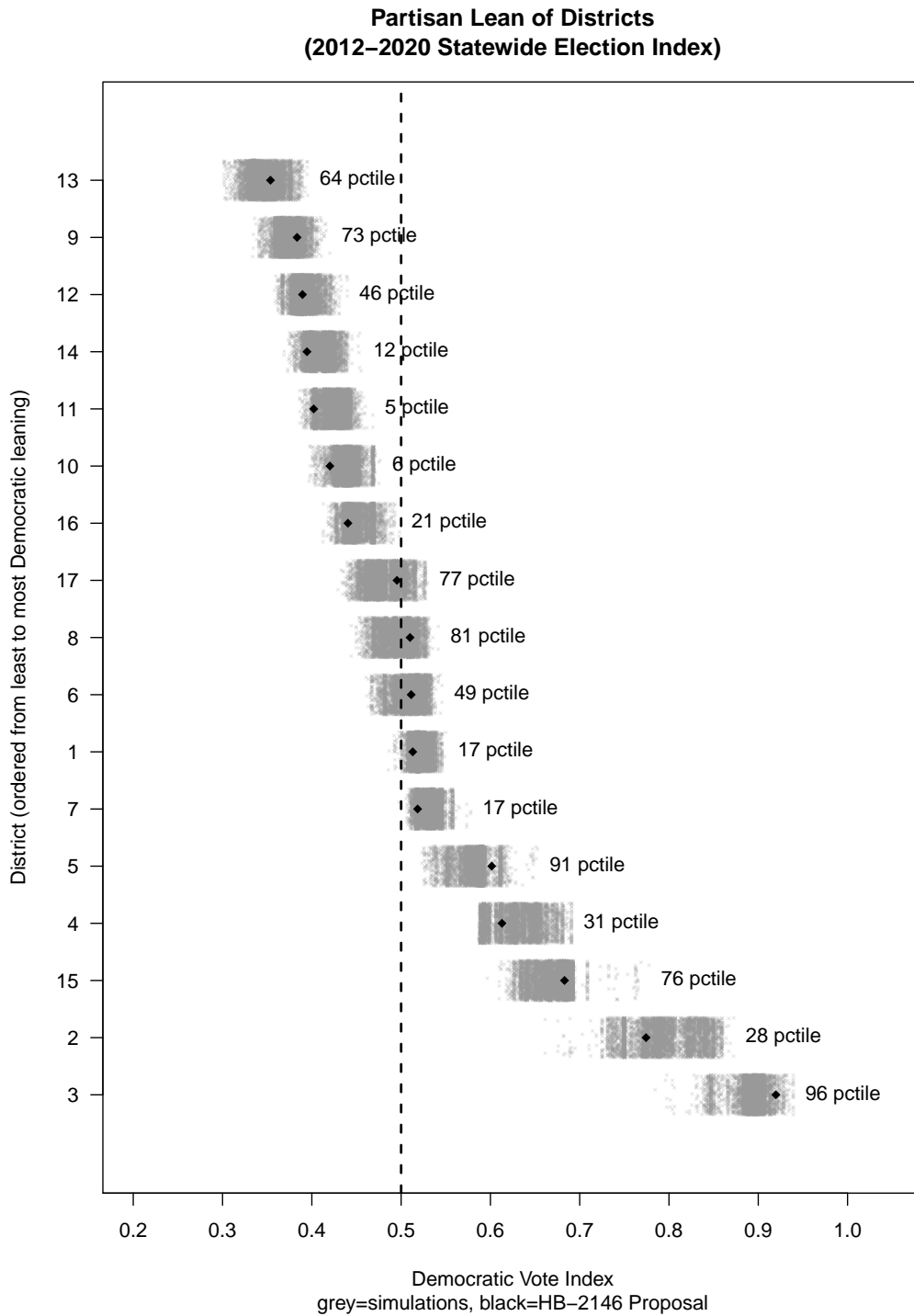
Looking district by district, we see that in most cases the HB2146 plan sits well within the middle of the distribution of simulations. In a few cases it stands out as an outlier, and I consider each of these cases one by one. In the 5th and 6th most Republican districts (Districts 11 and 10 in the HB2146 plan, as labelled on the vertical axis of the figure) the HB2146 plan is at the Republican edge of the simulation results indicating that the HB2146 plan is more Republican than only five and six percent of the simulations in these two districts, respectively. However, both of these districts are squarely Republican leaning, even in the simulations that are more favorable to Democrats.

In the 5th most Republican district (District 11 in the HB2146 plan) the partisan index of the HB2146 plan is 0.40 while the median simulation has a partisan index of 0.42. In other words, District 11 is only two points away from the median simulation in this district, and a partisan index of 0.40 or 0.42 would be a safely Republican districts in either case.

The same is true of the 6th most Republican district in the simulations, which is District 10 in the HB2146 plan. This district has a partisan index of 0.42 in the HB2146 plan while the median simulation has a partisan index of 0.435. In other words, District 10 is only 1.5 percentage points away from the median simulation in this district, and a partisan index of 0.42 or 0.435 would be a safely Republican districts in either case. In other words, in these two districts, the position of the HB2146 plan in relation to the median simulation will have minimal real-world impact on the electoral outcomes in those districts.

As described above, the HB2146 plan produces five districts that are extremely competitive with a partisan index within two percentage points of 0.50 (Districts 17, 8, 6, 1, and 7). In two of those five districts, the proposal is more Democratic than the median partisan index in the simulations (Districts 17 and 8), is very near the median simulation in one of the districts (District 6), and in two of these districts (Districts 1 and 7) the HB2146 plan is more Republican than the median simulation. Thus, in the districts where a shift of a few percentage points really could make a difference in the party that wins a congressional seat, the HB2146 plan is balanced between favoring Democrats in 2 of the districts, Republicans in 2 of the districts, and neither party in 1 of the districts when compared to the distribution of simulation results.

Figure 4: Partisan Composition of HB2146 plan and Simulations



Note: The grey ‘clusters’ show the range of vote margins for each district, ordered from least Democratic to most Democratic in the 50,000 simulations. The black dot inside of each cluster shows the partisan index for the HB2146 plan. Next to each cluster is the percentile, or relative position of the HB2146 plan within each cluster of simulation results for each district.

5.5 Median-Mean Difference

Another common measure of the partisan slant of a districting plan is the median-mean difference.¹⁸ The median-mean measure is calculated by taking the median value of the partisan index across all 17 districts in a plan (the value for which half of the observations are smaller and half the observations are larger) and subtracting from that the mean partisan index (the simple average) of all of the districts from the median. Consider a simple example in which there are three districts in a plan with partisan indices of 0.91, 0.46, and 0.40. To find the median we simply look for the district for which there is one district larger and one district smaller (0.46 in this case). To find the mean, we simply take the average by dividing the sum of the partisan indices by the number of districts. In this case, $(0.91+0.46+0.40)/3 = 0.59$. The median-mean value would then be $0.46-0.59 = -0.13$. As in this example, in Figure 5 I take the Democratic vote share of the median district minus the mean Democratic vote share for all 17 districts in the HB2146 plan. Negative numbers indicate a districting plan that favors Republicans and positive numbers indicate a slant in favor of Democrats.

The median-mean test is essentially a test of skew, or in the context of redistricting packing voters into legislative districts. If voters of one party are packed into few districts, those districts will have very high vote shares for one party and will pull the value of the mean district partisanship away from the district partisan index of the median district.¹⁹ This indicates that the party that is packed into the districts with overwhelming majorities will have a harder time translating their votes into seats.²⁰

¹⁸See Best, Robin E., Shawn J. Donahue, Jonathan Krasno, Daniel B. Magleby, and Michael D. McDonald. "Considering the prospects for establishing a packing gerrymandering standard." *Election Law Journal* 17, no. 1 (2018): 1-20. Warrington, Gregory S. "A comparison of partisan-gerrymandering measures." *Election Law Journal: Rules, Politics, and Policy* 18, no. 3 (2019): 262-281. Wang, Samuel S-H. "Three tests for practical evaluation of partisan gerrymandering." *Stan. L. Rev.* 68 (2016): 1263. McDonald, Michael D., and Robin E. Best. "Unfair partisan gerrymanders in politics and law: A diagnostic applied to six cases." *Election Law Journal* 14, no. 4 (2015): 312-330.

¹⁹A helpful analogy is to imagine a representative group of 100 Americans gathered at a restaurant. The median and mean incomes of the 100 customers are likely quite similar. If Bill Gates walks into the restaurant, the median income of the now 101 patrons will not shift by much at all, but the mean income will jump significantly, possibly by several million dollars.

²⁰McDonald, Michael D., and Robin E. Best. "Unfair partisan gerrymanders in politics and law: A diagnostic applied to six cases." *Election Law Journal* 14, no. 4 (2015): 312-330.

One drawback of the median-mean test is that it does not account for the natural clustering of voters that occurs in Pennsylvania and other states. This can be remedied by also computing the median-mean difference for the simulated districting plans that also consider for the geographic distribution of voters in the state. This allows us to make an apples-to-apples comparison that holds the political geography of the state constant. Figure 5 displays the results of the median-mean measure for the simulations (in grey) and the HB2146 plan (solid black line). The fact that the distribution of results from the simulations is mostly less than zero shows that the geography of Pennsylvania leads to a natural advantage for Republicans due to the dense clustering of Democratic voters in Philadelphia and Pittsburgh even when districts are drawn using strictly non-partisan criteria.

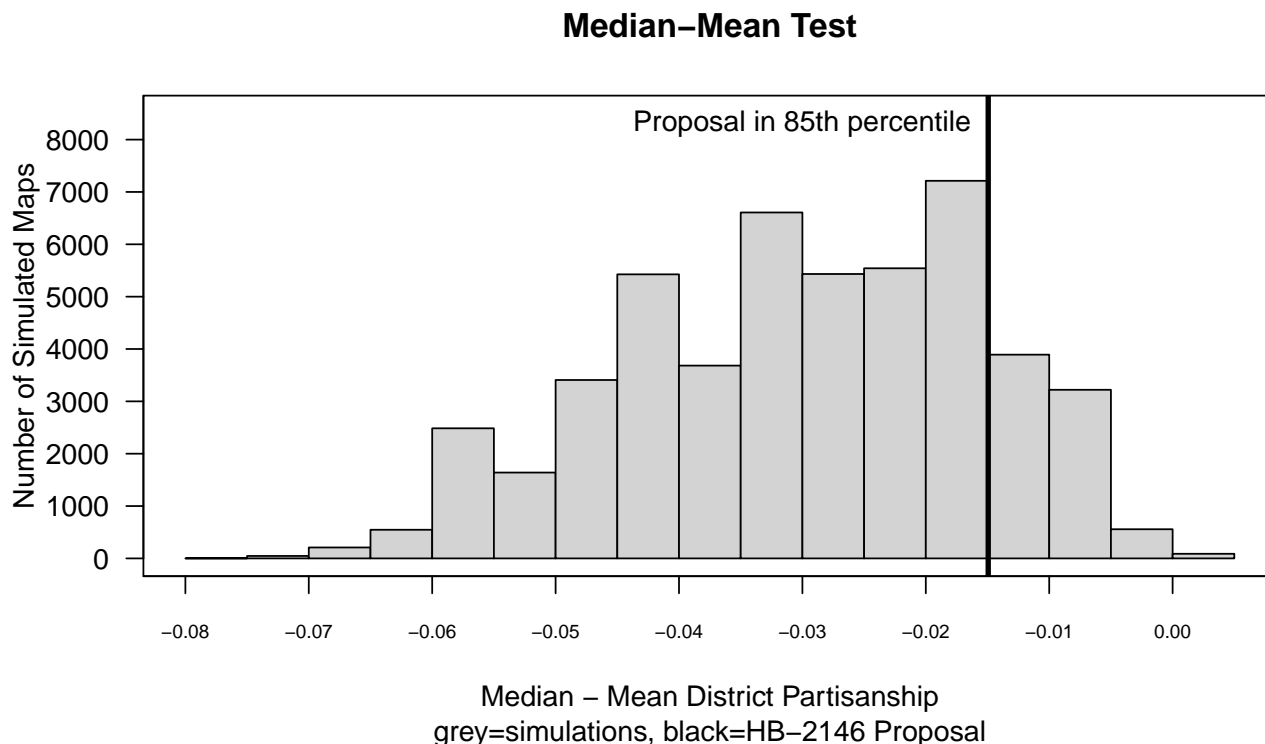
The solid black line shows the results of the HB2146 plan. There are two major points to take away from the results. First, without comparing to the simulations, the HB2146 plan is very nearly unbiased. The median-mean value for the HB2146 plan is -0.015, which is very close to zero.²¹ In other words, the median district and the mean district in the HB2146 plan are different by less than two percentage points. Second, when comparing the HB2146 plan to the simulations, the HB2146 plan is more favorable to Democratic voters than the vast majority of the simulated districting plans. The HB2146 plan has a median-mean value that is smaller (in absolute value) than 85 percent of the simulated plans. In other words, using only the non-partisan criteria described above to draw the simulated districts, 85% of them generate districts with a greater median-mean value, indicating a less efficient distribution of Democratic voters than the HB2146 plan contains.

5.6 Efficiency Gap

The efficiency gap is another common redistricting metric and is similar to the median-mean measure in that it looks for the degree to which a party's votes statewide are translated

²¹For example, the congressional plan that was challenged in the *League of Women Voters of Pennsylvania* case in 2017-2018 showed the congressional district plan had a median-mean difference of -0.059. The post-LWV case 2020 congressional plan had a median-mean difference of tktk.

Figure 5: Median-Mean Measure of HB2146 plan and Simulations



Note: Values calculated by taking the Democratic partisan index of the median district minus the mean of all 17 districts' partisan indices. Negative numbers indicate a districting plan that favors Republicans and positive numbers indicate a slant in favor of Democrats. The grey histogram shows the results for each of the simulations. The black bar shows the results for the HB2146 plan. The proposal shows very little absolute bias (it is very close to zero) and is more favorable to Democrats than 85% of the simulated districts.

into seats in each district.²² A description of this measure provided by the Brennan Center for Justice summarizes it well: “[T]he efficiency gap counts the number of votes each party wastes in an election to determine whether either party enjoyed a systematic advantage in turning votes into seats. Any vote cast for a losing candidate is considered wasted, as are all the votes cast for a winning candidate in excess of the number needed to win.”²³ In other words, the ideal strategy for a political to maximize the impact of their voters is to distribute

²²McGhee, Eric. “Measuring efficiency in redistricting.” *Election Law Journal: Rules, Politics, and Policy* 16, no. 4 (2017): 417-442. Veomett, Ellen. “Efficiency gap, voter turnout, and the efficiency principle.” *Election Law Journal: Rules, Politics, and Policy* 17, no. 4 (2018): 249-263. Plener Cover, Benjamin. “Quantifying partisan gerrymandering: An evaluation of the efficiency gap proposal.” *Stan. L. Rev.* 70 (2018): 1131.

²³https://www.brennancenter.org/sites/default/files/legal-work/How_the_Efficiency_Gap_Standard_Works.pdf

them as evenly as possible across districts so as to win by a narrow margin in the district they win and lose by very large margins in the districts where they lose. Put another way, ‘win by a little, lose by a lot’ is the ideal strategy for a party to maximize their impact of their voters.²⁴

The Brennan Center provides a simple example of how the efficiency gap is calculated:

To understand how the efficiency gap works, consider a hypothetical state with 500 residents that is divided into five legislative districts, each with 100 voters. In the most recent election cycle, Democrats won Districts 1 and 2 by wide margins, while Republicans won Districts 3, 4, and 5 in closer races. Overall, Democratic candidates received 55 percent of the statewide vote but won just 40 percent of the legislative seats, while Republican candidates received 45 percent and won 60 percent of the seats. The table below shows the election results for each district.²⁵

District	D votes	R Votes	Result
1	75	25	D wins
2	60	40	D wins
3	43	57	R wins
4	48	52	R wins
5	49	51	R wins
Total:	275	225	

Once we have the election results, the first step is to consider the number of “wasted votes” in each district. Because the Republican candidate in this example lost in District 1, all 25 of the votes cast for that candidates are wasted. The Democratic candidate in District 1 won, but by 24 more votes than would be necessary (since all that is needed is 51 votes to win). Thus, there are 24 wasted Democratic votes in this district. Taking the difference indicates that there was a net of 1 Republican wasted vote in this district.

²⁴Of course, parties have other priorities and winning by a single vote might not be their ideal scenario in reality.

²⁵https://www.brennancenter.org/sites/default/files/legal-work/How_the_Efficiency_Gap_Standard_Works.pdf

The efficiency gap is then calculated as $\text{Efficiency Gap} = (\text{Total Democratic Wasted Votes} - \text{Total Republican Wasted Votes}) / \text{Total Votes}$. In order to account for uneven turnout across districts and elections, the efficiency gap formula can be re-expressed as the following equation: $\text{Efficiency Gap} = (\text{Seat Margin} - 50\%) - 2(\text{Vote Margin} - 50\%)$ where the seat margin is the fraction of seats won by Democrats minus 0.50 and the vote margin is the fraction of votes won by Democratic candidates statewide minus 0.50.²⁶

In this example and in Figure 5 I use the Democratic seat and vote margins which means that negative efficiency gap numbers indicate a districting plan that favors Republican voters and positive numbers indicate a plan that favors Democratic voters. As with the median-mean test, the efficiency gap has the drawback of not accounting for the natural clustering of Democratic voters in Pennsylvania and other states. However, as before I remedy this by also computing the efficiency gap for the simulated districting plans that also must account for the geographic distribution of voters in the state. This allows us to make an apples-to-apples comparison that accounts for political geography. Figure 6 displays the results of the efficiency-gap measure for the simulations (in grey) and the HB2146 plan (solid black line). The distribution of results from the simulations show that the geography of Pennsylvania leads to a naturally arising advantage for Republicans due to the dense clustering of Democratic voters in Philadelphia and Pittsburgh.²⁷

The solid black line shows the results of the HB2146 plan. There are two major points to take away from the results. First, the HB2146 plan is very nearly unbiased. The efficiency gap for the HB2146 plan is -0.02, which is very close to zero.²⁸ In other words, in the HB2146 plan Democratic votes are not much more likely than Republican votes to be “wasted” across the districts. Second, when comparing the HB2146 plan to the simulations, the HB2146

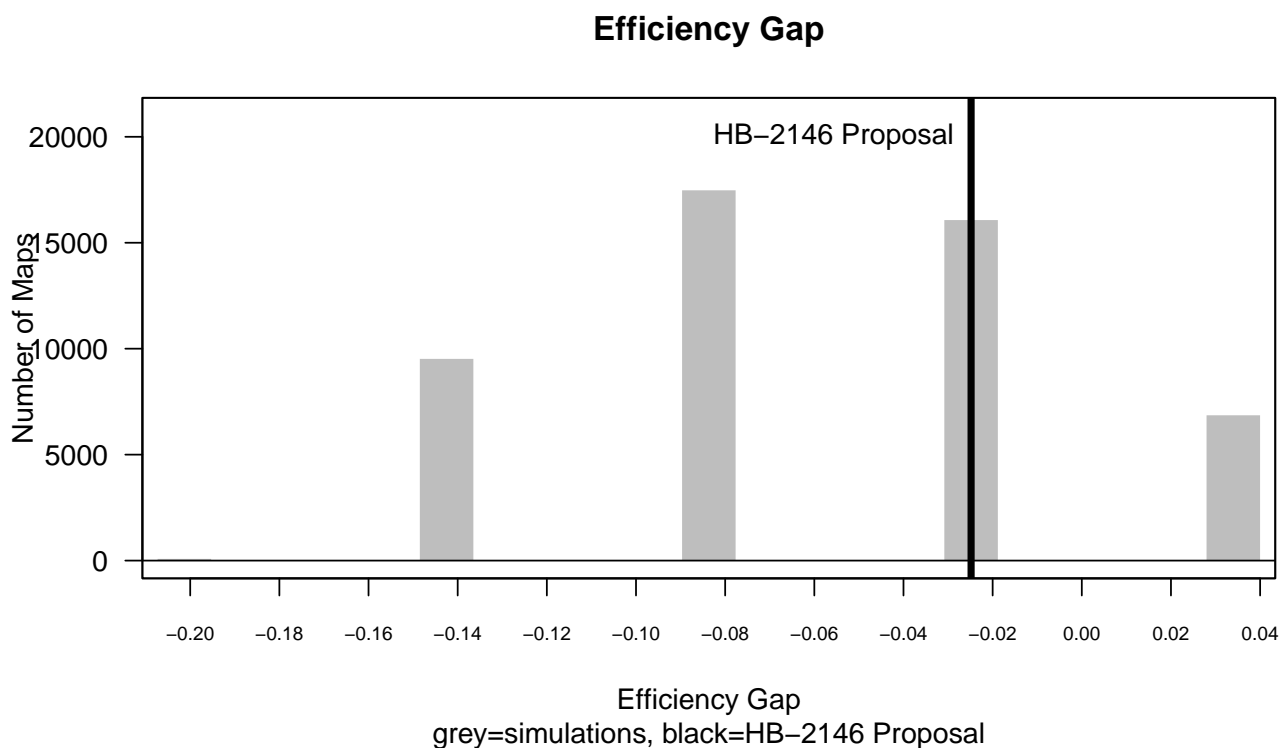
²⁶See McGhee, Eric. “Measuring efficiency in redistricting.” *Election Law Journal: Rules, Politics, and Policy* 16, no. 4 (2017): 417-442.

²⁷Because the efficiency gap is a measure of seat shares, it will be a ‘chunky’ measure with values for each seat won or lost in a plan, unlike the median-mean measure which is a more continuous measure that changes based on small changes in the margin of victory in each district.

²⁸For example, the congressional plan that was challenged in the *League of Women Voters of Pennsylvania* case in 2018 showed the congressional district plan had a pro-Republican efficiency gap of between -0.15 and -0.20. The post-LWV 2020 congressional map had an efficiency gap of tktk.

plan is more favorable to Democratic voters than the majority of the simulated districting plans. The HB2146 plan has an efficiency gap that is smaller (in absolute value) than all other outcomes in the simulated plans. While some of the simulated plans generate pro-Democratic efficiency gaps, they are larger in absolute terms and would be more biased than the HB2146 plan in favor of Democrats instead of the very slight lean towards Republicans exhibited in the HB2146 plan. In other words, using only the non-partisan criteria described above to draw the simulated districts, the HB2146 plan is in agreement with the least biased outcome in the simulations.

Figure 6: **Efficiency Gap Measure of HB2146 plan and Simulations**



Note: Distribution of efficiency gap among simulations shown in grey and the HB2146 plan shown as the solid black line. Negative values indicate plans that are have a Republican advantage and positive values indicate plans that have a Democratic advantage. The HB2146 plan has a very small efficiency gap of -0.02 and is more favorable to Democratic voters than the majority of the non-partisan simulations, which have larger (more negative) efficiency gap values.

5.7 Expected Seats from Uniform Swing

Another measure of redistricting considers how a plan performs, on average, under a variety of different electoral environments. While the partisan index does this to a degree by averaging across a number of elections and years, I present another measure here where I report the results of applying a randomly chosen uniform swing to the election results in the HB2146 plan and the simulations. A uniform swing is simply a way of asking what would the election results in the districts look like if a certain percentage were added uniformly to each district in the plan.²⁹ In other words, a uniform swing of 1.3 points in the Democratic direction would simply add 0.013 to the partisan index of each district while a uniform swing of 2.5 points in the Republican direction would simply subtract 0.025 from the partisan index of each district. Of course, a swing of 1 points is more likely than a swing of 5 or 6 points as large wave elections are more rare than elections that perform closer to the average performance of each party. To account for this, I randomly apply 10,000 uniform swings to the simulations and the partisan index of the HB2146 plan and calculate the average of the number of seats that are held by Democrats in the HB2146 plan and each of the 50,000 simulations. The value of the uniform swing is chosen from a normal distribution that is centered at zero with a standard deviation of 3 percentage points.³⁰ Thus, small swings are more likely than large swings, but large swings of 3, 4, 5, and even 6 percentage points are possible, just as we occasionally observe large electoral waves in national politics. This gives us an idea of how a plan performs, on average, under a variety of potential electoral environments.

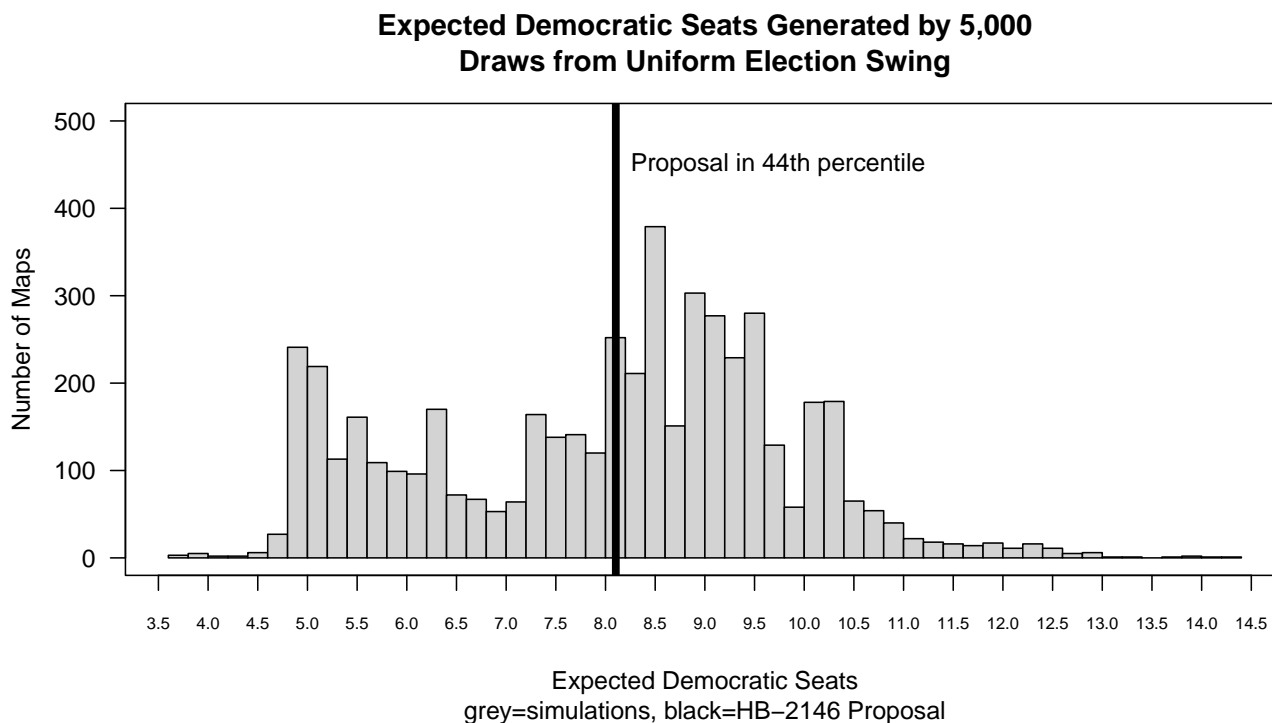
The result of this process is a measure of the expected number of Democratic seats that a plan will produce under a variety of different electoral conditions — some good for

²⁹See Jackman, Simon. "The predictive power of uniform swing." *PS: Political Science & Politics* 47, no. 2 (2014): 317-321 for a discussion of the concept of a uniform swing in elections. See Expert Report of Dr. Wesley Pegden in *Harper v. Hall*, Wake County North Carolina, No. 21 CVS 500085 for another example of using a uniform swing to calculate expected seat shares in redistricting.

³⁰3 percentage points is approximately the standard deviation of all of the statewide election results used in creating the 2012-2020 partisan index.

one party, some good for the other party, and some that are about average for both parties. Figure 7 shows the results of this process. The grey distribution shows the expected number of Democratic seats after applying the 5,000 draws from the uniform swing to the 50,000 simulations. Some of the simulated plans are very favorable to Republicans (with expected Democratic seat shares near 5) while other plans are very favorable to Democrats (with expected seat shares of 12 Democratic seats). The HB2146 plan, however, is nearly exactly in the middle of this distribution. The proposal generates an expected seats of 8.10 and is in the 44th percentile of the distribution of the simulated results. In other words, 44 percent of the simulations are worse for Democrats and 55 percent the simulations are better for Democrats compared to the HB2146 plan. The plan is positioned nearly in the middle of the non-partisan simulations on this measure.

Figure 7: Expected Seats from Uniform Swing of HB2146 plan and Simulations



Note: Distribution of expected seats in the HB2146 plan (black line) and the simulations (grey distribution) after applying 5,000 uniform swings to the partisan index. The value of each uniform swing is chosen from a normal distribution that is centered at zero with a standard deviation of 3 percentage points.

5.8 Considerations of Race

Table 3 shows the non-Hispanic Black voting age population percent of each district and the non-White voting age population percent of each district in the HB2146 plan. The districts are ordered from lowest to highest percentage in each category. The HB2146 plan contains one district (District 3) in Philadelphia that is just shy of being majority Black with a 49.82% non-Hispanic Black voting age population. Additionally, District 2 has a 59.60% non-White voting age population. District 15 has a 32.5% non-White voting age population.

Table 2: District-by-District Racial Composition of HB2146 plan

District rank	District Number	NHBVAP	District Number	Non-White
17	12	2.1%	14	7.2%
16	9	2.3%	12	9.0%
15	14	2.4%	16	10.8%
14	11	3.3%	9	11.6%
13	1	3.8%	17	12.2%
12	17	3.9%	13	13.8%
11	16	3.9%	1	18.1%
10	13	4.9%	11	18.1%
9	7	5.2%	8	18.3%
8	6	5.3%	10	20.0%
7	8	5.4%	4	25.6%
6	10	6.8%	6	26.4%
5	4	9.6%	7	27.5%
4	15	17.5%	15	28.3%
3	5	19.2%	5	32.8%
2	2	21.9%	2	57.1%
1	3	52.2%	3	68.6%

One potential criticism that some may raise of the simulations is that they do not take into account racial data when drawing district boundaries, and that once this constraint is imposed it may shift the partisan composition of the remaining districts in a way that the distribution of simulations may look different when racial factors are explicitly considered. This criticism, however, is unwarranted, as the explicit consideration of race, if anything, actually brings the distribution of simulations more in line with the HB2146 plan.

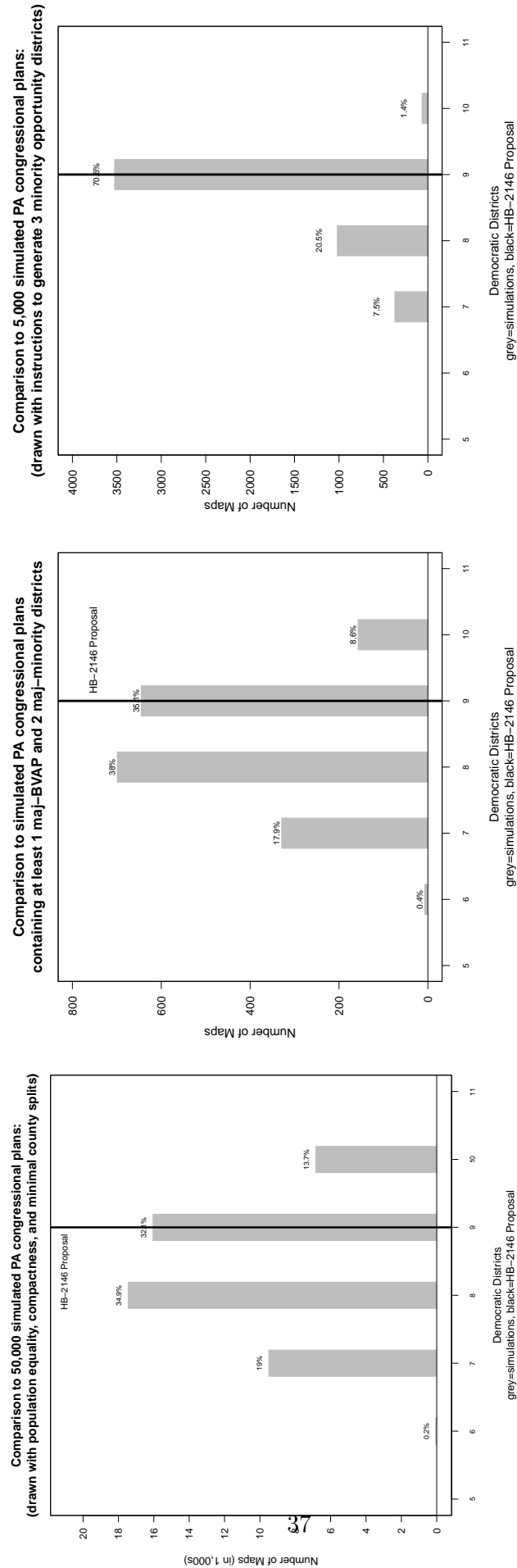
Figure 8 below shows this. The left panel of Figure 8 is the same as Figure 3 in

the earlier section of this report and shows the partisan distribution of the simulations and the location of the HB2146 plan. The middle panel of the figure subsets the race-blind simulations to the 1,842 plans that, while race was not explicitly considered, nevertheless contain both a majority-black district as well as an additional majority-minority district.³¹ Comparing the two panels shows that the distributions are extremely similar. The probability of a 9-D map, which is what the HB2146 plan generates, is nearly identical across the two sets of simulations (35.1% in the race-blind simulations, 32.1% in the race-filtered simulations).

The right panel in Figure 8 is the distribution of Democratic-leaning seats derived from a separate set of simulations that explicitly consider race. In this race-conscious set of simulations I instruct the model to ensure that every plan contains three districts that have at least a 35% non-white voting age population. These districts are often referred to as minority opportunity districts. I choose to instruct the model to generate three of these districts as it is similar to the number of minority opportunity districts generated by the HB2146 plan and the plans put forward recently by Governor Wolf. Other than the use of racial data to inform the construction of minority opportunity districts, the other parameters and data used in the two sets of simulations are identical in every other way. The right panel of Figure 8 shows that the results of the race-conscious simulations is a general reduction in the variation in the number of Democratic-leaning seats generated by the simulations. The probability of a 7-D or 8-D map has decreased substantially while there are no simulations that generate a 6-D map and only 1.4% of the simulations generate a 10-D map. A map with 9 Democratic-leaning districts is now the most common outcome with 70.6% of the simulations generating this result.

³¹While a reduction from 50,000 to 1,842 simulated plans is substantial, 1,842 is still a large number of plans to compare against and is larger than many simulations presented in other expert reports in recent redistricting litigation and is still large enough to provide a sufficient sample of maps to compare to.

Figure 8: Seats Carried by Democrats in Race-Blind and Race-Conscious Simulations



Note: The left panel contains the results of the 50,000 simulations that do not consider race when districts are drawn. The middle panel considers the 1,832 districts that, even though they were drawn without any racial data, nevertheless contain a majority Black district and an additional majority minority district. The right panel is the distribution from 5,000 simulations that are drawn with racial data and instructions to generate three districts with at least a 35% minority voting age population.

6 Conclusion

Based on the evidence and analysis presented above, my opinions regarding the HB2146 plan for congressional districts in Pennsylvania can be summarized as follows:

- The contemporary political geography of Pennsylvania is such that Democratic majorities are geographically clustered in the largest cities of the state while Republican voters dominate the suburban and rural portions of the state.
- This geographic clustering in cities puts the Democratic Party at a natural disadvantage when single-member districts are drawn. Specifically, districts drawn to be contiguous, compact, and contain minimal county and municipal splits will naturally create several districts in the Philadelphia and Pittsburgh areas that contain substantial Democratic majorities with many “wasted votes.”
- Based on a comparison between the HB2146 plan, and a set of 50,000 simulated maps, the HB2146 plan is a fair plan with no evidence of partisan gerrymandering across a number of different measures used to assess the fairness of a map.
- Based on an index of statewide elections from 2012-2020, the HB2146 plan generates nine Democratic-leaning districts and eight Republican-leaning districts.
- Based on the same index of statewide elections from 2012-2020, six of the districts in the HB2146 plan will likely be competitive with candidates from both parties having a realistic possibility of winning the seats. Five of these competitive districts are *extremely* competitive, with a partisan index within two percentage points of an even 50/50 split.
- Compared to a second set of simulations that explicitly consider the creation of minority opportunity districts, the HB2146 plan is similarly unbiased. The race-conscious simulations reduce the variation in Democratic-leaning districts substantially, mak-

ing nine Democratic-leaning districts the overwhelmingly most likely outcome in the simulations.

- Based on these commonly-used measures of redistricting fairness, the HB2146 plan is unbiased, and when compared to the simulations on these same metrics is balanced between occasionally having a slight Republican benefit and occasionally providing a slight benefit to Democratic voters.

I am being compensated for my time in preparing this report at an hourly rate of \$400/hour. My compensation is in no way contingent on the conclusions reached as a result of my analysis.

Michael Jay Barber

A handwritten signature in black ink, appearing to read "Michael Barber". The signature is fluid and cursive, with the first name "Michael" and last name "Barber" clearly distinguishable.

7 Appendix A: Additional Statistics

Table 3: District-by-District Compactness - Polsby-Popper

District rank	District Number	Polsby-Popper
17	6	0.20
16	2	0.23
15	3	0.24
14	14	0.24
13	17	0.24
12	4	0.25
11	5	0.26
10	13	0.29
9	15	0.29
8	9	0.30
7	8	0.35
6	7	0.37
5	1	0.40
4	12	0.42
3	10	0.45
2	16	0.49
1	11	0.50

Split Municipalities:

- Philadelphia*
- Stowe Township, Allegheny County
- Centre Township, Berks County
- Summit Township, Butler County
- East Hanover Township, Butler County
- Stonycreek Township, Cambria County
- West Whiteland Township, Chester County
- Pine Creek Township, Clinton County
- Silver Spring Township, Cumberland County
- Stroud Township, Dauphin County
- Luzerne Borough, Luzerne County
- Horsham Township, Montgomery County
- Buffalo Township, Union County
- Amwell Township, Washington County
- Independence Township, Washington County
- North Franklin Township, Washington County

*Population of the city is larger than a single congressional district and therefore will need to be split between multiple districts.

Split Counties:

- Allegheny County*
- Berks County
- Butler County
- Cambria County
- Chester County
- Clinton County
- Cumberland County
- Dauphin County
- Luzerne County
- Monroe County
- Montgomery County*
- Philadelphia County*
- Snyder County
- Union County
- Washington County

*Population of the county is larger than a single congressional district and therefore will need to be split between multiple districts.

Number of Democratic-leaning Districts using Alternative Election Indices:

- All 2012-2020 statewide elections: 9
- All 2014-2020 statewide elections: 8
- 2016-2020 index used by Dave's Redistricting: 9
- Index used by Planscore.com: 8

Appendix B: Curriculum Vitae

Michael Jay Barber

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ACADEMIC APPOINTMENTS

Brigham Young University, Provo, UT

August 2020 - present Associate Professor, Department of Political Science
2014 - July 2020 Assistant Professor, Department of Political Science
2014 - present Faculty Scholar, Center for the Study of Elections and Democracy

EDUCATION

Princeton University Department of Politics, Princeton, NJ

Ph.D., Politics, July 2014

- Advisors: Brandice Canes-Wrone, Nolan McCarty, and Kosuke Imai
- Dissertation: “Buying Representation: the Incentives, Ideology, and Influence of Campaign Contributions on American Politics”
- 2015 Carl Albert Award for Best Dissertation, Legislative Studies Section, American Political Science Association (APSA)

M.A., Politics, December 2011

Brigham Young University, Provo, UT

B.A., International Relations - Political Economy Focus, April, 2008

- *Cum Laude*

RESEARCH INTERESTS

American politics, congressional polarization, political ideology, campaign finance, survey research

PUBLICATIONS

19. **“Ideological Disagreement and Pre-emption in Municipal Policymaking”**
with Adam Dynes
Forthcoming at *American Journal of Political Science*
18. **“Comparing Campaign Finance and Vote Based Measures of Ideology”**
Forthcoming at *Journal of Politics*
17. **“The Participatory and Partisan Impacts of Mandatory Vote-by-Mail”**, with John Holbein
Science Advances, 2020. Vol. 6, no. 35, DOI: 10.1126/sciadv.abc7685
16. **“Issue Politicization and Interest Group Campaign Contribution Strategies”**, with Mandi Eatough
Journal of Politics, 2020. Vol. 82: No. 3, pp. 1008-1025

15. **“Campaign Contributions and Donors’ Policy Agreement with Presidential Candidates”**, with Brandice Canes-Wrone and Sharece Thrower
Presidential Studies Quarterly, 2019, 49 (4) 770–797
14. **“Conservatism in the Era of Trump”**, with Jeremy Pope
Perspectives on Politics, 2019, 17 (3) 719–736
13. **“Legislative Constraints on Executive Unilateralism in Separation of Powers Systems”**, with Alex Bolton and Sharece Thrower
Legislative Studies Quarterly, 2019, 44 (3) 515–548
Awarded the Jewell-Loewenberg Award for best article in the area of subnational politics published in *Legislative Studies Quarterly* in 2019
12. **“Electoral Competitiveness and Legislative Productivity”**, with Soren Schmidt
American Politics Research, 2019, 47 (4) 683–708
11. **“Does Party Trump Ideology? Disentangling Party and Ideology in America”**, with Jeremy Pope
American Political Science Review, 2019, 113 (1) 38–54
10. **“The Evolution of National Constitutions”**, with Scott Abramson
Quarterly Journal of Political Science, 2019, 14 (1) 89–114
9. **“Who is Ideological? Measuring Ideological Responses to Policy Questions in the American Public”**, with Jeremy Pope
The Forum: A Journal of Applied Research in Contemporary Politics, 2018, 16 (1) 97–122
8. **“Status Quo Bias in Ballot Wording”**, with David Gordon, Ryan Hill, and Joe Price
The Journal of Experimental Political Science, 2017, 4 (2) 151–160.
7. **“Ideologically Sophisticated Donors: Which Candidates Do Individual Contributors Finance?”**, with Brandice Canes-Wrone and Sharece Thrower
American Journal of Political Science, 2017, 61 (2) 271–288.
6. **“Gender Inequalities in Campaign Finance: A Regression Discontinuity Design”**, with Daniel Butler and Jessica Preece
Quarterly Journal of Political Science, 2016, Vol. 11, No. 2: 219–248.
5. **“Representing the Preferences of Donors, Partisans, and Voters in the U.S. Senate”**
Public Opinion Quarterly, 2016, 80: 225–249.
4. **“Donation Motivations: Testing Theories of Access and Ideology”**
Political Research Quarterly, 2016, 69 (1) 148–160.
3. **“Ideological Donors, Contribution Limits, and the Polarization of State Legislatures”**
Journal of Politics, 2016, 78 (1) 296–310.
2. **“Online Polls and Registration Based Sampling: A New Method for Pre-Election Polling”** with Quin Monson, Kelly Patterson and Chris Mann.
Political Analysis 2014, 22 (3) 321–335.
1. **“Causes and Consequences of Political Polarization”** In *Negotiating Agreement in Politics*. Jane Mansbridge and Cathie Jo Martin, eds., Washington, DC: American Political Science Association: 19–53. with Nolan McCarty. 2013.
 - Reprinted in *Solutions to Political Polarization in America*, Cambridge University Press. Nate Persily, eds. 2015
 - Reprinted in *Political Negotiation: A Handbook*, Brookings Institution Press. Jane Mansbridge and Cathie Jo Martin, eds. 2015

AVAILABLE WORKING PAPERS	<p>“Misclassification and Bias in Predictions of Individual Ethnicity from Administrative Records” (Revise and Resubmit at <i>American Political Science Review</i>)</p> <p>“Taking Cues When You Don’t Care: Issue Importance and Partisan Cue Taking” with Jeremy Pope (Revise and Resubmit)</p> <p>“A Revolution of Rights in American Founding Documents” with Scott Abramson and Jeremy Pope (Conditionally Accepted)</p> <p>“410 Million Voting Records Show the Distribution of Turnout in America Today” with John Holbein (Revise and Resubmit)</p> <p>“Partisanship and Trolleyology” with Ryan Davis (Under Review)</p> <p>“Who’s the Partisan: Are Issues or Groups More Important to Partisanship?” with Jeremy Pope (Revise and Resubmit)</p> <p>“Race and Realignment in American Politics” with Jeremy Pope (Revise and Resubmit)</p> <p>“The Policy Preferences of Donors and Voters”</p> <p>“Estimating Neighborhood Effects on Turnout from Geocoded Voter Registration Records.” with Kosuke Imai</p> <p>“Super PAC Contributions in Congressional Elections”</p>
WORKS IN PROGRESS	<p>“Collaborative Study of Democracy and Politics” with Brandice Canes-Wrone, Gregory Huber, and Joshua Clinton</p> <p>“Preferences for Representational Styles in the American Public” with Ryan Davis and Adam Dynes</p> <p>“Representation and Issue Congruence in Congress” with Taylor Petersen</p> <p>“Education, Income, and the Vote for Trump” with Edie Ellison</p>
INVITED PRESENTATIONS	<p>“Are Mormons Breaking Up with Republicanism? The Unique Political Behavior of Mormons in the 2016 Presidential Election”</p> <ul style="list-style-type: none">• Ivy League LDS Student Association Conference - Princeton University, November 2018, Princeton, NJ <p>“Issue Politicization and Access-Oriented Giving: A Theory of PAC Contribution Behavior”</p> <ul style="list-style-type: none">• Vanderbilt University, May 2017, Nashville, TN

“Lost in Issue Space? Measuring Levels of Ideology in the American Public”

- Yale University, April 2016, New Haven, CT

“The Incentives, Ideology, and Influence of Campaign Donors in American Politics”

- University of Oklahoma, April 2016, Norman, OK

“Lost in Issue Space? Measuring Levels of Ideology in the American Public”

- University of Wisconsin - Madison, February 2016, Madison, WI

“Polarization and Campaign Contributors: Motivations, Ideology, and Policy”

- Hewlett Foundation Conference on Lobbying and Campaign Finance, October 2014, Palo Alto, CA

“Ideological Donors, Contribution Limits, and the Polarization of State Legislatures”

- Bipartisan Policy Center Meeting on Party Polarization and Campaign Finance, September 2014, Washington, DC

“Representing the Preferences of Donors, Partisans, and Voters in the U.S. Senate”

- Yale Center for the Study of American Politics Conference, May 2014, New Haven, CT

CONFERENCE
PRESENTATIONS

Washington D.C. Political Economy Conference (PECO):

- 2017 discussant

American Political Science Association (APSA) Annual Meeting:

- 2014 participant and discussant, 2015 participant, 2016 participant, 2017 participant, 2018 participant

Midwest Political Science Association (MPSA) Annual Meeting:

- 2015 participant and discussant, 2016 participant and discussant, 2018 participant

Southern Political Science Association (SPSA) Annual Meeting:

- 2015 participant and discussant, 2016 participant and discussant, 2017 participant

TEACHING
EXPERIENCE

Poli 315: Congress and the Legislative Process

- Fall 2014, Winter 2015, Fall 2015, Winter 2016, Summer 2017

Poli 328: Quantitative Analysis

- Winter 2017, Fall 2017, Fall 2019, Winter 2020, Fall 2020, Winter 2021

Poli 410: Undergraduate Research Seminar in American Politics

- Fall 2014, Winter 2015, Fall 2015, Winter 2016, Summer 2017

AWARDS AND GRANTS

- 2019 BYU Mentored Environment Grant (MEG), American Ideology Project, \$30,000
- 2017 BYU Political Science Teacher of the Year Award
- 2017 BYU Mentored Environment Grant (MEG), Funding American Democracy Project, \$20,000
- 2016 BYU Political Science Department, Political Ideology and President Trump (with Jeremy Pope), \$7,500
- 2016 BYU Office of Research and Creative Activities (ORCA) Student Mentored Grant x 3
 - Hayden Galloway, Jennica Peterson, Rebecca Shuel
- 2015 BYU Office of Research and Creative Activities (ORCA) Student Mentored Grant x 3
 - Michael-Sean Covey, Hayden Galloway, Sean Stephenson
- 2015 BYU Student Experiential Learning Grant, American Founding Comparative Constitutions Project (with Jeremy Pope), \$9,000
- 2015 BYU Social Science College Research Grant, \$5,000
- 2014 BYU Political Science Department, 2014 Washington DC Mayoral Pre-Election Poll (with Quin Monson and Kelly Patterson), \$3,000
- 2014 BYU Social Science College Award, 2014 Washington DC Mayoral Pre-Election Poll (with Quin Monson and Kelly Patterson), \$3,000
- 2014 BYU Center for the Study of Elections and Democracy, 2014 Washington DC Mayoral Pre-Election Poll (with Quin Monson and Kelly Patterson), \$2,000
- 2012 Princeton Center for the Study of Democratic Politics Dissertation Improvement Grant, \$5,000
- 2011 Princeton Mamdouha S. Bobst Center for Peace and Justice Dissertation Research Grant, \$5,000
- 2011 Princeton Political Economy Research Grant, \$1,500

OTHER SCHOLARLY ACTIVITIES

- Expert Witness in Nancy Carola Jacobson, et al., Plaintiffs, vs. Laurel M. Lee, et al., Defendants. Case No. 4:18-cv-00262 MW-CAS (U.S. District Court for the Northern District of Florida)
- Expert Witness in Common Cause, et al., Plaintiffs, vs. LEWIS, et al., Defendants. Case No. 18-CVS-14001 (Wake County, North Carolina)
- Expert Witness in Kelvin Jones, et al., Plaintiffs, v. Ron DeSantis, et al., Defendants, Consolidated Case No. 4:19-cv-300 (U.S. District Court for the Northern District of Florida)
- Expert Witness in Community Success Initiative, et al., Plaintiffs, v. Timothy K. Moore, et al., Defendants, Case No. 19-cv-15941 (Wake County, North Carolina)
- Expert Witness in Richard Rose et al., Plaintiffs, v. Brad Raffensperger, Defendant, Civil Action No. 1:20-cv-02921-SDG (U.S. District Court for the Northern District of Georgia)

Georgia Coalition for the People's Agenda, Inc., et al., Plaintiffs, v. Brad Raffensberger, Defendant. Civil Action No. 1:18-cv-04727-ELR (U.S. District Court for the Northern District of Georgia)

Expert Witness in Alabama, et al., Plaintiffs, v. United States Department of Commerce; Gina Raimondo, et al., Defendants. Case No. CASE No. 3:21-cv-00211-RAH-ECM-KCN (U.S. District Court for the Middle District of Alabama Eastern Division)

Expert Witness in League of Women Voters of Ohio, et al., Relators, v. Ohio Redistricting Commission, et al., Respondents. Case No. 2021-1193 (Supreme Court of Ohio)

Expert Witness in Regina Adams, et al., Relators, v. Governor Mike DeWine, et al., Respondents. Case No. 2021-1428 (Supreme Court of Ohio)

Expert Witness in Rebecca Harper, et al., Plaintiffs, v. Representative Destin Hall, et al., Defendants (Consolidated Case). Case No. 21 CVS 500085 (Wake County, North Carolina)

ADDITIONAL
TRAINING

EITM 2012 at Princeton University - Participant and Graduate Student Coordinator

COMPUTER
SKILLS

Statistical Programs: R, Stata, SPSS, parallel computing

Updated January 7, 2022

EXPERT REPORT OF JONATHAN RODDEN, Ph.D.

***Carter v. Chapman*, 464 MD 2021, 465 MD 2021 (Pa. Commw. Ct.)
January 26, 2022**

In this report, I provide a brief analysis of a set of 13 Pennsylvania congressional redistricting plans that were provided to me on January 24. I have been asked to provide a basic analysis of these plans, and to compare them with a redistricting plan, called the “Carter Plan,” that I submitted in this case on January 24. Please see my previous report for a discussion of my qualifications and relevant experience.

First, I assess the extent to which these plans place voters in different districts than those of the 2018 Remedial Plan ordered by the Pennsylvania Supreme Court four years ago. Second, I assess these plans according to several traditional redistricting criteria, including population equality, contiguity, compactness, and splits of counties, county subdivisions, and vote tabulation districts. Third, I assess the likely partisan outcomes associated with these plans.

I. DEVIATION FROM THE PREVIOUS REDISTRICTING PLAN

In the expert report I submitted in this case on January 24, I explained that the Carter Plan was explicitly crafted to minimize the changes from the 2018 Remedial Plan, which had only been in place for two elections. This choice was made because the Pennsylvania Supreme Court had very recently endorsed this plan as meeting all its objective criteria.

I measured the extent to which each of the submitted plans places voters in the same district as in the previous 2018 plan. Note that some district numbers have changed. For each district in each submitted plan, the task is to find the overlapping fragments of districts from the previous plan and identify the largest one. I then calculate the share of all voters in the proposed new district living in that largest fragment. For instance, since Bucks County is in the corner of the state and has a population relatively close to the required population for a congressional district, most map-drawers drew a district that was dominated by Bucks County, adding in some municipalities on the Western or Southern edge of the district in Montgomery or Philadelphia, just as the previous plan had done. For this Bucks County-oriented district, many of the plans had what I will call a “retained population share” of over 90 percent. However, as explained in my earlier report, these shares were necessarily much lower in Central Pennsylvania in all the plans, because rural population loss required more substantial changes.

Some of the plans also introduced major changes in metro areas. For instance, while the 2018 Remedial Plan kept the city of Pittsburgh whole, some plans, including the Governor’s plan, opted to split it. The plan introduced in HB2146 pursues a different orientation of the Pittsburgh area altogether, adding a number of more rural, Republican communities to what was previously a very competitive but Republican-leaning district.

I have calculated the average “retained population share” across all the districts in each plan, and I report this quantity in Table 1.

Table 1: Retained Population Share in 14 Submitted PA Congressional Plans

Plan	Retained Population Share
Carter	86.6
CCFD	76.1
Citizen Voters	82.4
HB2146	78.5
Draw the Lines PA	78.8
GMS	72.8
Governor Wolf	81.2
Ali	81.5
PA House Dem. Caucus	73.3
Rescenthaler 1	76.5
Rescenthaler 2	76.5
Senate Dem. Plan 1	72.5
Senate Dem. Plan 2	72.5
Voters of PA	80.6

Not surprisingly, since the Carter Plan explicitly set out to minimize boundary changes, its districts retain more of their former population—around 87 percent—than any of the submitted plans. The plans that make the largest changes are the Senate Democratic plans, the GMS plan, and the House Democratic Caucus plan.

II. TRADITIONAL REDISTRICTING CRITERIA

Population Equality

The ideal population for a Pennsylvania Congressional District in the 2022 round of redistricting is 764,865. Each of the maps, including the Carter Plan, creates 17 districts where the population, according to the 2020 Census, is either precisely that number, one more, or one less. The only exception is the map submitted by Khalif Ali, where the districts were drawn using the Legislative Reapportionment Commission’s Data Set #2, which contains population adjustments to account for the reallocation of most prisoners to their last known address prior to incarceration. When analyzed using the Census data or Legislative Reapportionment Commission’s Data Set #1, the Ali map results in districts that have population deviations of up to several thousand people. But it purports to be equally populated under Data Set #2, and I did not analyze its population equality under that data set.

Given ongoing residential moves, measurement error, and the efforts of the census department to protect privacy, deviations of zero or a single voter from “perfect” equality are a form of what is commonly referred to as “false precision.” Given measurement error and population churn, even plans with zero population deviation in every district are unlikely to be *truly* equal in population.

The best we can say is that in each of these plans, populations are as close to equal as is possible given the constraints of the data.

Contiguity

Each of the maps, including the Carter Plan, has districts made up of contiguous territory. The only potential exception is the CCFD map, which includes a zero-population noncontiguous census block in District 9.

Compactness

All the maps I received include relatively compact districts. There is no widely accepted “best” measure of compactness, and each measure achieves something different. Two measures of compactness often considered by courts are the Polsby-Popper score and the Reock score. The Polsby-Popper score is the ratio of the area of the district to the area of a circle whose circumference is equal to the perimeter of the district. This score rewards districts with smooth perimeters and penalizes those with more contorted borders. To the extent that jagged borders are sometimes caused by natural features, like rivers separating counties, coastlines, or boundaries of cities that have experienced odd-shaped annexations over the years, the Polsby-Popper score might serve as a rather poor indicator of political manipulation. If one map-drawer chooses to keep an odd-shaped city whole, and another elects to split the city cleanly down the middle, the first map-drawer will end up with a district with a lower Polsby-Popper score. Likewise, if one district-drawer chooses to keep a county whole—but the county’s boundary is a meandering river—this district will have a lower Polsby-Popper score than that of another district-drawer who chooses to split the county along a smooth municipal boundary.

The Reock score is computed by dividing the area of the district by the area of the smallest circle that would completely enclose it. The downside of this measure is that it can be sensitive to the orientations of a district’s extremities. A rather odd-shaped district, for example one resembling a coiled snake, might still end up with a low Reock score if its stays nicely within the bounding circle. Fortunately, the districts submitted to the Court are not rife with such odd-shaped districts.

In general, the compactness scores all fall within a relatively narrow range. None of the submitted plans features highly non-compact districts with tentacles, claws, and the like.

Splits of Jurisdictions

Some maps- are more successful than others in keeping political subdivisions whole. Table 1 provides information about county splits in the submitted plans. It makes a subtle distinction between the number of split counties and the total number of county splits. The number of split counties is, quite simply, the number of counties that were not kept whole, regardless of how many splits they experienced. However, some counties were split multiple times. Many of the maps, for instance, split Philadelphia, Montgomery, or Berks County among three rather than just two districts. And some of the plans extracted separate chunks of the same county in different regions of the county. The last column in Table 1 adds up the *total* number of splits, such that a county

split between three districts counts as two splits rather than one, and two non-contiguous splits of the same county are both counted.

**Table 2:
County Splits in 14 Submitted Congressional Plans**

Plan	Number of Split Counties	Total County Splits
Carter	14	17
CCFD	16	20
Citizen Voters	14	17
HB2146	15	20
Draw the Lines PA	14	18
GMS	15	19
Governor Wolf	16	22
Ali	16	20
PA House Dem. Caucus	16	18
Resenthaler 1	13	18
Resenthaler 2	13	18
Senate Dem. Plan 1	17	20
Senate Dem. Plan 2	16	18
Voters of PA	15	17

The two Resenthaler plans split 13 counties, while the Carter, Citizen Voters, and Draw the Lines PA plans split 14. Note that in my previous report, I adopted the Pennsylvania Supreme Court’s logic, arguing that the Carter Plan’s split of only 6 people in order to preserve contiguity while avoiding a split of Chester County should not be counted, and the true number of split counties in the Carter Plan is actually 13 instead of 14. However, since I have not had the opportunity to assess such technicalities in each of the 13 other plans, Table 2 counts even these tiniest splits wherever they occur. The largest number of split counties, 17, is found in Senate Democratic Plan 1. However, if we focus on *total* splits, the Carter Plan, Citizen Voters Plan, and Voters of PA plans demonstrate the lowest number of splits, 17, and the Governor’s Plan demonstrates the largest number of splits, 22.

One might imagine that a low number of split counties goes hand in hand with higher levels of compactness, but for reasons described above, this is not necessarily the case. Figure 1 plots the Reock Score against the total number of county splits in each plan. There is only a weak negative relationship. Figure 1 shows that the “Voters of Pennsylvania” plan and the Carter Plan are the most compact, according to the Reock Score, and have the lowest number of total county splits.

Figure 1: Reock Compactness Score and Total County Splits, 14 Submitted Plans

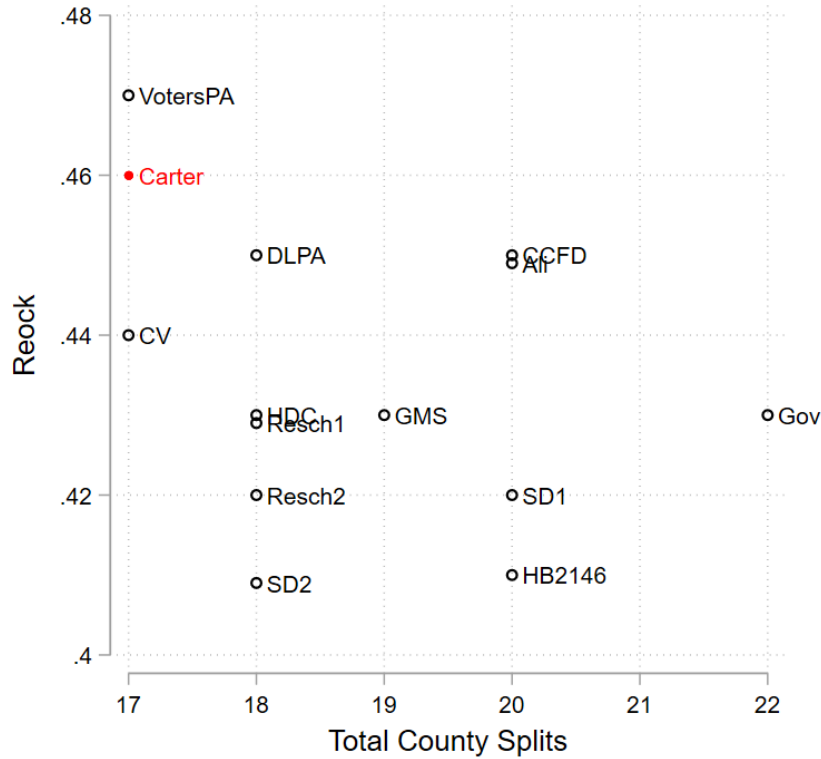


Table 3 examines splits in the boundaries of County subdivisions, using geo-spatial boundaries curated by the U.S. Census Department. The Carter Plan splits 20 such subdivisions, while the lowest number of subdivisions splits is demonstrated by the CCFD Plan, with 14. When it comes to *total* County Subdivision splits, the Carter Plan is in the middle of the distribution across plans.

Table 3: County Subdivision Splits in 14 Submitted Congressional Plans

Plan	Number of Split County Subdivisions	Total County Subdivision Splits
Carter	20	23
CCFD	14	18
Citizen Voters	16	21
HB2146	16	25
Draw the Lines PA	16	23
GMS	16	26
Governor Wolf	17	35
Ali	18	24
PA House Dem. Caucus	18	20
Resenthaler 1	15	22
Resenthaler 2	15	22
Senate Dem. Plan 1	19	22
Senate Dem. Plan 2	16	18
Voters of PA	18	26

In the world of election administration, it is especially useful to avoid splitting vote tabulation districts (VTDs). Above all, split VTDs can lead to mistakes for local election administrators, who must be sure to provide the right ballot for residents living in two different political districts, even though they might be voting at the same polling place. However, when a redistricting plan is aiming to seek population equality within a very narrow allowable deviation, like plus or minus one person, it is often not possible to avoid splitting a VTD somewhere along the boundary of two districts, since the VTD populations simply do not add to precisely the right numbers. Nevertheless, it is possible to minimize these splits. Table 4 provides the number of VTDs that were split by each plan.

Table 4: Split Vote Tabulation Districts in 14 Submitted PA Congressional Plans

Plan	Number of Split VTDs
Carter	14
CCFD	16
Citizen Voters	26
HB2146	9
Draw the Lines PA	23
GMS	17
Governor Wolf	17
Ali	27
PA House Dem. Caucus	16
Reschenthaler 1	31
Reschenthaler 2	31
Senate Dem. Plan 1	16
Senate Dem. Plan 2	16
Voters of PA	16

The two plans with the lowest number of split VTDs are HB2146 and the Carter Plan. The plans with the most split VTDs are the Reschenthaler plans and the Ali Plan.

III. PARTISAN FAIRNESS AND COMPETITION

A final task is to assess whether the plans are fair to both political parties. As explained in my initial report submitted in this case, if we look at statewide elections in recent years, around 52 to 53 percent of votes for the two major parties go to Democrats. The 2018 Remedial Plan had 18 districts, and the Congressional delegation was evenly split, 9 to 9. Given the overall statewide vote share, this map gave a slight advantage in practice to the Republican Party, though as pointed out in my earlier report, it is important not to be misled by simple seat counts without a closer look at the underlying partisanship of districts and the role of incumbency. Several districts in the previous plan were relatively balanced, both in terms of statewide partisanship and actual congressional elections, and one district—District 1 in Bucks County—leaned toward Democratic candidates in statewide races but consistently elected a Republican Congressional representative.

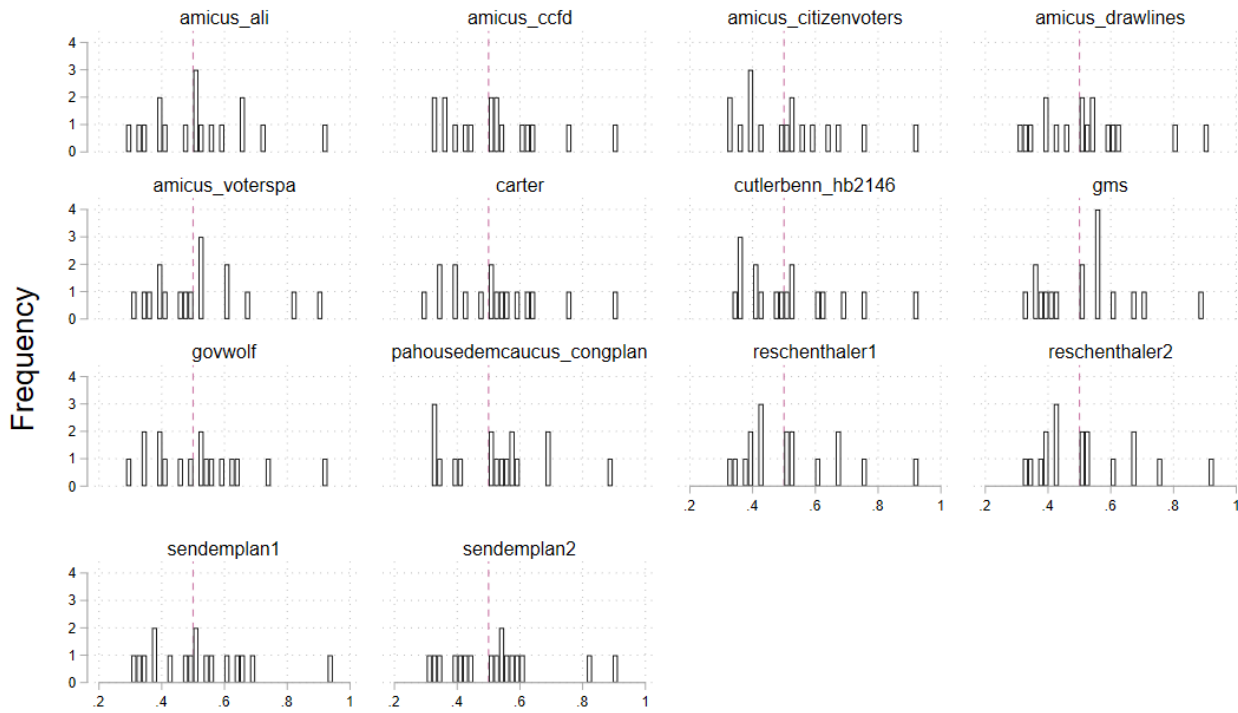
Now there is an odd number of districts, so a tied delegation is no longer possible. Given the Democrats' advantage in the statewide vote share, one would anticipate that the Democratic Party would be able to win a majority of congressional seats as well, especially since, as detailed in my previous report, population has been declining in Republican areas and increasing in Democratic areas, with Democratic support also *growing* in the areas that are gaining population.

As I have described elsewhere,¹ Pennsylvania's political geography is such that at the scale of congressional districts, Democratic and Republican areas are in sufficient proximity to one another—above all, along the Eastern side of the state and in the Pittsburgh suburbs—that it should also be possible to sustain some competitive districts that will change hands between the parties as voters' preferences change.

To examine partisanship, as in my previous report, I have aggregated the precinct-level votes for the two parties in all the statewide elections from 2016 to 2020 and calculated the average share of the vote for each of the two major parties in each district. A good way to visualize the result of this exercise is with Figure 2, which provides histograms of the Democratic vote share across districts for each plan. The 50 percent point is indicated with a dashed red line. On the left-hand side of the line are districts that Republicans can anticipate winning, and on the right-hand side are the districts that Democrats can expect to win. When the bars are higher, this indicates that there are multiple districts in that bin. The height of the bin corresponds to the number of districts in that bin. For instance, we can see that the Ali Plan has three districts that are very close to evenly divided between the parties. We also can see that all the plans have exceptionally Democratic districts on the right-hand side of the graph because most of them keep the very Democratic neighborhoods of Philadelphia together.

¹ Jonathan Rodden, *Why Cities Lose: The Deep Roots of the Urban-Rural Political Divide*. New York: Basic Books.

Figure 2:
The Distribution of Partisanship Across Districts of 14 Submitted Congressional Plans



Average Democratic Vote Share, 2016 to 2020

Graphs by plan

One way to use the data in Figure 2 is to simply add up the districts that are on either side of the red line. How many districts have Democratic majorities in these statewide races, however small, and how many have Republican majorities?

If we are interested in competitive districts, we can also ask how many seats are in the bins closest to the red lines in Figure 2. I have calculated the number of seats in each plan between 50 percent Democratic and 52 percent Democratic, and those between 50 percent Republican and 52 percent Republican, using statewide elections from 2016 to 2020. This information is set forth in Table 5 below.

Table 5: Number of Seats in Various Categories, 14 Submitted Congressional Plans

Plan	# of seats with statewide Dem vote share >.5	# of seats with statewide Dem vote share >.52	# of seats with statewide Dem vote share between .5 and .52	# of seats with statewide Rep vote share between .5 and .52	# of seats with statewide Rep vote share >.52	# of seats with statewide Dem vote share >.5
Ali	10	7	3	0	7	7
CCFD	10	8	2	0	7	7
Citizen Voters	9	8	1	1	7	8
Draw the Lines PA	10	8	2	0	7	7
Voters of PA	8	8	0	2	7	9
Carter	10	8	2	0	7	7
HB2146	8	7	1	2	7	9
GMS	10	8	2	0	7	7
Governor Wolf	9	9	0	1	7	8
PA House Dem. Caucus	11	9	2	0	6	6
Resenthaler 1	9	6	3	0	8	8
Resenthaler 2	9	7	2	0	8	8
Senate Dem. Plan 1	9	7	2	1	7	8
Senate Dem. Plan 2	10	9	1	0	7	7

In most of the plans, either 9 or 10 seats have average Democratic vote shares above 50 percent (see the first column in Table 5). However, one can look at Figure 2 above, or at the middle columns in Table 5, to see that typically, anywhere from one to three of the nominally Democratic districts are very close to 50 percent. In the Carter Plan, two of the Democratic-leaning districts, as determined by statewide elections, are in this category. These are usually in the Lehigh Valley, the Northeast, and/or suburban Pittsburgh. In other words, by no means does this analysis tell us the Democrats will win 10 seats in, for instance, the GMS plan. Figure 2 and Table 5 tell us that two of the districts in this plan are essentially toss-ups based on the statewide data.

In the Carter Plan, there are 10 Democratic-leaning districts, but two of them are very close to toss-ups, yet there are no Republican-leaning toss-ups. Thus, based purely on statewide election data, the Carter Plan could easily lead to a 9-8 Republican majority.

However, as I explained in my earlier report, the statewide analysis in Table 5 is potentially quite flawed. I pointed out that the Republican incumbent in Bucks County, Brian Fitzpatrick, typically outperforms his party by over 7 percentage points. As mentioned above, the Bucks County district experiences very little change in all these plans. As a result, all these plans include a district with a statewide Democratic vote share above 50 percent where the Republican incumbent is very likely to win. In fact, in many of these plans, including the Carter Plan, Table 5 categorizes the district

in which Rep. Fitzpatrick wins by large margins as a relatively comfortable *Republican* district. In other words, if the goal of the first column of Table 5 is to predict Democratic wins, one seat should be moved from the far-left Democratic column in Table 5 to the far-right Republican column. The anticipated number of Democratic seats in the Carter Plan, for example, is 9, not 10 if we consider this important fact.

Three plans are outliers: First, HB2146 and the “Voters of PA” plan both produce a minority of Democratic-leaning seats in spite of the Democrats’ overall statewide majorities during this period. This is especially noteworthy if we account for the incumbent in the Bucks County-based district and recognize that these plans are likely to produce only 7 Democratic seats (i.e. 41 percent of the seats in a state where Democrats get more than 52 percent of the vote).

The Reschenthaler 1 and Reschenthaler 2 plans also stand out, in that they produce 8 comfortable Republican seats, not including Rep. Fitzpatrick’s seat, and an unusually low number of comfortable Democratic seats, achieving a nominal, and potentially misleading, total of 9 Democratic-leaning seats by producing either 2 or 3 toss-up seats that lean Democratic.

The Senate Democratic Plan Number 1, too, produces fewer comfortable Democratic seats than almost every other plan.

In the other direction, the Pennsylvania House Democratic Caucus is an outlier in that it is the only plan with 11 seats above the 50 percent Democratic threshold. Governor Wolf’s Plan, as well as the Senate Democratic Plan Number 2 are unusual in that they produce only 1 district in the 50 to 52 percent range for either political party.

The HB2146 and “Voters of PA” plans, as well as the Reschenthaler plans, also stand out in another respect. Using the 2016 to 2020 statewide average, I have calculated the mean Democratic vote share across all the districts in each plan, as well as the median Democratic vote share in each plan. The mean and median are almost identical in all the plans, with the exception of these three. In HB2146, the average Democratic vote share is higher by 2.4 percentage points than the median Democratic vote share. In the “Voters of PA” plan, it is higher by 2.6 percentage points. In the Reschenthaler plans, the difference is 1 percentage point. This simple statistic captures the fact—also evident in Figure 2 above, that the distribution of Democratic vote shares across districts is unusually skewed in these plans. Democrats are quite concentrated in districts that they win with large majorities, in the right tail of the distributions depicted in Figure 2, and there is a large density of districts that Republicans win by comfortable, but not overwhelming, majorities, to the left of the red lines in Figure 2. This results in a mean Democratic vote share that is higher than the median. We do not see a similar skew in the cross-district distributions for any of the other plans.

Table 6: Mean-Median Difference for 14 Submitted Congressional Plans.

Plan	<u>Mean Median Difference</u>
Ali	0.004
Carter	0.005
CCFD	0.005
Citizen Voters	0.014
Draw the lines	0.006
GMS	0.005
Gov. Wolf	0.006
HB2146	0.024
HDC	0.004
Resenthaler 1	0.01
Resenthaler 2	0.01
Sen Dems 1	0.007
Sen Dems 2	0.007
Voters of PA	0.026

IV. CONCLUSION

The 14 plans reviewed in this report are in a relatively narrow band when it comes to population equality, county, county subdivision, and vote tabulation district splits, as well as compactness. The Carter Plan was more faithful than the others to the original 2018 districts and preserved more of the population of these districts within the proposed new districts. It also ranks at or near the top of the plans in terms of county and VTD splits, and the Reock compactness score.

Most of the plans produce either 9 or 10 districts in which Democratic statewide candidates have received majorities in recent years. The Carter Plan produces 10. It should be noted, however, that in most of these plans, including the Carter Plan, one of those districts is quite likely to be won by a Republican incumbent, so that the most likely outcome is 8 or 9 Democratic members of Congress. Two plans, the HB2146 plan and the “Voters of PA” Plan, are clearly more favorable to Republican candidates, and would likely lead to counter-majoritarian outcomes. Another plan, produced by the House Democratic Caucus, is unusually advantageous to the Democratic Party.

Ultimately, when one considers only those plans that accurately reflect Pennsylvanians’ statewide voter preferences, then the Carter Plan does best (or ties for best) on the Reock compactness score, county splits, and VTD splits and retains the most voters in their 2018 districts.

I hereby certify that the foregoing statements are true and correct to the best of my knowledge, information, and belief. This verification is made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.



Jonathan Rodden

January 26, 2022

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IN THE COMMONWEALTH COURT OF
PENNSYLVANIA

* * * * *

Carol Ann Carter; *
Monica Parrilla; * CASES
Rebecca Poyourow; * CONSOLIDATED
William Tung; *
Roseanne Milazzo; * No.
Burt Siegel; * 464 MD 2021
Susan Cassanelli; *
Lee Cassanelli; *
Lynn Wachman; *
Michael Guttman; *
Maya Fonkeu; *
Brady Hill; *
Mary Ellen Balchunis; *
Tom DeWall; *
Stephanie McNulty; *
And Janet Temin, *
Petitioners *

V.

Vernica Degraffenreid, *
in her official *
capacity as the Acting *
Secretary of the *
Commonwealth of *
Pennsylvania; and *
Jessica Mathis, in her *
Official capacity as *
Director for the *
Pennsylvania Bureau of *
Election Services and *
Notaries, *
Respondents *

BEFORE: PATRICIA A. MCCULLOUGH, JUDGE
HEARING: Thursday, January 27, 2022
9:40 a.m.

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Philip T. Gressman;	*	
Ron Y. Donagi;	*	
Kristopher R. Tapp;	*	
Pamela Gorkin;	*	
David P. Marsh;	*	
James L. Rosenberger;	*	
Amy Meyers;	*	
Eugene Boman;	*	
Gary Gordojn;	*	
Liz McMahon;	*	No.
Timothy G. Freman;	*	465 M.D. 2021
And Garth Isakk,	*	
Petitioners	*	
V.	*	
Vernica Degraffenreid,	*	
in her official	*	
capacity as the Acting	*	
Secretary of the	*	
Commonwealth of	*	
Pennsylvania; and	*	
Jessica Mathis, in her	*	
Official capacity as	*	
Director for the	*	
Pennsylvania Bureau of	*	
Election Services and	*	
Notaries,	*	
Respondents	*	
* * * * *	*	

LOCATION: Pennsylvania Judicial Center
601 Commonwealth Avenue
Suite 1500
Harrisburg, PA 17120

WITNESSES: Jonathan Rodden, Daryl
Deford, Moon Duchin, Michael Barber

Reporter: Nicole Montagano

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P R O C E E D I N G S

COURT CRIER HOLLAND:

00:00:00

All rise.

00:00:01

JUDGE McCULLOUGH:

00:00:01

Good morning.

00:00:04

THE WITNESS:

00:00:04

Good morning, Your

00:00:05

Honor.

00:00:05

JUDGE MCCULLOUGH:

00:00:10

So thank you for being

00:00:12

hearing, all being ready in this

00:00:13

expedited matter. I just want to say

00:00:16

good morning to everyone. We have

00:00:20

some people in overflow rooms because

00:00:23

of the space requirements, so

00:00:25

hopefully they are able to hear us and

00:00:29

see us. I assume that's all

00:00:32

connected.

00:00:32

Well, welcome to the

00:00:34

Commonwealth Court. I'm Judge

00:00:35

Patricia McCullough, and I will be

00:00:38

presiding over these proceedings as

00:00:38

the Trial Judge. As most of you or

00:00:41

all of you are aware, the Commonwealth

00:00:43 1 Court has two types of jurisdiction,
00:00:44 2 one being as an appellate Court and
00:00:46 3 the other as a trial Court in certain
00:00:49 4 statewide matters. This is one of
00:00:50 5 those cases. And whatever this
00:00:52 6 Court's decision is, it can be
00:00:53 7 appealed to the Supreme Court, which,
00:00:56 8 of course, will have the final say.

00:00:59 9 Before the Court today
00:01:00 10 and its original jurisdiction are the
00:01:04 11 consolidated matters filed by two sets
00:01:06 12 of Petitioners against Respondents,
00:01:08 13 the acting Secretary of Elections and
00:01:11 14 the Director for the Pennsylvania
00:01:13 15 Bureau of Election Services and
00:01:15 16 Notaries. The first case is Docketed
00:01:17 17 at 464 MD 2022 and captioned Carol Ann
00:01:22 18 Carter and 15 other Voters versus
00:01:25 19 Leigh Chapman, et al. And the second
00:01:27 20 one is Docketed at 465 MD 2022 and
00:01:27 21 captioned Philip Gressman and 11 other
00:01:37 22 Voters versus Leigh Chapman et. al.
00:01:39 23 The actions challenge Pennsylvania's
00:01:39 24 lack of the constitutional district
00:01:41 25 boundaries for the 2022 election

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cycle.

In 2020 the U.S. Census Bureau conducted for the 24th time in this country's history the decennial census for the purpose of, among other things, apportioning by population the 435 voting members of the United States House of Representatives among the 50 states. Following the 2020 Census, Pennsylvania's apportionment of Congressional seats was reduced yet again from 18 to 17. And Pennsylvania current Congressional District, which was adopted by the Supreme Court in 2018 and legal voters has been used in the past two primary elections in one general election and contains 18 districts thus, as we sit here today, Pennsylvania has no Congressional District map that squares with the newly allotted 17 congressional districts. And the constitution requires there to be an equal number of citizens in each Congressional District. In light of these changes,

00:02:46 1 the Petitioners ask the Court to
00:02:48 2 declare unconstitutional the
00:02:50 3 Pennsylvania's current Congressional
00:02:50 4 District plan, enjoin the Respondents
00:02:56 5 from using the current plan in any
00:02:56 6 future elections and adopt a new
00:02:59 7 congressional plan.

00:03:00 8 To be clear, this case is
00:03:02 9 not about deciding whether a current
00:03:04 10 map is unconstitutional due to
00:03:08 11 partisan or racial gerrymandering.
00:03:08 12 The issue before the Court is that the
00:03:10 13 current map is now obsolete in light
00:03:13 14 of the new census data and the parties
00:03:16 15 in amici have filed proposed plans for
00:03:18 16 the Court's consideration. Ordinarily
00:03:21 17 redistricting is left to the
00:03:25 18 legislature to undertake in the form
00:03:26 19 of an act or a statute, which must be
00:03:28 20 approved by the Governor to become
00:03:31 21 law. The United States Constitution
00:03:33 22 vests the state legislatures with the
00:03:34 23 powers to determine the times, places
00:03:35 24 and manner of holding elections for
00:03:38 25 representatives subject to any rules

00:03:41 1 that Congress may establish. To date,
00:03:44 2 the Governor and legislature have not
00:03:49 3 agreed on a map. In anticipation that
00:03:50 4 such approval might not be forthcoming
00:03:51 5 in time for the candidates to prepare
00:03:55 6 for the primary election and know the
00:03:56 7 boundaries of their districts so they
00:03:58 8 can circulate nomination petitions and
00:04:01 9 campaign, Petitioners filed these
00:04:03 10 lawsuits preemptively.

00:04:05 11 In response, this Court
00:04:06 12 has taken this matter very seriously
00:04:08 13 and acted as expeditiously and
00:04:10 14 proactively as possible at every turn
00:04:16 15 so that in the event that the
00:04:17 16 legislature and Governor do not reach
00:04:18 17 an agreement on a map by January 30th,
00:04:20 18 2022, the Court imposed deadline, this
00:04:22 19 Court will proceed to do so as
00:04:24 20 expeditiously as possible.

00:04:27 21 On December 20th, 2021,
00:04:29 22 this Court issued an Order setting
00:04:31 23 expedited guidelines by which parties
00:04:34 24 were required to file applications to
00:04:36 25 intervene, including ordering that if

00:04:39 1 the General Assembly has not enacted a
00:04:43 2 new congressional map which has been
00:04:44 3 approved by the Governor by
00:04:45 4 January 30th, 2022, the Court shall
00:04:47 5 proceed to issue an Opinion based on
00:04:50 6 the hearing and evidence presented by
00:04:51 7 the parties here today as well as
00:04:54 8 Amici.

00:04:55 9 In all, the Court
00:04:56 10 received ten applications to
00:04:57 11 intervene. On January 6th, 2022, I
00:04:57 12 presided over a hearing on the
00:05:02 13 applications to intervene. All ten
00:05:04 14 applicants were provided an
00:05:05 15 opportunity to argue why they should
00:05:07 16 be permitted to intervene under the
00:05:09 17 Pennsylvania Rules of Civil Procedure
00:05:10 18 and to argue why their participation
00:05:13 19 would not unduly delay or burden these
00:05:16 20 necessary expedited proceedings.

00:05:17 21 After consideration of
00:05:18 22 those arguments and evidence presented
00:05:21 23 at that hearing, I issued an Order
00:05:23 24 granting intervention to six parties
00:05:25 25 on January 14th, which are the Speaker

00:05:27 1 and Majority Leader of the
00:05:28 2 Pennsylvania House of Representatives
00:05:29 3 and the President Pro Tempore and
00:05:33 4 Majority Leader of the Pennsylvania
00:05:34 5 Senate, Pennsylvania State Senators
00:05:36 6 Maria Collett, Katie Muth, Sharif
00:05:37 7 Street and Anthony Williams, Tom Wolf,
00:05:41 8 Governor of the Commonwealth of
00:05:42 9 Pennsylvania, Senator Jay Costa and
00:05:44 10 members of the Democratic Caucus of
00:05:47 11 the Senate of Pennsylvania,
00:05:48 12 Representative Joanna McClinton,
00:05:50 13 leader of the Democratic Caucus of the
00:05:51 14 Pennsylvania House of Representatives,
00:05:52 15 Congressman Guy Reschenthaler, Swatara
00:05:56 16 Township Commissioner Jeff Varner, Tom
00:05:57 17 Reno, Ryan Costello and Bud Shuster.

00:05:59 18 These six parties and
00:06:00 19 their counsel are the ones presumably
00:06:02 20 all present here today and ready to
00:06:04 21 present evidence and legal argument on
00:06:07 22 why their map should be the one the
00:06:09 23 Court adopts.

00:06:10 24 The hearing today and
00:06:11 25 tomorrow is for the purpose of

00:06:13 1 receiving evidence from the experts to
00:06:15 2 explain from a technical and complex
00:06:18 3 point of view how map drawing works
00:06:21 4 and providing other opportunities an
00:06:24 5 opportunity to challenge those
00:06:26 6 opinions.

00:06:26 7 Four parties were
00:06:27 8 permitted to also participate as
00:06:31 9 Amici's participants. That is they
00:06:32 10 were permitted to present a map, an
00:06:35 11 expert report and a brief due to the
00:06:37 12 time constraints and the expedience of
00:06:40 13 the proceedings, but I want to make
00:06:44 14 clear that that does not mean this
00:06:44 15 Court will not give equal
00:06:46 16 consideration to the maps and expert
00:06:47 17 reports presented by these Amici.

00:06:50 18 Also, as we have all
00:06:51 19 discussed during the various
00:06:53 20 conferences and hearings held to date,
00:06:54 21 the Court wants to hear from the
00:06:55 22 parties their views on whether this
00:06:57 23 Court will need to consider revisions
00:06:59 24 to the 2022 election schedule
00:07:02 25 calendar. So I'm looking forward to

00:07:05 1 hearing argument on that as well from
00:07:06 2 the parties. Hopefully, we won't need
00:07:11 3 to do that.

00:07:12 4 As you can see, our staff
00:07:13 5 has worked hard to set up the
00:07:13 6 courtroom and spaces at the tables for
00:07:15 7 you all to sit I hope comfortably so
00:07:21 8 that we can be in compliance with the
00:07:22 9 current distancing requirements. The
00:07:23 10 room capacity is limited to 23
00:07:25 11 persons. It looks like every single
00:07:27 12 spot is taken, so we ask that the
00:07:29 13 parties be mindful of who they have
00:07:31 14 present in the courtroom. At our
00:07:33 15 pretrial conference each of you gave
00:07:34 16 an estimate of the number of attorneys
00:07:35 17 and support staff you anticipate would
00:07:38 18 be in the courtroom at anytime. And
00:07:39 19 again, we do have overflow rooms set
00:07:41 20 up and prepared for you by our
00:07:44 21 wonderful staff who have worked night
00:07:46 22 and day to get everything ready in
00:07:48 23 time, our IT staff, our prothonotary,
00:07:48 24 Dion and Mark, thank you very much,
00:07:48 25 our Court Criers, Dion Turner.

00:07:56 1 So it's my intent and
00:07:59 2 hope that we can get through what we
00:08:01 3 need to in these two days. But as I
00:08:01 4 have cautioned the parties at the
00:08:02 5 pretrial conference and then this
00:08:05 6 morning at the status conference, if
00:08:07 7 necessary, the Court is prepared to
00:08:08 8 proceed over the weekend to make sure
00:08:10 9 that everyone who has something to say
00:08:14 10 has the opportunity to do so.
00:08:17 11 Hopefully, that won't be necessary
00:08:19 12 because, as we all discussed at the
00:08:20 13 pretrial conference and as confirmed
00:08:22 14 to you via an email from our
00:08:24 15 prothonotary, Mr. Mike Crimmel, we
00:08:26 16 have set out time limitations
00:08:27 17 guidelines. I'll repeat those now so
00:08:30 18 there's no confusion.

00:08:31 19 Each party will be
00:08:32 20 permitted one hour to examine its
00:08:34 21 expert witness on Direct Examination.
00:08:37 22 Each party will be permitted
00:08:38 23 15 minutes to cross examine each of
00:08:41 24 the other parties' expert witnesses.
00:08:43 25 And each party will be permitted 15 to

00:08:45 1 20 minutes to conduct Redirect
00:08:48 2 Examination of its expert witness.
00:08:49 3 And if I believe these times ---
00:08:51 4 there's a need to tweak them based on
00:08:54 5 the circumstances, I will do so. With
00:08:56 6 the input of counsel pretrial
00:08:58 7 conference, we have also agreed that
00:08:59 8 each party will have eight minutes for
00:09:01 9 their opening statements/argument and
00:09:04 10 eight minutes for their closing
00:09:06 11 statements/argument.

00:09:08 12 As confirmed by Mr.
00:09:11 13 Crimmel in his email to --- I will
00:09:13 14 also state for the record the counsel
00:09:17 15 for the Republican Senate Intervenors
00:09:17 16 voluntarily offered that the Senate
00:09:22 17 Intervenors will not present an expert
00:09:22 18 witness, but will rely on the expert
00:09:23 19 witness presented by the Republican
00:09:23 20 House Intervenors. The Republican
00:09:26 21 Senate Intervenors will defer to
00:09:26 22 Republican House Intervenors'
00:09:29 23 Examination and Cross Examination of
00:09:31 24 experts and the Republican Senate
00:09:36 25 Intervenors will present opening and

00:09:37 1 closing statements.

00:09:38 2 I also note that the
00:09:39 3 parties entered into stipulations,
00:09:42 4 which they advised the Court of this
00:09:45 5 morning. They've stipulated that all
00:09:48 6 experts testifying are deemed as
00:09:49 7 qualified in their expert field.
00:09:56 8 Thank you for doing that. They have
00:09:58 9 also agreed to the admissibility of
00:09:59 10 the testifying experts' reports, and I
00:10:01 11 thank you for doing that as well. So
00:10:03 12 it helps us expedite to the meaty
00:10:05 13 matters here.

00:10:06 14 So as a last order of
00:10:07 15 business, the parties will be
00:10:08 16 presented in this order, as per our
00:10:11 17 discussions, Carter Petitioners
00:10:15 18 Gressman, Petitioners Respondent
00:10:15 19 Chapman and Mathias, Governor Tom
00:10:15 20 Wolf, Republican Legislative
00:10:21 21 Intervenors Cutler --- Representative
00:10:23 22 Cutler and Senator Wolf and Corman and
00:10:23 23 Warner, Congressional Intervenors
00:10:28 24 House Democratic Intervenors, that's
00:10:32 25 Representative McClinton and Senate

00:10:33 1 Democratic Intervenors, Senator Jay
00:10:37 2 Costa, et al.

00:10:38 3 So does anyone have
00:10:40 4 anything at this point that they need
00:10:42 5 to bring to the Court's attention?
00:10:42 6 Good. Thank you. That's why we had a
00:10:42 7 status conference.

00:10:43 8 Okay.

00:10:48 9 With that in this
00:10:49 10 critical matter affecting the
00:10:52 11 constitutional rights of the people,
00:10:52 12 we will now proceed to hear argument,
00:10:55 13 receive evidence and consider the
00:10:56 14 proposed plans that were timely filed
00:10:59 15 by the parties in Amici on or before
00:11:02 16 January 24th, 2022. I almost said
00:11:02 17 '20.

00:11:11 18 So would the Carter
00:11:11 19 Petitioners --- counsel for Carter
00:11:11 20 Petitioners, please come to the
00:11:12 21 podium, and you can make your opening
00:11:14 22 argument.

00:11:20 23 ATTORNEY JASRASARIA:

00:11:32 24 Good morning, Your
00:11:32 25 Honor. And may it please the Court,

00:11:33 1 my name is Jyoti Jasrasaria, and I
00:11:34 2 represent the Carter Petitioners who
00:11:36 3 first filed this lawsuit six weeks
00:11:38 4 ago. I'd like to start by thanking
00:11:41 5 the Court for its time and attention
00:11:43 6 to this important matter.

00:11:45 7 This Court is faced with
00:11:47 8 an unenviable task. Twelve (12)
00:11:51 9 parties and Amici have submitted
00:11:52 10 congressional redistricting plans for
00:11:54 11 this Court's consideration along with
00:11:56 12 metrics and arguments on a variety of
00:11:59 13 factors and the Court must sift
00:12:01 14 through the data and the arguments to
00:12:03 15 choose only one. But fortunately this
00:12:06 16 Court need not wade into uncharted
00:12:10 17 territory to accomplish this task, for
00:12:12 18 it has not one but two Pennsylvania
00:12:14 19 Court cases that together provide a
00:12:16 20 roadmap on how to arrive at a fair and
00:12:19 21 compliant Court adopted redistricting
00:12:24 22 plan.

00:12:24 23 Just four years ago the
00:12:26 24 Pennsylvania Supreme Court adopted the
00:12:28 25 2018 plan after striking down the

00:12:29 1 previous plan as an unconstitutional
00:12:32 2 gerrymander. There the Court analyzed
00:12:35 3 proposed maps along four factors.
00:12:40 4 Contiguity, population of quality,
00:12:44 5 compactness and respect for political
00:12:44 6 subdivision boundaries.

00:12:47 7 When looking at these
00:12:48 8 four factors in this case, we just see
00:12:51 9 subtle variations among the proposed
00:12:53 10 maps. The Carter plan is exemplary on
00:12:59 11 all of these measures, but for the
00:13:01 12 most part, all of these maps are
00:13:02 13 contiguous, equally populated,
00:13:02 14 relatively compact and respectful of
00:13:07 15 political subdivisions, so it's
00:13:09 16 difficult to draw distinctions along
00:13:09 17 these measures, and therefore this
00:13:13 18 Court is still left with the question
00:13:15 19 of how to choose a plan.

00:13:16 20 Luckily, the Supreme
00:13:18 21 Court's determination in Mellow V
00:13:21 22 Mitchell supplies the answer. After a
00:13:23 23 similar impasse between the political
00:13:26 24 branches in 1992, the Court in Mellow
00:13:28 25 upheld the Commonwealth Court's choice

00:13:31 1 of the map and did so by representing
00:13:34 2 that three additional criteria could
00:13:37 3 be considered and these were partisan
00:13:39 4 fairness, communities of interest and
00:13:41 5 preserving the cores of existing
00:13:45 6 districts.

00:13:45 7 On the first two of
00:13:46 8 these factors, partisan fairness and
00:13:48 9 communities of interest, the Carter
00:13:49 10 Petitioners contend that some plans
00:13:52 11 strike a fair and more reasonable
00:13:54 12 balance than others. In particular,
00:13:56 13 we believe that the Carter plan does
00:13:59 14 well --- very well on these categories
00:14:01 15 and we also believe that some of the
00:14:04 16 plans, notably HB-2146, the voters of
00:14:08 17 Pennsylvania plan, the Citizen Voters
00:14:11 18 plan and the two Reschenthaler plans
00:14:15 19 should not be adopted on these
00:14:17 20 grounds. But ultimately neither of
00:14:19 21 these two factors either provide a
00:14:20 22 straightforward objective standard for
00:14:22 23 this Court to select just one plan.

00:14:25 24 That leaves only the
00:14:27 25 preserving of the core of existing

00:14:31 1 districts, an objective metric that
00:14:32 2 not only follows for Mellow, but is
00:14:34 3 consistent with the least change
00:14:36 4 approach that Court's routinely follow
00:14:38 5 when tasked with taking up
00:14:40 6 redistricting after the political
00:14:43 7 branches have failed to enact a plan,
00:14:47 8 as they did here.

00:14:48 9 As set forth in our
00:14:48 10 papers, and as we will demonstrate
00:14:49 11 during this hearing, the Carter plan
00:14:50 12 performs in the top tier of plans on
00:14:53 13 all of the criteria that I've
00:14:54 14 mentioned. But when you focus in on
00:14:57 15 this final factor preserving the
00:15:00 16 previous core adopted congressional
00:15:00 17 districts, it is in a league of its
00:15:03 18 own. Even after the loss of a
00:15:05 19 Congressional district after this past
00:15:11 20 year's census results, 87 percent of
00:15:12 21 Pennsylvania voters are able to remain
00:15:14 22 in the same district that they were in
00:15:15 23 before, which is significantly higher
00:15:17 24 than the same measure for the next
00:15:20 25 best plan and all of the rest that

00:15:22 1 follow.

00:15:22 2 And this isn't just a
00:15:23 3 percentage that's divorced from
00:15:24 4 reality. Preserving the cores of
00:15:25 5 districts means continuity for
00:15:30 6 Pennsylvania voters, whose districts
00:15:30 7 have already changed once in the past
00:15:32 8 few years, and it also means
00:15:33 9 recognizing the very unique
00:15:34 10 circumstances that we're in during
00:15:36 11 this current cycle.

00:15:37 12 Today we have a
00:15:38 13 Congressional map that just four years
00:15:40 14 ago the Supreme Court held to be
00:15:43 15 constitutional and superior to all of
00:15:45 16 the many others that it considered.
00:15:48 17 The 2018 map reflects a long record
00:15:51 18 that was developed in the Commonwealth
00:15:53 19 Court and was the result of careful
00:15:54 20 consideration about the same criteria
00:15:56 21 that are at issue today.

00:15:58 22 Of course, due to
00:16:00 23 changes in population that have led to
00:16:02 24 the loss of the Congressional seat,
00:16:04 25 that map can't stand as it is, but it

00:16:06 1 can and should be a starting point.
00:16:08 2 And there is no reason that the Court
00:16:11 3 shouldn't hue as closely as possible
00:16:13 4 to that plan. Indeed, maintaining
00:16:15 5 fidelity to the 2018 map, while
00:16:19 6 striving to improve on it, on
00:16:21 7 traditional criteria grounds is not
00:16:21 8 just reasonable but worthwhile.

00:16:24 9 The 2018 map is a
00:16:26 10 physical manifestation of the Supreme
00:16:28 11 Court's criteria. And the Carter
00:16:29 12 Petitioner's choice to build on it
00:16:31 13 paid off on all of the relevant
00:16:33 14 criteria, not just on lease change.

00:16:37 15 To explain the Carter
00:16:38 16 plan in more detail, the Court will
00:16:40 17 soon hear testimony from Doctor
00:16:41 18 Jonathan Rodden, a tenured political
00:16:43 19 science professor at Stanford
00:16:44 20 University, who drew the Carter plan
00:16:45 21 and has been qualified as an expert in
00:16:48 22 many redistricting voting and election
00:16:51 23 cases. He'll explain his plan, how he
00:16:54 24 developed it, why he made certain
00:16:57 25 choices and how his map compares with

00:17:01 1 the others before this Court on a
00:17:01 2 variety of metrics.

00:17:01 3 Based on all of the
00:17:02 4 evidence the Carter Petitioners submit
00:17:03 5 that their plan is the one that best
00:17:05 6 matches or improves upon the core
00:17:07 7 approved 2018 plans compliance with
00:17:12 8 traditional redistricting criteria, as
00:17:13 9 well as partisan fairness, preserving
00:17:16 10 communities of interest and retaining
00:17:18 11 more of that plan than any other
00:17:19 12 submissions.

00:17:20 13 The Carter Petitioners
00:17:21 14 respectfully submit that this Court
00:17:23 15 adopt the Carter plan in full. And as
00:17:26 16 to the election deadline matter, we
00:17:29 17 agree that the Court has authority to
00:17:32 18 move election deadlines but do not
00:17:34 19 think that that will be necessary.
00:17:36 20 Thank you.

00:17:37 21 JUDGE McCULLOUGH:
00:17:37 22 Thank you very much,
00:17:39 23 Counsel.

24 Okay.

25 So now Counsel for

1 Petitioners Gressman.

2 ATTORNEY RING-AMUNSON:

3 Thank you, Your Honor.

4 Good morning, and may it please the

5 Court. My name is Jessica

00:18:05

6 Ring-Amunson, and I represent the

00:18:07

7 Gressman Math Science Petitioners.

00:18:07

8 At the outset and on

00:18:09

9 behalf of our clients, I want to thank

00:18:10

10 the Court for the time and attention

00:18:13

11 it is devoting to this most important

00:18:15

12 matter, and also to thank the

00:18:17

13 courtroom staff. I want to thank the

00:18:18

14 Court, in particular, for expediting

00:18:19

15 our petition. And I will say that,

00:18:22

16 although I'm appearing before the

00:18:25

17 Court pro hac vice, as someone who was

00:18:27

18 born and raised in Jenkintown and

00:18:30

19 Montgomery County, I am also very

00:18:30

20 personally grateful to the Court.

00:18:32

21 At the outset I want to

00:18:35

22 tell you a little bit about our

00:18:37

23 clients. They are 12 professors of

00:18:39

24 mathematics, statistics, geography and

00:18:42

25 data science at some of Pennsylvania's

00:18:44 1 leading colleges and universities.
00:18:46 2 They include the chairs of the
00:18:49 3 Mathematic Departments at Saint Joe's,
00:18:53 4 Lehigh and Lafayette. They have won
00:18:54 5 numerous honors and recognitions from
00:18:57 6 organizations, such as the National
00:18:59 7 Science Foundation, the American
00:19:02 8 Mathematical Society and the American
00:19:02 9 Statistical Association.

00:19:04 10 But beyond their
00:19:05 11 impressive credentials in fields
00:19:07 12 related to redistricting, they are
00:19:10 13 also Pennsylvania voters, who care
00:19:12 14 deeply about ensuring that the
00:19:15 15 Congressional redistricting process is
00:19:19 16 fair to all Pennsylvanians.

00:19:19 17 The Gressman Petitioners
00:19:21 18 are the only parties before this Court
00:19:23 19 who are not here to advance the agenda
00:19:26 20 of a particular political party or
00:19:28 21 incumbent office holder. I personally
00:19:32 22 do not even know the political
00:19:34 23 affiliation of my clients. I do know
00:19:37 24 that they're not here to argue on
00:19:40 25 behalf of Republicans or Democrats.

00:19:42 1 They're not here to engage in a power
00:19:45 2 struggle between the legislative
00:19:48 3 branch and the executive branch.
00:19:51 4 They're not here to advocate for the
00:19:52 5 interests of either federal or state
00:19:54 6 incumbent officeholders.

00:19:54 7 They're here for one
00:20:02 8 reason and one reason only. They want
00:20:02 9 a map that is fair to all Pennsylvania
00:20:04 10 voters. And in 2018 the Supreme Court
00:20:07 11 provided explicit guidance about how
00:20:10 12 to ensure that a map is fair to
00:20:13 13 Pennsylvania voters. First the court
00:20:17 14 said make sure that the map is compact
00:20:18 15 and contiguous, as nearly equal in
00:20:20 16 population as practicable and does not
00:20:21 17 divide any county, city, incorporated
00:20:26 18 town, borough, township or ward more
00:20:30 19 than is absolutely necessary to
00:20:31 20 achieve a quality of population.

00:20:33 21 But the Court was
00:20:33 22 equally clear that achieving those
00:20:36 23 neutral criteria was a floor not a
00:20:39 24 ceiling. Our remedial plan must also
00:20:43 25 fulfill the overarching objective of

00:20:45 1 the free and equal elections clause,
00:20:47 2 and that is to ensure that each
00:20:50 3 person's vote in the selection of
00:20:51 4 representatives for Congress is
00:20:53 5 equalized, quote, to the greatest
00:20:56 6 degree possible with all other
00:20:59 7 Pennsylvania citizens.

00:21:01 8 The Supreme Court also
00:21:02 9 explained how one might achieve these
00:21:04 10 objectives, and specifically the Court
00:21:07 11 said that advances in technology can
00:21:09 12 be used to, quote, aid in the
00:21:11 13 expeditious development of districting
00:21:14 14 maps, the boundaries of which are
00:21:15 15 drawn to scrupulously adhere to these
00:21:19 16 neutral criteria.

00:21:21 17 Along with their
00:21:22 18 experts, the Gressman Petitioners have
00:21:25 19 used these advances in technology and
00:21:27 20 specifically advances in the
00:21:29 21 relatively new field of computational
00:21:31 22 redistricting to generate a map that
00:21:33 23 scrupulously adheres to these neutral
00:21:36 24 criteria. As we explained in our
00:21:38 25 brief, computational redistricting

00:21:41 1 works by using algorithms to optimize
00:21:44 2 compliance with multiple legal
00:21:49 3 requirements simultaneously.

00:21:49 4 High performance
00:21:52 5 computers can turn out literally
00:21:52 6 millions of maps and evaluate how they
00:21:55 7 perform in seconds to find the ones
00:21:57 8 that best comply with the neutral
00:22:02 9 criteria. It allows the exploration
00:22:02 10 of alternatives and trade offs in ways
00:22:03 11 that hand drawn maps simply cannot do.
00:22:05 12 And all of the other maps before the
00:22:07 13 Court are hand drawn.

00:22:09 14 A comparison to both the
00:22:12 15 baseline plan and all of the other
00:22:13 16 parties show our computational
00:22:13 17 redistricting process was tremendously
00:22:21 18 successful. Our plan consists of
00:22:22 19 compact and contiguous territory. The
00:22:24 20 districts are not only easily visually
00:22:27 21 compact, nothing like Goofy kicking
00:22:28 22 Donald Duck here, but also superior or
00:22:31 23 comparable to all of the other
00:22:34 24 parties' plans on the various measures
00:22:36 25 of compactness.

00:22:36 1 To be sure, just as in
00:22:39 2 League of Women Voters, there are
00:22:39 3 variations in how the parties measure
00:22:42 4 compactness, but by any measure, our
00:22:43 5 plans are compact and contiguous. Our
00:22:46 6 plan is as nearly equal in population
00:22:48 7 as possible. There is a one-person
00:22:50 8 deviation between the largest and
00:22:52 9 smallest districts, the lowest you can
00:22:56 10 go. And our plan out performs all of
00:22:58 11 the other parties' plans on the
00:22:59 12 requirement not to divide any county
00:23:01 13 city, town, borough, township or ward
00:23:04 14 except where absolutely necessary to
00:23:07 15 achieve a quality of population.

00:23:09 16 Indeed our plan vastly
00:23:10 17 improves on the performance of even
00:23:12 18 the 2018 map on this metric whereas
00:23:15 19 the 2018 map split 72 total political
00:23:18 20 subdivisions our map divides just 49.
00:23:23 21 The lowest number of all the parties.
00:23:26 22 And importantly our plan achieves this
00:23:28 23 while ensuring that there is no
00:23:30 24 partisan vote dilution and that all
00:23:32 25 voters have an equal opportunity to

00:23:34 1 translate their votes into
00:23:35 2 representation.

00:23:37 3 I recognize there's a
00:23:39 4 lot of terminology in the briefs about
00:23:40 5 the various measures of partisan
00:23:44 6 fairness, mean median and efficiency
00:23:45 7 gap, and majoritarian outcomes, et
00:23:48 8 cetera, but they're all getting at the
00:23:49 9 same thing, that the Supreme Court
00:23:51 10 opinion, is this plan fair? Will it
00:23:56 11 allow voters across the state to
00:23:59 12 translate their votes into
00:24:00 13 representation, or does the plan
00:24:02 14 reward a party that does not receive
00:24:04 15 the majority of votes statewide with a
00:24:07 16 majority of the Congressional
00:24:09 17 delegation?

00:24:11 18 Our plan is the most
00:24:13 19 fair to Pennsylvania voters, but you
00:24:16 20 don't have to take my word for it.
00:24:18 21 One of the other parties experts, the
00:24:22 22 Senate Democrats experts, Doctor
00:24:25 23 Caughney put in the information about
00:24:27 24 a publicly available website called
00:24:29 25 Plan Score. When you put all of the

00:24:30 1 parties plans into Plan Score our map
00:24:35 2 scores the best as treating
00:24:36 3 Pennsylvania voters fairly and
00:24:39 4 symmetrically.

00:24:43 5 Conspicuously, that
00:24:44 6 expert when he did his analysis ran
00:24:46 7 all of the other parties plans but not
00:24:48 8 ours. There's a reason that the other
00:24:50 9 parties are not talking about our
00:24:53 10 plan, it beats theirs. That our plan
00:24:57 11 is best in achieving optimal partisan
00:24:59 12 fairness should not be surprising,
00:25:01 13 because our clients are the only
00:25:03 14 non-partisan party before this Court,
00:25:05 15 and they care only about ensuring that
00:25:08 16 the Court adopts a map that's fair to
00:25:10 17 all Pennsylvanians regardless of their
00:25:12 18 political affiliation.

00:25:18 19 Ensuring the adoption of
00:25:19 20 a politically fair and legally
00:25:19 21 compliant map that scrupulously
00:25:23 22 adheres to the neutral redistricting
00:25:24 23 criteria is particularly important,
00:25:25 24 whereas here the Court is, as the
00:25:28 25 Supreme Court put it in Mellow, thrust

00:25:30 1 into this role with no other feasible
00:25:33 2 option except to take one entire plan
00:25:36 3 or the other. Simply put, our plan is
00:25:40 4 the Court's best option. If the Court
00:25:43 5 chooses our plan, the Court doesn't
00:25:45 6 have to choose between Democrats and
00:25:47 7 Republicans. The Court doesn't have
00:25:48 8 to choose between the legislative
00:25:50 9 branch and the executive branch. The
00:25:53 10 Court doesn't have to choose between
00:25:54 11 the House and the Senate. The Court
00:25:56 12 doesn't have to choose between Federal
00:25:58 13 and State office holders. Instead,
00:26:01 14 the Court can simply choose the best
00:26:04 15 plan. And we respectfully ask that
00:26:06 16 the Court adopt the Gressman Math
00:26:09 17 Science Plan to remedy the
00:26:12 18 malapportionment claims before it.
00:26:14 19 Thank you.

00:26:14 20 JUDGE McCULLOUGH:

00:26:15 21 Thank you, Counsel.
00:26:22 22 Counsel now for Acting Secretary ---
00:26:24 23 or Secretary Chapman.

00:26:37 24 ATTORNEY WIYGUL:

00:26:37 25 Good morning, Your

00:26:38 1 Honor. Robert Wiygul. Just a note of
00:26:38 2 clarification, I represent, as the
00:26:41 3 Court is aware, both Respondents, the
00:26:41 4 Secretary of the Commonwealth and the
00:26:43 5 Director of Election Services and
00:26:45 6 Notaries and Intervenor Respondent
00:26:50 7 Governor Wolf.

00:26:51 8 The Respondents, the
00:26:51 9 Secretary, the Department of State,
00:26:54 10 have not proposed a map in this
00:26:55 11 litigation. The Governor, however,
00:26:57 12 has. And so if it pleases the Court,
00:26:59 13 I will now present an opening
00:27:01 14 statement on behalf of the Governor.

00:27:03 15 JUDGE McCULLOUGH:

00:27:03 16 Okay.

00:27:03 17 So you're not making an
00:27:05 18 opening on behalf on behalf of
00:27:07 19 Secretary Chapman.

00:27:07 20 ATTORNEY WIYGUL:

00:27:07 21 That is correct, Your
00:27:08 22 Honor.

00:27:08 23 JUDGE McCULLOUGH:

00:27:08 24 Okay. You were next
00:27:08 25 anyway, so you may proceed.

00:27:09 1 ATTORNEY WIYGUL:

00:27:10 2 On one level the

00:27:11 3 redistricting process is a matter of

00:27:13 4 line drawing and division. Thirteen

00:27:16 5 (13) million Pennsylvanians need to be

00:27:18 6 divided up into 17 different

00:27:20 7 districts. But redistricting is also

00:27:22 8 a process in which every ten years we

00:27:24 9 are asked to recommit ourselves to the

00:27:26 10 basic principles of our democracy. As

00:27:29 11 our Supreme Court said in 2018, a

00:27:31 12 healthy representative democracy

00:27:34 13 requires that all voters have an equal

00:27:36 14 opportunity to translate their votes

00:27:38 15 into representation. All too often in

00:27:41 16 Pennsylvania history that requirement

00:27:42 17 has not been met. Instead,

00:27:45 18 Pennsylvanians have voted under a

00:27:47 19 district map that entrenched a

00:27:47 20 structural partisan advantage. Such a

00:27:53 21 map produces the same electoral

00:27:53 22 results despite changes in voter

00:27:53 23 preferences and systematically awards

00:27:58 24 more than 50 percent of the

00:27:59 25 Congressional seats to a party winning

00:28:04 1 less than 50 percent of the votes. As
00:28:07 2 the Supreme Court has noted, that kind
00:28:08 3 of biased map leads to a government
00:28:09 4 that is neither responsive nor
00:28:12 5 accountable to Pennsylvania voters and
00:28:14 6 it discourages voters from
00:28:15 7 participating in elections.

00:28:17 8 In 2018, in a case called
00:28:18 9 League of Women Voters, the
00:28:19 10 Pennsylvania Supreme Court struck down
00:28:20 11 the then existing Congressional map
00:28:23 12 because it was fundamentally unfair.
00:28:25 13 Because that map was skewed in favor
00:28:28 14 of certain political parties, it did
00:28:30 15 not give all voters an equal
00:28:33 16 opportunity to translate their votes
00:28:35 17 into representation and it, therefore,
00:28:38 18 violated the Pennsylvania
00:28:39 19 Constitution.

00:28:40 20 As the Court pointed out
00:28:41 21 at the beginning of this hearing, this
00:28:42 22 case is different from League of Women
00:28:45 23 Voters in an important way. In the
00:28:47 24 League of Women Voters case the
00:28:49 25 question was whether a map passed by

00:28:50 1 the General Assembly and signed by the
00:28:52 2 Governor violated the Constitution and
00:28:53 3 should therefore, be thrown out and
00:28:55 4 replaced by the Courts. This case
00:28:57 5 does not ask the Court to decide
00:29:00 6 whether a given map is
00:29:02 7 unconstitutional. Here, everyone
00:29:04 8 agrees that Pennsylvania has to have a
00:29:06 9 new map and the Court's task is to
00:29:08 10 determine what map would be best.

00:29:09 11 Ideally, Pennsylvania's
00:29:12 12 new map would be enacted as a piece of
00:29:15 13 legislation passed by the General
00:29:18 14 Assembly and approved by the Governor.
00:29:19 15 The Governor's role in that process is
00:29:22 16 an important one because, unlike the
00:29:24 17 members of the Pennsylvania General
00:29:25 18 Assembly, the Governor is elected by
00:29:27 19 all Pennsylvania voters. Governor
00:29:29 20 Wolf has taken this role seriously.
00:29:29 21 While waiting for the General Assembly
00:29:29 22 to present a bill for his review, he
00:29:34 23 has consistently advocated for a fair
00:29:36 24 and transparent redistricting process.

00:29:39 25 In September of last year

00:29:40 1 he created the Pennsylvania
00:29:42 2 Redistricting Advisory Council. The
00:29:44 3 council, after accepting testimony
00:29:45 4 from the public, issued a set of
00:29:47 5 public redistricting principles to
00:29:50 6 guide the Governor's review of any
00:29:54 7 map. Moreover, during the General
00:29:59 8 Assembly's deliberations, the Governor
00:29:59 9 has provided public feedback on
00:30:00 10 proposed maps, highlighting examples
00:30:00 11 that are consistent with the
00:30:03 12 redistricting principles, free of
00:30:04 13 unfair partisan advantage and in full
00:30:06 14 accord with the law.

00:30:08 15 Unfortunately, despite
00:30:10 16 receiving the new census data in
00:30:12 17 August 2021, the General Assembly did
00:30:14 18 not pass any map until this week, just
00:30:17 19 days before this hearing was scheduled
00:30:18 20 to begin. Even more unfortunate,
00:30:22 21 instead of endorsing an even-handed
00:30:24 22 map commanding bipartisan support, the
00:30:24 23 General Assembly has rammed through on
00:30:26 24 party line votes a map that
00:30:29 25 fundamentally fails the test of

00:30:33 1 fairness and does not comply with the
00:30:34 2 redistricting principles.

00:30:34 3 As the Governor has
00:30:35 4 previously made clear, that map is
00:30:37 5 unacceptable. He could not in good
00:30:40 6 conscience sign it into law. As a
00:30:41 7 result, it now falls to the courts to
00:30:43 8 give Pennsylvanians the fair map they
00:30:45 9 deserve.

00:30:46 10 The Supreme Court showed
00:30:48 11 the way in League of Women Voters. It
00:30:51 12 identified certain neutral benchmarks
00:30:53 13 that provide a floor of protection
00:30:54 14 against unfair districting, including
00:30:56 15 equality of population, contiguity,
00:31:00 16 compactness and respect for the
00:31:01 17 boundaries of political subdivisions,
00:31:03 18 as counsel had previously identified.
00:31:05 19 But the Court made clear that these
00:31:07 20 criteria are only a floor. Put
00:31:11 21 differently, though many plans may
00:31:12 22 satisfy these criteria, not all are
00:31:13 23 fair, not all provide a level
00:31:15 24 political playing field. The
00:31:17 25 Governor's map does both, as will be

00:31:19 1 shown by the evidence in this hearing,
00:31:21 2 including, in particular, testimony
00:31:23 3 from the Governor's expert witness,
00:31:26 4 Doctor Moon Duchin of Tufts
00:31:26 5 University, a renown mathematician and
00:31:30 6 leading redistricting expert. That
00:31:33 7 evidence will show that the Governor's
00:31:34 8 map easily satisfies criteria. It
00:31:37 9 also does an exemplary job of
00:31:40 10 protecting communities of interest and
00:31:41 11 protecting the cores of the previous
00:31:44 12 districts established by the Supreme
00:31:46 13 Court, which, as Counsel mentioned
00:31:47 14 earlier, are other factors that our
00:31:49 15 Supreme Court has considered. But the
00:31:51 16 Governor's map does not rest on this
00:31:53 17 floor. It realizes the prediction of
00:31:55 18 the Supreme Court in League of Women
00:31:57 19 Voters, which anticipated that
00:31:59 20 technology and computing power could
00:32:02 21 make it easier to create fair maps.
00:32:02 22 Thanks to these tools, it is possible
00:32:04 23 to achieve fairness, to avoid maps in
00:32:06 24 which parties winning less than
00:32:08 25 50 percent of the votes systematically

00:32:11 1 win more than 50 percent of the seats
00:32:13 2 without sacrificing the benchmark
00:32:17 3 criteria.

00:32:18 4 The evidence will show
00:32:19 5 that the Governor's map is among the
00:32:20 6 best of the maps presented to the
00:32:21 7 Court at satisfying the traditional
00:32:25 8 criteria and among that first tier
00:32:26 9 does the best job of protecting
00:32:28 10 fairness and ensuring that every
00:32:30 11 Pennsylvania voter has an equal
00:32:31 12 opportunity to elect the candidate of
00:32:36 13 his or her choice.

00:32:37 14 Some of the parties
00:32:38 15 before the Court, including the House
00:32:38 16 and Senate Republicans, suggest that
00:32:41 17 Pennsylvania geography unavoidably
00:32:44 18 entrenches partisan advantage. The
00:32:46 19 Governor's map and the evidence to be
00:32:47 20 presented at this hearing demonstrates
00:32:48 21 that is wrong. The Commonwealth can
00:32:50 22 have a map that amply satisfies the
00:32:54 23 traditional redistricting criteria and
00:32:57 24 establishes a level political playing
00:32:59 25 field, safeguarding the basic

00:33:00 1 principles of democracy and ensuring
00:33:03 2 that elected representatives are
00:33:03 3 responsive and accountable to the
00:33:05 4 voters they serve. We respectfully
00:33:07 5 submit that Pennsylvania voters
00:33:08 6 deserve no less. Thank you.

00:33:11 7 JUDGE McCULLOUGH:

00:33:11 8 Thank you, Counsel.

00:33:24 9 Next is Counsel for Republican
10 Legislative Intervenors, Senator
11 Corman.

12 ATTORNEY TUCKER:

13 Your Honor, if it's
14 preferable to the Court, Robert Tucker
15 from BakerHostetler. I represent the
16 House Republicans that are
17 Intervenors. I was going to present
18 first and Mr. Holtzman, on behalf of
19 the Senate, was going to present after
20 me if that is okay.

21 JUDGE MCCULLOUGH:

00:33:36 22 That's fine.

00:33:36 23 ATTORNEY TUCKER:

00:33:36 24 Good morning, Your
00:33:36 25 Honor. And I'd also like to thank the

00:33:36 1 Court for its time, and particularly
00:33:49 2 the staff for setting everything up
00:33:49 3 for us this morning.

00:33:52 4 As Your Honor recognized
00:33:53 5 in her opening remarks, both the
00:33:55 6 United States and Pennsylvania
00:33:55 7 Constitutions task the legislature
00:34:01 8 with redrawing Pennsylvania's
00:34:02 9 Congressional Districts. This is the
00:34:05 10 General Assembly's prerogative. Even
00:34:06 11 with census delays, the General
00:34:09 12 Assembly has now passed its
00:34:11 13 congressional redistricting plan,
00:34:11 14 House Bill 2146, but the Governor has
00:34:15 15 inexplicably vetoed it. The evidence
00:34:18 16 that has been submitted to this Court
00:34:20 17 and that will be further submitted at
00:34:21 18 this hearing demonstrates
00:34:23 19 unequivocally that the plan passed by
00:34:27 20 the General Assembly adheres to
00:34:30 21 traditional redistricting criteria.

00:34:31 22 Indeed, Carter
00:34:33 23 Petitioners recognize that in their
00:34:34 24 opening and many of the experts in
00:34:35 25 their reports recognize that all of

00:34:36 1 the plans, including HB-2146 adhere to
00:34:40 2 traditional redistricting criteria.
00:34:45 3 HB-2146 has at most plus minus one
00:34:49 4 person population deviation. It is as
00:34:54 5 compact or close to compact as all of
00:34:55 6 the other submitted maps as well as
00:34:55 7 the map adopted by the Supreme Court
00:34:58 8 in 2018 and it splits nearly the same
00:35:01 9 number or fewer number of counties,
00:35:03 10 municipalities and precincts as both
00:35:06 11 the 2018 map and the other maps
00:35:08 12 submitted to this court. Indeed, it
00:35:10 13 actually fits --- splits the fewest
00:35:13 14 number of precincts of any of the
00:35:17 15 submitted maps. None of the other
00:35:19 16 parties can or will dispute these
00:35:19 17 points during this hearing.

00:35:21 18 Put simply, the General
00:35:22 19 Assembly's map adheres to traditional
00:35:25 20 redistricting criteria. Moreover, the
00:35:27 21 evidence has already been submitted
00:35:29 22 and that will be submitted during this
00:35:32 23 hearing reflects that the map passed
00:35:32 24 by the General Assembly is a fair map
00:35:34 25 to both political parties.

00:35:35 1 You will hear from the
00:35:36 2 testimony of Doctor Michael Barber,
00:35:38 3 who will demonstrate that HB-2146 is
00:35:42 4 predicted to result in nine Democratic
00:35:45 5 leaning seats and eight Republican
00:35:49 6 leaning sets, one more Democratic
00:35:51 7 leaning seat than the most common
00:35:52 8 outcome in its 50,000 unbiased maps
00:35:56 9 using only traditional redistricting
00:35:59 10 criteria and no partisan data. By any
00:36:02 11 account that is a fair map. More over
00:36:04 12 HB-2146 compares five seats
00:36:10 13 significantly more than many of the
00:36:13 14 other maps. Now if this --- that the
00:36:15 15 General Assembly has passed a map
00:36:17 16 traditional redistricting and is
00:36:19 17 generally fair that is where this
00:36:20 18 Court searches for a map should end.
00:36:23 19 HB-2146 now passed by the full General
00:36:27 20 Assembly is the only plan that has
00:36:29 21 undergone a full transparency and
00:36:36 22 deliberative legislative process.
00:36:37 23 This is a map that was initially drawn
00:36:38 24 by a citizen, was then selected by the
00:36:40 25 Pennsylvania House of Representatives

00:36:42 1 as a map that followed traditional
00:36:44 2 redistricting criteria, passed with
00:36:47 3 few changes and then after
00:36:49 4 deliberations in the Senate passed
00:36:51 5 unchanged. And the changes that were
00:36:53 6 made in the House were based upon
00:36:55 7 public input received during this open
00:36:58 8 and transparent process.

00:36:59 9 This is still intended to
00:37:00 10 be a political process and one that
00:37:02 11 the Court should only intrude into if
00:37:06 12 necessary to prevent a trampling of
00:37:06 13 constitutional rights or where, as
00:37:06 14 here, it is forced to, because of an
00:37:06 15 impasse resulting from Governor's
00:37:13 16 inexplicable and outright refusal to
00:37:14 17 sign a fair map.

00:37:15 18 There will be no
00:37:16 19 demonstration that the map passed by
00:37:18 20 the General Assembly does not pass
00:37:20 21 constitutional muster. Rather, as
00:37:22 22 you've already heard this morning,
00:37:23 23 Your Honor, the other parties will
00:37:25 24 simply submit our map is better. This
00:37:27 25 Court need not and should not turn

00:37:30 1 this into a beauty contest of
00:37:32 2 selecting the, quote, unquote,
00:37:34 3 prettiest map. Rather, this Court
00:37:37 4 should defer to the General Assembly
00:37:38 5 in determining the policy choices
00:37:40 6 necessarily involved in the drawing of
00:37:42 7 Congressional districting lines
00:37:45 8 regardless of any veto by the
00:37:45 9 Governor. This Court should not allow
00:37:51 10 one person to hold hostage a fair plan
00:37:52 11 passed by the elected Representatives
00:37:54 12 and Senators of the people of
00:37:55 13 Pennsylvania.

00:37:56 14 The United States Supreme
00:37:58 15 Court determined that it did not want
00:37:59 16 to wade into the political thicket of
00:38:02 17 restricting, and for good reason. The
00:38:02 18 next two days are going to demonstrate
00:38:07 19 why. The Court is going to see a
00:38:10 20 parade of political scientists and
00:38:11 21 mathematicians all opining that they
00:38:13 22 have the best way of drawing a fair
00:38:15 23 map. They each have the best super
00:38:15 24 computer. They have the best
00:38:18 25 algorithm of determining out what's a

00:38:18 1 fair map. But that is not what this
00:38:20 2 process is supposed to be about. Fair
00:38:23 3 is in the eye of the beholder and
00:38:26 4 determined on how you define fair.
00:38:28 5 There are more ways to draw a
00:38:30 6 Congressional district map in
00:38:31 7 Pennsylvania than there are atoms in
00:38:33 8 the universe. There is no good way to
00:38:36 9 pick the best map because there is no
00:38:37 10 best map.

00:38:40 11 Inevitably, some counties
00:38:42 12 and municipalities have to be divided
00:38:45 13 and the decisions on which political
00:38:47 14 subdivisions are split are at the
00:38:47 15 behest of the map drawer. One map
00:38:50 16 might be favorable to a particular
00:38:51 17 group of citizens while splitting a
00:38:53 18 different community of interest. That
00:38:55 19 is why these are policy choices
00:38:58 20 delegated to the Representatives and
00:39:01 21 Senators elected by the people of
00:39:03 22 Pennsylvania.

00:39:03 23 Again, what is fair?
00:39:04 24 I'll refer to a recent Decision from
00:39:07 25 the Wisconsin Supreme Court, Your

00:39:11 1 Honor, that struggled with this exact
00:39:11 2 problem when they found what
00:39:13 3 constitutes a fair map poses an
00:39:14 4 entirely subjective question with no
00:39:16 5 governing standards grounded in law.
00:39:19 6 Deciding among different versions of
00:39:20 7 fairness poses basic questions that
00:39:22 8 are political, not legal.

00:39:24 9 Some parties will argue
00:39:26 10 that strict adherence to traditional
00:39:27 11 redistricting principles is unfair to
00:39:29 12 Democrats because their supporters are
00:39:32 13 more densely concentrated in cities
00:39:35 14 and have urged the Court to adopt
00:39:35 15 plans that negate that advantage and
00:39:38 16 to seek instead a map that yields
00:39:39 17 proportional representation. This
00:39:40 18 argument unmask their partisan
00:39:40 19 motivations and their pleas for
00:39:40 20 partisan favoritism should be soundly
00:39:50 21 rejected because drawing lines
00:39:51 22 expressly for political gain is, by
00:39:56 23 definition, gerrymandering.
00:39:57 24 Regardless, the maps submitted by the
00:39:57 25 Petitioners, the Governor and the

00:40:00 1 Democratic caucuses go well past
00:40:01 2 correcting this disadvantage and are
00:40:03 3 all predicted, as Doctor Barber will
00:40:05 4 testify, to result in ten Democratic
00:40:09 5 leaning seats and seven Republican
00:40:10 6 leaning seats. That isn't
00:40:12 7 proportional in any way and goes way
00:40:14 8 correcting any potential geographic
00:40:18 9 disadvantage. Make no mistake, those
00:40:18 10 are gerrymanderers in favor of
00:40:18 11 Democrats.

00:40:21 12 Nothing in the
00:40:22 13 Pennsylvania Constitution requires
00:40:24 14 correction of the effects of the
00:40:26 15 clustering of Democratic voters in
00:40:26 16 dense areas or to create a map that
00:40:28 17 proportionally represents the
00:40:30 18 statewide two party vote chair.

00:40:33 19 Indeed, the Wisconsin
00:40:37 20 Supreme Court again recently rejected
00:40:37 21 that notion in selecting a plan to
00:40:40 22 remedy a malapportionment claim when
00:40:41 23 the Governor and legislature could not
00:40:43 24 agree. Rather, these are choices that
00:40:46 25 should be made by the General

00:40:48 1 Assembly, not by groups of
00:40:49 2 mathematicians or by scientists using
00:40:52 3 backroom computers to draw optimized
00:40:54 4 maps and not by this Court.

00:40:56 5 Moreover, this is not
00:40:57 6 just about preserving the cores of
00:40:59 7 districts either. If that was true,
00:41:03 8 then we wouldn't be going from what's
9 been a 9/9 map and losing a seat to a
10 10/7 map. The General Assembly has
11 passed a map that adheres to
12 traditional redistricting principles
13 and that is demonstrably fair. That
00:41:18 14 is where this inquiry should end and
00:41:18 15 this Court should select HB-2214 as
00:41:22 16 the appropriate plan. Thank you very
00:41:23 17 much, Your Honor.

00:41:23 18 JUDGE McCULLOUGH:

00:41:23 19 Thank you, Counsel. So
00:41:24 20 now we will proceed with counsel for
00:41:32 21 Senators Corman and Warren.

00:41:32 22 ATTORNEY HOLTZMAN:

00:41:32 23 That's right, Your
00:41:33 24 Honor. Thank you very much and thanks
00:41:33 25 for indulging our switching order

00:41:34 1 there, I appreciate that. Good
00:41:35 2 morning. May it please the Court, my
00:41:36 3 name is Anthony Holtzman, and I
4 represent Senator Jake Corman, the
5 President Pro Tempore of the
6 Pennsylvania Senate, along with
7 Senator Kim Ward, the majority leader
8 of the Pennsylvania Senate.

00:41:47 9 Your Honor, during this
00:41:48 10 hearing you're going to hear a lot of
00:41:50 11 technical and complex testimony,
00:41:51 12 testimony from political scientists
00:41:55 13 and mathematicians and testimony about
00:41:57 14 algorithms and various formulas and
00:41:59 15 analytics that can be used to evaluate
00:42:01 16 redistricting plans in differing ways.

00:42:03 17 You couldn't blame
00:42:05 18 someone for thinking that this case
00:42:07 19 must be an extremely difficult one.
00:42:09 20 But in our view, Your Honor, this case
00:42:10 21 is not a particularly difficult one.
00:42:11 22 The solution to the issue at hand is
00:42:14 23 straightforward and arises out of the
00:42:16 24 foundational and fundamental
00:42:19 25 constitution principles that are found

00:42:21 1 at the very heart of this case.

00:42:22 2 In this regard, Your
00:42:23 3 Honor, the United States and
00:42:24 4 Pennsylvania Constitutions have
00:42:26 5 assigned the task of redistricting the
00:42:29 6 Commonwealth's congressional districts
00:42:31 7 to the Pennsylvania General Assembly.
00:42:33 8 This task, in other words, is
00:42:35 9 expressly and constitutionally
00:42:35 10 committed to the people's elected
00:42:40 11 representatives and it's a
00:42:40 12 fundamentally legislative task.

00:42:44 13 At times, such as when
00:42:46 14 there's an impasse situation like the
00:42:48 15 one at hand, a Court may be left with
00:42:48 16 what the U.S. Supreme Court has
00:42:51 17 described as, quote, the unwelcome
00:42:52 18 obligation of performing in the
00:42:54 19 legislature stead, closed quote. When
00:42:54 20 these situations arise, however, it
00:43:01 21 does not mean that congressional
00:43:01 22 redistricting is no longer a
00:43:03 23 fundamentally legislative endeavor.
00:43:07 24 It does not mean that the task of
00:43:08 25 redistricting should suddenly be

00:43:08 1 viewed as nothing more than a
00:43:08 2 high-stakes cartography competition to
00:43:14 3 see which of various super computers,
00:43:15 4 mathematicians and academics can outdo
00:43:18 5 the others when it comes to drawing
00:43:19 6 maps in relation to various scientific
00:43:24 7 metrics that are nowhere to be found
00:43:28 8 in the law.

00:43:28 9 This point is especially
00:43:29 10 pronounced in this case, Your Honor.
00:43:29 11 Here, House Bill 2146 embodies a
00:43:34 12 congressional redistricting plan that
00:43:34 13 both the Senate and the House have
00:43:37 14 thoughtfully considered and passed.
00:43:39 15 In light of this factor, the HB-2146
00:43:41 16 plan, as a plan that the people's
00:43:43 17 representatives have approved, should
00:43:44 18 be given special weight, consideration
00:43:46 19 or deference so long as it meets the
00:43:50 20 applicable redistricting requirements.
00:43:51 21 And it plainly does so.

00:43:52 22 In this regard, Your
00:43:53 23 Honor, as Mr. Tucker just ably
00:43:56 24 explained and is explained in the
00:43:57 25 Senate and House Republican

00:43:59 1 Intervenor's briefs and as the
00:43:59 2 evidence in this hearing will show,
00:44:01 3 the HB-2146 plan does, in fact, meet
00:44:05 4 all the applicable requirements,
00:44:07 5 including requirements regarding
00:44:08 6 compact and contiguous territory,
00:44:11 7 population equality and respect for
00:44:14 8 the boundaries of political
00:44:14 9 subdivisions. And what the evidence
00:44:16 10 will not show is that the HB-2146 plan
00:44:20 11 is otherwise unlawful or unfair in
00:44:22 12 some other way.

00:44:24 13 What's more, Your Honor,
00:44:24 14 no other party or Amici has presented
00:44:27 15 this Court with a proposed
00:44:29 16 redistricting plan that has made its
00:44:31 17 way through any part of any
00:44:32 18 legislative process, let alone a plan
00:44:35 19 that both the Senate and House of
00:44:37 20 Pennsylvania have passed. Unlike the
00:44:40 21 other proposed plans, therefore, the
00:44:40 22 HB-2146 plan is entitled to deference
00:44:40 23 and special weight in recognition of
00:44:40 24 the General Assembly's constitutional
00:44:47 25 prerogative to engage in

00:44:48 1 redistricting. Indeed, the HB-2146
00:44:51 2 plan reflects a deliberative, open,
00:44:55 3 legislative process which involved
00:44:58 4 negotiations, compromise and policy
00:45:00 5 judgments in which the people's
00:45:03 6 elective representatives undertook in
00:45:03 7 order to memorialize and implement
00:45:05 8 state policy that reflects the will of
00:45:08 9 their constituents.

00:45:08 10 The Constitution does not
00:45:10 11 envision that a supercomputer or an
00:45:13 12 individual expert witness will create
00:45:14 13 a redistricting map that will govern
00:45:17 14 congressional elections for a decade,
00:45:17 15 no matter how technical or how complex
00:45:21 16 that computer's or expert's analysis
00:45:25 17 might be. Therefore, as I said, Your
00:45:25 18 Honor, the issue before the Court is
00:45:27 19 not a particularly difficult one in
00:45:28 20 our view. The answer is rooted in the
00:45:31 21 foundational and constitutional
00:45:31 22 principles that undergird this case.
00:45:33 23 As a legislatively approved plan that
00:45:36 24 meets all of the applicable
00:45:37 25 redistricting criteria, the HB-2146

00:45:41 1 map is entitled to deference from the
00:45:41 2 Court in order to honor the General
00:45:44 3 Assembly's constitutional prerogative
00:45:44 4 to engage in redistricting. And in
00:45:52 5 our view, it's as simple as that.
00:45:52 6 Thank you, Your Honor.

00:45:53 7 JUDGE McCULLOUGH:

00:45:53 8 Thank you very much,
00:45:55 9 Counsel. And the next party will be
00:45:55 10 Counsel for Representative
00:46:02 11 Reschenthaler, et al.

00:46:02 12 ATTORNEY VOSS:

00:46:05 13 Thank you, Your Honor.
00:46:07 14 May it please the Court, my name is
00:46:07 15 Joshua Voss from the Kleinbard firm.
00:46:11 16 And our team is happy to represent the
00:46:13 17 congressional delegation here today
00:46:14 18 and we appreciate your accommodation
00:46:16 19 of this schedule.

00:46:18 20 When I think about this
00:46:19 21 case I think about it like a contest.
00:46:22 22 And with most contests there's usually
00:46:25 23 a minimal barrier to entry, an entry
00:46:28 24 fee, perhaps success at a preliminary
00:46:31 25 competition, but just not everybody

00:46:32 1 gets in. So the entry fee in this
00:46:35 2 case, so to speak, is the standard set
00:46:39 3 forth by the Pennsylvania Supreme
00:46:41 4 Court, in League of Women Voters,
00:46:43 5 compact, contiguous in minimizing
00:46:47 6 splits.

00:46:47 7 What we will submit to
00:46:48 8 the Court and what we started to
00:46:49 9 submit to the Court yesterday in our
00:46:50 10 response brief is most of the maps,
00:46:53 11 and indeed we think all of the maps,
00:46:56 12 save ours, haven't paid the entry fee
00:46:58 13 for a variety of reasons. But chief
00:47:01 14 among them is our Constitution has
00:47:03 15 some very specific adjectives in it.
00:47:06 16 Absolutely necessary, when we talk
00:47:09 17 about splits in our Constitution we
00:47:11 18 say absolutely necessary. And that's
00:47:13 19 an important consideration in this
00:47:14 20 proceeding, which we'll develop as we
00:47:17 21 go along.

00:47:19 22 The second piece here is,
00:47:21 23 responding to your opening statement,
00:47:22 24 you said this case talks about the
00:47:24 25 constitutional rights of the people.

00:47:28 1 We agree. And as you learned this
00:47:30 2 morning, our expert is perhaps one off
00:47:30 3 from what everyone else is doing. He
00:47:37 4 doesn't own a supercomputer. He can't
00:47:38 5 spit out more maps than atoms in a
00:47:38 6 moment's notice. But what we have
00:47:45 7 endeavored to do with Doctor Keith
00:47:45 8 Naughton is bring the people into this
00:47:47 9 proceeding.

00:47:48 10 Now, Doctor Naughton
00:47:48 11 certainly doesn't know every
00:47:50 12 Pennsylvanian, but he has run
00:47:51 13 campaigns in every county in this
00:47:54 14 state, countywide, districtwide,
00:47:57 15 statewide. And he's learned a little
00:48:01 16 bit about the people of this state,
00:48:03 17 how they live, work and vote. And
00:48:04 18 through that testimony we intend to
00:48:06 19 show the Court how our two proposed
00:48:08 20 maps most respect the communities of
00:48:12 21 interest or really just the people of
00:48:14 22 the state. And we hope to bring the
00:48:15 23 people into this proceeding through
00:48:17 24 Doctor Naughton's testimony to further
00:48:19 25 underscore why our maps are, indeed,

00:48:22 1 the only maps that could be selected
00:48:24 2 here.

00:48:24 3 The final piece that
00:48:26 4 we'll hear perhaps at the end is the
00:48:28 5 bit about the schedule. As we have
00:48:31 6 set forth in our opening brief at page
00:48:36 7 43, you have until February 22 to get
00:48:38 8 a map in place, you being the court
00:48:39 9 system collectively, but certainly
00:48:40 10 this Court with the first bite of the
00:48:42 11 apple with the original jurisdiction.
00:48:45 12 There is time here. And you don't
00:48:46 13 have to take my word for it. Take the
00:48:46 14 Secretary of State's word for it from
00:48:50 15 League of Women Voters. And we've
00:48:50 16 certainly supported that position
00:48:52 17 where the Secretary was amenable to
00:48:54 18 moving and modifying the petition
00:48:58 19 circulation schedule. And we want to
00:48:59 20 make sure that issue is front and
00:49:02 21 center for the Court, that there is
00:49:03 22 some time here to get this right. And
00:49:05 23 we certainly want that to happen.

00:49:06 24 But in the end we will
00:49:07 25 urge this Court to adopt one of the

00:49:09 1 two Reschenthaler maps, as we're
00:49:12 2 calling them, because we believe they
00:49:13 3 are the only ones that satisfy the
00:49:17 4 barrier to entry, the admission fee,
00:49:19 5 so to speak, to have a map adopted for
00:49:23 6 the state. Thank you, Your Honor.

00:49:24 7 JUDGE McCULLOUGH:

00:49:25 8 Okay. Thank you very
00:49:26 9 much, Counsel. Next is counsel for
00:49:51 10 Representative McClinton.

00:49:51 11 ATTORNEY SENOFF:

00:49:51 12 Thank you, Your Honor.
00:49:53 13 Good morning. May it please the
00:49:53 14 Court, David Senoff on behalf of the
00:49:53 15 Intervenor Representative McClinton
00:49:53 16 and the --- as the leader of the House
00:49:53 17 --- Pennsylvania House of
00:50:05 18 Representatives Democratic Caucus.

00:50:06 19 We also would like to
00:50:08 20 thank Your Honor for the time and care
00:50:10 21 with which this Court has handled this
00:50:13 22 case, as well as thanking the staff
00:50:16 23 for making this go off so far
00:50:23 24 flawlessly.

00:50:23 25 Preliminarily, however,

00:50:24 1 we would like to note for the record
00:50:26 2 an objection to this Court's subject
00:50:28 3 matter jurisdiction over the creation
00:50:31 4 of a remedy. This issue was raised in
00:50:35 5 the trial brief we filed earlier
00:50:37 6 today. And I don't want to dwell on
00:50:40 7 it other than to note it for the
00:50:42 8 record and suggest that the reasons
00:50:49 9 for that are set forth clearly in
00:50:51 10 there.

00:50:51 11 We believe that this
00:50:53 12 Court certainly has the power to find
00:50:57 13 facts, similarly has the power to take
00:50:58 14 evidence and also has the power to
00:51:00 15 issue a recommendation to the Supreme
00:51:03 16 Court based on those facts and its
00:51:04 17 Conclusions of Law about what the
00:51:07 18 appropriate remedy should be.

00:51:12 19 However, we do not
00:51:13 20 believe that this Court has the power
00:51:15 21 to enact by virtue of an Order or
00:51:20 22 Final Judgment any particular map
00:51:21 23 because that power is saved to the
00:51:24 24 Pennsylvania Supreme Court under our
00:51:30 25 unified judicial system.

00:51:30 1 With that said, I want to
00:51:33 2 talk briefly about the maps that have
00:51:38 3 been submitted. First of all, we do
00:51:40 4 not believe and we believe the United
00:51:44 5 States Supreme Court has made clear
00:51:46 6 that the legislature's map, however
00:51:50 7 that map --- however one wants to
00:51:53 8 refer to that, either as the now
00:52:00 9 vetoed House Bill 2146 or the
00:52:02 10 Republican Legislative Map, is not
00:52:02 11 entitled to deference based upon the
00:52:04 12 United States Supreme Court's Decision
00:52:07 13 in the Arizona State Legislature
00:52:09 14 versus Arizona Independent
00:52:12 15 Redistricting Commission case. In
00:52:14 16 that case, the Supreme Court looked at
00:52:17 17 the elections clause of the United
00:52:22 18 States Constitution and it found,
00:52:25 19 quite simply, that the use of the
00:52:27 20 phrase the legislature thereof simply
00:52:32 21 means the State's normal legislative
00:52:35 22 processes. And Pennsylvania, by
00:52:41 23 Constitution, particularly in Articles
00:52:46 24 3 and 4, it provides the mechanism for
00:52:47 25 which any bill can become a law. It

00:52:50 1 must pass by a simple majority both
00:52:50 2 houses separately and then the
00:52:57 3 Governor must sign it. If the
00:52:58 4 Governor refuses to sign or approve
00:53:01 5 the law, the bill, then the bill is
00:53:04 6 vetoed, the bill is returned to both
00:53:08 7 houses for reconsideration. Both
00:53:11 8 houses have the opportunity to vote.
00:53:14 9 And if there is a vote by a two-thirds
00:53:16 10 majority, then the Governor's veto is
00:53:24 11 overridden.

00:53:25 12 That has not happened in
00:53:25 13 this case. And based upon the League
00:53:30 14 of Women Voters case, the courts are
00:53:31 15 forced to step in. And in this case,
00:53:35 16 based on those League of Women Voters
00:53:40 17 decision, the Mellow Decision, other
00:53:43 18 decisions analogous to this related to
00:53:48 19 the State redistricting process, we
00:53:53 20 believe that this Court is going to
00:53:54 21 find variations in the maps, but only
00:53:57 22 subtle variations in the maps, which
00:54:00 23 will make it difficult to simply
00:54:05 24 decide this based on whether one map
00:54:09 25 or another map is superior simply

00:54:15 1 based on the metrics set forth in
00:54:18 2 League of Women Voters.

00:54:21 3 In attempting to resolve
00:54:23 4 that question, in looking at League of
00:54:27 5 Women Voters and in Mellow the goal
00:54:30 6 --- the overarching goal, as everyone
00:54:33 7 here has said, is fairness. But in
00:54:36 8 ensuring fairness, the courts also
00:54:39 9 have to ensure that the people are not
00:54:45 10 disenfranchised, that people's votes
00:54:46 11 are not diluted and that when we say
00:54:53 12 fair and equal, we mean fair and
00:54:58 13 equal. One person, one vote.
00:55:03 14 Nobody's vote weighs more than than
00:55:11 15 another.

00:55:12 16 And so we submit that
00:55:13 17 when you look at the maps and the
00:55:14 18 relatively subtle differences between
00:55:17 19 the maps, that one ought to consider
00:55:19 20 historically what has happened with
00:55:22 21 these maps between 2011 and the
00:55:27 22 present as well as the voter
00:55:32 23 composition and registration in the
00:55:36 24 state.

00:55:37 25 For example, in 2011 the

00:55:39 1 Democrats enjoyed a 1.1 million voter
00:55:45 2 advantage over Republicans, and yet
00:55:47 3 that map produced 15 Republican
00:55:59 4 Congress people and three Democrats.
00:55:59 5 In 2018, after the map had been
00:56:01 6 redrawn, there were 840,000 additional
00:56:04 7 Democrats registered to vote in the
00:56:06 8 Commonwealth, and that map produced
00:56:08 9 nine Republicans and nine Democrats.
00:56:10 10 And so now, in fact on Monday I
00:56:15 11 checked the Department of State's
00:56:16 12 website and the Democratic voter
00:56:21 13 advantage is significantly down, but
00:56:24 14 down --- but nonetheless, an advantage
00:56:27 15 of approximately 540,000 voters.

00:56:30 16 So our point to the Court
00:56:32 17 is that if an 840,000 vote majority by
00:56:39 18 Democrats or registration advantage by
00:56:44 19 Democrats yields a 9/9 result, then a
00:56:48 20 540,000 vote registration advantage
00:56:52 21 should not yield substantially more
00:56:56 22 than 50/50, recognizing the fact that
00:56:59 23 because we have an odd number of
00:57:04 24 Representatives now apportioned to the
00:57:05 25 Commonwealth, that it's impossible to

00:57:09 1 have an even split. However, in order
00:57:11 2 to avoid such a disenfranchisement and
00:57:22 3 the dilution of individuals' votes, we
00:57:22 4 submit that a plan as close to 50/50
00:57:25 5 as possible would be the appropriate
00:57:28 6 plan and that any plan which would
00:57:32 7 increase the Republican --- which
00:57:40 8 would substantially increase the
00:57:44 9 Republican representation in Congress
00:57:48 10 above that 50/50 level would be, per
00:57:53 11 se, dilution of the votes and
00:58:00 12 disenfranchising some of the voters in
00:58:00 13 the Commonwealth. Thank you, Your
00:58:02 14 Honor.

00:58:02 15 JUDGE McCULLOUGH:

00:58:02 16 Thank you very much,
00:58:02 17 Counsel.

00:58:10 18 Now we have counsel for
00:58:11 19 Senator Jay Costa, et al.

00:58:25 20 ATTORNEY ATTISANO:

00:58:25 21 Good morning, Your
00:58:26 22 Honor, and may it please the Court,
00:58:29 23 Marco Attisano on behalf of the
00:58:29 24 Senate Democratic Caucus.

00:58:31 25 Your Honor, the law has

00:58:32 1 been covered by many of the other
00:58:34 2 speakers here this morning. You have
00:58:36 3 received introductions related to
00:58:46 4 other maps that have been proposed to
00:58:46 5 this Court. What I would like to draw
00:58:47 6 the Court's attention to today is
00:58:49 7 that, with respect to the map put
00:58:51 8 forward by the Republican legislators,
00:58:58 9 they're asking you to do more than
00:59:00 10 simply pick a map in that instance.
00:59:00 11 They're asking you to promote the
00:59:05 12 legislature over the executive branch
00:59:07 13 in the normal legislative process.
00:59:11 14 The map put forward by the Republican
00:59:16 15 legislators failed the Democratic
00:59:19 16 process. And for this Court to
00:59:23 17 promote that map and select that map
00:59:26 18 after it failed the Democratic process
00:59:27 19 would create an incentive going
00:59:29 20 forward that when there is split
00:59:31 21 government between the legislative
00:59:33 22 branch and the executive branch, there
00:59:35 23 would be an incentive in order to have
00:59:41 24 the legislative branch pass a map
00:59:43 25 without finding a way to enact the map

00:59:47 1 that is acceptable to the opposing
00:59:50 2 party in the executive branch.

00:59:54 3 It would be incentivized
00:59:54 4 to do that because they would know
00:59:58 5 that they could then go to the
00:59:59 6 judicial branch and receive some kind
01:00:02 7 of special deference or special
01:00:03 8 consideration. And that's something
01:00:05 9 that would affect Republican
01:00:12 10 legislators in the future and
01:00:12 11 Democratic majorities in the
01:00:12 12 legislature in the future. And that
01:00:15 13 would be something that is different
01:00:16 14 than we have right now under the law
01:00:17 15 in Pennsylvania. And so by being
01:00:19 16 asked to select that map, this Court
01:00:22 17 isn't only being asked to pick a map.
01:00:24 18 It is being asked to do something much
01:00:26 19 more than simply pick a map.

01:00:32 20 Your Honor, I would like
01:00:33 21 to just note for the record that the
01:00:35 22 Senate Democratic Caucus joins in the
01:00:37 23 objection that the House Democratic
01:00:40 24 Speaker just made related to the
01:00:43 25 subject matter jurisdiction today.

01:00:46 1 And Your Honor, moving on
01:00:48 2 specifically to the maps put forward
01:00:51 3 by the Senate Democratic Caucus, I
01:00:54 4 would just like to point out for this
01:00:56 5 Court's consideration that both of the
01:00:58 6 maps put forward by the Senate
01:01:01 7 Democratic Caucus, they minimize the
01:01:04 8 vote dilution, which will be further
01:01:12 9 explained by our expert. And they
01:01:15 10 also comply with the VRA by creating
01:01:16 11 an appropriate number of
01:01:18 12 minority/majority districts and
01:01:20 13 additionally creating coalition
01:01:23 14 districts where possible. And so I
01:01:25 15 would just ask that the Court take
01:01:27 16 those things into consideration
01:01:29 17 whenever determining the differences
01:01:31 18 between maps that are put forward
01:01:33 19 before the Court.

01:01:48 20 And, Your Honor, one more
01:01:50 21 point with respect to the League of
01:01:53 22 Women Voters traditional redistricting
01:01:53 23 factors that have been discussed
01:01:55 24 today. The case was very clear and I
01:01:57 25 think some other speakers touched on

01:01:59 1 it as well that simply because a map
01:02:02 2 meets the traditional redistricting
01:02:04 3 factors, the analysis does not stop
01:02:06 4 there, and that the traditional
01:02:08 5 redistricting factors can be met and a
01:02:11 6 map can still be unconstitutional for
01:02:15 7 both dilution.

01:02:16 8 And with that, Your
01:02:17 9 Honor, I'll conclude my opening to the
01:02:21 10 Court. Thank you.

01:02:21 11 JUDGE McCULLOUGH:

01:02:22 12 Okay. Thank you very
01:02:24 13 much, Counsel.

01:02:24 14 If I'm not mistaken,
01:02:30 15 that is the end of the opening
01:02:33 16 statements/arguments. So we will move
01:02:37 17 now to the first witness to be called
01:02:47 18 by the Petitioners Carter, et al.

01:03:24 19 ATTORNEY JASRASARIA:

01:03:24 20 Your Honor, the
01:03:26 21 Petitioner calls Doctor Jonathan
01:03:49 22 Rodden.

01:04:28 23 COURT CRIER TURNER:

01:04:29 24 Raise your right hand.

01:04:30 25 ---

1 JONATHAN RODDEN,
2 CALLED AS A WITNESS IN THE FOLLOWING
3 PROCEEDINGS, HAVING FIRST BEEN DULY
4 SWORN, TESTIFIED AND SAID AS FOLLOWS:

5 ---

6 DIRECT EXAMINATION

7 ---

8 BY ATTORNEY JASRASARIA:

01:04:31

9 Q. Good morning, Doctor Rodden.

01:04:31

10 Could you please state your name for
11 the record?

01:04:31

01:04:33

12 A. Good morning. My name is
13 Jonathan Rodden.

01:04:33

01:04:34

14 Q. And what is your current
15 employment?

01:04:35

01:04:36

16 A. I'm a professor of political
17 science at Stanford University.

01:04:37

01:04:37

18 JUDGE McCULLOUGH:

01:04:39

19 Sir, you can --- since
20 you already have a Plexiglass in front
21 of you, you can remove ---.

01:04:39

01:04:40

01:04:42

22 THE WITNESS:

01:04:42

23 I was hoping you would
24 say that. Thank you.

01:04:43

01:04:44

25 JUDGE McCULLOUGH:

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Yes, I know it's very
difficult to testify with that.

Go ahead.

BY ATTORNEY JASRASARIA:

Q. What does your current research
focus on?

A. I work on --- redistricting is
one of the most important issues I
work on, but a broader set of issues
related to political geography,
economic geography, I do a lot of work
of spatial data of various kinds and
census data and political data of all
kinds in the United States and other
countries.

Q. Did you write a report
documenting your methodology opinion
and all the facts that you relied on
in this case?

A. Yes, I did.

ATTORNEY JASRASARIA:

Your Honor, permission
to approach the witness with a copy of
his report.

JUDGE McCULLOUGH:

01:05:39 1 You may, yes.

01:05:39 2 Is there an opening in
01:05:39 3 that screen or on the side? That's
01:05:39 4 all right, I think it can --- Mr.
01:05:39 5 Turner will take it over for you.

01:06:11 6 BY ATTORNEY JASRASARIA:

01:06:11 7 Q. Doctor Rodden, are those the
01:06:16 8 reports that you authored?

01:06:17 9 A. Yes.

01:06:17 10 Q. Can you briefly summarize what
01:06:20 11 the Carter Petitioners have asked you
01:06:21 12 to do in this case?

01:06:22 13 A. I was asked to draw a
01:06:23 14 redistricting plan for the
01:06:25 15 Congressional Districts of the State
01:06:26 16 of Pennsylvania, focusing on
01:06:27 17 traditional redistricting criteria but
01:06:29 18 using the existing court ordered plan
01:06:34 19 from four years ago as a starting
01:06:36 20 point and trying to stay as close as
01:06:38 21 possible to that plan while, where
01:06:40 22 possible, improving on the traditional
01:06:42 23 redistricting criteria.

01:06:45 24 Q. Broadly, were you able to
01:06:47 25 accomplish this task?

01:06:48 1 A. Yes.

01:06:50 2 Q. What was the most significant
01:06:52 3 constraint that was shaping this task?

01:06:54 4 A. The same constraint that faces
01:06:56 5 all the other map makers, which is
01:06:59 6 Pennsylvania's population has changed
01:07:00 7 overtime. And as was pointed out
01:07:02 8 earlier this morning some population
01:07:06 9 stagnation relative to other states
01:07:09 10 means that Pennsylvania has lost a
01:07:11 11 seat, but also within the State
01:07:13 12 there's been a substantial
01:07:15 13 reorientation of population toward
01:07:18 14 this --- to the eastern part of the
01:07:20 15 state and to the Pittsburgh area. And
01:07:23 16 there's been population decline
01:07:24 17 elsewhere.

01:07:27 18 Q. Could we please turn to figure
01:07:30 19 two of your report, which is on page
01:07:43 20 eight. And this is a diagram entitled
01:07:45 21 the geography of population shifts
01:07:50 22 Pennsylvania Counties 2010 to 2020.

01:07:52 23 Doctor Rodden, what does this
01:07:53 24 diagram show?

01:07:53 25 A. This is just a visualization of

01:07:55 1 the population changes I just
01:07:57 2 mentioned. So we have the county
01:07:57 3 level of population data from 2010 and
01:08:00 4 county level population data from
01:08:02 5 2020. And I'm just taking the raw
01:08:05 6 changes in those population numbers
01:08:06 7 and making a map to display the places
01:08:09 8 where population has grown the most
01:08:12 9 and oriented the colors so that yellow
01:08:18 10 is --- orients us to all of the
01:08:20 11 counties that have lost population.
01:08:23 12 And then the counties with some shade
01:08:26 13 of orange have gained population,
01:08:27 14 getting to the darkest --- deepest
01:08:30 15 shade of orange in the places that
01:08:31 16 have gained the most population.

01:08:34 17 Q. What conclusion do you draw
01:08:37 18 from Figure 2?

01:08:39 19 A. Well, as affects redistricting,
01:08:41 20 I should point out that the figure
01:08:43 21 also contains the old 18 districts
01:08:46 22 from the previous plan, so it shows us
01:08:48 23 the starting point for redistricting
01:08:50 24 if we consider that plan, and it shows
01:08:54 25 us what has changed. So it gives us a

01:08:57 1 sense of what parts of the state will
01:09:00 2 experience some change. And this is a
01:09:02 3 constraint that faces not just --- not
01:09:04 4 just my plan but any plan. This is
01:09:06 5 the starting point for all of the
01:09:07 6 experts who will be testifying.

01:09:11 7 Q. Based on this figure and your
01:09:18 8 analysis of the demographic changes,
01:09:22 9 where across the State are the most
01:09:28 10 changes necessary for drawing a plan?

01:09:33 11 A. In the places where we see
01:09:35 12 yellow on the map. So these are the
01:09:36 13 places where it would not be possible
01:09:38 14 to keep the existing jurisdictional
01:09:41 15 arrangement because of population laws
01:09:42 16 and the places where we see more
01:09:45 17 orange colors are places where it is
01:09:47 18 possible to retain the existing
01:09:48 19 District arrangement. And we'll see
01:09:50 20 that that has been largely the case in
01:09:52 21 my plan.

01:09:55 22 Q. You mentioned earlier that you
01:09:57 23 were asked to use the 2018 plan as a
01:09:59 24 starting point to draw your map. Were
01:10:01 25 you already familiar with the 2018

01:10:03 1 plan when that request was made?

01:10:05 2 A. Yes, it's a plan that I've
01:10:08 3 examined in some of my academic work
01:10:10 4 and had already ascertained in that
01:10:13 5 work that this was a plan that was --
01:10:16 6 that performed very well on
01:10:17 7 traditional redistricting criteria,
01:10:27 8 and had also noticed that it was ---.

01:10:27 9 COURT REPORTER:

01:10:27 10 Had performed very well
01:10:27 11 on traditional --- you're going to
01:10:29 12 have to slow down a little bit.

01:10:29 13 THE WITNESS:

01:10:29 14 Of course, thank you. I
01:10:30 15 had noticed in a variety of metrics
01:10:32 16 and in some different academic work,
01:10:34 17 that the plan that was enacted by the
01:10:37 18 Supreme Court in 2018 was a plan that
01:10:41 19 performed very well according to
01:10:43 20 traditional redistricting criteria.
01:10:45 21 It was a compact plan and it was ---
01:10:48 22 it was a plan that involved relatively
01:10:50 23 few county splits and other
01:10:53 24 jurisdictional splits, so it was a
01:10:55 25 plan I was already familiar with on

01:10:57 1 those grounds. It's also a plan that
01:11:00 2 I examined with respect to partisan
01:11:03 3 fairness, and others have as well, and
01:11:05 4 it was broadly recognized to be quite
01:11:08 5 a fair plan. I think it had that
01:11:10 6 reputation broadly in the community of
01:11:13 7 people who study redistricting.

01:06:11 8 BY ATTORNEY JASRASARIA:

01:06:11 9 Q. Did you agree with the approach
01:11:20 10 of using the 2018 plan as a guide?

01:11:23 11 A. Yes, that's what I was asked to
01:11:25 12 do, and I agreed to do it. I thought
01:11:25 13 it seemed like a fine strategy,
01:11:27 14 especially if the goal was to abide by
01:11:29 15 traditional redistricting criteria,
01:11:32 16 this was a very good place to start.

01:11:34 17 Q. I'd like to briefly discuss how
01:11:38 18 you created the map that has been
01:11:40 19 considered for the Court's
01:11:41 20 consideration as the Carter plan.

01:11:42 21 Did you construct a map based on
01:11:45 22 adherence to certain criteria?

01:11:48 23 A. Yes. I pay attention --- like
01:11:53 24 every redistricting map in the United
01:11:55 25 States I paid attention to population,

01:11:58 1 equality. I tried to keep --- I tried
01:11:59 2 to keep the districts within plus or
01:12:01 3 minus one population deviation. I
01:12:03 4 paid attention to county and municipal
01:12:07 5 and voting tabulation district splits,
01:12:10 6 so trying to keep political
01:12:13 7 jurisdictions together and also paid
01:12:16 8 attention to compactness and
01:12:22 9 contiguity, these four basic
01:12:24 10 traditional redistricting principles.
01:12:24 11 Q. Let's break that down. What
01:12:26 12 does contiguity mean?
01:12:28 13 A. That simply means that we ---
01:12:30 14 when we draw a redistricting plan, we
01:12:32 15 don't want to have non-contiguous
01:12:34 16 fragments, so an example that others
01:12:37 17 sitting in the room might be familiar
01:12:39 18 with, there's a little section of
01:12:42 19 Chester County that is formed by a
01:12:44 20 bend in the river --- in a creek,
01:12:46 21 actually, that has six people in it
01:12:48 22 and it is a little fragment that is
01:12:50 23 not contiguous with the rest of the
01:12:52 24 county. So it is not permissible to
01:12:55 25 take that fragment and attach it to

01:12:57 1 the rest --- to the District that
01:12:59 2 contains Chester County. It's
01:13:01 3 necessary to make sure that fragment
01:13:03 4 is contiguous with the surrounding
01:13:07 5 area, so all of us have to abide by
01:13:12 6 that constraint.

01:13:12 7 Q. Was your map contiguous?

01:13:15 8 A. Yes.

01:13:15 9 Q. And did you evaluate the other
01:13:17 10 maps for contiguity?

01:13:19 11 A. I did.

01:13:19 12 Q. What was the result?

01:13:20 13 A. They all had the same feature.
01:13:21 14 There were no non-contiguities. There
01:13:23 15 may have been one unpopulated census
01:13:24 16 block that was inadvertently left in
01:13:29 17 one of the plans, but in general I
01:13:30 18 would agree that they all were
01:13:33 19 involved, did not produce any
01:13:38 20 non-contiguities.

01:13:38 21 Q. Turning to compactness, how do
01:13:42 22 you measure compactness?

01:13:44 23 A. Well, given the amount of time
01:13:46 24 we have today, I will not go into a
01:13:49 25 discourse on compactness. It's

01:13:50 1 something that we will hear a lot
01:13:53 2 about I presume. It is a concept that
01:13:56 3 --- in which in redistricting we like
01:13:58 4 to avoid districts that have very
01:14:00 5 unnatural shapes. Someone referred
01:14:05 6 earlier today to a district involving
01:14:08 7 Goofy and, you know, some comic
01:14:09 8 characters.

01:14:11 9 It's a long tradition
01:14:12 10 tradition starting with Elbridge Gerry
01:14:13 11 of these districts that are very oddly
01:14:15 12 shape with claws and tentacles. So we
01:14:18 13 want some way to measure that and try
01:14:19 14 to avoid it, and so mathematicians and
01:14:23 15 social scientists have been developing
01:14:25 16 over the years, various ways of trying
01:14:26 17 to do this, and they all --- they all
01:14:28 18 give us a little bit different
01:14:30 19 information. They all tell us
01:14:31 20 something different about the geometry
01:14:33 21 of districts, the shape of districts.
01:14:36 22 And so we have some measures that we
01:14:39 23 use to evaluate the individual
01:14:41 24 districts and we often take an average
01:14:44 25 for the whole plan, and so I've done

01:14:46 1 some of that in my reports.

01:14:49 2 Q. Is there any one compactness
01:14:54 3 metric that's more important to meet
01:14:58 4 than others?

01:14:59 5 A. No, they are a variety of
01:14:59 6 measures, all of which capture
01:15:00 7 something subtly different.

01:15:00 8 Q. And what are the compactness
01:15:02 9 measures that you used in your
01:15:04 10 analysis?

01:15:05 11 A. I reported on several in my
01:15:07 12 initial report, but I discussed in
01:15:09 13 more detail the poles be proper and
01:15:15 14 REOC measures, simply because I've
01:15:16 15 noticed they receive the most
01:15:17 16 attention in previous Pennsylvania
01:15:20 17 Court decisions and also in other
01:15:24 18 judicial proceedings in other states.

01:15:29 19 Q. Did you evaluate your plan for
01:15:31 20 compactness?

01:15:32 21 A. I did.

01:15:32 22 Q. And did you evaluate the other
01:15:34 23 plans for compactness?

01:15:36 24 A. Yes.

01:15:36 25 Q. How did your plan compare to

01:15:39 1 the other plans?

01:15:45 2 A. Well, this is --- again, the
01:15:46 3 answer depends on which of these
01:15:47 4 measures we look at. But on several
01:15:49 5 of the measures it was somewhere in
01:15:51 6 the middle of a fairly narrow range,
01:15:53 7 but on some of the measures it
01:15:55 8 performed very well. On the REOC
01:15:59 9 score, it performed near the top. I
01:16:02 10 think maybe the second to the top.

01:16:03 11 Q. Turning to the next criteria
01:16:09 12 for political subdivisions. Can you
01:16:11 13 explain what respect for a political
01:16:13 14 subdivision boundaries means?

01:16:17 15 A. Yeah. This simply means not
01:16:20 16 splitting counties in the first
01:16:22 17 instance. And then we can also talk
01:16:24 18 about other sub-county jurisdictions.
01:16:26 19 In some states there are jurisdictions
01:16:28 20 that cross county boundaries, so we
01:16:29 21 have a trade-off between not splitting
01:16:32 22 a county and not splitting, say, a
01:16:34 23 city like Columbus, Ohio that crosses
01:16:37 24 county boundaries.

01:16:42 25 But in general the idea

01:16:43 1 is to not split these jurisdictions,
01:16:45 2 but there are trade-offs between
01:16:47 3 different jurisdictions. We want to,
01:16:51 4 in many cases focusing on counties is
01:16:54 5 what redistricters are specially
01:16:55 6 attentive to. We want to try not to
01:16:57 7 split counties, keep counties whole
01:17:00 8 when we can, and that's something I
01:17:03 9 took very seriously. But I also pay
01:17:05 10 very close attention to vote
01:17:06 11 tabulation districts in my analysis
01:17:08 12 and try to minimize splits of vote
01:17:15 13 tabulation districts.

01:17:19 14 Q. Why did you try to minimize the
01:17:24 15 splits of vote tabulation districts?
01:17:24 16 Or I guess, let me start --- what is a
01:17:24 17 a vote tabulation district?

01:17:24 18 A. Yes. This is an important
01:17:27 19 geographic entity in the
01:17:29 20 administration of elections. This is
01:17:31 21 where the election really happens and
01:17:35 22 is administered at the level of vote
01:17:38 23 tabulation districts. So in U.S.
01:17:39 24 elections we have so many different
01:17:42 25 jurisdictions, so many different

01:17:44 1 offices, we have districts for city
01:17:48 2 council, we have districts for the
01:17:50 3 state legislature and for congress.
01:17:53 4 It's very important that everyone
01:17:54 5 receive a ballot that has the correct
01:17:56 6 offices on it, and this is what
01:17:58 7 happens at the level of vote
01:18:00 8 tabulation districts and precincts.
01:18:03 9 And so if we split a VTD ---
01:18:07 10 that's the short for vote tabulation
01:18:10 11 district --- this creates a serious
01:18:11 12 headache for election administrators,
01:18:16 13 and it's something I've spoken with
01:18:18 14 election administrators about and
01:18:20 15 I've, in fact, seen. I have not been
01:18:22 16 involved directly, but have learned a
01:18:29 17 lot about lawsuits in which sometimes
01:18:30 18 the wrong ballot ends up going to the
01:18:30 19 wrong people. It's a technical
01:18:33 20 problem. Whenever you split a vote
01:18:34 21 tabulation district, you are forcing
01:18:35 22 election administrators to try to put
01:18:37 23 people into two bins when they come in
01:18:41 24 and try to make sure that everyone
01:18:43 25 gets the correct ballot.

01:18:44 1 And when we split VTDs we run
01:18:47 2 the risk that mistakes are made. And
01:18:47 3 when there are very close elections,
01:18:50 4 these mistakes can be very
01:18:53 5 consequential and can actually affect
01:18:57 6 the outcome of the election.

01:18:59 7 Q. Were there any subdivision
01:19:01 8 splits that your plan performed
01:19:02 9 particularly well on compared to the
01:19:04 10 other plans?

01:19:05 11 A. It performed very well on
01:19:08 12 county splits, which is not
01:19:10 13 surprising, because I was starting
01:19:11 14 from a plan that was very low on
01:19:13 15 county splits and I was asked to even
01:19:16 16 reduce the number of county splits, if
01:19:19 17 possible, and so I was able to do
01:19:20 18 that.

01:19:21 19 So I believe my plan performs
01:19:23 20 very well relative to the others on
01:19:25 21 county splits, and I think it's
01:19:26 22 important that we not just look at the
01:19:29 23 total number of counties that were
01:19:31 24 split, but the number of actual splits
01:19:34 25 of counties. We can achieve a very

01:19:37 1 low number of counties --- of split
01:19:39 2 counties if we just take some counties
01:19:41 3 and split them many times. So I think
01:19:45 4 it's useful to look at the total
01:19:47 5 number of splits of counties. And on
01:19:48 6 that dimension, my plan does very
01:19:53 7 well.

01:19:53 8 Q. Did your plan also perform well
01:19:55 9 on voter tabulation districts or VTDs?

01:19:59 10 A. Yes. I think I paid special
01:19:59 11 attention to that. It's something
01:20:01 12 that I really tried hard to --- I
01:20:01 13 think the number that I eventually
01:20:04 14 split was 17, and that's a number that
01:20:06 15 corresponds to the number of
01:20:08 16 districts. So I tried at each
01:20:10 17 boundary to only split one vote
01:20:13 18 tabulation district, and then there
01:20:16 19 are some places in particular in
01:20:17 20 Philadelphia where I managed not to
01:20:19 21 split any.

01:20:25 22 Q. Turning to the final criteria
01:20:27 23 of the first four that you mentioned,
01:20:27 24 can you explain how population quality
01:20:28 25 is measured?

01:20:30 1 A. Right. We simply take the most
01:20:32 2 recent population number for
01:20:36 3 Pennsylvania and divide by 17, and
01:20:38 4 then we have a number, I believe it's
01:20:41 5 765,000, which is our --- give or take
01:20:45 6 --- I forgot the exact number, but
01:20:46 7 that is our --- all of us had that
01:20:48 8 same target population. And we try to
01:20:50 9 draw districts by choosing county
01:20:54 10 subdivisions and vote tabulation
01:20:56 11 districts, and at the very end of the
01:20:57 12 process we might have to split a vote
01:21:00 13 tabulation district in order to get
01:21:02 14 that number to zero or negative one or
01:21:05 15 one to get it as close as possible to
01:21:08 16 equality.

01:21:10 17 Q. Did you assess the equal
01:21:11 18 population for your plan?

01:21:13 19 A. Yes.

01:21:13 20 Q. And did you assess equal
01:21:15 21 population for the other plans?

01:21:17 22 A. Yes.

01:21:19 23 Q. From the information and data
01:21:21 24 that you received were all of the
01:21:23 25 plans equally populated under the

01:21:25 1 population data that they were using?

01:21:28 2 A. Yes.

01:21:28 3 Q. And your plan was as well?

01:21:33 4 A. Yes.

01:21:34 5 Q. Could you have gotten any
01:21:36 6 closer to population equality?

01:21:38 7 A. No, one person is --- I think
01:21:42 8 is very good.

01:21:48 9 Q. At this time I'd like to just
01:21:49 10 ask you some questions about the
01:21:50 11 Carter plan itself. Can we pull up
01:21:54 12 Figure 5 on page 13 of the report?
01:21:57 13 And this is a diagram that's entitled
01:22:00 14 proposed Congressional District
01:22:04 15 Boundaries.

01:22:05 16 And Doctor Rodden, can you
01:22:09 17 describe what this figure is showing
01:22:10 18 us?

01:22:11 19 A. Yes. What we see here are the
01:22:12 20 proposed Carter plan boundaries that
01:22:18 21 are --- that correspond to different
01:22:19 22 colors. And so you can see each color
01:22:22 23 corresponds to a proposed district.
01:22:23 24 But what this plan --- what this
01:22:26 25 figure also shows us is of, course,

01:22:29 1 the Pennsylvania counties, and it also
01:22:31 2 shows us in, kind of, dark somewhat
01:22:34 3 transparent grey, it shows us the old
01:22:36 4 2018 district boundaries. So we can
01:22:40 5 compare where the changes have been
01:22:41 6 made.

01:22:59 7 Q. And what kinds of changes ---
01:23:01 8 what was the major change that you had
01:23:03 9 to make here?

01:23:04 10 A. Yeah. What we can see from
01:23:06 11 looking at this level of Zoom at the
01:23:07 12 whole state, I think it's helpful to
01:23:09 13 think back to that orange and yellow
01:23:12 14 map we were considering a moment ago.
01:23:13 15 The places that looked orange on that
01:23:17 16 map where the population is growing,
01:23:19 17 and particularly where it's growing at
01:23:20 18 about the rate of the U.S. population
01:23:23 19 in the southeast part of the state, it
01:23:25 20 was easy to keep the district
01:23:27 21 boundaries relatively similar.

01:23:30 22 And so we see that the - that
01:23:31 23 the correspondence between the new
01:23:34 24 districts represented in colors and
01:23:37 25 the old districts with the grey lines,

01:23:40 1 the correspondence is quite strong as
01:23:43 2 we go through --- going from northeast
01:23:47 3 to kind of around clockwise, it's
01:23:50 4 quite strong in eight, seven, one,
01:23:56 5 four, two and three, both of those are
01:23:58 6 Philadelphia districts, and in five,
01:24:01 7 which is based in Delaware County.
01:24:03 8 And District 6, which is based in
01:24:05 9 Chester County, as well as Districts
01:24:08 10 10 and 11.

01:24:09 11 Those districts have
01:24:10 12 experienced, in the Carter plan,
01:24:12 13 relatively minor changes from their
01:24:14 14 orientation in the previous plan.
01:24:17 15 And the same is true of districts on
01:24:21 16 the west side of the state of
01:24:23 17 Districts 12 and 17, which you may
01:24:25 18 remember also experienced some
01:24:27 19 population growth since the last
01:24:28 20 census, not quite as much growth as
01:24:32 21 the U.S. as a whole, but experienced
01:24:35 22 growth. So it was possible to keep
01:24:37 23 the existing orientation rather
01:24:39 24 similar.

01:24:39 25 And so we see, just looking at

01:24:41 1 this broad Zoom we can also understand
01:24:45 2 that Districts 16 and 14 on the west
01:24:48 3 --- on the western boundary of the
01:24:50 4 state, because there's a state
01:24:52 5 boundary there, because the population
01:24:55 6 loss is relatively large in these
01:24:57 7 counties, they have to move a little
01:25:01 8 bit to the east. There's really no
01:25:03 9 other place for them to go, other than
01:25:04 10 to take up some space moving further
01:25:07 11 east into Pennsylvania. And so this
01:25:11 12 is something, that, again, it's not
01:25:13 13 just my approach that has this
01:25:15 14 problem.

01:25:16 15 Anyone drawing the District of
01:25:18 16 Pennsylvania has the problem that in
01:25:19 17 the middle of the state where the
01:25:21 18 population loss happens, the districts
01:25:23 19 will change more substantially from
01:25:27 20 the old plan. And that's why we see
01:25:29 21 less correspondence between the old
01:25:33 22 and new boundaries out there.

01:25:38 23 Q. Let's pull up Figure 6, which
01:25:42 24 is on page 13 of the report, and this
01:25:45 25 is entitled the Philadelphia Area.

01:25:49 1 Can you describe what you did with the
01:25:51 2 districts here, Doctor Rodden?

01:25:53 3 A. Sure. I'll try to do so
01:25:55 4 briefly. District 1 in Bucks County,
01:25:58 5 this is a place that was gaining
01:26:07 6 population, but not at a very rapid
01:26:12 7 rate, so it's --- it's relative to the
01:26:12 8 new ideal population. It was
01:26:12 9 underpopulated, and so it needed to
01:26:12 10 pick up some people.

01:26:16 11 So we can see I've kept the
01:26:18 12 arrangement very similar to before,
01:26:19 13 but added some additional parts of
01:26:20 14 Montgomery County in order to make
01:26:23 15 that District reach population
01:26:25 16 equality. And the choices of places
01:26:27 17 in Montgomery were based on trying to
01:26:28 18 keep --- trying to keep municipalities
01:26:29 19 together and trying to avoid VTD
01:26:29 20 splits and achieve one person
01:26:35 21 population deviation equality.

01:26:36 22 So that's what's happening in
01:26:37 23 District 1. Districts 2 and 3, the
01:26:40 24 Philadelphia County population is
01:26:42 25 actually growing at a very similar

01:26:44 1 rate to the national population. So
01:26:48 2 it's really not necessary to change
01:26:51 3 much at all from Districts 2 to 3 in
01:26:53 4 the existing map. So there's just a
01:26:55 5 little alteration needed there to
01:26:58 6 reach population equality.

01:27:00 7 District 5 is similar to
01:27:02 8 District 1 in that its population
01:27:10 9 growth was somewhat slower, and so it
01:27:10 10 also was below the target population,
01:27:12 11 and so it needed to pick up some
01:27:13 12 places. And this is the kind of thing
01:27:15 13 where we can appreciate the trade-offs
01:27:17 14 that someone makes when they're
01:27:18 15 drawing a districting plan. It has to
01:27:21 16 pick up some people in someplace. It
01:27:23 17 already was going into Montgomery
01:27:25 18 County. It can go further into
01:27:27 19 Montgomery County and add some more
01:27:29 20 people, or it can go up into Chester
01:27:32 21 County and which then creates a split
01:27:35 22 in Chester County, which then
01:27:37 23 unfortunately has a cascading effect
01:27:41 24 and creates splits in many of the
01:27:42 25 surrounding counties.

01:27:43 1 And so this is an example of a
01:27:44 2 place where there's a trade-off where
01:27:46 3 an redistricting expert has to face,
01:27:51 4 between --- between splits in
01:27:52 5 different places and also involving
01:27:54 6 compactness. So what I decided was
01:27:57 7 that by keeping the existing
01:27:58 8 arrangement and moving District 5 into
01:28:01 9 Montgomery County, that it would then
01:28:04 10 --- that what then has to happen is
01:28:05 11 Montgomery County has to --- has to
01:28:08 12 --- also needs some population that
01:28:10 13 needs to move further up into Berks
01:28:10 14 County.

01:28:13 15 And that is the arrangement
01:28:15 16 that I chose, and it's one that I
01:28:16 17 chose purely for reasons of avoiding
01:28:19 18 other splits and other places, so this
01:28:22 19 is why my county splits number is low,
01:28:24 20 because of a choice like that.

01:28:27 21 Q. Let's turn to Figure 7 on the
01:28:29 22 next page. Thanks. So this is a
01:28:37 23 diagram entitled District 7 and 8.
01:28:40 24 Could you describe what you did with
01:28:41 25 these districts in your plan?

01:28:44 1 A. Yes, I hope the colors are
01:28:46 2 clear to people. There's a shade of
01:28:49 3 green and a shade of blue that may not
01:28:51 4 be great for people who are
01:28:53 5 colorblind. But there is a ---
01:28:54 6 there's a District 7, which is a
01:28:57 7 Lehigh Valley District that was
01:29:00 8 already in existence, but it needed
01:29:02 9 some more population, and the
01:29:10 10 metropolitan statistical area of ---
01:29:15 11 of Easton and Bethlehem and --- you
01:29:15 12 know, of the Lehigh Valley, it
01:29:18 13 includes Carbon County. In that
01:29:18 14 Carbon County in the past had been ---
01:29:26 15 had been separated from this district.
01:29:27 16 So I was able to combine the entire
01:29:27 17 metropolitan statistical area in, kind
01:29:27 18 of, a communities of interest
01:29:27 19 consideration. I was able to combine
01:29:34 20 that entire MSA into a district that
01:29:36 21 became District 7, but its basic
01:29:41 22 structure is not very different than
01:29:42 23 before.

01:29:43 24 And then District 8 is --- is
01:29:44 25 also very similar to before. This is

01:29:45 1 one that contains the Scranton,
01:29:47 2 Wilkes-Barre and surrounding areas and
01:29:50 3 it was possible just to add a little
01:29:56 4 bit of --- its population growth was a
01:30:02 5 little low relative to other places,
01:30:02 6 so it was necessary to add a little
01:30:02 7 bit of territory in Monroe County and
01:30:02 8 very small amount of territory in ---
01:30:10 9 outside of Wilkes-Barre.

01:30:13 10 Q. Let's look to Figure 8, and
01:30:17 11 this one is entitled District 6, 10
01:30:17 12 and 11.

01:30:17 13 Could you briefly describe what
01:30:26 14 you did with the districts here?

01:30:26 15 A. Yes. This is another one where
01:30:26 16 I can be very brief, because as we saw
01:30:29 17 in that initial map, the population
01:30:30 18 growth was very similar to the
01:30:34 19 national average and so these
01:30:35 20 districts were already very close to
01:30:37 21 the target population.

01:30:38 22 District 6 had to just make
01:30:40 23 minimal changes by taking in an
01:30:43 24 additional part of a township that had
01:30:44 25 already been split in the earlier

01:30:46 1 plan. I just took in a little bit
01:30:50 2 more of that township and it had
01:30:50 3 population of equality.

01:30:51 4 District 11, only some small
01:30:53 5 changes on its western boundary. And
01:30:57 6 District 10 was one that is --- it's
01:31:01 7 clearly constructed in a communities
01:31:05 8 of interest framework. It's one that
01:31:07 9 is attempting to keep Harrisburg
01:31:09 10 together. It is at the confluence of
01:31:12 11 three counties. And this is a
01:31:13 12 district that tries to keep that city
01:31:14 13 together in the same district. And so
01:31:16 14 I retained that structure and dealt
01:31:19 15 with population equality by simply
01:31:25 16 moving the boundary --- we already had
01:31:25 17 split Cumberland County, simply move
01:31:25 18 the boundaries somewhat to the west in
01:31:28 19 order to accommodate that.

01:31:28 20 Q. Let's pull up Figure 9. And
01:31:32 21 this one is just describing District
01:31:32 22 9.

01:31:38 23 Can you also briefly describe
01:31:42 24 what you did here?

01:31:43 25 A. This is a district that was

01:31:44 1 previously smaller, but this is an
01:31:46 2 area, as we saw in that earlier map,
01:31:48 3 where population loss is happening.
01:31:51 4 And some of these other --- some of
01:31:54 5 the moves I just described involve
01:31:56 6 some incursion into what used to be
01:32:00 7 District 9's territory.

01:32:00 8 So you have incursions --- for
01:32:03 9 example, District 4 into Berks County,
01:32:05 10 District 8 moving a little bit further
01:32:08 11 out to the west. And --- but above
01:32:12 12 all population loss, it just requires
01:32:14 13 the footprint of District 9 to expand
01:32:17 14 in order to have --- for it to have
01:32:24 15 enough people.

01:32:24 16 Q. Let's turn to Figure 10. This
01:32:27 17 figure is describing Districts 13 and
01:32:31 18 15.

01:32:32 19 Could you describe what you did
01:32:33 20 here?

01:32:33 21 A. This is an area whereas I
01:32:35 22 described some things --- some of
01:32:36 23 these districts, with 9 is taking over
01:32:38 24 some of the territory that was
01:32:40 25 previously in District 12. And

01:32:44 1 District 10 is expanding somewhat to
01:32:46 2 the east. And as we'll see in a
01:32:48 3 moment District 16 and 14 are
01:32:51 4 expanding to the east.

01:32:52 5 I'm sorry, I misspoke a moment
01:32:55 6 ago. Those other places were
01:32:57 7 expanding a bit to the west. So the
01:33:00 8 center part of the state is being
01:33:04 9 squeezed by these population changes.
01:33:06 10 And so this is a place where the
01:33:07 11 retention of District 12, 13 and 15
01:33:10 12 was not --- was not possible. And so
01:33:12 13 it was --- I tried to --- in making
01:33:16 14 that reorientation of that area, tried
01:33:18 15 to make compact districts, and again
01:33:23 16 tried to minimize county splits.

01:33:25 17 And also, in terms of
01:33:26 18 communities of interest, the old plan
01:33:30 19 had split State College from some of
01:33:33 20 its suburbs. So this plan makes a
01:33:37 21 rather compact and rectangular
01:33:39 22 District 15 and resolves that problem
01:33:42 23 and also creates a relatively compact
01:33:45 24 version of District 13, but also
01:33:46 25 attempts to minimize splits.

01:33:48 1 Q. And finally, let's move to
01:33:50 2 Figure 11. This one describes the
01:33:56 3 western Pennsylvania Districts 14, 12,
01:33:58 4 17 and 16. I know we discussed this
01:34:01 5 briefly with the larger map, and so if
01:34:03 6 there's anything that you would like
01:34:04 7 to add to your description about what
01:34:07 8 you did here.

01:34:09 9 A. Merely that --- that the old
01:34:11 10 plan was --- was clearly attempting to
01:34:18 11 keep the City of Pittsburgh together
01:34:19 12 in one district, and that district was
01:34:20 13 previously known as District 18, but
01:34:21 14 we've lost districts. That number
01:34:24 15 doesn't work for us anymore. I've
01:34:26 16 called it District 12.

01:34:27 17 And this is a --- this is a
01:34:30 18 district that stays much the same, but
01:34:33 19 in order to keep this orientation that
01:34:36 20 the previous map had between Allegheny
01:34:39 21 County and its surroundings, it was
01:34:43 22 possible to simply alter, very
01:34:44 23 slightly, the border between 12 and
01:34:49 24 17, and then expand 12 in a way that
01:34:53 25 --- that really just expand Pittsburgh

01:34:54 1 --- the southern Pittsburgh district
01:34:56 2 into more of its suburbs and exurbs
01:35:02 3 over in Westmoreland County. And
01:35:02 4 then, with respect to 14 and 16, they
01:35:04 5 simply, as described earlier, have
01:35:06 6 their existing orientation but have to
01:35:08 7 pick up population by moving slightly
01:35:17 8 eastward.

01:35:17 9 Q. So now that we've gone through
01:35:18 10 the whole plan, how does the Carter
01:35:21 11 plan respect communities of interest?

01:35:24 12 A. Well, I've walked through a few
01:35:26 13 examples of that. For me the most
01:35:28 14 important thing is to think about ---
01:35:30 15 it's similar in spirit to the idea of
01:35:33 16 minimizing jurisdictional splits.
01:35:34 17 Sometimes counties split cities in
01:35:38 18 ways that even though formally it's
01:35:42 19 not --- we're not minimizing county
01:35:45 20 splits if we divide Harrisburg up into
01:35:50 21 three. But it would be --- it makes a
01:35:51 22 lot of sense from a districting
01:35:53 23 perspective to try to keep whole
01:35:55 24 places like Harrisburg, the Lehigh
01:35:58 25 Valley, State College --- there's some

01:35:58 1 other examples of places like that,
01:36:03 2 that in drawing the lines, even though
01:36:04 3 I was making small changes from the
01:36:05 4 existing plan I attempted to avoid
01:36:08 5 splitting apart those types of
01:36:12 6 communities.

01:36:19 7 Q. What are your overall
01:36:20 8 conclusions, based on your analysis
01:36:22 9 about how the Carter plan compares to
01:36:23 10 the 2018 plan?

01:36:26 11 A. Well, I was able to --- I was
01:36:28 12 able to quantitatively analyze that by
01:36:31 13 just looking at the --- looking at the
01:36:34 14 population data and overlaying the
01:36:34 15 maps and trying to get just a simple
01:36:37 16 measure that says what percentage of
01:36:38 17 the population in each district that I
01:36:40 18 created was already in that district,
01:36:47 19 so I did that district by district and
01:36:50 20 looked at the plan as a whole.

01:37:02 21 But the conclusion from that, I
01:37:05 22 should --- I think --- I didn't fully
01:37:06 23 answer your question. The conclusion
01:37:06 24 from that is that they were very ---
01:37:07 25 that the maps were very similar. They

01:37:09 1 were certainly similar as I could make
01:37:10 2 them. And they --- and the share of
01:37:13 3 the population that was contained in
01:37:16 4 the --- in each district, if we take
01:37:19 5 average, it was very high. I believe
01:37:20 6 it was 87 percent.

01:37:23 7 Q. Did you look at that similar
01:37:25 8 population, lease change metric on the
01:37:35 9 other plans that were submitted to the
01:37:36 10 Court?

01:37:36 11 A. Yes, I did.

01:37:36 12 Q. And can you explain what the
01:37:36 13 utility of that metric is in cases
01:37:38 14 like this one, where the number of
01:37:38 15 districts in the plan has actually
01:37:43 16 changed?

01:37:43 17 A. Well, we can still find --- we
01:37:45 18 can find what district was the --- in
01:37:46 19 the new proposed district what is the
01:37:49 20 largest overlapping district from the
01:37:54 21 past and we can figure out what the
01:37:56 22 population overlap is, and there will
01:37:58 23 still be some. In all of the
01:38:00 24 districts I created it was well over
01:38:04 25 50 percent. So it was certainly not

01:38:05 1 --- you know, but you can imagine if
01:38:06 2 we just start from scratch and we
01:38:08 3 start drawing districts as if there
01:38:10 4 was no regard at all for the old plan.
01:38:12 5 We would have several districts that
01:38:14 6 would be quite low like that.

01:38:21 7 Q. Could we pull up Table One,
01:38:25 8 which is on page two of the rebuttal
01:38:26 9 --- or of the response report. This
01:38:28 10 is entitled Retained Population Share
01:38:30 11 in the 14 Submitted Congressional
01:38:32 12 Plans.

01:38:33 13 Could you explain to us what
01:38:35 14 this table shows?

01:38:36 15 A. Yes. I was just describing the
01:38:38 16 approach I took to these calculations
01:38:42 17 just overlap --- again, overlaying
01:38:44 18 those maps, finding the largest
01:38:46 19 fragment in each district from the old
01:38:47 20 plan and asking what share of the
01:38:49 21 people in the new plan, the proposed
01:38:53 22 plan would be in the same district as
01:38:56 23 the old plan, the same district being
01:38:59 24 described as --- being defined as the
01:39:01 25 largest overlapping one.

01:39:03 1 And so what --- what I did, I
01:39:06 2 took averages for all the districts
01:39:09 3 and this is what we see for the ---
01:39:18 4 for each of the plans.

01:39:18 5 Q. Based on this analysis, what
01:39:21 6 can you conclude about the Carter plan
01:39:22 7 as compared to the other plans that
01:39:24 8 are being considered on this
01:39:27 9 particular metric?

01:39:27 10 A. Yes. On this metric, which I
01:39:29 11 called Retained Population Share, my
01:39:30 12 plan --- the Carter plan is 87 percent
01:39:33 13 and the --- perhaps, let's see the
01:39:37 14 next largest one is the Citizen voters
01:39:40 15 plan and there are several that follow
01:39:43 16 later, but they're all --- they're all
01:39:43 17 quite a bit lower.

01:39:52 18 Q. So now that we've talked about
01:39:54 19 some other criteria that you
01:39:55 20 considered and the decisions that you
01:39:57 21 have made in drawing your plan, did
01:39:59 22 you consider any racial data when
01:40:02 23 drawing your plan?

01:40:02 24 A. No.

01:40:03 25 Q. And do you consider partisan

01:40:04 1 data when drawing your plan?

01:40:08 2 A. No.

01:40:08 3 Q. Did you evaluate the
01:40:09 4 partisanship of your map at any point?

01:40:14 5 A. At the end. I created some
01:40:15 6 partisan indices and I discussed those
01:40:18 7 in my report.

01:40:20 8 Q. And did you evaluate the
01:40:22 9 partisanship of the other maps that
01:40:26 10 were submitted to the Court?

01:40:27 11 A. I did.

01:40:27 12 Q. Were you aware of the
01:40:28 13 identities of the groups that either
01:40:29 14 supported or supported the maps that
01:40:31 15 were sent to the Court?

01:40:32 16 A. No, the maps were provided to
01:40:34 17 me with abbreviations and strange
01:40:37 18 names that were not familiar to me, so
01:40:40 19 I was unfamiliar with who produced
01:40:41 20 those maps. I'm still actually foggy
01:40:47 21 on who some of the parties are, so
01:40:48 22 they were unknown to me.

01:40:50 23 Q. So you started mentioning this,
01:40:54 24 what methodology did you take to
01:40:57 25 examine the partisanship in the

01:41:02 1 existing maps?

01:41:03 2 A. The same methodology I used in
01:41:04 3 my --- in my map, which was to take
01:41:06 4 precinct level data from statewide
01:41:07 5 elections, and I had access to and
01:41:10 6 used data from 2016, 2018 and 2020
01:41:15 7 used those precinct level data to
01:41:20 8 aggregate to the level of the proposed
01:41:23 9 districts to my plan and the other
01:41:25 10 plans, and then analyzed the statewide
01:41:28 11 vote shares that would be obtained if
01:41:33 12 we were just looking --- just using
01:41:35 13 statewide vote chairs somehow to
01:41:37 14 determine the winners of those
01:41:38 15 districts. Use that as a rule of
01:41:41 16 thumb to just starting the process to
01:41:44 17 try to understand what kind of
01:41:45 18 partisan outcomes we might get from
01:41:48 19 this type of map.

01:41:51 20 Q. Can you explain why you would
01:41:52 21 use a statewide data for this type of
01:41:55 22 analysis?

01:41:58 23 A. Well, we are trying to think
01:41:59 24 about what this map might produce in
01:42:02 25 the future, so the legislative

01:42:04 1 elections haven't happened yet and we
01:42:06 2 can't really use old legislative
01:42:08 3 elections, because all of the changes
01:42:10 4 that have been made. So statewide
01:42:13 5 races are useful because the same
01:42:15 6 candidates are competing for the same
01:42:17 7 offices throughout the state. So they
01:42:18 8 give us a rule of thumb sense of what
01:42:21 9 the partisanship of a district looks
01:42:28 10 like.

01:42:28 11 Q. Let's pull up Table 5, which is
01:42:31 12 on page nine of the Response Report.
01:42:43 13 So this is figure is titled number of
01:42:46 14 seats in various categories in all of
01:42:47 15 the plans.

01:42:47 16 ATTORNEY JASRASARAI:
01:42:48 17 Could we highlight the
01:42:49 18 row that says Carter plan? It's like
01:42:51 19 halfway down.

01:42:51 20 BY ATTORNEY JASRASARAI:

01:43:03 21 Q. Can you describe what this
01:43:04 22 table shows with regard to the seats?

01:43:06 23 A. Yes, I would like to begin by
01:43:14 24 informing the Court of the mistake in
01:43:15 25 this --- in this --- at this table,

01:43:15 1 which I don't want to confuse anyone.
2 The far right column says number of
3 seats with statewide dem vote share.
4 That should say Rep. It should be
5 Republican.

6 So with that in mind, what ---
7 what I've done here is simply in the
8 far left and far right column, I've
9 just asked a simple question. When I
10 perform that task of aggregating up
11 all of those precinct level results to
12 the level of the proposed districts in
13 these plans, how many of those
14 districts have a statewide average
01:43:20 15 Democratic vote share in these 2016 to
01:43:20 16 2020 races that is above 50 percent.
01:43:20 17 I'm just adding those things up. And
01:43:59 18 in the far right column, I'm doing the
01:44:00 19 same thing for Republicans. What is
01:44:02 20 the number of seats with a statewide
01:44:03 21 Republican vote share above
01:44:06 22 50 percent? So that is a first
01:44:11 23 approximation of just what the
01:44:14 24 partisanship of these districts look
01:44:15 25 like.

01:44:15 1 But what I've done further is
01:44:17 2 ask some questions about --- I mean, I
01:44:19 3 think it's very important that we
01:44:20 4 address not just is it above
01:44:25 5 50 percent, but how competitive of
01:44:27 6 these districts. If we're really
01:44:31 7 trying to get a realistic sense of how
01:44:33 8 responsive the plan will be and what
01:44:35 9 might happen over a ten-year period,
01:44:38 10 it's very valuable to know that some
01:44:38 11 of these districts are really
01:44:39 12 essentially coin tosses even though we
01:44:44 13 have some number that, say, 50 percent
01:44:45 14 plus, you know, 50.05 or something
01:44:46 15 like that. It's important when
01:44:48 16 considering the partisanship of these
01:44:51 17 plans to know about that.

01:44:52 18 So what I've done here is
01:44:53 19 simply as a first cut taken this
01:44:56 20 52 percent as a cut point, and I think
01:44:58 21 that's a --- that's one that
01:45:00 22 reasonable people can disagree about.
01:45:02 23 We can say that the cut point should
01:45:07 24 be 53, we can say it should be 54.
01:45:07 25 But I thought this was a useful one

01:45:07 1 just for getting a sense of what are
01:45:11 2 the really competitive districts that
01:45:11 3 are potentially like toss ups and what
01:45:11 4 are the districts that are a little
01:45:11 5 bit more comfortable for one of the
01:45:11 6 parties.

01:45:20 7 And so when we add this up we
01:45:21 8 get this --- we get this column for
01:45:22 9 the Democrats that's in a darker shade
01:45:25 10 blue and we get a similar column for
01:45:30 11 the Republicans that's in a darker
01:45:32 12 shade of red. In the middle we get a
01:45:38 13 sense of what kind of really razor's
01:45:38 14 edge districts are these plans
01:45:39 15 producing? How many districts are
01:45:41 16 there that lean a little Democratic or
01:45:43 17 a little bit Republican? So that's
01:45:45 18 what we see there in the middle
01:45:48 19 columns.

01:45:48 20 Q. So looking at the Carter plan
01:45:51 21 in particular, which the row has been
01:45:52 22 highlighted, how many seats are above
01:45:54 23 50 percent Democratic vote share?

01:45:58 24 A. There are ten.

01:45:59 25 Q. And in the Carter plan again,

01:46:01 1 how many seats are above 50 percent
01:46:04 2 Republican vote share?

01:46:05 3 A. Seven.

01:46:05 4 Q. Does that mean that the Carter
01:46:06 5 plan will result in ten Democrats and
01:46:09 6 seven Republicans being elected to
01:46:11 7 congress from Pennsylvania?

01:46:13 8 A. No, I think that would require
01:46:15 9 a very naive idea about the way the
01:46:21 10 statewide vote shares translate into
01:46:22 11 actual Congressional elections. I
01:46:25 12 don't think very many political
01:46:27 13 analysts would --- would anticipate
01:46:29 14 that kind of an outcome for a couple
01:46:31 15 of reasons.

01:46:33 16 The first reason is that we can
01:46:34 17 see that there are two districts here
01:46:37 18 that are essentially toss ups. They
01:46:41 19 are very close to 50 percent, but what
01:46:43 20 I've done in my report, in addition,
01:46:45 21 is also tried to consider if our goal
01:46:49 22 in this type of analysis is to think
01:46:51 23 about what the likely partisanship is
01:46:55 24 of the plan, of the Congressional
01:46:56 25 delegation. We would be missing some

01:46:58 1 very valuable information if we did
01:47:00 2 not pay any attention to incumbency.

01:47:05 3 So one simple way to think
01:47:07 4 about incumbency is just to look at
01:47:10 5 --- because again, you asked earlier,
01:47:12 6 well, why use statewide elections, why
01:47:15 7 can't we maybe use actual
01:47:16 8 Congressional elections. Well, the
01:47:19 9 nice thing about the previous plan is
01:47:20 10 we can do that, but at the same time
01:47:22 11 we can see what happened in these
01:47:23 12 districts in the actual election for
01:47:26 13 Congress and what happened in these
01:47:27 14 statewide races.

01:47:28 15 And many of the districts are
01:47:29 16 relatively similar. In some places
01:47:32 17 the incumbents over perform relative
01:47:35 18 to their --- to the statewide vote
01:47:38 19 share. Now, that's useful information
01:47:39 20 for us. Again, if our --- if our
01:47:42 21 exercise here is to really try to
01:47:43 22 understand what these plans will
01:47:45 23 produce in terms of partisanship, then
01:47:49 24 we --- then we would want that
01:47:50 25 information, we would want to pay

01:47:52 1 attention to that information.

01:47:54 2 And so in these two relatively
01:47:58 3 highly contested districts in my plan
01:48:00 4 that are in the --- that --- and those
01:48:02 5 are Districts 8 and 7, those are the
01:48:05 6 Lehigh Valley districts and the
01:48:08 7 Northeast District, those are
01:48:09 8 districts where the incumbent is
01:48:13 9 either very similar to the statewide
01:48:15 10 vote share or does slightly better
01:48:17 11 than the statewide vote share. So no
01:48:19 12 matter how we look at those, those are
01:48:21 13 very competitive districts.

01:48:22 14 However, there's another
01:48:23 15 District here that currently is
01:48:25 16 classified in my plan, and in fact,
01:48:27 17 in, I believe, all of the other plans
01:48:29 18 is classified as a Democrat --- as a
01:48:33 19 strong Democratic District. And this
01:48:35 20 District is, in fact, currently
01:48:37 21 represented by a Republican incumbent
01:48:41 22 who over performs consistently
01:48:44 23 relative to statewide co-partisans to
01:48:46 24 the --- to the extent of seven
01:48:46 25 percentage points.

01:48:50 1 So this is District 1 in Bucks
01:48:53 2 County, which for reasons that we just
01:48:54 3 walked through, because of its place
01:48:58 4 in the corner of the state, and
01:49:03 5 because the fact its population is
01:49:05 6 very similar to the --- is very close
01:49:05 7 to the population of a Congressional
01:49:06 8 district, Bucks County is kept whole
01:49:10 9 in all of these --- in all these plans
01:49:11 10 more or less with some exceptions.
01:49:13 11 But there is a District that is
01:49:15 12 overwhelmingly based on Bucks County
01:49:18 13 and all of these plans. And all of
01:49:19 14 these plans are counting this as a
01:49:21 15 Democratic District when, in fact,
01:49:23 16 it's not, and everyone knows that.

01:49:26 17 And so this is --- if you put
01:49:31 18 all this together and you realize that
01:49:33 19 this whole exercise --- and I suspect
01:49:35 20 we will here a lot about this type of
01:49:37 21 exercise throughout the day, this
01:49:39 22 exercise of adding up the number of
01:49:41 23 districts in which something is above
01:49:43 24 --- some index is above .5, needs to
01:49:48 25 be taken with a --- we need to

01:49:50 1 consider these numbers with a great
01:49:51 2 deal of care and we need to understand
01:49:53 3 that these numbers, when we have a lot
01:49:55 4 of very competitive districts in the
01:49:57 5 middle a very small change can lead
01:50:01 6 --- can turn what appears to be a 10
01:50:03 7 to 7 District 1 way into very easily a
01:50:06 8 10 to 7 District the other way.

01:50:08 9 So in the Carter plan, we
01:50:10 10 already established that one of these
01:50:12 11 so-called Democratic districts is
01:50:14 12 actually represented by a rather safe
01:50:19 13 Republican incumbent, and we've also
01:50:21 14 established that there are these two
01:50:24 15 very competitive districts in the
01:50:25 16 middle. You put all of that together
01:50:27 17 in a --- in a somewhat pro Republican
01:50:29 18 election, this is --- this is a 10 to
01:50:31 19 7 plan in the other direction.

01:50:33 20 So that needs to be kept in
01:50:35 21 mind about all of these plans and
01:50:37 22 about all of the --- all of the
01:50:37 23 considerations we'll make about
01:50:40 24 partisanship is based on kind of seat
01:50:45 25 counting.

01:50:46 1 Q. So given all of that, is the
01:50:49 2 Carter plan reflective of voter
01:50:51 3 preferences in Pennsylvania?

01:50:53 4 A. Yeah, for all the reasons I
01:50:55 5 just described, I believe it is,
01:50:56 6 because as I think has been pointed
01:50:58 7 out earlier today it is a state that
01:51:00 8 has had Democratic vote share between
01:51:04 9 52 and 53 percent in statewide
01:51:06 10 elections, so we would anticipate a
01:51:09 11 set of districts in which there's more
01:51:12 12 likely than not, especially since we
01:51:15 13 have an odd number of districts, a
01:51:17 14 slight Democratic majority, but we
01:51:20 15 would expect to see the opportunity
01:51:21 16 for that to flip in a pro Republican
01:51:28 17 election and we would expect to see
01:51:30 18 some tight districts in the middle,
01:51:31 19 and that's what we see here.

01:51:32 20 Q. Is the Carter plan also
01:51:34 21 responsive to changes in voter
01:51:39 22 preferences in Pennsylvania?

01:51:40 23 A. I believe because it has, you
01:51:41 24 know, several districts that are
01:51:42 25 competitive. And in fact, if I don't

01:51:44 1 use 52 percent, but if I widen that
01:51:46 2 out a little bit further, we'd see
01:51:48 3 even more competitive districts. I
01:51:50 4 described the District in where we're
01:51:53 5 sitting now, in the Harrisburg area,
01:51:55 6 as one that could also be potentially
01:51:57 7 --- could also be potentially
01:52:00 8 competitive and one that's not
01:52:01 9 classified as competitive here, but I
01:52:03 10 think it very well is very close and
01:52:06 11 could be is one in the western suburbs
01:52:11 12 of Pittsburgh as well.

01:52:14 13 So there are a number of
01:52:15 14 competitive districts here where again
01:52:17 15 a very small shift away from patterns
01:52:20 16 we've seen in the last couple of
01:52:22 17 elections toward the Republican party
01:52:25 18 would --- would yield a number of
01:52:26 19 seats changing hands. I don't think
01:52:29 20 there's any --- I don't think that can
01:52:31 21 be disputed.

01:52:34 22 Q. So you can refer to page ten of
01:52:38 23 your response report. Based on this
01:52:44 24 table and pages nine and ten of your
01:52:47 25 report what about the other pages are

01:52:49 1 there any that stand out to you as
01:52:51 2 outliers in this analysis pages nine
01:52:53 3 and ten of your report?
01:52:57 4 A. I hesitate to call them safe
01:52:59 5 seats because I don't think that
01:53:00 6 captures at all what --- what we're
01:53:02 7 seeing here. But if you look at those
01:53:05 8 seats that have a Democratic vote
01:53:07 9 share above 52 percent, we see that
01:53:12 10 --- you know, a couple of --- some of
01:53:14 11 them are a bit, you know, lower than
01:53:17 12 others. We see HB-12146 and the
01:53:21 13 Reschenthaler plan and the senate
01:53:25 14 Democratic plan, number one, have that
01:53:29 15 feature.
01:53:30 16 We also see that --- we see
01:53:31 17 differences in the plan with respect
01:53:32 18 to the number of competitive seats, we
01:53:35 19 see --- we also see, I think,
01:53:38 20 especially what stands out about the
01:53:43 21 Reschenthaler 1 and 2 plans, is they
01:53:45 22 have a greater number of seats with
01:53:48 23 statewide Republican vote share above
01:53:51 24 52 percent. Those are some of the
01:54:01 25 observations that I --- I made in the

01:54:03 1 report.

01:54:03 2 Q. Are there any other plans that
01:54:04 3 lean the other way before towards a
01:54:06 4 Democratic advantage?

01:54:08 5 A. If we look at the --- if we
01:54:10 6 just look at a very simple way at the
01:54:12 7 number of --- the number of seats we
01:54:14 8 see that the house Democratic caucus
01:54:21 9 plan produces 11 with a share above
01:54:24 10 50 percent, although I certainly have
01:54:24 11 more in the bit about how to interpret
01:54:25 12 those numbers. But that one, you can
01:54:31 13 just see it's an outlier relative to
01:54:33 14 the others and that the number is 11
01:54:35 15 rather than 10.

01:54:36 16 But also when we look at the
01:54:37 17 --- at the safe --- you know, the more
01:54:43 18 than 52 percent Republican seats, we
01:54:46 19 see that that plan also has --- has
01:54:52 20 won fewer than the others.

01:55:01 21 Q. Did you conduct any other
01:55:03 22 analyses on the topic of partisanship
01:55:04 23 in these plans?

01:55:05 24 A. Yes. I was --- I focused at
01:55:06 25 the end of my report briefly on the

01:55:08 1 difference between the mean and the
01:55:09 2 median and the distribution of
01:55:12 3 District level vote shares. So it was
01:55:15 4 something --- the distribution of
01:55:17 5 support across districts, I think, is
01:55:19 6 a useful way for the Court to wade
01:55:22 7 through all of this, and I presented
01:55:24 8 some information, some displays about
01:55:27 9 those distributions and then a simple
01:55:34 10 summary statistic about those
01:55:34 11 Districts and those distributions is
01:55:36 12 to examine the mean and to examine the
01:55:38 13 median and to look at the difference
01:55:40 14 between those two.

01:55:41 15 Q. Let's just pull up that table,
01:55:42 16 it's Table 6 on page 11 of the
01:55:45 17 response report.

01:55:56 18 Is this the summary statistic
01:55:58 19 that you were describing?

01:55:59 20 A. Yes.

01:56:02 21 Q. And can you tell us what it
01:56:05 22 shows?

01:56:05 23 A. Yes. Again, what's happening
01:56:06 24 here is we're taking those statewide
01:56:10 25 election results we're aggregating

01:56:13 1 them to the districts of these
01:56:14 2 proposed plans, and we're doing
01:56:16 3 something very simple, which is we're
01:56:17 4 just trying to understand what is the
01:56:18 5 mean of the expected --- from
01:56:21 6 statewide vote share, expected
01:56:25 7 statewide vote share and what is the
01:56:27 8 median across the districts.

01:56:30 9 And what we see is that in most
01:56:33 10 of the plans --- again, this is using
01:56:35 11 data from 2016 to 2020, in most of the
01:56:39 12 plans the mean and the median are very
01:56:43 13 similar. We see just trivial
01:56:46 14 differences between the mean and the
01:56:48 15 median, which suggests that there
01:56:50 16 aren't --- that suggests there's not a
01:56:52 17 pack of districts in the tail of the
01:56:54 18 distribution where a lot of voters
01:56:56 19 from one of the parties are focused
01:56:58 20 and there isn't sort of a nice peak in
01:57:02 21 the distribution where one of the
01:57:03 22 parties has an unusual number of
01:57:06 23 comfortable victories.

01:57:10 24 So we just don't see anything
01:57:11 25 like that. We see no difference

01:57:13 1 between the mean and the median in
01:57:15 2 most of the plans. But then there are
01:57:17 3 some here where we do see a
01:57:18 4 substantial difference, a difference
01:57:20 5 of the kind where the median district
01:57:22 6 is more Republican than the average
01:57:24 7 across the districts. So it doesn't
01:57:27 8 necessarily tell us that that's
01:57:29 9 evidence that someone has been working
01:57:31 10 to produce districts with a partisan
01:57:31 11 advantage, but it is interesting that
01:57:31 12 lots of people sat down and tried to
01:57:31 13 draw some plans.

01:57:31 14 But a couple of these plans
01:57:43 15 ended up with a median district that
01:57:43 16 is more Republican than the average.
01:57:45 17 And those are the HB-2146 plan, the
01:57:55 18 Voters of Pennsylvania plan. Those
01:57:57 19 are the two that really stand out the
01:57:59 20 most, although if we're looking --- if
01:57:59 21 we go a little bit further down we can
01:58:02 22 see that the Citizen Voters plan has a
01:58:02 23 difference of 1.4 percentage points.
01:58:02 24 And both of the --- both of the
01:58:11 25 Reschenthaler plans are around one

01:58:12 1 percent, so --- and everything else is
01:58:15 2 very close to zero. So that's just
01:58:18 3 one very, very quick or simple way of
01:58:20 4 understanding --- just characterizing
01:58:23 5 the distribution of partisanship
01:58:39 6 across plans.

01:58:39 7 Q. And so would your conclusion
01:58:41 8 based on that be that some of those
01:58:44 9 plans are outliers on partisanship?

01:58:46 10 A. Yes, and it corresponds to the
01:58:49 11 simpler analysis of just looking at
01:58:51 12 the number of seats. You know, if we
01:58:52 13 look at the number of seats produced
01:58:54 14 in these plans and we think about
01:58:57 15 realistic scenarios, we take into
01:58:58 16 account things like incumbency, we
01:58:58 17 have potential that these plans would
01:58:58 18 produce counter-majoritarian outcomes
01:58:58 19 where a 50-percent vote share would
01:59:07 20 lead to a Republican seat share that
01:59:08 21 was well above 50 percent.

01:59:12 22 Q. Thank you. Well, we only have
01:59:14 23 a few minutes left, so I just wanted
01:59:15 24 to conclude by asking you, you know,
01:59:18 25 based on what we've talked about

01:59:19 1 today, what --- how does the Carter
01:59:23 2 plan compare to the other plans that
01:59:24 3 were --- what are your conclusions,
01:59:27 4 your summary conclusions, about how
01:59:28 5 the Carter plan compares to the other
01:59:30 6 plans that were submitted by the
01:59:32 7 Court?

01:59:32 8 A. I started by comparing it with
01:59:34 9 the existing plan and then received a
01:59:36 10 large stack of plans, which I could
01:59:38 11 then sort through and see how my plan
01:59:41 12 compared. And on the whole, I was
01:59:44 13 very pleased with the way my plan
01:59:46 14 performed in terms of traditional
01:59:48 15 redistricting criteria. It looks ---
01:59:52 16 it looks on some indicators of
01:59:54 17 compactness very good. On others,
01:59:58 18 it's sort of in the middle. On county
01:59:59 19 splits it does very well. On vote
02:00:02 20 tabulation splits it does very well.
02:00:04 21 And I think that when it comes to
02:00:06 22 partisan fairness, it is --- it also
02:00:10 23 performs very well. And
02:00:11 24 responsiveness to changing preferences
02:00:20 25 of Pennsylvania voters, I think it

02:00:20 1 clearly performs well on that
02:00:23 2 dimension as well.

02:00:27 3 ATTORNEY JASRASARIA:

02:00:28 4 Thank you. That's all
02:00:29 5 of my questions. I will pass the
02:00:31 6 witness.

02:00:31 7 JUDGE McCULLOUGH:

02:00:31 8 Okay.

02:00:31 9 We're going to proceed
02:00:33 10 to Cross Examination now, and the
02:00:35 11 first one on the list would be
02:00:37 12 Petitioner Gressman attorney. Do you
02:00:45 13 have Cross.

02:00:45 14 ATTORNEY RING-AMUNSON:

02:00:57 15 Thank you.

02:00:57 16 ---

02:00:57 17 CROSS EXAMINATION

02:00:57 18 ---

02:00:58 19 BY ATTORNEY RING-AMUNSON:

02:00:58 20 Q. Good morning, Doctor Rodden.

02:00:58 21 It's nice to see you. I'm Jessie
02:01:01 22 Amunson, and I represent the Gressman
02:01:02 23 Math and Science Petitioners.

02:01:04 24 A. Good morning.

02:01:04 25 Q. I have just a few questions for

02:01:05 1 you this morning. In your analysis of
02:01:10 2 which plan has the least amount of
02:01:12 3 change as compared to the 2018
02:01:14 4 remedial plan, did you consider how
02:01:16 5 improving on the 2018 mapped
02:01:19 6 performance with respect to the
02:01:20 7 various criteria, for example, respect
02:01:23 8 for political subdivisions, would
02:01:25 9 affect the numbers that you report on
02:01:26 10 retained population share?

02:01:31 11 A. That would involve me trying to
02:01:34 12 make some different kind of map that
02:01:40 13 --- the question, if I understand it
02:01:42 14 correctly, is is there a trade-off
02:01:44 15 between trying to achieve overlap and
02:01:51 16 --- was the question about splits in
02:01:54 17 particular or --- let me make sure I
02:01:57 18 just understand the question.

02:01:57 19 Q. Yes. So let me rephrase it.
02:01:59 20 So would you agree that if a party
02:02:01 21 prioritized compliance with, for
02:02:05 22 example, respect for the political
02:02:05 23 subdivisions to keep even more
02:02:05 24 political subdivisions intact than the
02:02:05 25 2018 plan, that would impact the least

02:02:05 1 changed metrics that you report?

02:02:18 2 A. I don't think so. I think on

02:02:19 3 county splits I was already --- I was

02:02:19 4 already I think as low as any of us

02:02:22 5 will get. And then so were there

02:02:24 6 instances of municipal splits that I

02:02:27 7 had to make because I was in this kind

02:02:29 8 of straightjacket of the initial plan?

02:02:32 9 No, because it wasn't a

02:02:34 10 straightjacket. You would see that I

02:02:36 11 did have to make changes. So did ---

02:02:38 12 did the attempt to minimize the

02:02:44 13 changes from the existing plan force

02:02:47 14 me into unwanted splits, I don't

02:02:49 15 recall any situations like that.

02:02:51 16 Q. So if I told you that with

02:02:54 17 respect to the specific constitutional

02:02:57 18 criteria, the six political

02:02:59 19 subdivisions that are enumerated in

02:03:02 20 the Constitution, which are counties,

02:03:03 21 cities, incorporated towns, boroughs,

02:03:07 22 townships and wards, if I told you

02:03:10 23 that the 2018 plan split 72 of them

02:03:15 24 and the Gressman plan split only 49 of

02:03:20 25 them, would you expect that the

02:03:22 1 Gressman plan's choice not to split
02:03:24 2 political subdivisions would impact
02:03:27 3 the least changed metrics that you
02:03:30 4 report?

02:03:31 5 A. It would be an analysis I would
02:03:33 6 have to do. It's not clear to me that
02:03:39 7 --- I think you're implying there's a
02:03:40 8 trade-off, and I'm not --- without
02:03:42 9 doing some analysis, I'm not ready to
02:03:45 10 --- to agree that that trade-off is
02:03:47 11 strong or that it's there at all. I'm
02:03:50 12 just not sure.

02:03:51 13 Q. So if you --- if you are
02:03:52 14 attempting to actually improve on the
02:03:54 15 constitutional criteria --- you
02:03:56 16 reported on counties, but there are
02:03:58 17 actually six different political
02:04:01 18 subdivisions in the Constitution. And
02:04:02 19 if you tried to maximize compliance on
02:04:05 20 keeping all of them whole, not
02:04:08 21 dividing any of them more than
02:04:11 22 absolutely necessary, would you expect
02:04:12 23 to see some actual trade-off with the
02:04:14 24 least change metrics?

02:04:17 25 A. Well, I think we should not

02:04:22 1 lump all these different counties ---
02:04:25 2 these entities smaller than a county
02:04:26 3 into one bucket. I should be clear
02:04:29 4 that I paid attention to county
02:04:30 5 subdivisions when I was --- when I was
02:04:32 6 working. There are a variety of other
02:04:35 7 jurisdictions like --- like wards and
02:04:38 8 census designated places and other
02:04:41 9 things that I was not --- I was not
02:04:43 10 focusing on in my analysis. So if I
02:04:46 11 came to this with the approach that
02:04:48 12 I'm going to minimize the split of
02:04:52 13 census designated places, would that
02:04:55 14 approach yield a different number in
02:04:59 15 terms of retained population, it
02:05:03 16 probably would.

02:05:04 17 Q. And you mentioned wards, for
02:05:07 18 example, is not something that you
02:05:08 19 were looking at, but wards is one of
02:05:10 20 the six subdivisions that are
02:05:13 21 specifically enumerated in the
02:05:15 22 Pennsylvania Constitution.

02:05:16 23 Correct?

02:05:17 24 A. That's right, wards were not
02:05:19 25 something I focused on.

02:05:20 1 Q. And you also mentioned that you
02:05:23 2 did focus on keeping VTDs, Voter
02:05:31 3 Tabulation Districts, together, but
02:05:31 4 those are not one of the six political
02:05:32 5 subdivisions that the Pennsylvania
02:05:34 6 Constitution prioritizes not dividing
02:05:36 7 more than absolutely necessary.

02:05:38 8 Correct?

02:05:38 9 A. That's correct.

02:05:39 10 Q. And can you just tell me the
02:05:48 11 least change approach that you
02:05:50 12 reported on as measured by retained
02:05:53 13 population share, are you aware of any
02:05:54 14 Court using that whereas here the
02:05:56 15 number of districts has changed from
02:05:58 16 the old plan to the new?

02:06:00 17 A. I don't have enough knowledge
02:06:03 18 of Court cases to be able to answer
02:06:04 19 that question. I'm not aware of any.

02:06:09 20 ATTORNEY RING-AMUNSON:

02:06:10 21 Thank you. I have no
02:06:11 22 further questions.

02:06:11 23 JUDGE McCULLOUGH:

02:06:11 24 Thank you, Counsel.

02:06:17 25 Attorney for Secretary Chapman, is

02:06:18 1 there any Cross? Or are you crossing
02:06:21 2 for Governor Wolf.

3 ATTORNEY WIYGUL:

4 I think primarily, Your
5 Honor, I'll be appearing for the
6 Governor. Thank you.

7 ---

8 CROSS EXAMINATION

9 ---

02:06:35 10 BY ATTORNEY WIYGUL:

11 Q. Good afternoon, Doctor Rodden.

12 COURT REPORTER:

13 I'm so sorry, what's
14 your name.

15 ATTORNEY WIYGUL:

16 Robert Wiygul on behalf
17 of Governor Wolf.

18 BY ATTORNEY WIYGUL:

19 Q. You've showed during your
20 Direct Examination some scoring you
02:06:37 21 had done of mean median metrics and
02:06:40 22 also number of seats.

02:06:41 23 Do you recall that?

02:06:42 24 A. Yes.

02:06:42 25 Q. And that was based on your

02:06:45 1 analysis of the results of a certain
02:06:47 2 number of statewide elections.

02:06:49 3 Is that right?

02:06:49 4 A. Yes.

02:06:50 5 Q. How many, again, elections did
02:06:52 6 you look at?

02:06:53 7 A. I looked at all of the
02:06:54 8 statewide elections from 2016 to 2020.

02:06:57 9 Q. And just to be clear, was the
02:07:00 10 scoring you did with respect to mean,
02:07:02 11 median and number of seats, was that
02:07:03 12 based on an average of those election
02:07:06 13 results?

02:07:06 14 A. Yes.

02:07:10 15 ATTORNEY WIYGUL:

02:07:10 16 Thank you.

02:07:15 17 JUDGE McCULLOUGH:

18 That was fast. Counsel
19 for --- excuse me, Representative
20 Cutler's group, is that going first.

21 Okay.

22 ---

23 CROSS EXAMINATION

02:08:05 24 ---

02:08:05 25 BY ATTORNEY LEWIS:

02:08:05 1 Q. Good morning, Doctor Rodden.
02:08:06 2 My name is Patrick Lewis. I represent
02:08:09 3 Speaker Cutler and Leader Benninghoff
02:08:10 4 of the Pennsylvania House of
02:08:11 5 Representatives.

02:08:15 6 Doctor Rodden, would you agree
02:08:17 7 that House Bill --- would you agree
02:08:25 8 that House Bill 2146 complies --- or
02:08:28 9 excuse me, is within the narrow band
02:08:29 10 with all the other plans that you
02:08:31 11 considered with respect to the
02:08:31 12 traditional districting criteria of
02:08:34 13 equal population, contiguity with
02:08:39 14 respect to county, municipal and
02:08:41 15 precinct splits as well as
02:08:43 16 compactness?

02:09:04 17 ATTORNEY SENOFF:
02:09:05 18 Objection to the form of
02:09:07 19 the question, compound.

20 JUDGE MCCULLOUGH:
21 Counsel, I can't
22 understand.

23 ATTORNEY SENOFF:
24 It's a compound
25 question.

1 JUDGE MCCULLOUGH:

2 Hold on one second.

3 Okay. I think she's saying would you
4 say your name when you stand up,
5 please.

6 ATTORNEY SENOFF:

7 Certainly Your Honor.
8 David Senoff. Objection to the form
9 of the question and the nature of a
10 compound question.

02:09:08

11 JUDGE MCCULLOUGH:

02:09:08

12 Your response? Do you
13 have a response to the objection.

02:09:13

02:09:14

14 ATTORNEY LEWIS:

02:09:16

15 I mean, Your Honor, I
16 think we have all been referring to
17 the criteria collectively. I don't
18 believe it's ---.

02:09:16

02:09:17

02:09:19

02:09:22

19 JUDGE McCULLOUGH:

02:09:22

20 I agree so overruled.

02:09:22

21 THE WITNESS:

02:09:22

22 Would you mind just
23 repeating the question?

02:09:25

02:09:26

24 BY ATTORNEY LEWIS:

02:09:29

25 Q. Doctor Rodden, would you agree

02:09:30

02:09:31 1 that House Bill 2146 is in the same
02:09:33 2 narrow band with the other plans with
02:09:36 3 respect to the traditional criteria of
02:09:38 4 equal population, contiguity with
02:09:41 5 respect to county, municipal and
02:09:48 6 precinct splits and compactness?
02:09:50 7 A. That is a --- there are --- I
02:09:50 8 analyzed a lot of plans and there's a
02:09:53 9 lot of --- lot of different indicators
02:09:54 10 that you mentioned. So I think I
02:09:58 11 would be remiss in not looking at my
02:10:02 12 report and make sure I give an
02:10:06 13 accurate answer, but it is --- when it
02:10:08 14 comes to total county splits, it is
02:10:12 15 one of the --- one of the plans with
02:10:15 16 one of the higher numbers. But when
02:10:20 17 it comes to --- to VTD splits, it is
02:10:27 18 --- it is relatively low. And I don't
02:10:40 19 recall --- I don't have a specific
02:10:42 20 recollection about compactness, but I
02:10:42 21 believe it was --- I believe I
02:10:42 22 characterized in my report that all of
02:10:42 23 the plans were in a relatively narrow
02:10:49 24 band, and so I would put it in that
02:10:50 25 category all the plans, so yes.

02:10:57 1 Q. Thank you. I'd like to now
02:10:59 2 direct your attention to page four of
02:11:01 3 your rebuttal report. Give me one
02:11:03 4 second here to get it up on the
02:11:05 5 screen. And this is your list of ---
02:11:06 6 this Table 2 this is your list of
02:11:10 7 county splits and then total county
02:11:11 8 lists in the plans.

02:11:17 9 Is that right?

02:11:17 10 A. Yes.

02:11:18 11 Q. Okay.

02:11:18 12 In here you show the Carter
02:11:26 13 plan as having 14 splits and House
02:11:31 14 Bill 2146 as having 15?

02:11:33 15 Correct? Split counties I
02:11:33 16 should ---.

02:11:33 17 A. Yes. And I think I'd already
02:11:34 18 like to amend my answer to your
02:11:36 19 previous question. I realize I was
02:11:38 20 looking at the wrong table. I think I
02:11:40 21 gave an answer a moment ago that was
02:11:43 22 not correct about --- about county
02:11:44 23 splits. I was looking at a different
02:11:45 24 table so I take back the earlier ---
02:11:50 25 earlier comment that it was high on

02:11:51 1 the total number of county splits.

02:11:57 2 Q. Okay.

02:11:59 3 Now, you do identify --- okay.

02:12:12 4 We can move on from there.

02:12:14 5 Now, we go to Table 3, and this

02:12:14 6 is what you call your county

02:12:14 7 subdivision splits. Those are your

02:12:14 8 municipalities, your cities, your

02:12:14 9 townships.

02:12:22 10 Correct?

02:12:22 11 A. Yes.

02:12:23 12 Q. Okay.

02:12:23 13 And here you've identified that

02:12:24 14 House Bill 2146 has four less split

02:12:28 15 county subdivisions than the Carter

02:12:30 16 plan.

02:12:31 17 Is that right?

02:12:34 18 A. Yeah, this is the one that I

02:12:35 19 was --- I misspoke about a moment ago.

02:12:38 20 It is relatively low on the ---

02:12:41 21 relative to the Carter plan on the

02:12:42 22 number of split subdivisions, but on

02:12:44 23 the total splits it's --- it's a bit

02:12:48 24 higher.

02:12:53 25 Q. Okay.

02:12:54 1 Now, I will represent to you
02:12:55 2 I'm going to put up on the screen what
02:12:56 3 has been attached to our opening ---
02:12:56 4 Republican Intervenor Respondents
02:13:04 5 opening brief at Exhibit I and
02:13:04 6 sub-Exhibit 1 And this is a report,
02:13:10 7 Doctor Rodden, generated by the
02:13:15 8 Legislative Data Processing Center for
02:13:16 9 HB-2146. And I'm going to direct you
02:13:19 10 to what I believe is page 12.

02:13:21 11 Unfortunately, these are not
02:13:23 12 numbered pages, but this is a report
02:13:29 13 identifying the number of places
02:13:32 14 within counties where there are splits
02:13:33 15 in the plan. Let me zoom this out for
02:13:36 16 you so you can see the whole page.
02:13:38 17 Let me know if you can't read this.

02:13:39 18 A. It's very hard to read, but I
02:13:43 19 think we might just ---.

02:13:45 20 Q. We'll do our best. All right.
02:13:48 21 I'll zoom in if you need me to, Doctor
02:13:49 22 Rodden.

02:13:49 23 Now, you computed us as having
02:13:55 24 25 total municipal splits in your
02:13:55 25 report.

02:13:56 1 Is that right?

02:13:57 2 A. These are county subdivisions.
02:13:59 3 That's a specific category that the
02:14:01 4 census puts together. So it doesn't
02:14:05 5 --- it's different than the census
02:14:07 6 place, it's different from --- there
02:14:08 7 are lots of different municipal
02:14:10 8 terminologies that we might be using.
02:14:13 9 That one was county subdivisions.

02:14:15 10 Q. Okay.

02:14:16 11 So that split could be
02:14:17 12 something then other than just
02:14:19 13 splitting a city line or splitting a
02:14:21 14 township line. Is that what you're
02:14:22 15 saying?

02:14:22 16 A. Well, it's just that the
02:14:25 17 townships are --- they are census ---
02:14:28 18 they are county subdivisions, but
02:14:31 19 there are --- but there are other
02:14:32 20 things that are also county
02:14:33 21 subdivisions that are not townships.
02:14:36 22 So it's just possible that we're
02:14:38 23 talking about --- I just want to make
02:14:41 24 sure we're talking about the same
02:14:43 25 census geography.

02:14:45 1 Q. Okay.

02:14:45 2 Well, you can see here that

02:14:46 3 this reports a city, the City of

02:14:49 4 Philadelphia, it has townships, it has

02:14:56 5 boroughs on it.

02:14:57 6 Right?

02:14:57 7 A. Yes.

02:14:57 8 Q. Okay.

02:14:58 9 And it actually identifies

02:15:00 10 exactly which political subdivisions

02:15:03 11 are split and how many times.

02:15:04 12 Correct?

02:15:05 13 A. Yes.

02:15:05 14 Q. Okay.

02:15:09 15 And it tabulates 18 total

02:15:11 16 splits of the 16 political

02:15:13 17 subdivisions.

02:15:14 18 Correct?

02:15:23 19 A. Again, I would want to make

02:15:25 20 sure I understand what is being

02:15:27 21 considered as a subdivision. This is

02:15:29 22 something that's hard for me to --- if

02:15:32 23 there's a slight discrepancy, it's ---

02:15:34 24 it's probably due to something like

02:15:36 25 that.

02:15:36 1 Q. Okay. We can --- we can move
02:15:38 2 on, Doctor Rodden.

02:15:41 3 I would like now to turn to
02:15:43 4 your analysis of --- briefly of
02:15:44 5 partisan fairness. And specifically,
02:15:52 6 we're going to go to that Table 5 in
02:15:55 7 your rebuttal report. I believe it's
02:15:57 8 on page nine. Here we are. Okay.
02:16:08 9 Now, just as a matter of mathematics,
02:16:11 10 if a party wins 9 out of 17
02:16:15 11 congressional districts, that would be
02:16:17 12 about 52.9 percent of the seats.

02:16:20 13 Right?

02:16:20 14 A. Yes.

02:16:20 15 Q. Okay.

02:16:20 16 And if a party wins 10 out of
02:16:24 17 17 seats, that would be about 58.8
02:16:24 18 percent.

02:16:28 19 Correct?

02:16:28 20 A. That's right.

02:16:29 21 Q. Okay.

02:16:29 22 And again, you've calculated
02:16:30 23 using your election index, about 52
02:16:30 24 percent Democratic statewide vote
02:16:30 25 share.

02:16:39 1 Is that right?

02:16:39 2 A. That's one of the things that
02:16:41 3 it displays, yes.

02:16:43 4 Q. Okay.

02:16:48 5 Now, you identified that the
02:16:50 6 Carter plan has ten Democratic leaning
02:16:54 7 districts, of which two are --- you
02:16:57 8 would call these are your really
02:16:59 9 competitive, I heard you call coin
02:17:03 10 toss, razor's edge districts, is that
02:17:08 11 right, the two there?

02:17:09 12 A. Yes.

02:17:09 13 Q. Okay.

02:17:09 14 And those districts, as I
02:17:11 15 recall, those districts could flip to
02:17:13 16 Republicans under the right election
02:17:17 17 circumstances.

02:17:19 18 Right?

02:17:20 19 A. Yes.

02:17:20 20 Q. Okay.

02:17:21 21 So for the House Bill 2146
02:17:24 22 plan, you have one Democratic razor's
02:17:27 23 edge district and you have two
02:17:29 24 Republican razor's edge districts, do
02:17:33 25 you not?

02:17:33 1 A. Yes.

02:17:33 2 Q. Okay.

02:17:34 3 So in fact, under a favorable
02:17:36 4 election environment for Democrats,
02:17:39 5 House Bill 2146 could also yield 10
02:17:46 6 Democratic seats, couldn't it?

02:17:46 7 A. I just want to make sure I'm
02:17:48 8 looking at the right thing. So you're
02:17:48 9 looking at the eight plus ---?

02:17:52 10 Q. Yes. Here. If I highlight it,
11 it won't work out well for either of
12 us, so ---.

13 A. But ---.

14 Q. Right here in the middle.
15 Seven, plus one plus two is 10.
16 Right?

02:18:18 17 A. Yes, with the caveat that I
02:18:19 18 made earlier about District 1 that I
02:18:21 19 think is worth considering.

02:18:30 20 Q. And in fact, when you look at
02:18:32 21 these razor's edge districts, do you
02:18:36 22 identify a single plan on here with
02:18:39 23 more than three of those razor's edge,
02:18:45 24 coin toss districts?

02:18:47 25 A. Does any have --- more than

02:18:47 1 three if we add the two --- the two
02:18:49 2 --- those two middle columns together?
02:18:51 3 Q. That's correct.
02:18:53 4 A. No, I don't believe so.
02:18:54 5 Q. All right.
02:18:59 6 Now, you've spoken generally,
02:19:02 7 Doctor Rodden, about describing some
02:19:04 8 of the plans, including House Bill
02:19:06 9 2146, as outliers. Do you recall that
02:19:10 10 testimony?
02:19:11 11 A. Yes.
02:19:11 12 Q. Outliers compared to what,
02:19:12 13 Doctor Rodden?
02:19:16 14 A. The other plans submitted in
02:19:17 15 this process.
02:19:18 16 Q. Okay.
02:19:26 17 Now, you and Professor Jowei
02:19:26 18 Chen have written several articles
02:19:30 19 talking about the use of simulations
02:19:33 20 methodologies to measure partisan
02:19:38 21 fairness in the plan.
02:19:39 22 Is that right?
02:19:40 23 A. Yes.
02:19:40 24 Q. And in fact, your article,
02:19:40 25 Unintentional Gerrymandering, is sort

02:19:47 1 of routinely cited as a lead
02:19:47 2 publication in that field, is it not?
02:19:50 3 A. The effort we made in that ---
02:19:53 4 in that --- in that article was to run
02:19:54 5 simulations to try to get a sense of
02:19:56 6 what the predicted seat chairs would
02:19:58 7 be from the simulations, and that
02:19:59 8 gives us something to contrast with
02:20:01 9 what we see in realty.
02:20:03 10 Q. Yet you didn't perform a
02:20:06 11 simulations analysis in this case, did
02:20:08 12 you?
02:20:09 13 A. This is a --- this is a
02:20:10 14 technique that's used to identify
02:20:13 15 gerrymandering and to understand some
02:20:17 16 aspects of political geography. This
02:20:19 17 is a case in which I was asked to draw
02:20:20 18 a --- draw a plan and evaluate its
02:20:23 19 fairness, so it didn't occur to me
02:20:25 20 that drawing a 100,000 other plans was
02:20:31 21 something that I should do.
02:20:32 22 Q. But it's within your technical
02:20:34 23 capability to conduct a simulations
02:20:38 24 analysis if you wanted to?
02:20:39 25 A. Yes.

02:20:39 1 Q. Okay.

02:20:40 2 Now, you described HB-2146 as
02:20:43 3 an outlier because I believe it was
02:20:45 4 not aligned with that state vote share
02:20:48 5 you indicated what produced a counter
02:20:50 6 majority outcome.

02:20:53 7 Right?

02:20:55 8 A. Yes.

02:20:55 9 Q. All right.

02:20:57 10 And that's because you would
02:20:59 11 expect a plan --- again, with that
02:21:02 12 52 percent statewide vote share for
02:21:05 13 Democrats, you would expect the plan
02:21:07 14 to have about nine Democratic leaning
02:21:10 15 districts, and yet you have on your
02:21:12 16 report here that HB-2146 generates
02:21:15 17 eight.

02:21:16 18 Correct?

02:21:16 19 A. I'm sorry. Would you repeat
02:21:18 20 the question?

02:21:19 21 Q. Sure. So the basis for you
02:21:21 22 claiming HB-2146 as an outlier here is
02:21:27 23 that it generates eight expected
02:21:29 24 Democratic seats under your analysis.

02:21:31 25 Right?

02:21:32 1 A. I think that, yeah, that was an
02:21:34 2 answer to a specific question in the
02:21:35 3 previous testimony.

02:21:36 4 Q. And if that's the case, why is
02:21:37 5 the ten seats in Carter not equally an
02:21:43 6 outlier?

02:21:43 7 A. Well, again, I was just ---
02:21:44 8 this relates to an earlier question.
02:21:46 9 I was just answering a specific
02:21:48 10 question about the plans that I
02:21:49 11 received and just characterizing the
02:21:55 12 distribution of those plans. I was
02:21:56 13 not --- I was not suggesting it is an
02:21:59 14 outlier relative to some other
02:22:01 15 distribution, just what's on the
02:22:03 16 table.

02:22:04 17 Q. Now, you testified that you
02:22:05 18 were not aware of who the different
02:22:07 19 groups were here who submitted the 14
02:22:13 20 plans?

02:22:13 21 A. That's correct.

02:22:13 22 Q. So you didn't know who Governor
02:22:13 23 Wolf was?

02:22:14 24 A. I did know who Governor Wolf
02:22:17 25 was, yes.

02:22:17 1 Q. And you knew HB-2146 were my
02:22:21 2 clients.

02:22:21 3 Right?

02:22:22 4 A. I believe it was actually
02:22:24 5 marked in my --- the name given to the
02:22:27 6 file. I eventually put HB-2146 on the
02:22:31 7 tables at the last minute because it
02:22:34 8 looked ugly to have the name that was
02:22:38 9 on there which was I believe some
02:22:39 10 names of individuals. So when I was
02:22:41 11 doing the analysis, I was not aware
02:22:43 12 that this was a plan that had been
02:22:46 13 submitted to the legislature, but I am
02:22:51 14 now. And when finalizing the report,
02:22:52 15 I became aware of that.

02:22:56 16 ATTORNEY LEWIS:

02:22:56 17 I have nothing further.

02:22:58 18 Thank you.

02:22:58 19 JUDGE McCULLOUGH:

02:22:58 20 Okay.

02:23:07 21 Thank you, Counsel. And
02:23:07 22 then we will move to Congressional
02:23:07 23 Intervenors, Congressman
02:23:12 24 Reschenthaler, et al.

02:23:14 25 ATTORNEY GORDON:

02:23:16 1 I'll alert Court staff
02:23:17 2 up front, I may briefly need to use
02:23:18 3 that also, so if I could get that
02:23:21 4 fired up, that would be helpful.

02:23:21 5 ---

02:23:21 6 CROSS EXAMINATION

02:23:23 7 ---

02:23:23 8 BY ATTORNEY GORDON:

02:23:24 9 Q. Good afternoon.

02:23:25 10 A. Good afternoon. We're just
02:23:26 11 past noon. So I represent the
02:23:29 12 Congressional Intervenors for the
02:23:30 13 Reschenthaler Maps 1 and 2. So I'll
02:23:33 14 give you an easy one here. Of all the
02:23:36 15 maps you looked at, which one is the
02:23:39 16 best one, in your opinion?

02:23:40 17 A. Of course I have to say that I
02:23:42 18 like my map. I spent a lot of time on
02:23:46 19 it, so it's unlikely I'll give any
02:23:53 20 other answer.

02:23:53 21 Q. I suspected that's what you
02:23:53 22 would answer. And you, in fact, drew
02:23:54 23 that map yourself?

02:23:54 24 A. Yes.

02:23:55 25 Q. Is it the only one you drew?

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A. In this --- in this case?

Q. In this case.

A. Yes.

Q. Very good.

So I want to run you through your response report for the most part. So I'll flip to page two. You got Table 1 there, retain share population. I'll skip down to Reschenthaler 1. In fact, this is just kind of an omnibus question for all of the stats in your response report. You're very --- what is your level of confidence in these numbers?

A. In the --- in the population overlap numbers I believe these are --- these are correct. I don't think there's a lot of room for trouble there.

Q. Sure. And in fact, in all of the numbers in your report, is it safe to say you're confident in their accuracy?

A. Yes. I will --- I will stipulate that this is a calendar

02:24:44 1 under which I've never had to work
02:24:46 2 before. I had --- I had one day to
02:24:48 3 look at the maps, a day during which I
02:24:51 4 had some faculty meetings and other
02:24:53 5 things. So I am confident because I
02:24:55 6 think the techniques I used make me
02:24:59 7 confident.

02:25:00 8 Q. Very good. So as it concerns
02:25:02 9 this chart, 76 and a half, 76 and a
02:25:06 10 half, Reschenthaler 1, Reschenthaler
02:25:09 11 2, you're confident those numbers are
02:25:09 12 correct?

02:25:11 13 A. I am.

02:25:11 14 Q. Okay.

02:25:11 15 And on page three of your
02:25:13 16 report, at the top you make a
02:25:14 17 conclusion about population equality
02:25:14 18 and you say each of these plans --- in
02:25:14 19 each of these population as close to
02:25:22 20 as equal as is possible given the
02:25:22 21 constraints of the data. Do you still
02:25:24 22 agree with that statement?

02:25:25 23 A. Yes.

02:25:25 24 Q. And that includes the
02:25:27 25 Reschenthaler 1 and Reschenthaler 2

02:25:29 1 plans?

02:25:29 2 A. Yes.

02:25:29 3 Q. And then continuity ---

02:25:32 4 contiguity, I'm the first one to

02:25:32 5 fumble it, but I guarantee I won't be

02:25:37 6 the last, you agree that the

02:25:38 7 Reschenthaler 1 and 2 maps meet the

02:25:42 8 contiguity standard?

02:25:43 9 A. I do.

02:25:44 10 Q. Very good. And at the

02:25:46 11 conclusion or compactness section you

02:25:49 12 say none of the submitted plans

02:25:52 13 features high non-compact districts of

02:25:55 14 ten --- clause and the like. Would

02:25:55 15 you agree that's true about

02:25:57 16 Reschenthaler 1 and Reschenthaler 2?

02:26:00 17 A. Yes, I would.

02:26:01 18 Q. Okay. Very good.

02:26:02 19 So I want to flip to Table 2.

02:26:07 20 You list the split counties and you

02:26:09 21 show Reschenthaler 1 at 13 and

02:26:12 22 Reschenthaler 2 at 13. Do you see

02:26:13 23 where I'm looking there?

02:26:17 24 A. Yes.

02:26:17 25 Q. And you believe that's correct?

02:26:18 1 A. I do believe so.

02:26:19 2 Q. Okay.

02:26:20 3 And would you agree with me
02:26:21 4 that's the lowest number of split
02:26:23 5 counties in all the maps you reviewed?

02:26:27 6 A. Yes. When we define it as just
02:26:30 7 whether or not the county is split,
02:26:32 8 that's correct, 13 is the lowest
02:26:33 9 number we see in this table.

02:26:35 10 Q. Correct. And what I don't see
02:26:36 11 in your chart is something that I do
02:26:37 12 see in some of the other reports. It
02:26:39 13 talks about segments. Are you
02:26:40 14 familiar with what segment are?

02:26:44 15 A. That is --- that's I believe
02:26:47 16 what I'm doing in the second column.

02:26:48 17 Q. Well, I think it might be a
02:26:50 18 little bit different, so let me
02:26:52 19 explain what I'm asking when I say
02:26:54 20 segment. So if we had a rectangle and
02:26:56 21 we cut it in half once, it's got two
02:26:56 22 segments. If we split one of the
02:27:00 23 halves in half, now it's got three
02:27:01 24 segments. Do you see what I'm
02:27:01 25 referring to?

02:27:02 1 A. Larger numbers if we just
02:27:03 2 counted up all the segments.

02:27:04 3 Q. Right.

02:27:04 4 Well, would you agree that the Carter
02:27:06 5 map produces 31 county segments? And
02:27:22 6 if the you can't recall ---.

02:27:22 7 A. A little bit, but this is not
02:27:22 8 --- this is not a statistic that I ---
02:27:23 9 that I included.

02:27:23 10 Q. Fair enough. The Governor's
02:27:25 11 expert testifies in her report, and
02:27:27 12 she'll testify on the stand, that you
02:27:28 13 have 31 segments. So I suspect you
02:27:32 14 don't know whether it's true or not if
02:27:37 15 the Reschenthaler 1 and 2 have 29
02:27:39 16 segments?

02:27:41 17 A. I do not. That's not an
02:27:41 18 analysis that I conducted.

02:27:41 19 Q. Well, let me ask you this. Do
02:27:44 20 you agree that a 17-district, compact,
02:27:51 21 contiguous and equal population map
02:27:51 22 can be drawn with just 13 split
02:27:54 23 counties?

02:27:56 24 A. Yes, I believe that
02:28:01 25 characterizes this --- this map.

02:28:02 1 Q. Okay. Let's jump ahead to
02:28:05 2 page five.

02:28:05 3 Briefly in figure one I believe
02:28:09 4 you have Reschenthaler 1 and
02:28:11 5 Reschenthaler 2, if I'm reading this
02:28:13 6 correctly, and a REOC score around
02:28:15 7 approximately .42 for Reschenthaler 2
02:28:18 8 and .41 for Reschenthaler 1. Is that
02:28:20 9 --- is that what that chart reflects?

02:28:23 10 A. It might be more like .42 and
02:28:26 11 .43.

02:28:27 12 Q. Fair enough.

02:28:28 13 A. Yeah.

02:28:28 14 Q. And you believe those numbers
02:28:29 15 to be correct to the best of your
02:28:31 16 professional degree of certainty?

02:28:33 17 A. Yes.

02:28:33 18 Q. Okay. Very good. All right.

02:28:37 19 Let's look at Table 3, number
02:28:38 20 of split county subdivisions. And
02:28:40 21 when you say subdivisions, is that
02:28:42 22 municipalities, townships, boroughs,
02:28:47 23 cities, et cetera?

02:28:48 24 A. This is the census category
02:28:48 25 called county subdivisions, and so I

02:28:52 1 believe there are --- as I was saying
02:28:53 2 earlier, there are some other
02:28:55 3 categorizations that would give us
02:28:58 4 larger numbers that include some other
02:29:01 5 kinds of entities like
02:29:03 6 census-designated places and things
02:29:05 7 like that.

02:29:05 8 Q. Sure.

02:29:06 9 A. This is just this one category.

02:29:08 10 Q. So these are smaller than a
02:29:13 11 county, bigger than a ward?

02:29:14 12 A. Yes, I believe that --- that
02:29:15 13 captures it, although I'm not entirely
02:29:17 14 sure.

02:29:18 15 Q. Okay.

02:29:18 16 Well, if you look at
02:29:19 17 Reschenthaler 1 and Reschenthaler 2,
02:29:21 18 you show them at 15 county subdivision
02:29:24 19 splits. Are you confident that those
02:29:27 20 numbers are correct?

02:29:28 21 A. Based on the analysis I did,
02:29:29 22 yes.

02:29:29 23 Q. And here I would ask is that
02:29:31 24 the lowest number of splits, but I
02:29:33 25 show you have CCFD at 14.

02:29:38 1 Is that correct? That's number
02:29:38 2 two?
02:29:38 3 A. Yes.
02:29:39 4 Q. Now, this is something you
02:29:41 5 probably don't know, but late
02:29:43 6 yesterday the Court entered an Order
02:29:45 7 discarding the CCFD map as being
02:29:49 8 untimely filed. So if you accept my
02:29:52 9 representation that that map is no
02:29:53 10 longer before the Court, would you
02:29:54 11 agree that 15 is the lowest of the
02:29:56 12 remaining maps?
02:29:57 13 A. Yes.
02:29:57 14 Q. Okay.
02:30:01 15 So do you agree that a
02:30:01 16 17-district congressional map that is
02:30:03 17 both compact, contiguous and equal
02:30:08 18 population can be drawn with just 15
02:30:11 19 county subdivision splits?
02:30:13 20 A. Yes.
02:30:22 21 Q. Just quickly on page six, Table
02:30:25 22 4, VTDs, are they bigger or smaller
02:30:28 23 than a ward, if you know?
02:30:29 24 A. Smaller.
02:30:29 25 Q. Smaller. All right.

02:30:34 1 Page 9, Table 5, so
02:30:40 2 Reschenthaler 1 and 2, you have ---
02:30:42 3 I'm going to look at the extreme
02:30:42 4 columns, as in on either end. So you
02:30:42 5 show the Carter map as ten and that
02:30:42 6 Democrat vote share greater than .5.
02:30:54 7 And then you show Reschenthaler 1 as 9
02:30:56 8 and Reschenthaler 2 as nine.

02:30:58 9 Is that correct?

02:30:58 10 A. Yes.

02:30:58 11 Q. And that's a difference of just
02:31:01 12 one?

02:31:01 13 A. Yes.

02:31:01 14 Q. One seat out of 17?

02:31:04 15 A. Yes.

02:31:04 16 Q. Okay.

02:31:05 17 And then we'll go to the
02:31:06 18 extreme far right column, same column
02:31:09 19 where you amended the heading here in
02:31:11 20 Court. The Carter plan shows seven
02:31:14 21 and Reschenthaler 1 is eight and
02:31:17 22 Reschenthaler 2 is eight. And that's
02:31:19 23 a difference of just one.

02:31:21 24 Is that correct?

02:31:22 25 A. That's correct.

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Q. Okay.

Briefly then again on table --- we'll jump ahead on Table 6 on page 11. You show Reschenthaler 1 and 2 on the mean and median difference as --- I believe you testified one percent.

Is that correct?

A. Yes.

Q. And you further testified that you didn't run a simulation for drawing this map, you just drew one map?

A. That's correct.

Q. So you didn't draw say 500 maps as Doctor Chen did in League of Women Voters?

A. No.

Q. And are you aware that under those 500 maps in League of Women Voters the Court made Findings of Fact about what the range of mean median was over those 500 maps. Are you aware of that --- that statistic from that prior proceeding?

A. No, I don't recall it.

02:32:17 1 Q. Fair enough. No questions on
02:32:19 2 that then.

02:32:19 3 I wanted to go to your main
02:32:21 4 report now. And I'm going to refer to
02:32:23 5 Figure 2, where you show sort of a
02:32:26 6 dynamic shifts of Pennsylvania
02:32:28 7 population over the last ten years.
02:32:32 8 And I'm hoping I can educate myself a
02:32:34 9 little bit on this. Does this map
02:32:38 10 reflect that Pennsylvania has become
02:32:41 11 more tightly packed in urban areas and
02:32:44 12 less tightly packed in rural areas?

02:32:48 13 A. That would be one way you might
02:32:53 14 summarize the fact that population is
02:32:55 15 growing in places that are relatively
02:32:57 16 dense and falling in places that are
02:33:00 17 relatively sparse.

02:33:02 18 Q. So in effect, more populous,
02:33:02 19 tightly-packed cities and less
02:33:07 20 populous rural communities, whatever
02:33:08 21 those things may be, boroughs or et
02:33:11 22 cetera?

02:33:11 23 A. No, I would push back a little
02:33:14 24 on that. I don't consider Lancaster
02:33:14 25 County to be a --- to be tightly

02:33:14 1 packed. I mean, it has tightly-packed
02:33:14 2 neighborhoods in Lancaster itself, the
02:33:19 3 city, but some of the places that are
02:33:21 4 growing rather quickly are more
02:33:23 5 suburban areas, like Montgomery County
02:33:26 6 and Lancaster County and parts of
02:33:26 7 Chester County.

02:33:27 8 Q. Fair enough.

02:33:29 9 Well, if we look at page ten of
02:33:30 10 this report, and this is --- this is
02:33:33 11 where I'm sort of where I'm trying to
02:33:34 12 merge this chart with something you're
02:33:36 13 saying here. Is the way to interpret
02:33:41 14 the sentence that begins with
02:33:42 15 moreover, another pronounced trend in
02:33:45 16 Pennsylvania and the rest of the
02:33:46 17 United States is that places that are
02:33:49 18 gaining population are not only more
02:33:51 19 Democratic to begin with but are
02:33:53 20 becoming more Democratic as they gain
02:33:56 21 population. That sentence, does that
02:34:00 22 mean that as these areas become
02:34:00 23 tighter, Lancaster County or city or
02:34:04 24 otherwise, they tend to become more
02:34:06 25 Democratic?

02:34:07 1 A. That's just the pattern that's
02:34:08 2 displayed in Figure 3, that over time
02:34:11 3 the places that have experienced the
02:34:12 4 largest population change, which are
02:34:14 5 also the places that are becoming more
02:34:16 6 dense, are the --- are places where
02:34:18 7 the Democratic vote share has
02:34:19 8 increased. There's a positive
02:34:23 9 correlation there between those
02:34:25 10 things.

02:34:25 11 Q. So in the last ten years
02:34:25 12 Pennsylvania has generally become
02:34:25 13 tighter in certain areas and more
02:34:25 14 Democrat in those areas that have
02:34:32 15 become tighter.

02:34:33 16 Is that correct?

02:34:37 17 A. Yes, with --- with the caveat
02:34:38 18 that some of the --- some of the
02:34:39 19 places --- we're talking about
02:34:39 20 counties here. And some of them are
02:34:42 21 --- have areas that are really growing
02:34:42 22 that are not especially dense.

02:34:43 23 Q. Sure. And I want to ask you a
02:34:45 24 question about the next sentence on
02:34:47 25 that same page. Likewise, places that

02:34:47 1 are losing population are not only
02:34:49 2 relatively Republican, to begin with,
02:34:52 3 but are becoming more Republican and
02:34:55 4 you actually emphasize more.

02:34:57 5 Does that reflect the
02:34:58 6 phenomenon that as people go in the
02:34:58 7 city, these cities and tighter-packed
02:34:58 8 counties, the places they leave behind
02:35:07 9 tend to become more Republican?

02:35:08 10 A. Well, it's --- it's --- the way
02:35:10 11 you described it kind of implies that
02:35:12 12 the population changed, that people
02:35:17 13 who are leaving are Democrats or
02:35:20 14 something like that. We don't know
02:35:21 15 that. All we know from this --- from
02:35:23 16 this figure is that in the lower left
02:35:24 17 corner, the places that are losing
02:35:25 18 population are becoming more
02:35:27 19 Republican. So I think this really
02:35:30 20 more has to do with a --- with a
02:35:33 21 longstanding trend where population
02:35:35 22 density and voting are becoming more
02:35:40 23 correlated over time. So rural areas
02:35:41 24 are becoming more Republican and urban
02:35:45 25 areas are becoming more Democratic.

02:35:45 1 That's the main thing that's being
02:35:48 2 captured here.

02:35:48 3 Q. Is what you're talking about
02:35:49 4 here the concept of human geography?

02:35:51 5 A. We could call it that, yes.

02:35:52 6 Q. Well, I'm asking if you would
02:35:53 7 call it that.

02:35:54 8 A. Sure.

02:35:54 9 Q. Okay.

02:35:55 10 And in fact, have you called it
02:35:57 11 that before in any of your --- your
02:36:02 12 publications?

02:36:03 13 A. Probably.

02:36:03 14 Q. Okay.

02:36:04 15 And I noted in your --- your
02:36:06 16 resume attached to your report there's
02:36:12 17 a number of peer-reviewed journal
02:36:12 18 articles. What's it mean for an
02:36:16 19 article to be peer reviewed?

02:36:17 20 A. It means that it's submitted to
02:36:18 21 a journal and various --- the journal
02:36:21 22 editor chooses some reviewers who work
02:36:22 23 in the same field and those reviewers
02:36:24 24 have to say nice things about it or
02:36:26 25 the editor will reject it. And if the

02:36:29 1 editor decides to go forward, then it
02:36:32 2 gets published in the journal.

02:36:33 3 Q. So in effect, what you say is
02:36:36 4 tested by someone else?

02:36:40 5 A. Tested?

02:36:41 6 Q. Reviewed?

02:36:41 7 A. Reviewed, yes. In the ideal
02:36:45 8 world perhaps they would take the data
02:36:47 9 and rerun it, but that doesn't always
02:36:49 10 happen.

02:36:49 11 Q. Sure. In your peer-reviewed
02:36:51 12 articles that you list here in your
02:36:52 13 resume that you submitted to the
02:36:54 14 Court, did you believe at the time you
02:36:56 15 published these articles that you were
02:36:57 16 being truthful, accurate and
02:36:59 17 descriptive of the conclusions and
02:37:02 18 findings you were putting in your
02:37:03 19 article?

02:37:04 20 A. Yes.

02:37:05 21 Q. Okay.

02:37:06 22 And I want to direct your
02:37:07 23 attention to Unintentional
02:37:11 24 Gerrymandering. This is on page three
02:37:12 25 of your report. It was referenced a

02:37:13 1 moment ago. Is that a report, a
02:37:24 2 peer-reviewed article that you wrote?
02:37:25 3 A. Yes.
02:37:25 4 Q. Do you recall the abstract from
02:37:27 5 that report?
02:37:28 6 A. No.
02:37:30 7 Q. Probably not. Eight years ago.
02:37:35 8 All right. If I could get that
02:37:36 9 projected on the screen. Does that
02:37:38 10 look like the article that you
02:37:39 11 created?
02:37:40 12 A. Yes.
02:37:41 13 Q. Okay.
02:37:41 14 ATTORNEY GORDON:
02:37:42 15 And I will note for the
02:37:44 16 record there are some stamps on this.
02:37:46 17 It appears to have been used in a
02:37:49 18 proceeding at some point in time.
02:37:51 19 Those markings are not intended as
02:37:53 20 evidentiary markings by my party or
02:37:56 21 for this case.
02:37:56 22 BY ATTORNEY GORDON:
02:38:02 23 Q. So let's have a look at that
02:38:04 24 --- that abstract. In fact, if you've
02:38:06 25 had a chance to review that, my

02:38:08 1 question is really on the terminal
02:38:11 2 sentence which appears on the next
02:38:12 3 page. And it reads, our results
02:38:14 4 illustrate a strong relationship
02:38:16 5 between the geographic concentration
02:38:19 6 of Democratic voters and electoral
02:38:22 7 bias favoring Republicans.

02:38:24 8 Did I read that correctly?

02:38:25 9 A. Yes.

02:38:25 10 Q. Was that true at the time you
02:38:27 11 said it?

02:38:27 12 A. Yes.

02:38:27 13 Q. Is it true today?

02:38:30 14 A. Yes.

02:38:30 15 Q. And do you think that applies
02:38:32 16 to Pennsylvania?

02:38:34 17 A. Well, I've written a book on
02:38:36 18 that topic, so I'd be happy to talk
02:38:39 19 about that. Yes, there's a
02:38:41 20 considerable analysis in the book.
02:38:44 21 There's a chapter on Pennsylvania in
02:38:46 22 particular, and it considers exactly
02:38:48 23 this question. I also have a
02:38:52 24 follow-up article on --- that focuses
02:38:53 25 on Pennsylvania. And in that analysis

02:38:56 1 one of the things we --- one of the
02:39:01 2 things we see is that if we just run a
02:39:03 3 lot of simulations ---.

02:39:04 4 Q. If I could interrupt you. I'm
02:39:06 5 on the clock. Your counsel has
02:39:07 6 rebuttal. I really just want to get
02:39:09 7 to the terminal statement of this ---
02:39:12 8 this report.

02:39:14 9 Proving such intent in court
02:39:15 10 will be difficult in states where
02:39:17 11 equally egregious electoral bias can
02:39:21 12 emerge purely from human geography?
02:39:23 13 Did I read that correctly?

02:39:25 14 A. Yes.

02:39:25 15 Q. And is that --- was that true
02:39:26 16 when you said it?

02:39:27 17 A. Yes.

02:39:27 18 Q. And is it still true today
02:39:30 19 about Pennsylvania?

02:39:31 20 A. Yes. I wasn't under the
02:39:33 21 understanding of this Court --- this
02:39:35 22 case was about gerrymandering. So I'm
02:39:36 23 not --- not something I considered in
02:39:39 24 this --- in my report.

02:39:39 25 Q. Fair enough. Thank you,

02:39:42 1 Doctor.

02:39:42 2 ATTORNEY GORDON:

02:39:43 3 Those are all the
02:39:44 4 questions I have at this time.

02:39:45 5 JUDGE McCULLOUGH:

02:39:45 6 Thank you, Counsel. We
02:39:52 7 have the counsel for Representative
02:39:52 8 McClinton.

02:40:03 9 ATTORNEY SENOFF:

02:40:03 10 Thank you, Your Honor.
02:40:05 11 David Senoff for Representative
02:40:08 12 McClinton.

02:40:08 13 ---

02:40:08 14 CROSS EXAMINATION

02:40:08 15 ---

02:40:08 16 BY ATTORNEY SENOFF:

02:40:09 17 Q. Good afternoon, Doctor. I just
02:40:10 18 have a few questions, which I know is
02:40:12 19 the death nail for any attorney to say
02:40:12 20 at the beginning of a Cross
02:40:12 21 Examination.

02:40:19 22 Doctor, when you were retained
02:40:22 23 and asked to come here today, your
02:40:24 24 role was not to give an opinion on
02:40:26 25 whether any particular map was

02:40:28 1 constitutional or not?

02:40:30 2 Am I correct?

02:40:31 3 A. That's correct. I'm not
02:40:32 4 usually asked to make that kind of
02:40:34 5 conclusion.

02:40:35 6 Q. And that's because only a court
02:40:38 7 or the Supreme Court can do that.
02:40:41 8 Right?

02:40:41 9 A. Correct.

02:40:41 10 Q. Now, in creating your plan in
02:40:45 11 specific that's been gone over, did
02:40:48 12 you consider Pennsylvanian's statewide
02:40:54 13 voter registration data as it reflects
02:40:59 14 party registration?

02:41:02 15 A. I did not make use of
02:41:04 16 registration data. I just --- I only
02:41:06 17 made use of observed election results
02:41:10 18 at the precinct level.

02:41:10 19 Q. And in reaching your
02:41:11 20 conclusions, did you give any thought
02:41:13 21 to vote dilution or disenfranchisement
02:41:18 22 in any way?

02:41:19 23 A. I was only thinking in broad
02:41:21 24 terms about partisan fairness after
02:41:24 25 drawing my map and did some

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rudimentary analysis. But vote
dilution in particular was not a
concept that I tried to --- that I
tried to evaluate.

Q. And in looking at your map, as
you said, in a rudimentary way with
regard to those factors, did you make
any changes to the map as a result?

A. No.

Q. Thank you, Doctor.

ATTORNEY SENOFF:

I don't have any - any
other questions.

JUDGE McCULLOUGH:

You stood by your words.

ATTORNEY SENOFF:

I'm going to try to do
that through the whole trial.

JUDGE McCULLOUGH:

Okay, Counsel. You can
do what you need. Thank you. And
then for Senator Costa, Counsel,
please.

CROSS EXAMINATION

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BY ATTORNEY ATTISANO:

Q. Hi, Doctor Rodden. When you referred to partisan fairness, can you just tell us briefly what you're referring to?

A. I think many of us have the notion that 50 percent of the votes should correspond to 50 percent of the seats in expectation, that there's a correspondence between the statewide vote share and the statewide seat share. That's the basic concept I had in mind.

Q. Is that --- on your reply report, page nine, Table 5, is that what that table is about?

A. Yes, that's just an effort to provide for the Court some basic information that is related to the partisanship of the map. I don't think it clearly translates into --- there's not a measure of fairness that we can extract from this. I've tried to communicate it's a little more

02:43:19 1 subtle than that.

02:43:20 2 Q. Is it fair to say that when you
02:43:22 3 did those statistics you used a
02:43:24 4 statewide vote share of 50/50 split
02:43:27 5 between Democrats and Republicans
02:43:27 6 based on the historical election data
02:43:29 7 that you drew from.

02:43:31 8 Is that fair?

02:43:31 9 A. The data that --- the data I
02:43:33 10 drew from, as I explained in the
02:43:35 11 initial report, if we look at those
02:43:37 12 elections, I think it's something like
02:43:39 13 52 percent Democratic, on average.

02:43:42 14 Q. Okay.

02:43:45 15 Did you adjust any data to test
02:43:47 16 this whenever you increased the vote
02:43:52 17 share statewide for Democrats, for
02:43:55 18 example, taking it from 52 percent to
02:43:58 19 54 or 55 percent? Did you run an
02:44:00 20 analysis like that?

02:44:02 21 A. Well, we can mentally run that
02:44:06 22 analysis by looking at this table and
02:44:08 23 knowing what the statewide vote share
02:44:11 24 from which I drew the data, what it
02:44:13 25 looked like. And if we just imagine

02:44:14 1 that that share, that shift, say a two
02:44:14 2 percentage point shift happens equally
02:44:22 3 across all districts, then we can ---
02:44:23 4 we can ask ourselves what would happen
02:44:25 5 to these districts under that
02:44:27 6 situation and we could certainly do a
02:44:29 7 more thorough analysis like that. But
02:44:31 8 that's not something I included in my
02:44:34 9 report.

02:44:34 10 Q. Okay.

02:44:34 11 And so you agree, though, you
02:44:35 12 didn't run that analysis?

02:44:37 13 Correct?

02:44:37 14 A. Correct.

02:44:38 15 Q. Isn't it possible that with an
02:44:41 16 analysis like that the increase in
02:44:43 17 statewide vote share will not
02:44:45 18 automatically proportionally increase
02:44:51 19 the proportion of seats in a map? Is
02:44:57 20 that possible?

02:44:58 21 A. Well, I think in the --- if I
22 understand you correctly, the question
23 seems to be about if we wanted to
24 conduct that exercise, would it be
25 realistic to imagine that a two

1 percentage point swing was experienced
2 in exactly the same way in every
3 district. That's the way analysts
4 often do this. If I understand the
02:45:13 5 question correctly, it's --- the
02:45:14 6 question is whether that makes -
02:45:15 7 whether we should do that, is that
02:45:17 8 realistic. Is that --- is that the
02:45:18 9 question?

10 Q. The question is, is it possible
02:45:20 11 that the analysis could come out that
02:45:26 12 it is not a proportional increase in
02:45:30 13 seat share?

14 A. Well, right. So if we imagine
02:45:37 15 that there's a shift in the vote
02:45:39 16 share, might we get --- yes, if we
02:45:43 17 have a large shift in the --- in the
02:45:45 18 vote share, then the seat share may
02:45:46 19 very well not be proportional to the
02:45:51 20 vote share. That's correct.

21 Q. And for example, if the
02:45:55 22 increase in vote share statewide for
02:45:58 23 one party showed a more dramatic shift
02:46:03 24 in proportional gain of seats, would
02:46:10 25 that tell us --- more dramatic shift

02:46:16 1 as opposed to the other parties'
02:46:18 2 statewide increase, would that tell us
02:46:20 3 anything about the partisanship of a
02:46:28 4 map?

02:46:28 5 A. Well, that's just a different
02:46:29 6 way of defining, I guess, the
02:46:30 7 partisanship of the map, that yes, if
02:46:30 8 we --- we are interested in knowing
02:46:30 9 the responsiveness of the map to
02:46:35 10 changes in the vote share, so what
02:46:35 11 would happen if there was a big shift
02:46:40 12 in one direction or the other, and we
02:46:40 13 could certainly conduct an analysis
02:46:42 14 where we just imagine that shift to
02:46:44 15 happen to all the districts and we see
02:46:47 16 what happens, and one of the things we
02:46:48 17 know about the transformation of votes
18 to seats in general is that as one
19 party gets a larger and larger
20 majority, its --- its seat share ends
21 up increasing by --- by more than its
22 vote share. That's something that
02:47:06 23 traditionally happens when a party
02:47:08 24 wins by a large majority.

02:47:08 25 Q. And Doctor, I believe on Direct

02:47:10 1 you said you didn't consider any
02:47:11 2 racial data in your analysis.
02:47:14 3 Is that correct?
02:47:14 4 A. That's correct.
02:47:15 5 Q. Okay.
02:47:16 6 Why don't --- why didn't you do
02:47:19 7 that?
02:47:19 8 A. Well, that's one thing I know
02:47:21 9 to be illegal, to draw district
02:47:24 10 boundaries. Though I'm no lawyer, I
02:47:28 11 do know that it's not permissible to
02:47:29 12 draw district boundaries with race as
02:47:31 13 a predominant guiding principle.
02:47:36 14 Typically, it would also be --- it
02:47:38 15 would make sense after drawing a plan
02:47:39 16 to then assess its compliance with the
02:47:43 17 Voting Rights Act. This was a
02:47:45 18 situation in which I was drawing from
02:47:46 19 a plan and deviating very little from
02:47:49 20 a plan that was --- that I understood
02:47:51 21 to not have been challenged in any
02:47:54 22 way. It just made it through the
02:47:55 23 process four years ago in the Supreme
02:47:57 24 Court of Pennsylvania and there was no
02:48:00 25 VRA challenge that I was aware of.

02:48:04 1 And the districts in the surroundings
02:48:07 2 of minority communities changed hardly
02:48:11 3 at all in my plan. So that was the
02:48:12 4 extent of my consideration of Voting
02:48:14 5 Rights Act claims.

02:48:14 6 Q. You were asked by another
02:48:15 7 counsel about human geography in
02:48:21 8 Pennsylvania, and you were giving an
02:48:22 9 answer and then it got cut off. Do
02:48:25 10 you remember that?

02:48:25 11 A. Yes.

02:48:25 12 Q. Could you go ahead and please
02:48:27 13 address that issue of human geography
02:48:29 14 in Pennsylvania that you were
02:48:30 15 addressing in which you were cut off?

02:48:32 16 A. Yes. And might still have to
02:48:34 17 cut me off because it's a topic on
02:48:36 18 which I'm very interested.

02:48:37 19 Q. I got eight minutes, so I hope
02:48:38 20 I don't have to.

02:48:38 21 A. But let me give you the very
02:48:39 22 brief version of it. It's just that
02:48:45 23 the --- that the --- that at the scale
02:48:45 24 of congressional districts, the
02:48:49 25 problem I described in the paper with

02:48:49 1 Jowei Chen had to do with
02:48:52 2 concentrations of Democrats in very
02:48:53 3 large cities, but also to some extent
02:48:53 4 a concentration of Democrats in
02:48:57 5 smaller cities in such a way that the
02:48:59 6 distribution of Democrats across
02:49:01 7 districts ended up being inefficient
02:49:04 8 for the Democratic party. And I
02:49:06 9 pointed out in this work that similar
02:49:07 10 things have happened in other context.
02:49:11 11 But we can't make broad
02:49:12 12 statements about that regarding every
02:49:14 13 context. It's necessary to focus on a
02:49:16 14 specific context, and I've done that
02:49:18 15 in the Pennsylvania congressional
02:49:20 16 context. And one thing we see is when
02:49:22 17 we do a lot of simulations a good
02:49:26 18 share of those simulations end up in a
02:49:32 19 range that --- that is --- that
02:49:34 20 produces the kind of partisan fairness
02:49:36 21 we're talking about. So it is not the
02:49:38 22 case that the human geography in
02:49:40 23 Pennsylvania somehow requires that we
02:49:41 24 draw unfair districts. There's just
02:49:44 25 no --- there's no evidence for that

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whatsoever.

Q. When it comes to drawing unfair districts, is it possible to unintentionally draw an unfair district?

A. Yes.

Q. And it's possible to intentionally draw an unfair district. Correct?

A. Yes.

Q. And with respect to gerrymandering, is it possible to unintentionally draw a gerrymandered district?

A. Then it depends on how we define gerrymandering. Then we get into some philosophical conversations. Do we --- do we define gerrymandering to be any deviation from something that would emerge from a million simulations or do we find gerrymandering to be an intentional effort to favor a party. If we define it that way, then if it's unintentional, then we wouldn't

02:50:33 1 include it in the definition of
02:50:34 2 gerrymandering.

02:50:35 3 Q. And you agree that it's
02:50:38 4 possible to unintentionally draw an
02:50:40 5 unfairly partisan district.

02:50:44 6 Correct?

02:50:46 7 A. Yes.

02:50:50 8 ATTORNEY ATTISANO:

02:50:51 9 Thank you.

02:50:51 10 JUDGE McCULLOUGH:

02:50:51 11 Thank you, Counsel. I
02:50:52 12 believe that's all on Cross. Does the
02:50:59 13 Petitioner have Redirect?

02:51:16 14 ATTORNEY JASRASARIA:

02:51:17 15 Good morning, Your
02:51:19 16 Honor. Again Jyoti Jasrasaria for the
02:51:20 17 Carter Petitioners. Hello, Doctor
02:51:23 18 Rodden. I don't have any Redirect
02:51:25 19 questions, but I just wanted to ask
02:51:26 20 Your Honor, I understand, based on a
02:51:31 21 stipulation this morning, that Doctor
02:51:34 22 Rodden's report has already been
02:51:34 23 admitted. But if necessary, I would
02:51:36 24 move to admit that. And I'm happy to
02:51:38 25 offer hard copies if that's necessary

02:51:40 1 this morning to confirm that.

02:51:42 2 JUDGE McCULLOUGH:

02:51:42 3 I think we have
02:51:43 4 everything on the docket, if I'm
02:51:43 5 correct. And they --- you're correct,
02:51:51 6 they were admitted per the
02:51:51 7 stipulations of counsel this morning.

02:51:53 8 ATTORNEY JASRASARIA:

02:51:53 9 Okay. Excellent.

02:51:55 10 And I also just wanted
02:51:56 11 to raise the issue of declarations
02:51:58 12 from the Carter Petitioners. I
02:51:59 13 understand that no party is
02:52:02 14 challenging standing, but I'm just
02:52:05 15 offering declarations from most of our
02:52:08 16 Petitioners to establish where they
02:52:11 17 live and where they intend to vote.
02:52:12 18 And I believe my colleague, Matthew
02:52:17 19 Gordon, has already made these
02:52:18 20 available to other counsel.

02:52:20 21 JUDGE McCULLOUGH:

02:52:21 22 All right.

02:52:21 23 Does anyone have any
02:52:22 24 objection? Then they can be
02:52:26 25 admitted ---

02:52:28 1 ATTORNEY JASRASARIA:

02:52:29 2 Thank you.

02:52:30 3 JUDGE McCULLOUGH:

02:52:30 4 --- if there's no

02:52:30 5 objections. Do you have hard copies?

02:52:32 6 ATTORNEY JASRASARIA:

02:52:32 7 I do. Thank you, Your

02:52:55 8 Honor. That's all for me.

02:52:56 9 JUDGE McCULLOUGH:

02:52:56 10 All right.

02:52:56 11 Thank you very much.

02:52:57 12 And then you're finished with your

02:52:59 13 witness?

02:53:00 14 ATTORNEY JASRASARIA:

02:53:00 15 Yes.

02:53:00 16 JUDGE McCULLOUGH:

02:53:01 17 And Doctor Rodden, thank

02:53:02 18 you very much. You may step down.

02:53:02 19 THE WITNESS:

02:53:04 20 Thank you.

02:53:10 21 JUDGE McCULLOUGH:

02:53:10 22 I was just looking at

02:53:11 23 the time. As I had told counsel, I

02:53:13 24 don't want to take long breaks, but I

02:53:14 25 think maybe you might need a 15-minute

02:53:16 1 break, comfort break. Can I have a
02:53:19 2 nod of heads yes or no? Yes. Okay.
02:53:21 3 We'll take a 15-minute break and then
02:53:24 4 reconvene to begin Direct Examination
02:53:24 5 of Gressman --- Petitioner Gressman's
02:53:39 6 witness. Thank you.

02:53:39 7 COURT CRIER HOLLAND:
02:53:40 8 Commonwealth Court is
02:53:41 9 now in recess.

10 ---
11 (WHEREUPON, A SHORT BREAK WAS TAKEN.)

12 ---
13 COURT CRIER HOLLAND:
14 Commonwealth Court is
03:19:55 15 back in session.

03:19:55 16 JUDGE McCULLOUGH:
17 Please be seated. Thank
18 you all for doing that quickly.
19 So now we will proceed
20 with the Petitioners Gressman calling
21 their expert witness.
03:19:58 22 Counsel?

03:19:58 23 ATTORNEY RING-AMUNSON:
03:19:58 24 Thank you, Your Honor.
03:19:59 25 We call Doctor Daryl DeFord.

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JUDGE MCCULLOUGH:

He knows his way around to the witness stand now, because Doctor Rodden had to do it first. Okay.

COURT CRIER TURNER:

Please raise your right hand.

DARYL DEFORD,

CALLED AS A WITNESS IN THE FOLLOWING PROCEEDINGS, HAVING FIRST BEEN DULY SWORN, TESTIFIED AND SAID AS FOLLOWS:

DIRECT EXAMINATION

BY ATTORNEY RING-AMUNSON:

Q. Good afternoon, Doctor DeFord. You can take your mask off if you want. Thank you.

Could you please introduce yourself to the Court?

A. Sure. Good morning. My name is Darryl DeFord. I'm an assistant professor of data analytics in the

03:20:53 1 department of mathematics and
03:20:55 2 statistics at Washington State
03:20:56 3 University.

03:20:56 4 Q. And Doctor DeFord, do you have
03:20:58 5 experience evaluating electoral maps?

03:21:01 6 A. I do, yes.

03:21:02 7 Q. Could you please summarize it
03:21:03 8 for the Court?

03:21:06 9 A. Sure. So for the last three
03:21:08 10 years most of my main, sort of
03:21:09 11 research work has focused on studying
03:21:09 12 sort of the mathematical and
03:21:09 13 computational methods for evaluating
03:21:09 14 redistricting plans, including any
03:21:19 15 sort of peer-reviewed academic
03:21:19 16 publications as well as practical work
03:21:23 17 with actual maps.

03:21:23 18 Q. And I'm going to ask you to
03:21:25 19 speak slowly and clearly so the Court
03:21:29 20 Reporter can get down everything
03:21:30 21 you're saying without breaking any
03:21:32 22 fingers.

03:21:36 23 Are you aware that the Court is
03:21:37 24 here to evaluate which congressional
03:21:40 25 math to adopt for Pennsylvania based

03:21:42 1 on the 2020 census results?

03:21:44 2 A. Yes.

03:21:44 3 Q. And have you evaluated the map
03:21:47 4 prepared by the Gressman Math Science
03:21:50 5 Petitioners?

03:21:51 6 A. I have, yes.

03:21:51 7 Q. And on the screen is a map, do
03:21:57 8 you recognize it?

03:21:59 9 A. Yes.

03:21:59 10 Q. And what is it?

03:22:01 11 A. This is the map proposed by the
03:22:01 12 mathematician and scientist
03:22:09 13 petitioners.

03:22:09 14 Q. Okay.

03:22:10 15 And you are here and have been
03:22:11 16 stipulated as an expert in
03:22:13 17 redistricting and data analysis. Are
03:22:14 18 you an expert on Pennsylvania
03:22:16 19 geography itself?

03:22:17 20 A. No, I'm not.

03:22:18 21 Q. And did you actually draw this
03:22:19 22 map?

03:22:20 23 A. No, I did not.

03:22:21 24 Q. Could you just briefly explain
03:22:22 25 for the Court your understanding of

03:22:24 1 how the map was prepared?

03:22:28 2 A. So my understanding is that
03:22:29 3 sort of principles of computational
03:22:32 4 redistricting were applied, so the
03:22:34 5 idea was that there were sort of a ---
03:22:37 6 you know, there are several
03:22:38 7 traditional districting criteria and
03:22:40 8 so this was formulated as a sort of
03:22:42 9 multi objective optimization problem,
03:22:45 10 and so the computer generated sort of
03:22:48 11 many plans intended to optimize for
03:22:50 12 those traditional criteria.

03:22:52 13 Q. And did you prepare some
03:22:53 14 reports in this case?

03:22:54 15 A. I did, yes.

03:22:55 16 Q. And do you have those sitting
03:22:56 17 goes in front of you, Doctor DeFord?

03:22:59 18 A. Yes, I do.

03:22:59 19 Q. And what analysis did the
03:23:07 20 Gressman Math and Science Petitioners
03:23:07 21 ask you to perform with respect to
03:23:09 22 their map?

03:23:10 23 A. So I was asked to analyze the
03:23:12 24 map in terms of sort of traditional
03:23:25 25 districting criteria, criteria drawn

03:23:25 1 from the --- traditional districting
03:23:28 2 criteria as well as criteria derived
03:23:32 3 from the Pennsylvania Commonwealth
03:23:34 4 Constitution, and sort of responsive
03:23:37 5 to the orders in the League of Women's
03:23:43 6 Voters case.

03:23:43 7 Q. Okay.

03:23:43 8 And how many criteria did you
03:23:44 9 evaluate?

03:23:45 10 A. Six.

03:23:45 11 Q. Could you list those for the
03:23:47 12 Court, please?

03:23:49 13 A. So population balance,
03:23:51 14 contiguity, compactness, the
03:23:55 15 preservation of municipal boundaries,
03:23:57 16 the existence and number of minority
03:24:06 17 election opportunity districts and
03:24:06 18 partisan fairness.

03:24:06 19 Q. And I think you mentioned
03:24:09 20 municipal boundaries. Were there any
03:24:10 21 other boundaries that you evaluated
03:24:12 22 the map for?

03:24:13 23 A. Yes, I --- yes, I evaluated the
03:24:15 24 six types of boundaries that are
03:24:22 25 explicitly listed in the Constitution.

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Q. Okay.

And can you start by summarizing your conclusions about how the Gressman Math and Science map performed on all of these criteria together?

A. So my report concludes that the mathematicians and scientist map performs very well on these criteria and use the best possible population balance. It sort of undoes remarkably well in terms of partisan fairness, it preserves sort of the many --- sort of a high degree, the counties, municipal boundaries and wards in the state, and also it constructs three voting age minority/majority districts.

Q. So let's start with population balance. Did you evaluate how the math and science map performs with respect to population balance?

A. Yes, I did.

Q. And how did it perform?

A. So I just use the best possible population balance of a deviation of

03:25:25 1 one person between the largest
03:25:27 2 district and the smallest district in
03:25:29 3 the plan.

03:25:30 4 Q. And did you evaluate how the
03:25:32 5 other maps submitted to the Court
03:25:35 6 perform with respect to population
03:25:36 7 balance?

03:25:36 8 A. Yes, I did.

03:25:36 9 Q. Did any of those maps have more
03:25:39 10 than a one person deviation?

03:25:41 11 A. Yes.

03:25:41 12 Q. Which ones?

03:25:46 13 A. So two of the maps the Carter
03:25:46 14 map and the map submitted by the House
03:25:50 15 Democratic Caucus had at least one
03:25:53 16 district with sort of one person over
03:25:55 17 the ideal value, and so a maximum
03:25:58 18 population deviation of two people
03:26:00 19 between the largest district and the
03:26:01 20 smallest district.

03:26:02 21 Q. And in your experience
03:26:04 22 evaluating maps, is it standard for a
03:26:07 23 congressional map to be drawn with
03:26:08 24 more than one person deviation?

03:26:10 25 A. No.

03:26:11 1 Q. Let's move on to discussing
03:26:20 2 political boundary subdivisions.
03:26:21 3 Can you describe your understanding of
03:26:22 4 the Pennsylvania requirements
03:26:22 5 regarding boundary preservation?

03:26:25 6 A. So the requirement, at least in
03:26:25 7 the Constitution, with respect to
03:26:25 8 state legislative districts uses very
03:26:31 9 strong language about preserving those
03:26:36 10 boundaries. And in particular with
03:26:39 11 respect to counties, cities,
03:26:43 12 incorporated towns, boroughs and
03:26:46 13 townships and wards.

03:26:46 14 Q. And did you evaluate the math
03:26:48 15 and science map and the other maps
03:26:51 16 submitted to the Court to see how they
03:26:55 17 performed with respect to each of
03:26:56 18 those boundary preservations?

03:26:57 19 A. Yes, I did.

03:26:59 20 Q. Okay.

03:26:59 21 And how many metrics did you
03:27:00 22 use to evaluate how those maps
03:27:02 23 performed with respect to boundary
03:27:04 24 preservation?

03:27:06 25 A. Four.

03:27:06 1 Q. Could you list them for the
03:27:08 2 Court, please?

03:27:09 3 A. Sure. So we computed the total
03:27:12 4 number of splits in the counties ---
03:27:15 5 sorry, split units, the number of
03:27:17 6 split units beyond those required for
03:27:19 7 population reasons, the number of
03:27:24 8 cases, which I think we referred to as
03:27:25 9 segments earlier today, as well as the
03:27:27 10 number of segments beyond those
03:27:33 11 required for population or to preserve
03:27:36 12 another larger boundary.

03:27:36 13 Q. Okay.

03:27:37 14 And starting with counties,
03:27:38 15 what did you conclude about how the
03:27:40 16 math and science map performed with
03:27:43 17 respect to maintaining political
03:27:44 18 boundaries of counties?

03:27:45 19 A. It did well on that measure.

03:27:49 20 Q. And did you evaluate the other
03:27:51 21 maps as well for that same metric?

03:27:53 22 A. I did, yes.

03:27:54 23 Q. And let's turn to your
03:28:00 24 responsive brief, to the top of page
03:28:03 25 five, to Table 2.

03:28:36 1 All right. Do you see this
03:28:36 2 table?

03:28:37 3 A. Yes.

03:28:37 4 Q. Okay.

03:28:37 5 And can you please summarize
03:28:40 6 for the Court what this table shows?

03:28:42 7 A. So this table shows three of
03:28:45 8 those measures that I just mentioned,
03:28:46 9 so the top row is just the number of
03:28:48 10 counties that were split by the
03:28:51 11 various plans submitted by the
03:28:52 12 parties. So this is just the number
03:28:54 13 of counties that intersected at least
03:29:01 14 two districts. The second row shows
03:29:02 15 the number of sort of what we call
03:29:04 16 non-intact counties, which are those
03:29:05 17 split more times than is required by
03:29:07 18 their population total. And then, the
03:29:09 19 final row shows the number of pieces
03:29:12 20 with the number of times the districts
03:29:15 21 intersect those counties, again
03:29:18 22 accounting for pieces that must exist
03:29:20 23 because of population balance.

03:29:22 24 Q. Okay.

03:29:23 25 Can you explain to the Court

03:29:24 1 what you mean by the number of county
03:29:25 2 pieces beyond those required for
03:29:27 3 population?

03:29:28 4 A. Sure. So for example,
03:29:33 5 Philadelphia County has a population
03:29:34 6 that's equal to about 2.1
03:29:37 7 Congressional Districts, and so in a
03:29:38 8 population balance plan there must be
03:29:40 9 at least three districts that touch
03:29:44 10 that plan --- or that county.

03:29:45 11 Similarly Allegheny and
03:29:47 12 Montgomery Counties each have more
03:29:48 13 population than a single district, and
03:29:51 14 so have to be split into at least two
03:29:53 15 pieces, and so this measure accounts
03:29:55 16 for that by not sort of counting it
03:30:01 17 against the map for splitting those
03:30:03 18 units, as required by population
03:30:05 19 reasons.

03:30:05 20 Q. And what are the types of
03:30:07 21 municipalities moving on from counties
03:30:10 22 that the Pennsylvania Constitution
03:30:11 23 says should not be split unless
03:30:14 24 absolutely necessary?

03:30:16 25 A. So it specifically mentions

03:30:16 1 cities, incorporated towns, boroughs
03:30:19 2 and townships.

03:30:22 3 Q. Okay.

03:30:22 4 And how did the math and
03:30:24 5 science map perform in terms of
03:30:26 6 municipality splits?

03:30:27 7 A. So --- sorry --- it performed
03:30:32 8 very well in that measure. So it
03:30:32 9 split cities, sort of the minimum
03:30:36 10 amount possible. That's also true for
03:30:38 11 the sole incorporated town. It split
03:30:41 12 very few boroughs and following the
03:30:42 13 example of the 2018 plan, only split
03:30:45 14 boroughs in places where the borough
03:30:45 15 itself overlapped with a county
03:30:55 16 boundary and split fewer than the one
03:30:55 17 percent of the townships in the state.

03:30:57 18 Q. And what I put on the screen is
03:30:59 19 page six of your rebuttal report,
03:31:01 20 contains Table 3. Could you summarize
03:31:04 21 for the Court how the Gressman Math
03:31:08 22 and Science map, which is denoted as
03:31:10 23 GMS here, performs with respect to
03:31:13 24 municipality splits?

03:31:15 25 A. So across those four listed

03:31:18 1 types of municipalities in terms of
03:31:21 2 total splits, the mathematicians and
03:31:24 3 scientist plan splits fewer than any
03:31:27 4 of the other maps, and in particular
03:31:29 5 sort of achieves the lowest possible
03:31:31 6 value for cities. So Philadelphia,
03:31:33 7 the --- you know, city and county are
03:31:37 8 co-terminus, and it has a population
03:31:39 9 larger than two districts, so it has
03:31:40 10 to be split, but no other cities are
03:31:42 11 split in this plan. And so overall in
03:31:45 12 terms of the total number of splits
03:31:51 13 it's very small.

03:31:51 14 Q. Okay.

03:31:51 15 And did you also analyze the
03:31:52 16 performance of the max in terms of
03:31:56 17 ward splits?

03:31:57 18 A. I did, yes.

03:31:57 19 Q. And how did the math and
03:31:59 20 science map perform in terms of ward
03:32:03 21 splits?

03:32:03 22 A. The math and sciences plan
03:32:07 23 splits only 15 wards, which is the
03:32:10 24 smallest out of any of the plans
03:32:12 25 proposed by parties.

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Q. Okay.

And did you then analyze the total number of split political subdivisions in each of the maps?

A. I did, yes.

Q. Okay.

And is that what is reflected in Table 6 of your report?

A. That's correct.

Q. Okay.

So there's going to be a number of witnesses testifying about political subdivision splits in the different maps, what, in your opinion, are the most salient metrics that will help the Court understand how the maps perform relative to each other in terms of protecting and preserving political subdivisions?

A. So I think it's very helpful to sort of look at the sort of sum of the splits across the six classes that are specifically listed in the Constitution. Particularly because you can see the potential for, you

03:33:12 1 know, perhaps trade-offs between
03:33:14 2 those, splitting fewer counties with
03:33:16 3 being forced to split, more
03:33:18 4 municipalities in order to achieve
03:33:20 5 population balance. And so looking at
03:33:23 6 sort of all those splits together,
03:33:24 7 which is done in the bottom row of
03:33:28 8 this table allows you to sort of
03:33:29 9 account for those trade-offs.

03:33:31 10 Q. And just for the record, are
03:33:32 11 you referring to Table 6 of your
03:33:34 12 rebuttal report?

03:33:35 13 A. Yes, I am.

03:33:37 14 Q. Okay.

03:33:41 15 And can I ask you to explain to
03:33:44 16 the Court what is reflected in Table 7
03:33:47 17 of your rebuttal report?

03:33:49 18 A. So in addition to looking at
03:33:51 19 just the number of splits of the
03:33:52 20 units, as mentioned before it's also
03:33:55 21 helpful to look at the number of
03:33:56 22 pieces to make sure that it's not the
03:33:59 23 case --- for example, you know, a
03:34:00 24 single unit is getting split a whole
03:34:02 25 bunch of times, but only counting once

03:34:05 1 under the splits measurement, and so
03:34:05 2 this table reports on those values
03:34:08 3 across, again, the sort of six listed
03:34:11 4 types of political boundaries, and
03:34:15 5 again, computes sort of the total
03:34:15 6 number of pieces beyond those required
03:34:19 7 before.

03:34:19 8 Q. And how does the Gressman Math
03:34:21 9 and Science map perform with respect
03:34:25 10 to pieces relative to the other maps?

03:34:27 11 A. Very well. So it's tied for
03:34:33 12 first on this measure.

03:34:33 13 Q. Okay.

03:34:34 14 Can you --- let's talk about
03:34:35 15 compactness. Did you evaluate how the
03:34:38 16 Gressman Math and Science map performs
03:34:41 17 relative to the other maps with
03:34:43 18 respect to compactness?

03:34:44 19 A. Yes, I did.

03:34:44 20 Q. Okay.

03:34:44 21 And were you here earlier when
03:34:47 22 Doctor Rodden testified about his
03:34:49 23 metrics for compactness?

03:34:51 24 A. Yes, I was.

03:34:51 25 Q. And did you agree with his

03:34:53 1 definitions as to those metrics?

03:34:55 2 A. Yes.

03:34:56 3 Q. And did you also evaluate the
03:35:00 4 different maps using multiple
03:35:03 5 different metrics to evaluate
03:35:05 6 compactness?

03:35:05 7 A. Yes, that's correct. Like
03:35:07 8 Doctor Rodden --- sorry.

03:35:07 9 Q. Why did you do that?

03:35:12 10 A. Yes. So I think it's --- it's
03:35:12 11 important to note that single measure
03:35:14 12 of compactness captures everything
03:35:14 13 that is sort of meant by that, that
03:35:19 14 word in terms of geographic regularity
03:35:20 15 of the districts, and so it's
03:35:20 16 important to look at a variety of
03:35:23 17 measures.

03:35:23 18 Q. Okay.

03:35:24 19 And based on the measures that
03:35:25 20 you used, how did the Gressman Math
03:35:28 21 and Science map perform in terms of
03:35:30 22 compactness?

03:35:31 23 A. So it performs well as sort of
03:35:33 24 across the measures.

03:35:35 25 Q. Okay.

03:35:36 1 And if you know, how did the
03:35:37 2 Gressman Math Science map compare to
03:35:44 3 the compactness scores of the map that
03:35:44 4 was adopted by the Supreme Court of
03:35:47 5 Pennsylvania in 2018?

03:35:48 6 A. So on three of the four metrics
03:35:48 7 that I computed, it outperforms the
03:35:51 8 2018 map, so that's the Polsby-Popper
03:35:54 9 score, the mean Convex Hull and the
03:35:59 10 cut edges measure. And it's sort of
03:36:02 11 got a slightly smaller value to a .03
03:36:03 12 on the mean REOC score.

03:36:06 13 Q. Could you explain to the Court
03:36:09 14 how compactness relates to the other
03:36:11 15 redistricting criteria, for example,
03:36:14 16 political boundary subdivisions?

03:36:17 17 A. So in redistricting there's
03:36:19 18 lots of examples of potential
03:36:21 19 trade-offs between the metrics and
03:36:23 20 between the criteria. And in a
03:36:25 21 situation like this one where many of
03:36:28 22 the plans are preserving lots of
03:36:30 23 political boundaries, the compactness
03:36:33 24 measures that are measuring sort of
03:36:35 25 the external perimeters of those

03:36:38 1 boundaries are to a large extent sort
03:36:39 2 of controlled by the municipal
03:36:41 3 boundaries themselves, because they
03:36:42 4 perform the outer boundaries of the
03:36:46 5 districts. And so given that, there
03:36:47 6 can be some tension between these,
03:36:50 7 depending on the shapes of the
03:36:51 8 municipal boundaries that are
03:36:54 9 preserved.

03:37:04 10 Q. So what I put on the screen is
03:37:15 11 from your opening report on page 21,
03:37:16 12 it's Figure 6. What is this image?

03:37:17 13 A. So this image is showing
03:37:19 14 Allegheny County, which I mentioned
03:37:21 15 has to be touched by at least two
03:37:23 16 districts in all of the plans, and
03:37:25 17 also has the boundary of Pittsburgh,
03:37:28 18 which is sort of the center of
03:37:29 19 Allegheny County and also the second
03:37:30 20 largest city in the state highlighted.
03:37:33 21 And the overlays here, the colors
03:37:36 22 represent two of the maps and sort of
03:37:38 23 how they interact with Allegheny
03:37:38 24 County.

03:37:40 25 So the left shows the

03:37:41 1 mathematician and scientist plan,
03:37:48 2 which preserves Pittsburgh, and in
03:37:48 3 particular with respect to compactness
03:37:48 4 then, also preserves all of its sort
03:37:51 5 of legally boundary components. The
03:37:56 6 right panel shows the map proposed by
03:38:00 7 the Governor overlaid here that splits
03:38:00 8 Pittsburgh and has a much smoother
03:38:03 9 boundary in that region.

03:38:05 10 Q. Okay.

03:38:06 11 So how were the maps that are
03:38:07 12 before the Court that keep Pittsburgh
03:38:09 13 whole affected in their compactness
03:38:12 14 score by keeping Pittsburgh whole?

03:38:15 15 A. So if you look at, for example,
03:38:16 16 the Polsby-Popper scores of the two
03:38:21 17 districts that intersect Allegheny
03:38:23 18 County across all of the plans there's
03:38:25 19 a large difference between those
03:38:27 20 scores on plans that keep Pittsburgh
03:38:32 21 whole and hence sort of include those
03:38:34 22 boundary components that are a little
03:38:36 23 irregular and plans that split
03:38:39 24 Pittsburgh and have higher
03:38:45 25 Polsby-Popper scores.

03:38:46 1 Q. And notwithstanding that the
03:38:46 2 mathematicians and scientists keep
03:38:47 3 Pittsburgh whole, what is your bottom
03:38:48 4 line conclusion about their map's
03:38:51 5 compactness scores?

03:38:52 6 A. That it is compact and that the
03:38:53 7 scores themselves are quite good.

03:38:56 8 Q. Okay.

03:38:57 9 Now, at the outset of your
03:38:58 10 testimony, I think, one of the six
03:38:59 11 factors you evaluated you listed
03:39:02 12 partisan fairness.

03:39:03 13 Can you explain how you define
03:39:06 14 partisan fairness from a mathematical
03:39:10 15 perspective?

03:39:10 16 A. So the measures of partisan
03:39:12 17 fairness that I looked at are rooted
03:39:15 18 in trying to model and understand ways
03:39:17 19 in which a particular plan treats
03:39:20 20 voters from the two major parties, and
03:39:20 21 particularly trying to show that they
03:39:20 22 are treated the same, that they're
03:39:29 23 treated fairly.

03:39:29 24 Q. Okay.

03:39:30 25 And is there any one metric

03:39:32 1 that allows you to fully assess a map
03:39:35 2 partisan fairness?

03:39:37 3 A. No.

03:39:37 4 Q. So what kinds of metrics did
03:39:39 5 you use to assess the map's respective
03:39:42 6 partisan fairness?

03:39:43 7 A. So I took two and broad
03:39:46 8 perspectives. One was to analyze just
03:39:48 9 sort of majoritarian translation or
03:39:56 10 responsiveness so the ability of
03:39:57 11 voters from each party to translate a
03:39:58 12 majorities of the votes to majorities
03:39:59 13 of the seats. I also looked at
03:40:02 14 expected measures of partisanship
03:40:02 15 symmetry, which, again, you're
03:40:08 16 supposed to measure at the extent to
03:40:09 17 which a plan is treating the voters
03:40:09 18 from each party fairly.

03:40:09 19 Q. Okay.

03:40:12 20 And how did you begin that
03:40:14 21 analysis?

03:40:14 22 A. So to start with, we needed
03:40:16 23 some election data to evaluate and so
03:40:19 24 I selected statewide general
03:40:23 25 elections.

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Q. And why did you select statewide general elections?

A. So as we're considering various different types of boundaries, we need to have sort of a way to compare them effectively, and so because everybody was voting for the same candidates in those elections, using those statewide results allows us to sort of investigate what happens as we vary the boundaries.

Q. Okay.

And can you explain to the Court which elections you used?

A. Yes. So I looked at in general elections over the last decades, so starting in 2012 and going up through 2020, I took the Presidential Gubernatorial, senatorial races as well as the State Auditor, State Attorney General and one State Supreme Court race from 2017.

Q. Why did you include the State Supreme Court race from 2017 in your approach?

03:41:21 1 A. So one of the reasons for
03:41:22 2 looking at lots of different elections
03:41:24 3 is to get a sense for how the voters
03:41:27 4 actually sort of act in different
03:41:29 5 situations, and across that set of
03:41:31 6 elections, not including the State
03:41:34 7 Supreme Court race, you have a more
03:41:38 8 Democratic favoring elections than
03:41:40 9 Republican ones. And the Republican
03:41:42 10 wins themselves are pretty close, so
03:41:44 11 they're all fairly narrow wins. The
03:41:47 12 State Supreme Court race was one that
03:41:48 13 had sort of a larger Republican wins
03:41:51 14 with over five percent margin that was
03:41:53 15 used to investigate the effects of
03:41:58 16 just sort of different distribution of
03:41:58 17 voters than the other elections.

03:42:00 18 Q. Okay.

03:42:00 19 And so you take the results of
03:42:01 20 these 18 statewide elections and what
03:42:04 21 do you do with the data?

03:42:06 22 A. So you have this data, the
03:42:09 23 level of sort of voting districts
03:42:11 24 where it's initially aggregated, and
03:42:12 25 then you sort of add that up within

03:42:15 1 the district boundaries themselves to
03:42:16 2 get within each of those districts,
03:42:19 3 how many people voted for each of the
03:42:23 4 two major party candidates in each
03:42:24 5 election.

03:42:25 6 Q. Okay.

03:42:25 7 And so how do you know that
03:42:27 8 because people in a particular area
03:42:29 9 voted Democrat for Attorney General or
03:42:32 10 for Governor that they would also vote
03:42:36 11 Democrat in a congressional election?

03:42:40 12 A. So you definitely don't
03:42:41 13 perfectly. It's not a case that this
03:42:42 14 is some sort of magic crystal ball
03:42:46 15 that lets you see in the future, but
03:42:46 16 this is a good representation of that,
03:42:46 17 so this is a commonly used method in
03:42:52 18 the field, it's one that's been, you
03:42:55 19 know, validated in various ways. And
03:42:57 20 like I said, allows us to do this
03:42:59 21 comparison in using the actual votes
03:43:01 22 of actual Pennsylvania residents where
03:43:08 23 they live to try to understand how
03:43:08 24 they're distributed around the state.

03:43:08 25 Q. Okay.

03:43:08 1 And so you take the collection
03:43:10 2 of data from these 18 statewide
03:43:12 3 elections and you map it onto the map
03:43:15 4 that you are assessing.

03:43:16 5 Is that correct?

03:43:17 6 A. Yes, that is correct.

03:43:18 7 Q. Okay.

03:43:18 8 And what are you looking for?

03:43:21 9 A. So to start with, you know, the
03:43:23 10 first thing that we're going to
03:43:25 11 compute is just the sort of the
03:43:27 12 percentage of Democratic voters in
03:43:30 13 each of those regions --- or each of
03:43:32 14 those districts and so that's going to
03:43:33 15 get us a set of 17 percentages per
03:43:37 16 election, one for each district. And
03:43:37 17 then from those, we'll say the ones
03:43:40 18 where the Democratic party got more
03:43:42 19 than 50 percent of the votes, you
03:43:42 20 know, we're going to count those as
03:43:47 21 wins for the Democratic party. Ones
03:43:48 22 that got less than 50 percent of the
03:43:50 23 votes, we're going to count those as
03:43:52 24 wins for the Republican party, and so
03:43:54 25 then for each election we can measure

03:43:58 1 the number of seats in a specific plan
03:44:03 2 that would have been won by each
03:44:03 3 party.

03:44:03 4 Q. And what would you expect to
03:44:05 5 see from a map that treats voters from
03:44:08 6 each political party fairly?

03:44:09 7 A. So the first criterion and sort
03:44:09 8 of the starting place for all of the
9 measures of partisan fairness is this
10 idea of majority representation that
11 even small majorities, hopefully, in
12 terms of the votes should be able to
13 converted into majorities of the seats
14 of the representation.

15 Q. Okay.

03:44:33 16 And did you use this approach
03:44:35 17 to analyze the Gressman Math and
03:44:40 18 Science map and the other maps for
03:44:44 19 their partisan fairness?

03:44:45 20 A. Yes.

03:44:45 21 Q. And how did the Gressman Math
03:44:45 22 and Science map perform when you used
03:44:47 23 this approach to measure for partisan
03:44:53 24 fairness?

03:44:53 25 A. So of the 18 elections that I

03:44:55 1 considered, the Gressman Math and
03:44:56 2 Science's map achieved a majoritarian
03:44:59 3 result in 15 of the 18 elections,
03:45:02 4 which is quite a good score,
03:45:03 5 particularly because there are several
03:45:05 6 very close elections in the data set,
03:45:08 7 particularly in recent years, and the
03:45:12 8 map performs effectively at allowing
03:45:14 9 majorities of voters to sort of
03:45:16 10 convert that into a majority of the
03:45:20 11 seats.

03:45:20 12 Q. And what happened in the three
03:45:22 13 elections where a majority of the
03:45:23 14 votes didn't translate into a majority
03:45:26 15 of the seats?

03:45:27 16 A. So there were two cases the
03:45:29 17 auditors race in 2012 and the
03:45:32 18 auditor's race in 2016, or the
03:45:35 19 statewide candidate, the one was a
03:45:38 20 Democrat, but that under the Gressman
03:45:39 21 Math and Sciences plan, the
03:45:41 22 Republicans would have won a majority
03:45:44 23 of the Districts. And there was also
03:45:45 24 one plan or one election, the senate
03:45:50 25 election in 2016 where the Republican

03:45:52 1 candidate won the statewide vote, but
03:45:55 2 the Democrats would have gotten a
03:45:58 3 majority of the seats under the
03:45:59 4 Gressman map.

03:46:01 5 Q. And how did the other maps you
03:46:03 6 evaluated perform using this approach?

03:46:09 7 A. So the Gressman map was tied
03:46:11 8 for the best in terms of the total
03:46:12 9 number of outcomes of 15 out of 18,
03:46:15 10 and also, you know, had this sort of
03:46:17 11 good sign that it treated the parties
03:46:18 12 as equally as possible in deviations
03:46:21 13 from that, so having some were
03:46:24 14 deviated for the Republican, some were
03:46:26 15 deviated for the Democrats, and that
03:46:29 16 was not a case across all of the maps.
03:46:31 17 So in particular, I think, four of the
03:46:36 18 plans had cases where all of the
03:46:38 19 deviations favored one party.

03:46:41 20 Q. Which of the maps performed the
03:46:43 21 worst in terms of partisan fairness
03:46:48 22 when using this approach to test for
03:46:52 23 partisan fairness?

03:46:52 24 A. So under this approach, those
03:46:56 25 were the two Reschenthaler maps, each

03:46:57 1 of which had six elections where the
03:47:01 2 Democratic candidate won the statewide
03:47:01 3 majority, but the sort of Republican
03:47:05 4 party would have won a majority of the
03:47:06 5 seats.

03:47:06 6 Q. And how did the House
03:47:08 7 Republicans map perform using this
03:47:11 8 approach?

03:47:11 9 A. So it was a similar approach to
03:47:15 10 the Reschenthaler maps, in that it ---
03:47:15 11 there were five elections where it
03:47:17 12 failed to convert majorities from the
03:47:20 13 Democratic party and no elections
03:47:25 14 where a Republican candidate won the
03:47:27 15 statewide race, but the Democrats
03:47:30 16 would have gotten the majority of the
03:47:33 17 seats.

03:47:33 18 Q. At the beginning of your
03:47:34 19 testimony you mentioned --- or on
03:47:35 20 partisan fairness you mentioned
03:47:35 21 partisan symmetry. Can you explain to
03:47:35 22 the Court what you mean by partisan
03:47:42 23 symmetry?

03:47:42 24 A. Yeah. So the idea here sort of
03:47:43 25 extends the original idea of

03:47:47 1 majoritarianism to try to evaluate how
03:47:50 2 the plans treat voters from each party
03:47:54 3 symmetrically, perhaps under sort of
03:47:55 4 shifts of the underlying voting data.

03:47:58 5 Q. What was the first technique
03:48:00 6 that you used to evaluate the partisan
03:48:03 7 symmetry of the different maps?

03:48:08 8 A. As with the previous expert I
03:48:10 9 evaluated the difference between the
03:48:13 10 mean and median score.

03:48:14 11 Q. Okay.

03:48:25 12 I'm displaying on the screen,
03:48:27 13 from your rebuttal report, on page 13,
03:48:30 14 Figure 1, and I think it might be
03:48:31 15 helpful to just walk through it for
03:48:33 16 the Court.

03:48:33 17 So what do - what do the dots
03:48:35 18 on this figure represent?

03:48:40 19 A. So each row of dots is
03:48:43 20 associated to one of the proposed
03:48:48 21 plans by the parties and then each
03:48:51 22 individual dot corresponds to that
03:48:51 23 mean median difference for one of the
03:48:53 24 18 elections. So there's 18 dots in
03:48:55 25 each row here. And the new median

03:48:59 1 score is signed, so here positive
03:49:01 2 values that are colored blue indicate
03:49:04 3 elections under that particular map
03:49:06 4 that would have had favorable values
03:49:08 5 for the Democratic party under the
03:49:14 6 score, whereas the red values indicate
03:49:16 7 elections that would have had a
03:49:16 8 favorable value for the Republican
03:49:20 9 party for the score.

03:49:20 10 Q. And what does the purple line
03:49:24 11 down the middle represent?

03:49:24 12 A. So the purple line is centered
03:49:25 13 at zero, which is the ideal value
03:49:27 14 under this measure, so the idea being
03:49:32 15 that there's sort of a transition in
03:49:33 16 sort of majority of the representation
03:49:38 17 right at zero.

03:49:43 18 Q. Okay.

03:49:43 19 And so what does that show you
03:49:44 20 about the partisan fairness of the
03:49:46 21 various maps that are under
03:49:48 22 consideration?

03:49:49 23 A. So there's two things we're
03:49:50 24 looking for here. The first is that
03:49:53 25 because we have this ideal value of

03:49:55 1 zero, and it's sort of the best score
03:49:57 2 you can achieve on this metric, we
03:49:59 3 want to see points that are close to
03:50:01 4 zero and being representing sort of
03:50:03 5 results that are more fair. And so
03:50:05 6 the idea there is that values on
03:50:09 7 either side that are closer to zero
03:50:13 8 treat --- are better at treating the
03:50:14 9 voters from each party equally.

03:50:16 10 So in corresponding the values
03:50:18 11 that are further away on either side
03:50:20 12 correspond to sort of less fair
03:50:20 13 elections under this metric.

03:50:25 14 The other thing we sort of
03:50:26 15 expect to see in a reasonably fair
03:50:28 16 plan is values on both sides of zero,
03:50:31 17 sort of representing that under some
03:50:34 18 of those elections that favored one
03:50:34 19 party on other elections favoring
03:50:40 20 another party.

03:50:40 21 Q. Okay.

03:50:40 22 And how did the Gressman Math
03:50:42 23 and Science map perform in your
03:50:43 24 evaluation of mean median scores?

03:50:46 25 A. So it performs very well. So

03:50:48 1 absolutely as well as in relation to
03:50:48 2 the other parties, so it has some
03:50:51 3 values, some elections that favor both
03:50:56 4 parties, and it has sort of the small
03:50:58 5 range of values from the smallest
03:51:01 6 value that it observes across these
03:51:03 7 elections up to the largest ones.

03:51:05 8 Q. And which maps performed the
03:51:07 9 most poorly on mean median score?

03:51:10 10 A. So there's, you know, a couple
03:51:12 11 of ways to measure this, as I said.
03:51:14 12 The first one is we can see that the
03:51:17 13 two Reschenthaler maps and the House
03:51:25 14 Republicans map over all of the
03:51:25 15 elections have Republican favoring
03:51:26 16 values, so there weren't sort of
03:51:26 17 differences between the two there.
03:51:27 18 They also had fairly large ranges,
03:51:31 19 which are reported in the next table,
03:51:32 20 I think, in the report.

03:51:34 21 Q. Okay.

03:51:35 22 What other techniques did you
03:51:36 23 use to assess partisan symmetry?

03:51:39 24 A. The final technique --- and
03:51:42 25 like the mean median score, this was

03:51:44 1 one that was sort of referenced
03:51:45 2 explicitly in the discussion the
03:51:48 3 League of Women Voters was the
03:51:48 4 efficiency gap measure.

03:51:52 5 Q. Okay.

03:51:52 6 What does the efficiency gap
03:51:56 7 measure?

03:51:56 8 A. So the efficiency gap is
03:51:58 9 designed to sort of capture the
03:51:58 10 difference in the number of wasted
03:52:03 11 votes between the two parties in a
03:52:05 12 given election.

03:52:06 13 Q. Can you explain to the Court,
03:52:08 14 please, what it means for votes to be
03:52:10 15 wasted?

03:52:11 16 A. So it's defined in the sort of
03:52:14 17 original paper that introduced the
03:52:16 18 efficiency gap. There's two ways that
03:52:17 19 a vote can count as wasted in a
03:52:17 20 particular election. So the first is
03:52:21 21 it counts any vote that goes towards a
03:52:23 22 candidate that lost in a particular
03:52:23 23 district as wasted, because it didn't
03:52:27 24 go for a winning candidate. The other
03:52:28 25 way a vote can be wasted if it's for a

03:52:31 1 winning candidate, somebody who won
03:52:35 2 the district but was beyond those that
03:52:35 3 were actually needed to win a
03:52:39 4 district.

03:52:39 5 Q. And if there are a lot of
03:52:43 6 wasted votes for one party but not the
03:52:48 7 other, what does that tell you about a
03:52:49 8 map's partisan fairness?

03:52:49 9 A. So that's a sign or at least a
03:52:49 10 measure that's capturing something
03:52:49 11 about unequal treatment that voters
03:52:54 12 from parties are sort of wasting votes
03:52:57 13 in different quantities.

03:52:59 14 Q. I'm now displaying on the
03:53:01 15 screen, from your rebuttal report,
03:53:03 16 Figure 2, which appears on page 14.
03:53:06 17 Again, can you just explain for the
03:53:07 18 Court what the dots represent on this
03:53:09 19 figure?

03:53:10 20 A. So here the dots represent the
03:53:12 21 efficiency gap scores. Again, the
03:53:14 22 rows correspond to the proposed plans
03:53:16 23 by the parties and each dot
03:53:16 24 corresponds to the efficiency gap
03:53:22 25 score for that proposed plan in one of

03:53:26 1 the 18 elections.

03:53:26 2 Q. And what does the line down the
03:53:28 3 middle on this chart represent?

03:53:33 4 A. So again, that line is posted
03:53:33 5 zero, which is the ideal value under
03:53:34 6 this measure that would have sort of
03:53:35 7 exactly the same number of wasted
03:53:36 8 votes for both parties.

03:53:38 9 Q. Okay.

03:53:39 10 And what does this figure
03:53:41 11 demonstrate about the relative
03:53:42 12 partisan fairness of the maps under
03:53:45 13 consideration?

03:53:46 14 A. So the same two criteria to try
03:53:50 15 to understand how the maps are
03:53:54 16 performing here are true from the mean
03:53:54 17 median score. So we'd like to see in
03:53:56 18 maps that are fair, lots of values
03:53:58 19 that are closer and closer around zero
03:54:00 20 as well as sort of a small overall
03:54:05 21 range of values that are observed
03:54:05 22 across the maps.

03:54:06 23 Q. Okay.

03:54:06 24 And how did the math and
03:54:08 25 science map perform with respect to

03:54:10 1 its efficiency gap score?

03:54:12 2 A. So as with the median score it
03:54:16 3 performs very well. It has values for
03:54:18 4 both parties as a sort of small range
03:54:20 5 of overall values, and the values
03:54:22 6 themselves are sort of clustered near
03:54:25 7 zero, particularly relative to the
03:54:30 8 other collection of maps.

03:54:30 9 Q. Okay.

03:54:31 10 Are you aware that several
03:54:33 11 experts have evaluated maps using a
03:54:35 12 website called Plan Score?

03:54:37 13 A. Yes, I am.

03:54:39 14 Q. And can you tell the Court what
03:54:41 15 Plan Score is?

03:54:42 16 A. Plan Score is a website that's
03:54:47 17 designed to make it easy to evaluate,
03:54:49 18 at least some aspects of the expected
03:54:50 19 partisan performance of districting
03:54:52 20 plans. So you upload a shape file to
03:54:54 21 the website, it has a collection of
03:54:55 22 historical data as well as sort of a
03:54:58 23 very clever statistical model that it
03:55:01 24 uses to evaluate a collection of
03:55:07 25 partisan symmetry measures for that

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proposed plan.

Q. And after reviewing the other expert reports, did you do anything to test their conclusions about how maps performed on Plan Score?

A. Yes, I did.

Q. And can you tell the Court what you did?

A. So I took each of the shape files for the proposed maps of the parties and put them up on Plan Score to get it sort of report evaluations of the four person metrics that it reports.

Q. And what did that show you?

A. So across all of the four metrics and across all of the plans, the mathematicians and scientists map performed the best with exactly one exception. So the efficiency gap measure of the House Democratic map was --- had a score of 1.2 compared to a score of 1.4 and mathematicians and scientists plan, but for every other plan and on every other measure, the

03:56:02 1 mathematician and scientist plan got
03:56:13 2 the best score.

03:56:13 3 Q. Okay.

03:56:13 4 So if you were evaluating all
03:56:16 5 of these metrics together together,
03:56:16 6 what bottom line conclusions did you
03:56:16 7 draw about the partisan fairness of
03:56:20 8 the math and science map?

03:56:20 9 A. So that the math and sciences
03:56:24 10 map performs remarkably well on these
03:56:26 11 measures, and in particular its
03:56:29 12 ability to translate even small
03:56:32 13 majorities for both parties into sort
03:56:32 14 of electoral majorities is, you know,
03:56:34 15 a very good sign about its fairness.
03:56:38 16 You know, the plan score results
03:56:38 17 themselves are very strong and
03:56:40 18 demonstrate that, you know, the map
03:56:40 19 under a broad collection of symmetry
03:56:40 20 measures performs very close to the
03:56:50 21 ideal values and better than the other
03:56:50 22 proposed maps, and the same is true
03:56:55 23 for the specific details in my report.

03:56:57 24 Q. And so taking all of the
03:56:58 25 metrics together is there any map that

03:57:01 1 performs better than the Gressman Math
03:57:06 2 Science map with respect to partisan
03:57:08 3 fairness?

03:57:08 4 A. No, there's not.

03:57:09 5 Q. Did you perform an ensemble
03:57:09 6 analysis to test the map's partisan
03:57:17 7 fairness?

03:57:17 8 A. No, I did not.

03:57:17 9 Q. Why not?

03:57:18 10 A. So I didn't think it was
03:57:20 11 necessary here. You know, ensemble
03:57:25 12 analyses are great for determining
03:57:28 13 facts about, you know, expected values
03:57:28 14 of distributions based on modeling
03:57:29 15 decisions over the state, but what we
03:57:32 16 have here, and particularly in my
03:57:34 17 initial analysis of the mathematician
03:57:36 18 and scientist map, it achieves, you
03:57:41 19 know, very good values on the absolute
03:57:43 20 scorers. And given they're
03:57:43 21 interpretations as actual measurements
03:57:45 22 of partisan fairness, the fact that
03:57:47 23 they achieve those values doesn't need
03:57:50 24 to be excused by trying to understand
03:57:56 25 a different distribution.

03:57:56 1 Q. Did you review an expert report
03:57:59 2 prepared by Professor Barber?

03:58:00 3 A. Yes, I did.

03:58:01 4 Q. And did you evaluate his
03:58:07 5 ensemble analysis?

03:58:07 6 A. To the extent it was possible
03:58:10 7 from the information provided in the
03:58:13 8 report.

03:58:13 9 Q. Do you agree with his
03:58:14 10 conclusion about what his ensemble
03:58:17 11 analysis shows?

03:58:18 12 A. No, I do not.

03:58:18 13 Q. So for the reason that I just
03:58:21 14 mentioned that, you know, looking at
03:58:23 15 this plan you can see that it achieves
03:58:27 16 excellent scores on the partisan
03:58:29 17 fairness measures. And so the fact
03:58:34 18 that you can draw lots of plans that
03:58:37 19 get poor scores on those measures,
03:58:39 20 doesn't mean that a plan that gets
03:58:41 21 better scores should be, you know,
03:58:47 22 discarded.

03:58:47 23 Q. Okay.

03:58:48 24 Did you evaluate how the
03:58:49 25 different maps performed with respect

03:58:51 1 to pairing of incumbents?

03:58:57 2 A. Yes, I did.

03:58:58 3 Q. And why did you evaluate that?

03:58:59 4 A. So this is, again, one of these
03:59:01 5 features of sort of complexity of
03:59:04 6 redistricting analysis that it's
03:59:04 7 certainly possible that by choosing
03:59:07 8 which incumbents are paired in which
03:59:10 9 districts and which party they come
03:59:12 10 from, that there can be, you know,
03:59:14 11 unequally distributed harms from those
03:59:22 12 pairings in the proposed plans.

03:59:22 13 Q. Okay.

03:59:22 14 And how did the Gressman Math
03:59:28 15 and Science map perform with respect
03:59:28 16 to the pairing of incumbents?

03:59:29 17 A. So it does the best possible,
03:59:30 18 so because Pennsylvania is moving from
03:59:32 19 18 to 17 districts, there has to be at
03:59:36 20 least one repairing in each of the
03:59:40 21 plans. But there are two current
03:59:41 22 representatives who are not running
03:59:42 23 for re-election this year, and one of
03:59:44 24 those is one of the two in a paired
03:59:47 25 district in the mathematicians and

03:59:48 1 scientist plan.

03:59:49 2 Q. And how did that compare to the
03:59:51 3 other maps that you looked at?

03:59:53 4 A. So all of the other maps had at
03:59:56 5 least one district to where there are
03:59:57 6 two current representatives who are
04:00:00 7 seeking re-election that are paired.

04:00:06 8 Q. And was this, in your view, a
04:00:09 9 potential sign of partisan unfairness
04:00:11 10 in any of the maps?

04:00:12 11 A. There are some imbalances in
04:00:12 12 terms of the numbers of candidates
04:00:15 13 from each party that are paired in
04:00:17 14 some of the maps.

04:00:18 15 Q. Can you provide the Court with
04:00:19 16 some examples?

04:00:20 17 A. Yeah, sure. Sorry. So for
04:00:22 18 example, in the Senate Democratic's
04:00:26 19 map two among the sort of paired
04:00:30 20 candidates there are three Republicans
04:00:31 21 and one Democrat. A similar thing is
04:00:33 22 the true for the Rechenhalter first
04:00:37 23 map, but in reverse so there's three
04:00:38 24 Democrats and one Republican paired
04:00:41 25 there.

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Q. Okay.

Let's talk now about minority electoral opportunity. Why did you evaluate that?

A. So I evaluated that to, you know, understand sort of compliance with the Voting Rights Act as well as to sort of understand it is a traditional redistricting principle.

Q. Okay.

In Pennsylvania what is the minority citizen voting age population as of the latest census?

A. It's about one-fifth or 20 percent.

Q. So in a 17 district map, how many reasonably compact majority, minority electoral --- minority opportunity districts would you expect to see?

A. So you know .2 times 17 is a little over 3, so about 3.

Q. And your report discusses an analysis that you performed of minority electoral opportunity in the

04:01:45 1 math and science map, what did you
04:01:47 2 conclude about its creation of
04:01:49 3 effective minority districts?

04:01:51 4 A. I concluded that the three
04:01:55 5 districts in the plan, which are
04:01:57 6 Districts 2, 3 and 5 are all sort of
04:02:00 7 minority effective.

04:02:01 8 Q. Have you reviewed briefs from
04:02:03 9 the Republican intervenors suggesting
04:02:05 10 that the math and science map is a
04:02:08 11 racial gerrymander?

04:02:11 12 A. Yes.

04:02:11 13 Q. And did you see any evidence of
04:02:13 14 racial gerrymandering in the data
04:02:16 15 that's reflected in the math and
04:02:17 16 science map?

04:02:19 17 A. No, I did not.

04:02:20 18 Q. What would you expect to see in
04:02:22 19 a racial gerrymandering situation?

04:02:26 20 A. So you might expect to see
04:02:28 21 things like failures of compactness or
04:02:28 22 if the tentacles and claws reaching
04:02:33 23 out to grab, you know, particularly in
04:02:36 24 densely populated regions of minority
04:02:39 25 voters. You might also expect to see,

04:02:39 1 you know, particular numerical targets
04:02:43 2 that are drawn, and I didn't observe
04:02:44 3 any of that in those three districts.

04:02:49 4 Q. Okay.

04:02:50 5 And based on your expertise and
04:02:53 6 your analyses of all of the different
04:02:55 7 maps, which map in your view best
04:02:58 8 complies with Pennsylvania's
04:03:00 9 constitutional and also the federal
04:03:02 10 criteria for redistricting?

04:03:05 11 A. The mathematician and science
04:03:11 12 map.

04:03:11 13 ATTORNEY RING-AMUNSON:

04:03:12 14 Thank you.

04:03:16 15 ATTORNEY SENOFF:

04:03:17 16 Your Honor, David
04:03:17 17 Senoff. I'd just object to the last
04:03:17 18 question and answer as being ---
04:03:18 19 calling for this witness to opine on
04:03:20 20 the law.

04:03:21 21 ATTORNEY RING-AMUNSON:

04:03:21 22 Your Honor, my response
04:03:22 23 is that I asked him in his expert
04:03:24 24 opinion. He's been offered and
04:03:29 25 stipulated as an expert in

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redistricting.

ATTORNEY SENOFF:

But the question was whether or not the constitutional requirements as set forth in particular Pennsylvania case law, not whether it meets the standard in the industry, for example, or standards by which other redistricting plans are judged. It specifically asks a comparison to the Pennsylvania Constitution and the Supreme Court's decision of League of Women Voters.

JUDGE McCULLOUGH:

Counsel, either I need to have the question read back or you can restate the question.

ATTORNEY RING-AMUNSON:

I'm happy to restate the question, Your Honor.

JUDGE McCULLOUGH:

Okay.

BY ATTORNEY RING-AMUNSON:

Q. With respect to your evaluation of equal population, compactness,

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contiguity, respecting political subdivisions where unless absolutely necessary, partisan fairness and compliance with the Voting Rights Act, which map performed the best in your opinion as a redistricting expert?

A. The mathematician and scientist map.

ATTORNEY RING-AMUNSON:

Thank you.

JUDGE McCULLOUGH:

Thank you. So we'll proceed to Cross, and as we discussed we're just going to keep going back up to the top of the list. So Petitioner Carter.

ATTORNEY GORDON:

Matthew Gordon for the Carter Petitioners.

CROSS EXAMINATION

BY ATTORNEY GORDON:

Q. Good afternoon, Doctor DeFord.

A. Hi.

04:05:22 1 Q. Doctor DeFord, if I understand
04:05:23 2 you correctly, you did not perform an
04:05:25 3 evaluation of the core of retention
04:05:29 4 vis-a-vis the 2018 plan.

04:05:31 5 Is that correct?

04:05:31 6 A. That's correct.

04:05:32 7 Q. So you didn't do any analysis
04:05:34 8 of how much deviation the various
04:05:36 9 plans had from the 2018 plan?

04:05:39 10 A. That's correct.

04:05:40 11 Q. But you expressed some support
04:05:43 12 for the 2018 plan in your report
04:05:45 13 saying that it served as an effective
04:05:47 14 baseline for considering plans.

04:05:50 15 Correct?

04:05:51 16 A. That's correct. In particular
04:05:52 17 with respect to some of the decisions
04:05:54 18 that were made, you know,
04:05:58 19 prioritizing, say, borough splits over
04:05:58 20 county lines and things like that as
04:06:01 21 well.

04:06:01 22 Q. And you also opined in your
04:06:05 23 report, or you noted in your report
04:06:07 24 that the 2018 map was extensively
04:06:07 25 vetted and analyzed according to legal

04:06:12 1 and traditional redistricting
04:06:12 2 criteria.
04:06:12 3 Correct?
04:06:13 4 A. That's correct.
04:06:14 5 Q. And you said, and thus its
04:06:16 6 performance on metrics evaluating this
04:06:18 7 criteria can serve as a starting point
04:06:20 8 or baseline for identifying
04:06:22 9 potentially reasonable values for
04:06:24 10 plans created now.
04:06:25 11 Correct?
04:06:25 12 A. Yes, that's correct.
04:06:29 13 Q. I want to ask you a couple of
04:06:31 14 questions about subdivision splits.
04:06:33 15 If I understand correctly, you did not
04:06:35 16 evaluate precinct splits or VTD
04:06:40 17 splits.
04:06:40 18 Is that correct?
04:06:41 19 A. Yes, that's correct.
04:06:41 20 Q. You did evaluate the number of
04:06:48 21 borough splits.
04:06:49 22 Correct?
04:06:49 23 A. Yes.
04:06:50 24 Q. And I believe --- I want to
04:06:52 25 draw your attention to page 14 of your

04:06:54 1 initial report where you discussed the
04:06:56 2 borough splits. And at paragraph 42
04:06:56 3 here you first note that there are 955
04:06:56 4 boroughs in the state.

04:07:09 5 Correct?

04:07:09 6 A. Yes.

04:07:09 7 Q. And the GSM plan splits three
04:07:09 8 boroughs.

04:07:09 9 Correct?

04:07:11 10 A. Yes.

04:07:11 11 Q. And then you go on later in the
04:07:13 12 report on the next page, page 15,
04:07:15 13 paragraph 45, you say that the GSM map
04:07:21 14 split those three boroughs because it
04:07:23 15 was necessary to do so to preserve
04:07:26 16 county boundaries.

04:07:27 17 Do I have that right?

04:07:28 18 A. Yes, the borough boundary there
04:07:30 19 crosses the county boundary, and so if
04:07:33 20 those two counties are assigned in
04:07:35 21 different plans you have to make
04:07:36 22 decision to either split the borough
04:07:39 23 or split the county.

04:07:40 24 Q. And the GSM map made the
04:07:42 25 decision to split the borough instead

04:07:45 1 of the county?

04:07:46 2 A. That's correct. Following the
04:07:46 3 choice made in the 2018 plan, which
04:07:48 4 splits six boroughs but all for the
04:07:51 5 same reason.

04:07:51 6 Q. I'm sorry, I didn't hear
04:07:51 7 the ---.

04:07:52 8 A. I'm sorry all along --- all for
04:07:55 9 the same reason. They all sort of
04:07:57 10 cross the county line.

04:07:57 11 Q. And you said that you decided
04:08:00 12 in your analysis to not count these
04:08:05 13 three borough splits against the GSM
04:08:05 14 plan because they occurred along
04:08:05 15 county lines.

04:08:09 16 Correct?

04:08:09 17 A. That's correct.

04:08:10 18 Q. And you also noted that
04:08:11 19 counties are considered to be a more
04:08:13 20 fundamental political unit than
04:08:15 21 boroughs.

04:08:15 22 Correct?

04:08:16 23 A. That's correct.

04:08:16 24 Q. In other words, in your view
04:08:18 25 it's more important to avoid a county

04:08:22 1 split than a borough split.

04:08:22 2 Correct?

04:08:24 3 A. That's correct.

04:08:24 4 Q. I want to ask you a couple of
04:08:26 5 questions about your compactness
04:08:28 6 analysis.

04:08:28 7 A. Okay.

04:08:28 8 Q. I think you said in both your
04:08:30 9 report and on Direct Exam from Counsel
04:08:34 10 there are a number of different
04:08:36 11 compactness measures.

04:08:38 12 Right?

04:08:38 13 A. Yes.

04:08:38 14 Q. And each one accounts for a
04:08:40 15 slightly different piece of
04:08:42 16 information.

04:08:43 17 Correct?

04:08:43 18 A. That's correct.

04:08:43 19 Q. And I think you said in your
04:08:45 20 report that --- or maybe you didn't,
04:08:46 21 but do you have an opinion about
04:08:47 22 whether one of those compactness
04:08:48 23 measures is better than another?

04:08:52 24 A. I mean, I really do think that
04:08:53 25 they each capture something different

04:08:56 1 and so you certainly can construct
04:08:58 2 examples, where one of them would be
04:09:00 3 sort of appropriate for flagging the
04:09:03 4 failure of regularity of a boundary
04:09:03 5 but it would sort of pass a test based
04:09:09 6 on another metric.

04:09:09 7 Q. And in this particular case,
04:09:09 8 did you come to an opinion about which
04:09:11 9 of the compactness scores was more ---
04:09:13 10 was better to use in this particular
04:09:18 11 case for this map analysis than
04:09:20 12 others?

04:09:21 13 A. No, I didn't.

04:09:21 14 Q. And that's why you chose to
04:09:23 15 look at them all or four of them
04:09:26 16 together?

04:09:26 17 A. That's correct.

04:09:27 18 Q. And I think similarly ---
04:09:29 19 actually, I'll come back to that. I
04:09:31 20 wanted to ask you about your
04:09:32 21 discussion about the City of
04:09:33 22 Pittsburgh.

04:09:34 23 A. Yeah.

04:09:35 24 Q. And I think you mentioned that
04:09:38 25 you discussed the City of Pittsburgh,

04:09:41 1 if I understand correctly, to
04:09:43 2 illustrate that map makers had a
04:09:45 3 choice between keeping Pittsburgh
04:09:47 4 whole and by doing so, sacrificing
04:09:50 5 something on the Polsby-Popper
04:09:54 6 compactness score for splitting
04:09:55 7 Pittsburgh up and getting a better
04:10:01 8 Polsby-Popper Compactness score.

04:10:01 9 Is that accurate?

04:10:02 10 A. I'm not sure how to quite
04:10:05 11 process the question.

04:10:06 12 Q. Let me ask a different
04:10:08 13 question. I don't want to ask a
04:10:09 14 confusing question.

04:10:11 15 My understanding is that your
04:10:13 16 testimony indicated that if the map
04:10:15 17 kept Pittsburgh whole that would
04:10:17 18 necessarily result in a decrease of in
04:10:25 19 the Polsby-Popper compactness score.

04:10:26 20 Is that correct?

04:10:27 21 A. I think that it did in the
04:10:29 22 proposed plans at least.

04:10:29 23 Q. In the proposed plans that you
04:10:32 24 reviewed, keeping Pittsburgh whole was
04:10:32 25 a choice that resulted in a lower

04:10:37 1 P o l s b y - P o p p e r c o m p a c t n e s s s c o r e ?

04:10:40 2 A. Y e s .

04:10:41 3 Q. A n d y o u w o u l d a g r e e w i t h m e

04:10:44 4 t h a t t h e C a r t e r m a p k e p t t h e C i t y o f

04:10:45 5 P i t t s b u r g h w h o l e .

04:10:45 6 C o r r e c t ?

04:10:46 7 A. C a n I l o o k a t m y r e p o r t ?

04:10:46 8 S o r r y . I ' m t h i n k i n g a b o u t a l o t o f

04:10:47 9 m a p s h e r e .

04:10:47 10 Q. C e r t a i n l y . W h a t p a g e w o u l d y o u

04:10:49 11 l i k e t o l o o k a t ?

04:10:50 12 A. T h e r e ' s a t a b l e o n p a g e s e v e n

04:10:50 13 o f t h e r e s p o n s e r e p o r t , T a b l e 4 . Y e s .

04:11:06 14 S o r r y , i n a n s w e r t o y o u r q u e s t i o n .

04:11:06 15 Q. P a g e s e v e n o f t h e r e s p o n s e

04:11:08 16 r e p o r t T a b l e 4 ?

04:11:09 17 A. Y e s , t h a t ' s c o r r e c t .

04:11:11 18 Q. O k a y .

04:11:16 19 A n d d o e s t h a t c o n f i r m t h a t t h e

04:11:20 20 C a r t e r m a p k e p t P i t t s b u r g h w h o l e ?

04:11:22 21 A. T h a t ' s c o r r e c t . Y e a h .

04:11:22 22 Q. A n d s o a s a r e s u l t o f k e e p i n g

04:11:22 23 P i t t s b u r g h W h o l e , t h e C a r t e r m a p w o u l d

04:11:23 24 h a v e n e c e s s a r i l y s c o r e d l o w e r o n t h e

04:11:27 25 P o l s b y - P o p p e r c o m p a c t n e s s s c o r e t h a n

04:11:29 1 it otherwise would have had it chose
04:11:31 2 to split Pittsburgh?

04:11:31 3 A. I think that requires me to
04:11:34 4 draw conclusions of what would have
04:11:34 5 been done instead, but at least with
04:11:38 6 respect to the proposed maps that I
04:11:40 7 looked at, it was true that the ones
04:11:43 8 that split Pittsburgh had
04:11:47 9 Pilsby-Popper scores than the ones
04:11:47 10 that didn't.

04:11:47 11 Q. And I think you testified
04:11:48 12 earlier that if you included
04:11:50 13 Pittsburgh that would result in a ---
04:11:52 14 if Pittsburgh was a whole District
04:11:57 15 that would result in a lower
04:11:59 16 Pilsby-Popper score for these maps?

04:12:03 17 A. Right.

04:12:06 18 Q. Keeping on the rebuttal report,
04:12:09 19 Doctor DeFord, I'd like to turn to
04:12:12 20 page five, Table 2 of your rebuttal
04:12:14 21 report, please. If I understand
04:12:18 22 correctly, here you're looking at the
04:12:19 23 number of county splits.

04:12:21 24 Is that accurate?

04:12:22 25 A. Yes, in the top row.

04:12:23 1 Q. In the top row. And then you
04:12:26 2 also have number on non-intact
04:12:29 3 counties, number of pieces, correct.
04:12:30 4 And you would agree with me on this
04:12:33 5 metric the Carter map was slightly
04:12:36 6 better than the GMS map on county
04:12:38 7 splits?

04:12:38 8 A. That's correct.

04:12:38 9 Q. And in fact, it was one of the
04:12:40 10 --- it did better than most other maps
04:12:41 11 with respect to county splits, would
04:12:43 12 you agree with that?

04:12:44 13 A. That's correct.

04:12:44 14 Q. I want to ask you about
04:12:47 15 partisan fairness in your map --- I'm
04:12:51 16 sorry in your report. And you start
04:12:57 17 --- you start and you have some
04:13:00 18 metrics that you choose here to
04:13:01 19 evaluate partisan fairness. The first
04:13:03 20 one --- well, I'm sorry. Let me just
04:13:05 21 ask you a general question. Do you
04:13:07 22 recall generally how the Carter map
04:13:09 23 did on the partisan fairness criteria?

04:13:12 24 A. Can I look it up in the report.

04:13:13 25 Q. Well, let's go through --- I'll

04:13:15 1 ask you specific questions and then we
04:13:17 2 can circle back if you don't recall.
04:13:18 3 On page ten, paragraph 30, you're
04:13:24 4 discussing your metric that I believe
04:13:26 5 you called direct majority
04:13:29 6 responsiveness.

04:13:29 7 Do you recall that?

04:13:30 8 A. Yes.

04:13:30 9 Q. And in here you said that the
04:13:30 10 GSM tied for the fewest
04:13:30 11 anti-majoritarian outcomes, and you
04:13:30 12 identified three as reflected in the
04:13:30 13 Table 9 on the next page.

04:13:41 14 Correct?

04:13:42 15 A. Yes.

04:13:42 16 Q. And in fact, it tied with the
04:13:44 17 Carter map for the fewest
04:13:46 18 anti-majoritarian outcomes.

04:13:49 19 Correct?

04:13:50 20 A. Yes.

04:13:50 21 Q. And according to Table 9 here,
04:13:53 22 the Carter map had deviations, more
04:13:59 23 deviations that actually favored
04:14:02 24 Republicans than Democrats, two for
04:14:05 25 Republicans, one for Democrats.

04:14:06 1 Correct?

04:14:07 2 A. That's correct.

04:14:07 3 Q. And the fact that it had
04:14:08 4 deviations on both sides of the aisle
04:14:11 5 is a hallmark of --- or another
04:14:14 6 indicator of partisan fairness.

04:14:17 7 Correct?

04:14:17 8 A. Yes.

04:14:18 9 Q. I want to talk to you about
04:14:19 10 your mean median analysis that you
04:14:21 11 used to evaluate partisan symmetry.
04:14:26 12 If we could go to page 13, figure one.
04:14:32 13 Am I correct that the mean median
04:14:34 14 analysis was used to evaluate --- was
04:14:34 15 one of two measures to evaluate
04:14:40 16 partisan symmetry?

04:14:41 17 A. Yes.

04:14:41 18 Q. And I just wanted to ask you a
04:14:43 19 couple questions about the table or
04:14:45 20 the figure one here. Counsel asked
04:14:47 21 you about whether there were any plans
04:14:49 22 that did --- that faired poorly under
04:14:52 23 this, and I think you identified the
04:14:55 24 Republican Congressional Map 2 and 1
04:14:57 25 as performing particularly poorly

04:15:01 1 because all of the --- all of the
04:15:02 2 outcomes were on one side of the
04:15:03 3 aisle?

04:15:04 4 A. That's correct.

04:15:05 5 Q. And I want to draw your
04:15:05 6 attention to the House Republicans Map
04:15:11 7 showed a similar feature, all outcomes
04:15:11 8 favoring Republicans.

04:15:12 9 Correct?

04:15:13 10 A. That's also correct. Yes.

04:15:15 11 Q. So would you --- would you
04:15:15 12 agree with me that the House
04:15:17 13 Republicans map also fared
04:15:19 14 particularly poorly under this
04:15:21 15 analysis?

04:15:22 16 A. Yes, that's correct.

04:15:23 17 Q. Your efficiency gap analysis,
04:15:27 18 turning to the next page of your
04:15:29 19 report, Figure 2, you evaluate ---
04:15:31 20 this is another measure to evaluate
04:15:36 21 partisan symmetry.

04:15:37 22 Correct?

04:15:37 23 A. Yes.

04:15:38 24 Q. And you have, again, a similar
04:15:41 25 plot there. And then if we could go

04:15:43 1 to Table 13 on the next page you
04:15:45 2 calculate some mean scores for
04:15:46 3 efficiency gaps.
04:15:48 4 A. Yes.
04:15:49 5 Q. Do you see that?
04:15:50 6 A. Yes, that's correct.
04:15:54 7 Q. Now, if I understand correctly,
04:15:55 8 closest to zero here is an indication
04:15:55 9 of treating voters from each party
04:15:59 10 equally?
04:16:00 11 A. That's right.
04:16:00 12 Q. And farthest from zero is an
04:16:02 13 indication of less partisan symmetry,
04:16:07 14 i.e. favoring one party more than the
04:16:09 15 other.
04:16:09 16 Correct?
04:16:10 17 A. Yes.
04:16:10 18 Q. And the sign here negative
04:16:10 19 favors Republicans, positive favors
04:16:13 20 Democrats.
04:16:14 21 Correct?
04:16:14 22 A. That's correct.
04:16:15 23 Q. Under this metric, if we look
04:16:17 24 at the mean score, the Carter map had
04:16:19 25 the mean score closest to zero.

04:16:22 1 Correct?

04:16:22 2 A. That's correct.

04:16:23 3 Q. Indicating that under this
04:16:25 4 metric the Carter map performed best
04:16:27 5 in treating voters from each party
04:16:29 6 equally.

04:16:30 7 Correct?

04:16:31 8 A. With respect to the mean. It
04:16:32 9 has a slightly larger range of values
04:16:37 10 that are seen.

04:16:37 11 Q. Sure. And then with respect to
04:16:39 12 the mean also, the maps that do most
04:16:45 13 poorly under your analysis here are
04:16:47 14 the House Republicans map and the
04:16:49 15 Republican Congressional Maps 1 and 2.

04:16:55 16 Correct?

04:16:55 17 A. That's correct.

04:16:56 18 Q. And when you analyzed the
04:16:57 19 efficiency gap under more recent
04:17:00 20 elections, and I'd like to turn to
04:17:02 21 page 19 of your report, Figure 6, here
04:17:05 22 you calculate the average efficiency
04:17:08 23 gap from more recent elections, if I
04:17:10 24 understand that correctly, and here
04:17:11 25 again the Carter plan was closest to

04:17:13 1 zero on that one as well.

04:17:16 2 Is that correct? I'm sorry.

04:17:17 3 Did I pull --- I pulled up the wrong

04:17:19 4 one. Page 18, figure 4. My

04:17:22 5 apologies, Doctor.

04:17:23 6 A. But anyway, yes, that's

04:17:24 7 correct.

04:17:24 8 Q. Okay.

04:17:25 9 And you can see that reflected

04:17:26 10 in this correct figure now.

04:17:37 11 ATTORNEY GORDON:

04:17:37 12 No further questions.

04:17:38 13 Thank you for your time, Doctor

04:17:40 14 DeFord.

04:17:40 15 JUDGE McCULLOUGH:

04:17:40 16 Thank you, Counsel.

04:17:41 17 ATTORNEY GORDON:

04:17:41 18 Thank you, Your Honor.

04:17:42 19 JUDGE McCULLOUGH:

04:17:43 20 Counsel for Secretary

04:17:45 21 Chapman or Governor Wolf, whomever

04:17:51 22 you're coming up for.

04:17:51 23 ATTORNEY WIYGUL:

04:18:06 24 Thank you, Your Honor.

04:18:06 25 I'm appearing again in my role as

04:18:08 1 counsel for the Governor.

04:18:08 2 ---

04:18:08 3 CROSS EXAMINATION

04:18:08 4 ---

04:18:08 5 BY ATTORNEY WIYGUL:

04:18:12 6 Q. Good afternoon, Doctor DeFord.

04:18:13 7 A. Good afternoon.

04:18:14 8 Q. Could I start by also asking
04:18:14 9 you to review a portion of your
04:18:14 10 report.

04:18:14 11 ATTORNEY WIYGUL:

04:18:21 12 And if Ms. Frye would
04:18:21 13 please pull up Table 8 on page nine of
04:18:25 14 your rebuttal report.

04:18:25 15 BY ATTORNEY WIYGUL:

04:18:30 16 Q. These are the measures of
04:18:33 17 compactness that you've been talking
04:18:34 18 about.

04:18:34 19 Correct?

04:18:35 20 A. That's correct.

04:18:35 21 Q. And could you just tell us
04:18:36 22 which map under your calculation has
04:18:38 23 the best Polsby-Popper score?

04:18:42 24 A. That's the map proposed by the
04:18:44 25 Governor.

04:18:44 1 Q. And if we look at the mean
04:18:44 2 convex hull, which two maps there
04:18:50 3 score best?

04:18:50 4 A. The map proposed by the
04:18:53 5 Governor and the first Reschenthaler
04:18:54 6 map.

04:18:54 7 Q. And those two maps also score
04:18:56 8 the best under the cut edges metric.

04:18:59 9 Is that correct?

04:19:10 10 A. Yes, that's correct.

04:19:11 11 Q. And if we could go --- also a
04:19:11 12 table we've looked at already, but
04:19:13 13 Table 9 on page 11 of your --- of the
04:19:16 14 same report, please. And this is the
04:19:18 15 table that counsel's already discussed
04:19:20 16 shows deviations in each --- for each
04:19:22 17 plan under the various elections.

04:19:27 18 Correct?

04:19:27 19 A. Yes, that's correct.

04:19:27 20 Q. And is it true there's only one
04:19:30 21 plan listed here that has perfect
04:19:32 22 balance in the number of Democrat and
04:19:34 23 Republican favoring deviations?

04:19:34 24 A. Yes, although there are several
04:19:34 25 that are as good as possible given

04:19:43 1 they have an odd number of
04:19:44 2 anti-majoritarian results.

04:19:44 3 Q. Okay.

04:19:45 4 But you would agree with me the
04:19:46 5 Governor's map has an equal number of
04:19:49 6 Democrat versus Republican favoring
04:19:50 7 deviations?

04:19:51 8 A. Yes, that's correct.

04:19:52 9 Q. And could we look at Table 12
04:19:58 10 on page 15 of the same report, please?
04:20:01 11 This is the mean median scores table.

04:20:11 12 Correct?

04:20:12 13 A. Yes.

04:20:12 14 Q. And if we look at the mean
04:20:14 15 score row there, would you agree with
04:20:18 16 me that the Carter map and the
04:20:20 17 Governor's map score best under that
04:20:22 18 metric?

04:20:35 19 A. For the means score?

04:20:35 20 Q. For the mean score, yeah.

04:20:35 21 A. No.

04:20:40 22 Q. Am I wrong that you want to be
04:20:40 23 closer to zero?

04:20:41 24 A. That's correct.

04:20:42 25 Q. Okay.

04:20:42 1 So sorry. Maybe I'm misreading
04:20:44 2 it. Carter is .004.
04:20:47 3 Correct?
04:20:47 4 A. That's the maximum score.
04:20:50 5 Q. Are we looking at the wrong
04:20:51 6 table? I'm sorry my mistake.
04:20:54 7 Table 13.
04:20:59 8 A. So we're talking about the
04:21:00 9 efficiency gap now?
04:21:02 10 Q. Yes. I'm sorry. I was reading
04:21:04 11 the wrong label and the wrong table.
04:21:04 12 A. No worries.
04:21:06 13 Q. Okay.
04:21:07 14 Efficiency gap, now we can see
04:21:09 15 what I'm referring to. Would you
04:21:11 16 agree with me there that for mean
04:21:13 17 score the best performing maps by your
04:21:15 18 metric are the Governor's map and the
04:21:17 19 Carter map?
04:21:18 20 A. Yes, although again for the
04:21:26 21 mean score, not necessarily the range.
04:21:26 22 Q. Well, let's look at the range
04:21:28 23 as well. Would you agree with me that
04:21:29 24 the Governor's map scores well by that
04:21:32 25 metric?

04:21:34 1 A. Yes.

04:21:34 2 Q. When you were talking about
04:21:35 3 partisan fairness you mentioned using
04:21:38 4 Plan Score.

04:21:38 5 Do you recall that?

04:21:39 6 A. Yes.

04:21:39 7 Q. Okay.

04:21:40 8 And am I right that plan score
04:21:44 9 uses an election index that is blended
04:21:46 10 from a list of elections?

04:21:48 11 A. That's correct.

04:21:48 12 Q. Is this use of a blended
04:21:50 13 election index, in your professional
04:21:53 14 opinion, a superior approach to
04:21:55 15 looking at individual actual
04:21:56 16 elections?

04:21:57 17 A. No.

04:21:58 18 ATTORNEY WIYGUL:

04:21:58 19 Thank you. I have
04:21:59 20 nothing further.

04:22:05 21 JUDGE McCULLOUGH:

04:22:05 22 Thank you, Counsel. Now
04:22:07 23 Republican Intervenors, Senator
04:22:07 24 Cutler.

04:22:07 25 ---

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CROSS EXAMINATION

BY ATTORNEY LEWIS:

Q. Doctor DeFord, good afternoon.

My name is Patrick Lewis. I represent the Republican House Intervenors, Brian Cutler and Kerry Benninghoff.

A. Good afternoon.

Q. Doctor DeFord, would you agree that House Bill 2146 ---?

JUDGE McCULLOUGH:

Counsel, you can take your mask off.

ATTORNEY LEWIS:

Sorry.

JUDGE McCULLOUGH:

That is fine.

BY ATTORNEY LEWIS:

Q. Would you agree, Doctor DeFord, that House Bill 2146 broadly performs in the same range as the other plans with respect to equal population, contiguity, respect for keeping political subdivisions whole and compactness?

04:23:21 1 A. Broadly.

04:23:21 2 Q. Okay.

04:23:22 3 I'd like to turn to page eight
04:23:27 4 of your rebuttal report and
04:23:35 5 specifically Table 6. So you would
04:23:37 6 agree with me that --- would you agree
04:23:39 7 with me that House Bill 2146, which
04:23:42 8 you have as House Republicans on here,
04:23:45 9 splits the third least pieces of any
04:23:49 10 of the plans you studied?

04:23:52 11 A. Table 7?

04:23:56 12 Q. I apologize. You know what,
04:23:58 13 we'll go with Table 7 I'm fine with
04:24:01 14 that. Table 7

04:24:02 15 A. I'm sorry. Can you repeat the
04:24:03 16 question then?

04:24:04 17 Q. Yes, absolutely. So would you
04:24:06 18 agree with me that House Bill 2146
04:24:08 19 splits the third least pieces of any
04:24:11 20 of the plans you studied on Table 7?

04:24:13 21 A. That's correct.

04:24:14 22 Q. Okay.

04:24:15 23 Now, is there a reason that you
04:24:17 24 didn't provide a similar calculation
04:24:19 25 for precinct splits?

04:24:22 1 A. Precinct splits sort of weren't
04:24:25 2 listed in the six --- in the State
04:24:25 3 Constitution, and so I didn't consider
04:24:29 4 them here

04:24:29 5 Q. All right.

04:24:30 6 And would you agree, Doctor
04:24:32 7 DeFord, that it is not absolutely
04:24:34 8 necessary to split the City of
04:24:37 9 Pittsburgh in a plan?

04:24:42 10 A. Yes.

04:24:42 11 Q. Okay.

04:24:42 12 And Doctor DeFord, I'd like to
04:24:52 13 turn now to your analysis of --- you
04:24:52 14 have safe and responsive districts.
04:24:57 15 This was in page 32, Table 8, of your
04:24:58 16 opening report. All right. Let me
04:25:15 17 know when you're there?

04:25:16 18 A. Yes.

04:25:16 19 Q. Great. Now, here you show ---
04:25:17 20 I assume the house map, that's House
04:25:21 21 Bill 2146?

04:25:22 22 A. That's correct.

04:25:23 23 Q. Okay.

04:25:24 24 So here --- and my
04:25:25 25 understanding of your page 34, I've

04:25:27 1 got it up on the screen here, that you
04:25:28 2 would consider a district potentially
04:25:31 3 responsive if it elected at least, if
04:25:35 4 I understand this correctly, that the
04:25:38 5 district elects at least one R and one
04:25:40 6 D?

04:25:40 7 Is that right?

04:25:41 8 A. That's correct. This is a very
04:25:46 9 weak measure of responsiveness.

04:25:46 10 Q. Okay.

04:25:46 11 And on this measure the House
04:25:49 12 plan has the most responsive districts
04:25:53 13 of the three that you studied.

04:25:57 14 Right?

04:25:57 15 A. That's correct.

04:26:03 16 Q. Would you agree with me as well
04:26:04 17 that Governor Wolf's plan has the most
04:26:11 18 number of safe Democratic districts of
04:26:13 19 the three that you looked at?

04:26:14 20 A. That's correct.

04:26:14 21 Q. I'm going to turn to page 11 of
04:26:23 22 your report. We've all looked at this
04:26:27 23 table already. This is Table 9, your
04:26:29 24 majority responsiveness metric. I
04:26:33 25 just have a few questions for you on

04:26:34 1 that. Now, here you criticize House
04:26:37 2 Bill 2146 for having, page 11, I
04:26:39 3 believe you were describing as
04:26:43 4 anti-majoritarian outcomes. And those
04:26:43 5 are the shaded boxes on the chart.

04:26:46 6 Correct?

04:26:46 7 A. Yes.

04:26:46 8 Q. Now, it's fairly obvious here
04:26:48 9 that, you know, we have what, five you
04:26:54 10 believe are anti-majoritarian here?

04:26:59 11 A. Yes. That's right.

04:26:59 12 Q. But at least two of them,
04:27:03 13 auditor of 2012, auditor of 2016,
04:27:03 14 virtually every plan produces an
04:27:03 15 anti-majoritarian outcome.

04:27:11 16 Right?

04:27:12 17 A. That's true.

04:27:12 18 Q. So is it fair to say what we're
04:27:12 19 really focused on then would be the
04:27:15 20 other three races, Treasurer 12;
04:27:18 21 Governor, 12; and President, 20.

04:27:20 22 Right?

04:27:21 23 A. I think it's Treasurer, 12;
04:27:22 24 Attorney General, 16; and President,
04:27:26 25 20.

04:27:26 1 Q. I apologize. I had read the
04:27:27 2 wrong column.

04:27:30 3 Okay.

04:27:30 4 But as an example, in the 2012
04:27:35 5 elections, you have the same voters
04:27:42 6 voted in the 2012 general election for
04:27:45 7 all five races.

04:27:50 8 Right?

04:27:50 9 A. The same --- yes, that's
04:27:51 10 correct.

04:27:51 11 Q. Okay.

04:27:52 12 And so, in the same voters,
04:27:53 13 same elections, you've got - for the
04:27:57 14 House Republican plan you've got three
04:28:00 15 that are producing majoritarian
04:28:03 16 outcomes and two that are producing
04:28:04 17 anti-majoritarian outcomes.

04:28:06 18 Is that right?

04:28:07 19 A. That's correct.

04:28:08 20 Q. Actually, it's six. I
04:28:10 21 overlooked Attorney General.

04:28:10 22 Right?

04:28:11 23 Okay.

04:28:11 24 So we're doing --- we've got
04:28:12 25 four out of six. Aren't those

04:28:15 1 differences telling us that electoral
04:28:19 2 outcomes are being driven by voter
04:28:23 3 preferences and not the map itself?
04:28:23 4 A. Well it's a combination, right.
04:28:24 5 The position of the voters in sort of
04:28:24 6 they're, you know, voting in different
04:28:24 7 quantities and different regions
04:28:24 8 intersections with the map, because
04:28:24 9 the map sort of splits up those voters
04:28:39 10 based on their positions.
04:28:40 11 Q. It splits them up in the same
04:28:42 12 way for all six elections that you
04:28:42 13 studied that year.
04:28:42 14 Right?
04:28:43 15 A. It does, but there's --- you
04:28:44 16 know, the voters themselves could have
04:28:46 17 voted differently on those between
04:28:48 18 those candidates.
04:28:51 19 Q. I see. Now, I believe you
04:28:54 20 testified on Direct Examination that
04:28:57 21 you did not believe that an ensemble
04:29:05 22 analysis would have been informative
04:29:05 23 for your work in this case.
04:29:07 24 Is that right?
04:29:08 25 A. I believe I said it wasn't

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necessary.

Q. We'll go with aren't necessary.
That's fair. And if I use the term
simulations, would you understand that
is being similar to ensemble?

A. Yes.

Q. Okay. All right.
Now, you were --- you did some
work for the Colorado Independent
Redistricting Commission this ---
2021, did you not?

A. Yes.

Q. And in fact, you used an
ensemble analysis in that case to
analyze multiple different proposals
for congressional districts in that
state, did you not?

A. That's correct.

Q. You did? Okay.
And you could have performed a
very similar analysis in this case,
couldn't you have?

A. The Carter analysis was really
tuned to something different that I
think is a meaningful distinction with

04:29:57 1 this case. So there our comparison
04:30:01 2 was to try to understand sort of what
04:30:01 3 was possible in terms of a collection
04:30:07 4 of metrics based on decisions that the
04:30:07 5 Commission was making in terms of
04:30:10 6 communities of interest it wanted to
04:30:11 7 preserve and sort of other aspects of
04:30:14 8 its deliberative process.

04:30:17 9 And so there the question was
04:30:19 10 sort of what is possible. And you
04:30:23 11 know, the Commission then wanted to
04:30:23 12 use that to help evaluate some of its
04:30:28 13 decision making. Here we have plenty
04:30:32 14 of examples of plans that are proposed
04:30:32 15 that perform really well under the
04:30:36 16 partisan fairness measures.

04:30:36 17 Q. Now, I believe you testified
04:30:46 18 that you were not sure of the --- let
04:30:49 19 me just ask it this way. You
04:30:53 20 understand that the GMS plan was
04:30:58 21 prepared using a computer algorithmic
04:30:58 22 technique.

04:31:07 23 Right?

04:31:08 24 A. Yes, they were used to assist
04:31:10 25 in that metric is my understanding.

04:31:11 1 Q. But you don't know exactly what
04:31:13 2 technique was used.

04:31:15 3 Right?

04:31:15 4 A. I do not.

04:31:16 5 Q. But did you understand that
04:31:17 6 that algorithm was looking to optimize
04:31:22 7 on partisan fairness and Voting Rights
04:31:25 8 Act compliance as well as traditional
04:31:27 9 districting principles?

04:31:28 10 A. I do not.

04:31:29 11 Q. Would it surprise you to learn
04:31:30 12 that that's how it's described on
04:31:32 13 page 14 of the Gressman Petitioner's
04:31:37 14 opening brief in this case?

04:31:40 15 A. Can you show me the page?

04:31:43 16 Q. Absolutely. So you see where
04:32:04 17 it says at the bottom of page 14 the
04:32:06 18 GMS plan remedies the malapportionment
04:32:10 19 now present in the 2018 plan while
04:32:14 20 also optimizing compliance with all
04:32:15 21 state and federal legal requirements.
04:32:15 22 Those legal requirements and those
04:32:18 23 metrics are set forth below.

04:32:19 24 Do you see that?

04:32:23 25 A. I do.

04:32:23 1 Q. So you see first we have equal
04:32:26 2 population. Right. I'm on page 15.
04:32:26 3 A. So sorry. Can I ask a question
04:32:29 4 about your question?
04:32:30 5 Q. Sure.
04:32:35 6 A. Can you go back up to the
04:32:37 7 previous quote?
04:32:38 8 Q. Absolutely.
04:32:39 9 A. So this is talking about the
04:32:41 10 plan itself, right, not the
04:32:43 11 methodology?
04:32:44 12 Q. That's correct.
04:32:47 13 A. Okay. Sorry. I can't draw any
04:32:49 14 conclusions from this about what
04:32:51 15 computational techniques were used.
04:32:52 16 Q. But it's possible that this
04:32:55 17 algorithm could have been attempting
04:32:57 18 to optimize for partisan fairness, you
04:32:58 19 know, using whatever metrics you
04:33:04 20 choose.
04:33:04 21 Right?
04:33:04 22 A. I don't have any knowledge of
04:33:05 23 that.
04:33:06 24 Q. Now, if a plan were being drawn
04:33:08 25 to, for example, try to find the

04:33:10 1 fairest plan using, for example,
04:33:14 2 mean-median, it would do so by drawing
04:33:16 3 districts that place voters into
04:33:19 4 districts in order to generate that
04:33:23 5 outcome.

04:33:26 6 Right?

04:33:27 7 A. If you're asking me to
04:33:29 8 speculate about an algorithm that I'm
04:33:35 9 not sure about.

04:33:35 10 Q. But the way you would draw ---
04:33:38 11 the point is that a map drawn to have
04:33:41 12 a zero mean-median gap, right, is
04:33:43 13 going --- by necessity, it's going to
04:33:45 14 be --- you're going to have to place
04:33:45 15 voters in the districts on the basis
04:33:47 16 of their partisanship.

04:33:50 17 Right?

04:33:53 18 A. I'm sorry. Again, I'm
04:33:55 19 struggling to figure out how I can
04:33:58 20 answer your question helpfully. So
04:34:04 21 are you asking across like any
04:34:06 22 possible algorithm for generating a
04:34:09 23 map? Is this ---?

04:34:09 24 Q. I'm just asking for any drawing
04:34:09 25 of a map at all. Sit down and draw a

04:34:09 1 map, I want a zero mean-median gap. I
04:34:09 2 have to --- if I'm going to achieve
04:34:17 3 that, don't I have to draw it and
04:34:19 4 place voters in basis on their
04:34:24 5 partisanship?

04:34:24 6 A. Well, not necessarily, right.
04:34:24 7 You could sort of generate a whole
04:34:26 8 bunch of maps just according to the
04:34:26 9 criteria and then look for those that
04:34:26 10 had that property, even if it didn't
04:34:26 11 have sort of partisan data available
04:34:40 12 to the algorithm.

04:34:41 13 Q. All right.

04:34:41 14 I would like to turn briefly to
04:34:43 15 your discussion then, Doctor DeFord,
04:34:45 16 of race, on the use of race in the
04:34:51 17 generation of --- your evaluation of
04:34:53 18 race in this particular plan. Did I
04:34:55 19 hear you correctly on Direct
04:34:57 20 Examination that you believed that if
04:34:59 21 the minority voting age population in
04:35:06 22 the Commonwealth of Pennsylvania is
04:35:07 23 about 20 percent, you'd expect there
04:35:08 24 to be about 20-percent
04:35:11 25 majority/minority districts?

04:35:12 1 A. Minority effective districts.

04:35:12 2 Q. And in this particular case,
04:35:14 3 the districts that you characterized
04:35:16 4 in your plan as minority effective
04:35:19 5 were all majority/minority.

04:35:21 6 Is that correct?

04:35:21 7 A. That's correct.

04:35:22 8 Q. Okay.

04:35:23 9 A. But they don't have to be to
04:35:25 10 satisfy that criteria.

04:35:26 11 Q. And in fact, would you agree
04:35:27 12 with me that in House Bill 2146 that
04:35:30 13 you studied, that District 5 was a
04:35:34 14 majority performing --- or a minority
04:35:37 15 performing --- excuse me, a minority
04:35:37 16 effective district?

04:35:39 17 A. Yes, that's correct.

04:35:39 18 Q. Okay.

04:35:42 19 And District 5 in the House
04:35:43 20 Bill plan had less than 50 percent
04:35:46 21 minority voting age population.

04:35:52 22 Isn't that right?

04:35:53 23 A. Can I look at the table or the
04:35:54 24 report? I'm sorry.

04:35:54 25 Q. Absolutely. We'll go there

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1 together. What page?
2 A. Let me find it for you. We're
3 talking about District 5.
4 Is that correct?
5 Q. Yes. That's right. I had you
6 at page 50 --- around 51 of your
7 rebuttal report --- initial report.
8 Excuse me.
9 A. So I may not have reported that
10 number in my report.
11 Q. All right.
12 But you would agree with me
13 that House Bill 2146 drew only two
14 majority/minority districts in the
15 greater Philadelphia area, not three.
16 Right?
17 A. That's correct.
18 Q. Okay.
19 And we could use any statistics
20 we want to calculate the percentage of
21 minority voting population in District
22 5 in the House Bill plan.
23 Right?
24 A. In terms of like being
25 effective, is that ---?

04:37:15 1 Q. In terms of the ---.

04:37:17 2 A. Yes.

04:37:18 3 Q. Okay.

04:37:19 4 Percentage, perfect. Okay.

04:37:21 5 So now you're not giving an
04:37:22 6 opinion in this case as to whether
04:37:25 7 there's legally significant racially
04:37:25 8 polarized voting in Pennsylvania, are
04:37:35 9 you?

04:37:35 10 A. That's correct, in
04:37:36 11 Philadelphia, yeah.

04:37:36 12 Q. All right.

04:37:36 13 And in fact, your win rates
04:37:36 14 being over 50 percent means it can't
04:37:36 15 be said that minority-preferred
04:37:39 16 candidates of choice are usually being
04:37:41 17 defeated at polls by white block
04:37:51 18 voting.

04:37:52 19 Right?

04:37:52 20 A. Yes.

04:37:57 21 ATTORNEY LEWIS:

04:37:57 22 Nothing further, Your
04:37:58 23 Honor

04:37:58 24 JUDGE McCULLOUGH:

04:37:58 25 Okay.

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Thank you. You beat the clock by six seconds. The next party. Congressional Intervenors, Congressman Reschenthaler.

ATTORNEY VANCE:

Thank you, Your Honor. Shohin Vance on behalf of the Congressional Intervenors.

CROSS EXAMINATION

BY ATTORNEY VANCE:

Q. Good afternoon, Doctor DeFord.

A. Good afternoon.

Q. I'll start by asking you the same question my colleague did. Which one's the best map?

A. The mathematicians and scientists map.

Q. Okay.

Let's go through some of the basic criteria first. Based on your assessment, you would agree with me that all of the submissions with the exception of the House Democratic

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Caucus's submission meets the zero
balance requirement?
A. The Carter map also has a
two-person deviation.
Q. Okay.
So all the other ones meet your
zero balance test?
A. Yes, that's correct.
Q. And with regard to contiguity,
you would agree with me that they're
all contiguous?
A. Yes.
Q. And on compactness I believe
the Reschenthaler 1 and 2, which I
believe in your table is Republican
Congressman 1 and 2, they have either
better or equal compactness scores on
every measure as compared to the GMS
map.
Is that correct?
A. That's correct, yeah, better or
equal.
Q. And then with regard to
splitting counties, you would agree
with me that the Reschenthaler 1 and 2

04:39:44 1 maps split less counties than the GMS
04:39:49 2 map?

04:39:49 3 A. Yes, that's correct.

04:39:50 4 Q. Okay.

04:39:50 5 And same is true with regard to
04:39:56 6 the number of segments or pieces as
04:39:59 7 you put it?

04:40:00 8 A. Yes.

04:40:00 9 Q. And same --- and as it pertains
04:40:04 10 to the number of municipal splits,
04:40:07 11 excluding counties, it's the same
04:40:10 12 between GMS and the Reschenthaler map.

04:40:13 13 Correct?

04:40:15 14 A. Ones here account for borough
04:40:17 15 splits along county lines and the
04:40:20 16 population of Pittsburgh. So there
04:40:21 17 are --- there's one more split
04:40:22 18 municipality in the Reschenthaler
04:40:22 19 maps, once you account for this. So
04:40:22 20 if you look at the number of split
04:40:22 21 municipalities not adjusted for those
04:40:22 22 things, then I believe there's one
04:40:42 23 more split for the Reschenthaler maps.

04:40:42 24 Q. And for all of those municipal
04:40:45 25 splits, county and non-county

04:40:48 1 municipal, again, with your reasonable
04:40:52 2 criteria, which I understand that you
04:40:53 3 exclude those that are along county
04:40:56 4 boundaries, the Reschenthaler maps
04:40:59 5 perform the best with regard to that
04:40:59 6 metric.

04:41:01 7 Right?

04:41:01 8 A. Tied with the mathematicians
04:41:04 9 and scientists map, yeah.

04:41:04 10 Q. Okay.

04:41:08 11 So you would agree then that it
04:41:09 12 is possible to produce a map and it is
04:41:13 13 not absolutely necessary to produce a
04:41:17 14 congressional districting map that
04:41:19 15 satisfies all of the basic criteria
04:41:22 16 that has less county splits than the
04:41:25 17 GSM map?

04:41:27 18 A. Oh, I see. Yes, as long as
04:41:33 19 I've got the right number of negatives
04:41:35 20 in that sentence, I think.

04:41:35 21 Q. I apologize. I want to ask you
04:41:37 22 about something you said about the
04:41:40 23 racial gerrymandering question. So is
04:41:46 24 it your testimony that, in your
04:41:48 25 professional view, based on your

04:41:51 1 experience in this field, the GMS map
04:41:55 2 was not drawn with racial
04:41:58 3 considerations in mind?

04:42:07 4 A. Well, I can't comment on what
04:42:08 5 sort of considerations were in mind
04:42:10 6 for the line drawers.

04:42:10 7 Q. But does it --- is it your view
04:42:11 8 --- again, I mean this is --- you're
04:42:12 9 --- you're the professional. So based
04:42:13 10 on your view and having reviewed the
04:42:15 11 map, you're testifying that you do not
04:42:19 12 believe that it was drawn to achieve
04:42:23 13 any type of minority composition and a
04:42:30 14 certain percentage of votes --- excuse
04:42:35 15 me, population?

04:42:35 16 A. And so I don't think --- I
04:42:38 17 concluded that it was not a racial
04:42:40 18 gerrymander.

04:42:45 19 Q. Okay.

04:42:46 20 So --- all right We'll move
04:42:46 21 on.

04:42:48 22 With regard to your fairness
04:42:51 23 metrics, let me start with the
04:43:03 24 majority responsiveness. Now, you ---
04:43:11 25 in analyzing majority responsiveness

04:43:15 1 the basic sort of principle, right, is
04:43:19 2 that people vote the same way based on
04:43:21 3 party. If one party wins statewide,
04:43:27 4 then more likely than not that is who
04:43:29 5 the person would vote for for
04:43:33 6 Congress?

04:43:36 7 A. Or at least an approximation of
04:43:38 8 that, yes.

04:43:39 9 Q. Okay.

04:43:39 10 And so based on that, you
04:43:41 11 calculated the majority
04:43:45 12 responsiveness. And that calculation
04:43:47 13 doesn't take into account fundraising,
04:43:51 14 incumbency, any of those other
04:43:53 15 considerations?

04:43:54 16 A. It does not.

04:43:56 17 Q. Okay.

04:43:56 18 Does it account for candidate
04:44:00 19 preference?

04:44:05 20 A. No, it does not, except to the
04:44:05 21 extent that that's sort of expressed
04:44:05 22 in the elections that are there
04:44:08 23 already.

04:44:08 24 Q. And does it account for
04:44:13 25 split-ticket voting?

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1 A. Well ---.

2 Q. If you would like, I can

3 explain. People who vote for a

4 candidate of one party for one office

5 and a candidate of another party for

6 another office.

7 A. Well, sir, looking at the ---

8 you know, different elections on the

9 same ballot captured some of that. We

10 have --- we just talked about the

11 example in 2012 where you had very

12 similar overall statewide percentages

13 that --- different performance on some

14 of the maps because ---.

15 Q. But they're all statewide?

16 A. That's correct.

17 Q. So it doesn't measure, for

18 example, whether people prefer ---

19 whether people, for example, vote at

20 higher rates for different parties on

21 a local level?

22 A. That's correct I think.

23 Q. And so having analyzed the 2016

24 election for purposes of this measure,

25 would it surprise you to learn that of

04:45:13 1 the 18 congressional districts that
04:45:21 2 voted for the opposite party for
04:45:23 3 President than they did for Congress?

04:45:25 4 A. I don't have that in front of
04:45:27 5 me.

04:45:27 6 Q. Okay.

04:45:31 7 Also you --- in paragraph 104
04:45:38 8 you discuss the political geography of
04:45:42 9 the Commonwealth and there --- I
04:45:51 10 apologize

04:45:52 11 A. I'm sorry. Of the initial
04:45:52 12 report?

04:45:53 13 Q. Yes. You make the point that
04:45:55 14 there is a partisan --- and I'm
04:45:57 15 quoting, partisan advantage to
04:45:59 16 Republicans based on the political
04:46:02 17 geography of the state. So it is not
04:46:04 18 necessarily a surprise to see a slight
04:46:08 19 tilt favoring Republicans on these two
04:46:12 20 metrics, which were the metrics you
04:46:15 21 discussed.

04:46:17 22 Is that accurate?

04:46:18 23 A. Yes, that's correct.

04:46:18 24 Q. And in fact, you say --- I
04:46:29 25 apologize. In the Philadelphia ---

04:46:30 1 for example, there were over 1,000
04:46:30 2 voting districts that supported the
04:46:30 3 Democratic candidate in the 2020
04:46:34 4 Presidential Election by 90 percent or
04:46:36 5 more, mostly in the Philadelphia and
04:46:38 6 Pittsburgh areas. By contrast, there
04:46:40 7 were fewer than 50 voting districts in
04:46:40 8 the Commonwealth that had a similar
04:46:44 9 level of support for the Republican
04:46:47 10 candidate. Meaning that there is not
04:46:49 11 a part of the state where Republican
04:46:52 12 voters are as heavily concentrated as
04:46:56 13 Democratic voters are in the
04:46:58 14 Philadelphia and Pittsburgh areas.

04:46:59 15 Did I read that right?

04:47:00 16 A. Yes.

04:47:01 17 Q. Okay.

04:47:01 18 Now, also when you're doing the
04:47:03 19 --- I believe it was the mean-median
04:47:08 20 analysis, you make the point that more
04:47:12 21 recent elections are more --- and this
04:47:14 22 is paragraph 101, are more likely to
04:47:27 23 be reflective of the current political
04:47:28 24 geography.

04:47:28 25 Is that right?

04:47:29

1 A. Yes.

04:47:29

2 Q. Okay.

04:47:30

3 But --- and you --- and you

04:47:30

4 point out in your mean-median and

04:47:34

5 efficiency gap analysis the difference

04:47:34

6 based on year breakdown, but you don't

04:47:35

7 do that with the majority

04:47:38

8 responsiveness measurement, do you?

04:47:40

9 A. That's correct, although you

04:47:41

10 can read it off the table.

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11 Q. So turning back to that, if we

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12 look at the elections after 2016, so

04:47:45

13 2017 on down to 2020, the majority

04:47:50

14 responsiveness of the Reschenthaler

04:47:54

15 maps are the exact same as the GMS

04:47:59

16 ones, are they not?

04:48:01

17 A. Sorry. We're back to the other

04:48:03

18 report now.

04:48:03

19 Q. Sorry.

04:48:09

20 A. Let's see here. So you said

04:48:09

21 from 2016 forward?

04:48:12

22 Q. Correct. So Supreme Court

04:48:13

23 2017; United States Senate, 2018;

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24 Governor, 2018 and then four different

04:48:23

25 elections in 2020?

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1 A. And sorry, what was the
2 question about those elections?
3 Q. So the majority responsiveness
4 by your calculation would be the exact
5 same for the GSM map and the
6 Reschenthaler maps?
7 A. No, that's not correct.
8 Q. For those ---?
9 A. The President Election in 2020
10 I believe is anti-majoritarian for the
11 Reschenthaler maps.
12 Q. Oh, excuse me. It would be one
13 off.
14 Is that right?
15 A. Right. So across those
16 elections, the math and scientists map
17 has no anti-majoritarian results. The
18 Reschenthaler map has one.
19 Q. Has one?
20 A. That's correct.
21 Q. And that's based on this
22 measurement, which again you said
23 doesn't account for the other --- for
24 any factor than what you've stated?
25 A. That's correct.

04:49:05 1 Q. And are there other --- you
04:49:10 2 mentioned a winner's bonus, but
04:49:12 3 there's no further discussion of that,
04:49:13 4 nor is it --- I don't see it as being
04:49:15 5 part of the calculation.

04:49:18 6 A. Is there a question I can
04:49:20 7 answer?

04:49:21 8 Q. Yeah. Is there --- is there a
04:49:22 9 reason why you left that out?

04:49:24 10 A. So the winner's bonus is a
04:49:24 11 concept --- and I think Professor
04:49:24 12 Rodden mentioned this as well, that
04:49:32 13 for --- you know, the winning party
04:49:32 14 might expect to get some larger number
04:49:34 15 of seats than its vote percentage, you
04:49:37 16 know, in terms of its difference from
04:49:39 17 50 percent. But there isn't certain
04:49:42 18 broad agreement over what makes for a
04:49:44 19 good amount of winner's bonus.
04:49:48 20 There's just sort of an agreement
04:49:51 21 that tends to exist in these types of
04:49:51 22 elections. So in my initial report I
04:49:51 23 highlighted regions --- plan that
04:49:55 24 would have corresponded to points that
04:50:01 25 would have failed to have a winner's

04:50:02 1 bonus, but there were no ---.

04:50:03 2 Q. I'm sorry. I don't mean to

04:50:05 3 interrupt, and your counsel can

04:50:05 4 Redirect if necessary, but we're on a

04:50:08 5 clock, so ---.

04:50:08 6 ATTORNEY ATTISANO:

04:50:09 7 Objection, Your Honor.

04:50:09 8 I ask that the witness be allowed to

04:50:15 9 finish his answer.

04:50:15 10 ATTORNEY VANCE:

04:50:15 11 I got the answer as to

04:50:16 12 why he didn't include it in his report

04:50:18 13 so I appreciate that. I think if his

04:50:21 14 --- if they wish to further elaborate

04:50:23 15 on that on Redirect, I'm sure they

04:50:25 16 will do so.

04:50:27 17 ATTORNEY ATTISANO:

04:50:27 18 It's the witness's

04:50:28 19 answer, not the attorney's answer.

04:50:29 20 JUDGE McCULLOUGH:

04:50:30 21 Counsel, I think the

04:50:31 22 attorney said he got the answer. And

04:50:32 23 we are on a time limitation, so ---

04:50:34 24 ATTORNEY ATTISANO:

04:50:34 25 Yes, Your Honor.

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JUDGE McCULLOUGH:
--- you can ask about it
if you would like.
BY ATTORNEY VANCE:
Q. And with regard to that, the
fact that there can be differences,
your table doesn't --- or your
measurement doesn't account for how
much of a, so to speak or to use your
phrase, majoritarian nonresponsiveness
or responsiveness in that path, right,
so it's essentially binary?
A. That's correct.
Q. Okay.
So as long as one map yields
the same --- or as long as the
majority of the seats under --- as
measured against one election go to
that party, that's it, there's no
other addition for whether the
difference, the gap is maybe 30
percent or 10 percent or whatever the
case may be?
A. Yes, that's correct.
Q. Okay.

04:51:41 1 Now, you started out by
04:51:50 2 describing --- by explaining that the
04:51:51 3 goal here is in measuring with some of
04:51:54 4 these measurements is fairness, but
04:52:00 5 --- and you use obviously the majority
04:52:05 6 responsiveness as a criterion. But
04:52:06 7 you don't quite explain and provide
04:52:09 8 any literature, and I think in
04:52:11 9 paragraph 73, on whether this has
04:52:15 10 actually been an accurate predictor?
04:52:19 11 A. So majoritarianism, this idea
04:52:19 12 that, you know, a majority of the
04:52:25 13 votes should translate to a majority
04:52:25 14 of the seats is usually sort of the
04:52:29 15 starting point for and just kind of
04:52:30 16 the baseline for the parties ---.
04:52:30 17 Q. So it's just part of the
04:52:32 18 analysis and it's s potentially
04:52:35 19 flawed?
04:52:36 20 A. It's useful certainly.
04:52:38 21 Q. Okay.
04:52:42 22 So --- and you also, I believe,
04:52:48 23 acknowledge that, given the multitude
04:52:51 24 of variables that must be balanced, it
04:52:56 25 is not easy to produce a map that is

04:52:59 1 perfectly compact and that has the
04:53:03 2 highest compactness score.
04:53:05 3 Right?
04:53:06 4 A. Yes, that's correct.
04:53:06 5 Q. So that, to your mind, is not
04:53:09 6 the most important measure?
04:53:10 7 A. That's correct.
04:53:11 8 Q. Okay.
04:53:13 9 And is it correct that, based
04:53:16 10 on the efficiency gap analysis,
04:53:23 11 Table 12 of your response brief ---
04:53:26 12 A. Table 13 maybe?
04:53:28 13 Q. --- correct --- the most --- I
04:53:37 14 apologize, Table 12. So I'm looking
04:53:43 15 at the mean-median. The most
04:53:45 16 politically gerrymandered map is the
04:53:50 17 Governor's with the biggest range
04:53:51 18 under Table 12?
04:53:53 19 A. Well, I don't think that I
04:53:56 20 would characterize that as proving
04:53:58 21 anything about gerrymandering.
04:53:58 22 Q. But it has the largest range?
04:54:00 23 A. That's correct.
04:54:01 24 Q. And so in that regard it is the
04:54:04 25 least responsive to the political

04:54:10 1 leanings of the state?

04:54:12 2 A. No. So the range here is
04:54:13 3 capturing the sort of distance between
04:54:14 4 the sort of most Republican favoring
04:54:14 5 value that was observed and the most
04:54:17 6 Democratic favoring value.

04:54:17 7 Q. So it's polarizing then?

04:54:23 8 A. It has the largest --- or the
04:54:23 9 largest gap between those two.

04:54:23 10 Q. The largest polarity?

04:54:27 11 A. Yes.

04:54:29 12 Q. Okay. Thank you.

04:54:29 13 ATTORNEY VANCE:

04:54:30 14 I have no further
04:54:30 15 questions.

04:54:31 16 JUDGE McCULLOUGH:

04:54:31 17 Thank you, Counsel.

04:54:38 18 Okay. Next is Representative
04:54:38 19 McClinton.

04:54:58 20 ATTORNEY SENOFF:

04:55:00 21 Your Honor, good
04:55:02 22 afternoon.

04:55:02 23 ---

04:55:02 24 CROSS EXAMINATION

04:55:02 25 ---

04:55:02 1 BY ATTORNEY SENOFF:

04:55:03 2 Q. Just because I brought my
04:55:05 3 computer and some more papers up, I
04:55:08 4 still only have a few questions for
04:55:09 5 you, Doctor, hopefully.
04:55:13 6 Doctor, you said in response to
04:55:16 7 somebody's --- one of the counsels'
04:55:18 8 questions that the GMS map performed
04:55:20 9 remarkably well for these metrics. Do
04:55:24 10 you remember that testimony?

04:55:25 11 A. Yes.

04:55:25 12 Q. Can you just remind me what
04:55:27 13 those metrics were?

04:55:29 14 A. Sure. So the majoritarian
04:55:33 15 responsiveness or the ability to
04:55:34 16 convert, you know, majorities into,
04:55:34 17 you know, votes into majorities of
04:55:34 18 seats as well as sort of the partisan
04:55:34 19 symmetry measures and everything
04:55:43 20 measured on plan score.

04:55:43 21 Q. Okay.

04:55:44 22 And those metrics, were you ---
04:55:47 23 did you independently arrive at them
04:55:50 24 to analyze or were they given to you?

04:55:52 25 A. So they were my decision. The

04:55:55 1 mean-median and efficiency gap were
04:55:55 2 sort of testified about heavily in
04:56:01 3 League of Women Voters by experts, so
04:56:01 4 that's why I picked those. And the
04:56:01 5 majority responsiveness, like I said
04:56:01 6 recently, really is a starting place
04:56:13 7 for thinking about partisan fairness.
04:56:13 8 Q. And the factors that you
04:56:14 9 testified are contained or, you know,
04:56:18 10 in your opinion are contained within
04:56:19 11 the Pennsylvania Constitution, how did
04:56:23 12 those factors factor into your general
04:56:31 13 metrics that you said the GMS map
04:56:33 14 performed remarkably well under?
04:56:35 15 A. So they are, you know, intended
04:56:35 16 to be sort of responsive to the free
04:56:38 17 and fair elections clause in terms of
04:56:39 18 treating voters from both parties
04:56:43 19 equally.
04:56:43 20 Q. And so were you aware of those
04:56:46 21 metrics in the Pennsylvania
04:56:48 22 Constitution before you were retained
04:56:51 23 for this case?
04:56:55 24 A. Well, so --- sorry. Let me ---
04:56:55 25 I don't think the metrics are in

04:56:55 1 the ---.

04:56:55 2 Q. I'm sorry. Not the metrics,
04:56:57 3 the factors. You selected the
04:57:01 4 metrics. I'm just talking about the
04:57:04 5 elements, let's call them, within the
04:57:07 6 constitutional structure in
04:57:08 7 Pennsylvania.

04:57:08 8 A. I mean, so I had read the
04:57:14 9 League of Women Voters ruling as it
04:57:14 10 came out.

04:57:14 11 Q. Now, turning more specifically
04:57:17 12 to the maps, would you agree with me
04:57:20 13 that within a certain relatively
04:57:21 14 narrow band all of the maps based on
04:57:25 15 these metrics are relatively close
04:57:29 16 together?

04:57:33 17 A. I'm not sure that's true for
04:57:34 18 all of the metrics. I think there's a
04:57:38 19 range of values, for example, on
04:57:41 20 splits.

04:57:41 21 Q. But in terms of the results,
04:57:43 22 there are certainly no map that you
04:57:46 23 reviewed for this case that would
04:57:49 24 produce a result like 15
04:57:52 25 Representatives for one party and

04:57:54 1 three Representatives for another in
04:57:56 2 an 18-Representative state?

04:58:04 3 A. Sorry. None of the maps had 18
04:58:07 4 districts. I'm not sure ---.

04:58:07 5 Q. Well, okay. But in terms of
04:58:08 6 being lopsided, right, I mean 15 to 3
04:58:13 7 out of 18, you know, there's no map
04:58:14 8 that you've reviewed for this case
04:58:16 9 that has that same kind of lopsided
04:58:19 10 result.

04:58:19 11 Right?

04:58:23 12 A. Not across the elections I
04:58:24 13 looked at, that's right.

04:58:24 14 Q. Now, there was a lot of
04:58:26 15 discussion about the 2016 election and
04:58:33 16 your rebuttal report, and I believe
04:58:35 17 it's Table 9 of that report. Do you
04:58:37 18 have that?

04:58:38 19 A. Yes.

04:58:38 20 Q. So --- actually, I'm glad
04:58:41 21 you're here because I've always wanted
04:58:43 22 to ask somebody about the results of
04:58:45 23 this election. So do you know what is
04:58:49 24 meant when people refer to as row
04:58:51 25 offices?

04:58:52 1 A. No, I don't.

04:58:53 2 Q. Okay.

04:58:55 3 So those are statewide. Just
04:58:56 4 so we're clear, I'm going to refer to
04:58:58 5 the row offices as the Auditor, the
04:59:03 6 Attorney General, and the Treasurer?

04:59:10 7 A. Okay.

04:59:10 8 Q. And in this case, in 2016, you
04:59:12 9 showed us that in comparison to the
04:59:16 10 Presidential Election, which was also
04:59:18 11 a statewide election, correct ---

04:59:20 12 A. Yes.

04:59:21 13 Q. --- that President Trump we
04:59:26 14 know defeated Secretary Clinton at
04:59:28 15 that time.

04:59:28 16 Right?

04:59:32 17 A. That's correct.

04:59:33 18 Q. And we know that the row
04:59:34 19 offices were Democrat --- resulted in
04:59:39 20 a Democratic sweep?

04:59:42 21 A. Yes.

04:59:42 22 Q. So given that, did you --- I
04:59:45 23 know you've showed us the percentages,
04:59:47 24 but did you consider the raw votes? I
04:59:50 25 mean, obviously, you had to calculate

04:59:52 1 the percentage, but did you consider
04:59:53 2 the raw votes in those elections?

04:59:56 3 A. I used them to compute the
04:59:58 4 percentages.

04:59:59 5 Q. So the Secretary's, the
05:00:03 6 Secretary of the Commonwealth's
05:00:05 7 website still has the raw votes up and
05:00:08 8 the raw votes show that President
05:00:11 9 Trump defeated Secretary Clinton by
05:00:13 10 approximately 14,292 votes. Does that
05:00:20 11 comport with your recollection?

05:00:22 12 A. It was certainly close, yeah.

05:00:22 13 Q. Okay.

05:00:23 14 And in the Attorney General's
05:00:25 15 race, which was a race where there was
05:00:30 16 no incumbent, the Republican candidate
05:00:30 17 was a State Senator, Senator Rafferty,
05:00:30 18 Democratic candidate is the current
05:00:38 19 Attorney General, Josh Shapiro, who
05:00:39 20 was a former State Representative,
05:00:41 21 Attorney General Shapiro garnered just
05:00:47 22 over 3 million votes and Senator
05:00:47 23 Rafferty garnered about 2. --- almost
05:00:55 24 2.9 million votes.

05:00:55 25 Now, Attorney General Shapiro

05:00:57 1 was the highest statewide vote getter
05:00:58 2 that year. Do you recall that when
05:00:59 3 you put this table together?
05:01:01 4 A. I'm not sure.
05:01:02 5 Q. And is there a reason why or do
05:01:10 6 you take into account in terms of
05:01:12 7 putting this chart together these
05:01:14 8 kinds of anomalous results where, for
05:01:18 9 example, both federal races that were
05:01:22 10 on the ballot that year were won by
05:01:25 11 Republicans, President Trump and
05:01:28 12 Senator Toomey, whereas the row
05:01:29 13 offices were won by Democrats. Do you
05:01:31 14 --- is there an explanation for that,
05:01:32 15 that's applicable to the districting
05:01:37 16 that we're talking about here?
05:01:38 17 A. Well, that's one of the reasons
05:01:40 18 to look at sort of a broad collection
05:01:42 19 of elections. Even on the same ballot
05:01:43 20 the distribution of voters can be
05:01:45 21 different as you're pointing out. And
05:01:47 22 it was also true in 2020 here in
05:01:49 23 Pennsylvania as well, you know, at the
05:01:51 24 statewide level. And that's why it's
05:01:52 25 sort of informative to look at those

05:01:55 1 separately and try to understand how
05:01:57 2 the distribution of voters in those
05:02:00 3 elections differed under the maps.

05:02:00 4 Q. So would you agree with me,
05:02:02 5 though, that the distribution of
05:02:03 6 voters across the State can vary like
05:02:06 7 we see in the 2016 and the 2020
05:02:09 8 results?

05:02:09 9 A. Yes.

05:02:10 10 Q. And similarly, they can vary at
05:02:12 11 the local level.

05:02:14 12 Correct?

05:02:15 13 A. Yes.

05:02:15 14 Q. And is there --- there's no
05:02:18 15 correlation from one election --- in
05:02:20 16 one election cycle to the distribution
05:02:23 17 of votes at, for example, the federal
05:02:26 18 level versus the state row office
05:02:31 19 level versus the district level.

05:02:32 20 Is that fair to say?

05:02:33 21 A. No, I wouldn't say there's no
05:02:34 22 correlation.

05:02:34 23 Q. But the correlation, you would
05:02:35 24 agree with me, certainly you couldn't
05:02:37 25 look at these four elections or five

05:02:40 1 elections in 2016 and look at a
05:02:43 2 specific congressional district and be
05:02:46 3 able to, you know, put a blindfold on
05:02:49 4 and figure out who won that
05:02:53 5 congressional District.

05:02:54 6 Right?

05:02:54 7 A. That's correct, although I
05:02:55 8 think you can make an informed
05:02:58 9 inference.

05:02:58 10 Q. Now, just talking briefly about
05:03:01 11 your role here today and what brought
05:03:04 12 you here, your role was not to offer
05:03:07 13 an opinion on the constitutionality
05:03:09 14 broadly of those maps, of any of these
05:03:12 15 maps.

05:03:13 16 Right?

05:03:13 17 A. That's right.

05:03:15 18 Q. And in creating your plan and
05:03:18 19 developing your metrics, did you
05:03:22 20 consider an overall statewide voter
05:03:26 21 registration as it relates to party
05:03:28 22 affiliation?

05:03:29 23 A. To be fair, I didn't create the
05:03:31 24 plan. I didn't have anything to do
05:03:33 25 with that process.

05:03:33 1 Q. I'm sorry. In your metrics,
05:03:35 2 when you tested the plan did you
05:03:37 3 consider that?

05:03:37 4 A. No, I did not.

05:03:38 5 Q. And in reaching your
05:03:40 6 conclusions that you have testified
05:03:44 7 about here today, and I won't go
05:03:47 8 through them all again with you, but
05:03:49 9 in reaching those conclusions, did you
05:03:52 10 consider a voter dilution or
05:04:01 11 disenfranchisement at all within your
05:04:07 12 --- the metrics you testified about
05:04:08 13 that you created?

05:04:10 14 A. Can you define what you mean by
05:04:11 15 those terms?

05:04:11 16 Q. Well, I mean, in --- you said
05:04:11 17 you read the League of Women Voters
05:04:15 18 case.

05:04:15 19 Correct?

05:04:16 20 A. Yes.

05:04:16 21 Q. Okay.

05:04:17 22 So in the League of Women
05:04:19 23 Voters case the Supreme Court said
05:04:21 24 that one of the overarching principles
05:04:24 25 of the Pennsylvania Constitution was

05:04:26 1 to prevent dilution of an individual's
05:04:29 2 vote. So with that in mind, can you
05:04:32 3 tell me, is there something in one of
05:04:34 4 your metrics that captures that?

05:04:36 5 A. Yes. So I think the measures
05:04:40 6 of partisan fairness that I evaluated
05:04:43 7 are relevant to that question.

05:04:43 8 Q. And is it fair to say that of
05:04:47 9 all the maps you reviewed, and I'm not
05:04:49 10 going to ask you which one was better,
05:04:51 11 but were there some maps that didn't
05:04:54 12 consider partisan fairness and some
05:04:56 13 maps that did?

05:04:59 14 A. I'm not sure what you mean by
05:05:00 15 consider?

05:05:01 16 Q. In other words, were there some
05:05:03 17 plans that considered what you just
05:05:05 18 referred to as partisan fairness as
05:05:07 19 opposed to other maps that did not
05:05:09 20 consider partisan fairness?

05:05:12 21 A. I'm sorry. Who's doing the
05:05:13 22 considering?

05:05:14 23 Q. You. In other words, in your
05:05:16 24 review --- in your review of the other
05:05:19 25 reports, did you find any other

05:05:21 1 reports, for example, that did not
05:05:23 2 consider partisan fairness?

05:05:29 3 A. I think at least one report was
05:05:33 4 filed that only reported on splits,
05:05:36 5 for example. I'd have to sort of look
05:05:42 6 back through them to recall the rest.

05:05:42 7 Q. And as you used the term
05:05:43 8 partisan fairness, what metric would
05:05:45 9 you expect that to be reflected in?

05:05:49 10 A. So a broad collection of
05:05:55 11 metrics, including the ones that I
05:05:57 12 analyzed in this report and the ones
05:05:57 13 reported on plan score and, you know,
05:06:00 14 other measures of majoritarianism.

05:06:02 15 Q. So does that include
05:06:06 16 compactness?

05:06:06 17 A. So --- sorry. Can you repeat
05:06:09 18 the question?

05:06:10 19 Q. Yeah. In other words, can you
05:06:12 20 establish partisan fairness by looking
05:06:13 21 at the compactness element?

05:06:20 22 A. I mean, the compactness doesn't
05:06:25 23 measure anything about partisanship
05:06:26 24 directly.

05:06:26 25 Q. Does contiguity measure

05:06:31 1 anything about partisan fairness
05:06:32 2 directly?
05:06:32 3 A. No.
05:06:33 4 Q. Is there one factor that you
05:06:34 5 can point to that specifically or in
05:06:36 6 part measures partisan fairness?
05:06:42 7 A. I mean, the partisan fairness
05:06:45 8 measures themselves.
05:06:45 9 Q. Right. And what --- what I'm
05:06:46 10 getting at ---
05:06:46 11 A. Sorry.
05:06:48 12 Q. --- and I'm not trying to be
05:06:50 13 difficult here, is just what --- you
05:06:50 14 know, in all these reports these
05:06:55 15 factors, metrics, are referred to by
05:06:56 16 different names, right, and so I'm
05:06:57 17 trying to find out if there's a common
05:06:59 18 word that's used across all of these,
05:07:02 19 for example --- all of these reports
05:07:02 20 that would reflect partisan fairness.
05:07:05 21 A. I mean I would use partisan
05:07:07 22 fairness.
05:07:08 23 Q. I understand.
05:07:09 24 A. I think it was sort of listed
05:07:11 25 in different subheadings in probably

05:07:13 1 each of the reports, partisan
05:07:13 2 performance or vote dilution and
05:07:22 3 things like that.
05:07:22 4 Q. But you would expect to see the
05:07:23 5 word partisan something in those
05:07:23 6 reports.
05:07:25 7 Is that right?
05:07:25 8 A. I see, yes.
05:07:28 9 ATTORNEY SENOFF:
05:07:28 10 Thank you. I don't have
05:07:29 11 any other questions.
05:07:30 12 JUDGE MCCULLOUGH:
05:07:30 13 Then the Counsel for
05:07:31 14 Senator Costa, is that Mr. Attisano.
05:07:57 15 ATTORNEY ATTISANO:
05:07:57 16 Thank you.
05:07:57 17 ---
05:07:57 18 CROSS EXAMINATION
05:08:05 19 ---
05:08:05 20 BY ATTORNEY ATTISANO:
05:08:06 21 Q. Doctor DeFord, did you take
05:08:07 22 into consideration any communities of
05:08:09 23 interest in your evaluation?
05:08:13 24 A. Just the --- the municipal
05:08:13 25 boundaries that are supposed to be

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preserved.

Q. You were asked a question about Pittsburgh being split earlier. Do you remember being asked about that?

A. Yes.

Q. Did you do any analysis with respect to the communities of interest related to the City of Pittsburgh?

A. I did not.

Q. Did you read what has been titled the Lamb Report authored by Pittsburgh City Controller and lifelong resident of the City of Pittsburgh, Michael Lamb, that was in the brief filed by the Senate Democratic Caucus?

A. No, I did not.

Q. Okay.

When you look at population deviation and you just look at that number related to a map, can it tell you anything about whether that map has been optimized for partisanship?

A. No.

Q. When you look at contiguity of

05:09:15 1 a map, can it tell you anything about
05:09:16 2 whether that map as been optimized for
05:09:19 3 partisanship?

05:09:21 4 A. No.

05:09:21 5 Q. When you look at compactness of
05:09:24 6 a map, can it tell you anything about
05:09:25 7 whether that map has been optimized
05:09:29 8 for partisanship?

05:09:29 9 A. It sometimes has been used that
05:09:32 10 way in the past in the sense of, you
05:09:37 11 know, very poor compactness scores
05:09:38 12 reflecting some sort of intention.

05:09:38 13 Q. So it --- so it's been used as
05:09:40 14 --- compactness has been used as a
05:09:45 15 tool in the past to achieve partisan
05:09:45 16 optimization.

05:09:47 17 Is that fair?

05:09:47 18 A. The lack of compactness, I
05:09:51 19 guess, yes.

05:09:52 20 Q. But you agree that simply
05:09:56 21 looking at a compactness score, you
05:09:58 22 don't know, unless you look at other
05:10:00 23 factors, whether the map is being
05:10:01 24 optimized for partisanship?

05:10:06 25 A. That's correct.

05:10:06 1 Q. And looking at splits, just by
05:10:17 2 looking at splits you can't tell if
05:10:21 3 those splits have been used in a way
05:10:23 4 to optimize partisanship or not.

05:10:29 5 Correct?

05:10:29 6 A. That's correct.

05:10:35 7 Q. I'm referring you to Table 9.
05:10:37 8 I believe this is your reply report.
05:10:41 9 Just correct me if I'm mistaken about
05:10:42 10 that. It is on page 11 of the report.

05:10:44 11 A. That's correct.

05:10:45 12 Q. When we look at this, can we
05:10:47 13 learn anything about whether a map has
05:10:50 14 been optimized for partisanship?

05:10:53 15 A. I don't know about the word
05:10:56 16 optimized.

05:10:56 17 Q. So when we look at this, you
05:10:57 18 agree that some maps score higher on
05:11:07 19 the anti-majoritarian metric than
05:11:07 20 others.

05:11:18 21 Correct?

05:11:18 22 A. That's correct.

05:11:19 23 Q. And you agree that the
05:11:19 24 anti-majoritarian metric is a tool
05:11:19 25 used to understand the partisanship of

05:11:22 1 a map.

05:11:23 2 Correct?

05:11:24 3 A. That's correct.

05:11:24 4 Q. And you agree the Senate
05:11:26 5 Democratic Map Number 1 up there, it's
05:11:28 6 got three highlighted blocks showing
05:11:31 7 anti-majoritarian factors.

05:11:34 8 Correct?

05:11:35 9 A. That's correct.

05:11:36 10 Q. And why are they highlighted
05:11:38 11 red rather than highlighted blue?

05:11:40 12 A. So each of those examples is an
05:11:42 13 election where the Democratic
05:11:45 14 candidate won the statewide vote. But
05:11:48 15 under the --- sorry, the first Senate
05:11:51 16 Democratic map, the Republicans would
05:11:53 17 have won the majority of the
05:11:56 18 districts.

05:11:56 19 Q. So with respect to the Senate
05:11:58 20 Democratic map, the indicators of
05:12:02 21 ant---majoritarianis that you've
05:12:07 22 highlighted do not cut in the
05:12:20 23 direction of a Democratic advantage.

05:12:20 24 Correct?

05:12:20 25 A. That's correct.

05:12:27 1 Q. Is it possible that a map can
 05:12:29 2 comply with the traditional
 05:12:30 3 redistricting principles we discussed
 05:12:33 4 and still be optimized for
 05:12:40 5 partisanship?

05:12:40 6 A. I mean, if you --- meaning
 05:12:40 7 actually you have core values on the
 05:12:45 8 scores, the answer is yes.

05:12:49 9 Q. Thank you.

05:12:49 10 ATTORNEY ATTISANO:
 05:12:49 11 No further questions.
 05:12:49 12 JUDGE MCCULLOUGH:
 05:12:54 13 Thank you, Mr. Attisano.

05:12:54 14 Petitioner Gressman, do you have
 05:12:57 15 Redirect?

05:13:09 16 ATTORNEY RING-AMUNSON:
 05:13:09 17 Thank you, Your Honor.

05:13:09 18 ---
 05:13:09 19 REDIRECT EXAMINATION

05:13:10 20 ---
 05:13:10 21 BY ATTORNEY RING-AMUNSON:
 05:13:11 22 Q. Doctor DeFord, is it true that
 05:13:12 23 you, in your reports, attempted to
 05:13:15 24 report all metrics for all maps?

05:13:18 25 A. To the extent I could, yes.

05:13:18 1 Q. And does that mean that each
05:13:21 2 party can find its favorite nugget
05:13:21 3 somewhere in your report to point out
05:13:31 4 to the Judge?

05:13:31 5 A. That's correct.

05:13:31 6 Q. And some of the metrics on a
05:13:35 7 particular line item might favor maps
05:13:36 8 submitted by Democratic parties?

05:13:37 9 A. That's correct.

05:13:38 10 Q. And some of the metrics on a
05:13:39 11 particular line item might favor
05:13:41 12 Republican parties?

05:13:42 13 A. That's correct.

05:13:43 14 Q. So why did you not cherry pick
05:13:45 15 your presentation to focus only on the
05:13:47 16 metrics that favored the Gressman Math
05:13:52 17 and Science Petitioners map?

05:13:53 18 A. You know, I sort of of was
05:13:55 19 asked to analyze initially the
05:13:57 20 Gressman plan and then, you know, all
05:13:58 21 of the plans across sort of all the
05:14:01 22 metrics that I deemed responsive to
05:14:04 23 the criteria, and so that's what I did
05:14:06 24 and I reported the results for all of
05:14:08 25 those analyses.

05:14:10 1 Q. And if every party can pick one
05:14:13 2 specific line item or another where
05:14:16 3 they perform the best, why is it and
05:14:19 4 how were you able to develop a view
05:14:21 5 that the Gressman Math and Science
05:14:23 6 Petitioners map performs the best when
05:14:29 7 accounting for all of the criteria
05:14:31 8 together?

05:14:31 9 A. Yeah, so in particular, looking
05:14:33 10 across the criteria and observing, you
05:14:35 11 know, the best possible performance on
05:14:37 12 --- or the best performance across the
05:14:39 13 maps on splits, you know, this is
05:14:41 14 really sort of a remarkable
05:14:42 15 performance compared to the other
05:14:45 16 plans on the partisanship measures,
05:14:47 17 you know, exact population balance,
05:14:50 18 you know, sort of taken together, you
05:14:52 19 know, in my expert opinion, make the
05:14:52 20 mathematicians and scientists map the
05:14:57 21 best one.

05:14:57 22 ATTORNEY RING-AMUNSON:
05:14:57 23 Thank you. No more
05:14:58 24 questions.

05:14:58 25 JUDGE MCCULLOUGH:

05:15:00 1 Thank you. You may step
05:15:01 2 down and thank you very much,
05:15:03 3 Professor.

05:15:03 4 THE WITNESS:

05:15:04 5 Thank you.

05:15:04 6 JUDGE MCCULLOUGH:

05:15:04 7 Unless there was any
05:15:05 8 Recross. I'm sorry I didn't --- is
05:15:07 9 there.

05:15:07 10 ATTORNEY VANCE:

05:15:08 11 No.

05:15:08 12 JUDGE MCCULLOUGH:

05:15:08 13 Okay.

05:15:09 14 Then we will move on.

05:15:11 15 Thank you. We will move on. Now,
05:15:25 16 Respondent, Secretary Chapman I do not
05:15:26 17 believe has an expert for today or
05:15:33 18 does ---?

05:15:33 19 ATTORNEY WIYGUL:

05:15:34 20 Your Honor, so the
05:15:34 21 Respondents don't have a map expert
05:15:34 22 because they haven't submitted a map.
05:15:34 23 The Governor has a map expert that
05:15:35 24 he'd like to call. And I know there's
05:15:35 25 a separate issue which we discussed,

05:15:37 1 and I understand there was a
05:15:38 2 conference this morning I missed, I
05:15:38 3 apologize for that, about the
05:15:43 4 Respondents possibly calling a witness
05:15:44 5 on --- just on calendar issues. My
05:15:46 6 thought was that that might happen
05:15:49 7 tomorrow, if at all, and not at this
05:15:52 8 moment.

05:15:52 9 JUDGE MCCULLOUGH:

05:15:52 10 Right. We may not --- I
05:15:52 11 don't --- I don't think we're going to
05:15:56 12 need that, but we will talk about that
05:15:57 13 later.

05:16:00 14 ATTORNEY WIYGUL:

05:16:00 15 Okay.

05:16:00 16 JUDGE MCCULLOUGH:

05:16:01 17 You may proceed to call
05:16:01 18 your witness on behalf of Governor
05:16:03 19 Wolf.

05:16:03 20 ATTORNEY WIYGUL:

05:16:03 21 Thank you, Your Honor.
05:16:05 22 Governor Wolf calls Professor Moon
05:16:12 23 Duchin to the stand, please.

05:16:15 24 COURT CRIER TURNER:

05:16:16 25 Please raise your right

1 hand.

2 ---

3 PROFESSOR MOON DUCHIN,
4 CALLED AS A WITNESS IN THE FOLLOWING
5 PROCEEDINGS, HAVING FIRST BEEN DULY
6 SWORN, TESTIFIED AND SAID AS FOLLOWS:

05:16:25

7 ---

05:16:25

8 ATTORNEY WIYGUL:

05:16:25

9 And Your Honor, may I

05:16:27

10 just provide the witness with a

05:16:28

11 binder, if that's all right?

05:16:28

12 JUDGE MCCULLOUGH:

05:16:28

13 Is that the witness's

05:16:30

14 report?

05:16:30

15 ATTORNEY WIYGUL:

05:16:30

16 I understand it's the

05:16:30

17 witness's report and other reports as

05:16:33

18 well.

05:16:33

19 JUDGE MCCULLOUGH:

05:16:34

20 Yes.

05:16:34

21 ---

05:16:34

22 DIRECT EXAMINATION

05:16:45

23 ---

05:16:45

24 BY ATTORNEY WIYGUL:

05:16:45

25 Q. Good afternoon, Professor

05:16:47 1 Duchin. Could you please start by
05:16:48 2 just introducing yourself to the
05:16:50 3 Court, please?

05:16:50 4 A. Yes. My name is Moon Duchin.

05:16:53 5 Q. And what's your current
05:16:54 6 position?

05:16:55 7 A. I'm a professor of mathematics
05:16:57 8 and Senior Fellow in the College of
05:17:01 9 Civic Life at Tufts University.

05:17:01 10 Q. And do you have any experience
05:17:02 11 in any areas of research that are
05:17:04 12 relevant to the two reports you
05:17:06 13 prepared in this matter?

05:17:07 14 A. Yes. The main focus of my
05:17:10 15 research in recent years has been on
05:17:10 16 techniques to analyze redistricting
05:17:18 17 and systems of election.

05:17:18 18 Q. And have you published in
05:17:19 19 peer-reviewed articles in the area of
05:17:21 20 redistricting?

05:17:21 21 A. Yes, quite a few at this point
05:17:23 22 appearing in places like the Election
05:17:27 23 Law Journal, Political Analysis,
05:17:32 24 Statistics in Public Policy and so on.

05:17:32 25 Q. Outside of that strictly

05:17:35 1 academic work, do you have any other
05:17:37 2 experience where you assess the
05:17:39 3 characteristics --- characteristics of
05:17:40 4 district maps?

05:17:41 5 A. I do. In this cycle I have
05:17:44 6 worked with various line-drawing
05:17:47 7 bodies such as redistricting
05:17:47 8 commissions, independent and
05:17:51 9 bipartisan commissions around the
05:17:52 10 country which have brought me into
05:17:56 11 call balls and strikes as I see it and
05:17:59 12 try to put plans in the context in
05:18:01 13 terms of metrics trying to understand
05:18:03 14 the alternatives and the political
05:18:06 15 geography.

05:18:07 16 Q. I would like to turn now to the
05:18:09 17 reports in this matter. Generally
05:18:10 18 speaking, what were you asked to do?

05:18:11 19 A. I was asked in this matter to
05:18:13 20 look at a collection of congressional
05:18:17 21 plans for Pennsylvania, to compare
05:18:20 22 them. Ultimately I compared 13 plans,
05:18:24 23 but also performed what has been
05:18:27 24 called an ensemble analysis, what I
05:18:30 25 call an ensemble analysis. My main

05:18:34 1 ensemble consists of 100,000
05:18:38 2 alternative plans that follow the ---
05:18:39 3 the rules and priorities of
05:18:41 4 Pennsylvania redistricting, so I
05:18:43 5 suppose you could say I compared
05:18:52 6 100,013 plans.

05:18:53 7 Q. And we've heard a lot in this
05:18:53 8 case so far about traditional or
05:18:53 9 neutral redistricting principles.
05:18:53 10 You heard that testimony?

05:18:53 11 A. Yes.

05:18:54 12 Q. Did you evaluate the maps in
05:18:55 13 this case under those principles?

05:18:56 14 A. I did.

05:18:57 15 Q. Okay.

05:18:57 16 And what do you understand the
05:19:00 17 term traditional districting
05:19:03 18 principles to mean?

05:19:05 19 A. So in my view, usually there's
05:19:07 20 a sort big six. So we talk about
05:19:09 21 population equality under one person,
05:19:12 22 one vote, we talk about minority
05:19:14 23 opportunity to elect under the Voting
05:19:17 24 Rights Act of 1965 and the
05:19:20 25 Constitution.

05:19:20 1 There are compactness and
05:19:22 2 contiguity, there's respect for
05:19:24 3 political boundaries and also respect
05:19:27 4 for communities of interest. Those
05:19:29 5 round out the most important of the
05:19:31 6 most typically considered six, and
05:19:34 7 there are others such as least change
05:19:36 8 and incumbency considerations and so
05:19:40 9 on that are often in play.

05:19:43 10 Q. We've also heard quite a bit
05:19:44 11 today about the conduct of
05:19:46 12 partisanship fairness. Did you
05:19:46 13 evaluate the maps at issue in this
05:19:47 14 case for partisan fairness?

05:19:47 15 A. I did. And I took that to be a
05:19:47 16 major area of interest in comparing
05:19:48 17 the maps.

05:19:48 18 Q. And what do you understand the
05:19:50 19 term partisan fairness to mean?

05:19:50 20 A. Broadly, in terms of partisan
05:19:50 21 fairness, I've been talking about
05:20:07 22 concepts like vote dilution. The idea
05:20:11 23 is that votes should weigh as much,
05:20:11 24 they should have as much weight, power
05:20:14 25 and value, regardless of how they're

05:20:16 1 aligned or how they're placed. And
05:20:17 2 that includes, in particular, votes
05:20:19 3 cast for members of different parties.
05:20:21 4 So the partisan fairness broadly is
05:20:24 5 about giving votes equal weight,
05:20:31 6 irrespective of their party limit.
05:20:33 7 Q. And you said you analyzed the
05:20:34 8 13 maps that were submitted in this
05:20:36 9 case. Is it true in your opening
05:20:38 10 report you focused on three, the
05:20:39 11 Governor's plan, HB-2146 or the plan
05:20:44 12 passed out at Pennsylvania House and
05:20:46 13 what your report referred to as the
05:20:48 14 Citizens plan?
05:20:49 15 A. That's correct.
05:20:49 16 Q. And just to be clear, by
05:20:51 17 Citizens plan because of the
05:20:52 18 nomenclature you're referring to the
05:20:56 19 draw of the lines in the Amicus plan.
05:20:58 20 Is that correct?
05:20:58 21 A. That's right. I would like to
05:20:59 22 point out, it was noted in one of the
05:21:00 23 --- at least one of the response
05:21:03 24 briefs that their plan had been
05:21:05 25 updated several times in January, and

05:21:10 1 so in the report I look at, a January
05:21:13 2 draw of the lines plan, but I'm also
05:21:14 3 prepared to discuss the update. I
05:21:19 4 compared them.

05:21:19 5 Q. Okay.

05:21:20 6 Great. Great?

05:21:20 7 And so you looked at those
05:21:22 8 three plans initially and then your
05:21:23 9 response report looked at the balance
05:21:24 10 of the plans.

05:21:24 11 Is that right?

05:21:25 12 A. That's right.

05:21:25 13 Q. So after conducting your
05:21:28 14 analysis did you reach any conclusions
05:21:29 15 to a reasonable degree of professional
05:21:31 16 certainty about the various maps
05:21:33 17 conformance to what we called the
05:21:35 18 traditional redistricting principles?

05:21:38 19 A. I --- I did. I analyzed that
05:21:40 20 in some detail.

05:21:41 21 Q. And --- and generally speaking,
05:21:42 22 what were those conclusions?

05:21:43 23 A. In general, the plans submitted
05:21:45 24 that are in consideration for the
05:21:49 25 Court form quite well across a range

05:21:51 1 of different metrics, but that's not
05:21:52 2 to say that you can't make some
05:21:55 3 distinctions if you're looking to make
05:21:59 4 tiers of adherence to the traditional
05:22:02 5 principles.

05:22:03 6 Q. And let's --- can we pull up
05:22:05 7 Exhibit 1 to your opening report,
05:22:06 8 please. That's page eight, Table 1.
05:22:09 9 And this addresses the principle
05:22:10 10 population balance.

05:22:12 11 Is that correct?

05:22:12 12 A. That's right.

05:22:13 13 Q. What conclusions did you reach
05:22:15 14 with regard to this principle?

05:22:17 15 A. That all plans --- in this
05:22:22 16 case, the initial three --- but
05:22:24 17 ultimately all 13 plans are quite
05:22:27 18 tightly population balanced with
05:22:28 19 respect to their --- to the relevance
05:22:30 20 basis of population that they
05:22:33 21 considered.

05:22:33 22 Q. And then there's also a table
05:22:35 23 about prisoner adjusted numbers.

05:22:37 24 Can you just explain what that is?

05:22:39 25 A. Absolutely. So there are

05:22:40 1 actually three data sets in play, the
05:22:47 2 census PL 94171, as it's called,
05:22:48 3 that's the raw decennial data release.
05:22:54 4 And in the State of Pennsylvania the
05:22:59 5 LRC released two data sets afterwards.
05:22:59 6 One that many people call LRC-1,
05:23:02 7 corrects some boundaries and what you
05:23:04 8 might call some labeling errors from
05:23:07 9 the census bureau, but it's very
05:23:10 10 similar. And a second ORC 2 that
05:23:13 11 reallocates incarcerated people as
05:23:19 12 best as possible to their communities
05:23:21 13 of origin.

05:23:21 14 Most of the plans are balanced
05:23:21 15 with respect to the first data set to
05:23:25 16 the raw census data and LRC-1 which
05:23:25 17 agree. But in particular the plan
05:23:25 18 submitted by Khalif Ali, et al. is
05:23:25 19 balanced with respect to the prisoner
05:23:35 20 adjusted data.

05:23:35 21 Q. And so you show what the
05:23:36 22 deviation would be for these three
05:23:38 23 plans under that data set.

05:23:39 24 Is that correct?

05:23:40 25 A. Yes.

05:23:47 1 Q. Okay.

05:23:47 2 Now, we've also heard a lot
05:23:47 3 about contiguity, I believe the
05:23:47 4 testimony so far has been all the
05:23:47 5 plans at issue are contiguous?

05:23:47 6 Do you agree with that?

05:23:53 7 A. I do.

05:23:53 8 Q. So let's move on to compactness
05:23:53 9 and can we pull up your opening
05:23:56 10 report, page nine, Table 3, and
05:23:57 11 Exhibit 2 --- excuse me, and your
05:23:58 12 response report, page two. Maybe
05:23:58 13 juxtapose those, if we can.

05:24:06 14 We've heard a lot about
05:24:09 15 compactness in this case. Can you
05:24:11 16 just say generally how you would
05:24:12 17 describe that metric?

05:24:12 18 A. Sure. Maybe a family of
05:24:17 19 metrics. Compactness is one of the
05:24:18 20 areas of my specialization. It's what
05:24:22 21 got me into thinking about
05:24:24 22 redistricting in the first place. And
05:24:26 23 here I've concluded the five
05:24:28 24 different, what I call, contour-based
05:24:33 25 measures that were referenced by the

05:24:34 1 Supreme Court in the League of Women
05:24:36 2 Voters case.

05:24:37 3 All the plans in 2018 had to
05:24:39 4 submit the scores of those five
05:24:41 5 metrics. And then there's another one
05:24:42 6 called block cut edges, which is a
05:24:45 7 discreet measure that takes the units
05:24:48 8 into account, but without going into
05:24:48 9 great depth, rather than choosing a
05:24:53 10 metric, I've as you'll see in many of
05:24:54 11 the expert treatments, and as you'll
05:24:56 12 see in the way I treat other matters,
05:24:58 13 I've tried to report all the ones I
05:25:01 14 think are of interest.

05:25:02 15 Q. And what conclusions do you
05:25:04 16 draw about the relative performance of
05:25:07 17 the various maps under these different
05:25:09 18 compactness scores?

05:25:11 19 A. That the maps are quite good
05:25:15 20 across the board, but that you can
05:25:17 21 still see some that are better. And
05:25:19 22 the Governor's plan, in particular, is
05:25:22 23 highly compact. It's the most compact
05:25:26 24 in several of these measures. It's
05:25:27 25 one of the two or three most compact

05:25:30 1 in perhaps most or all of the
05:25:32 2 measures.

05:25:33 3 So broadly speaking, I agree
05:25:35 4 with the experts who have spoken
05:25:37 5 before me, who have said that the
05:25:39 6 different measures capture largely
05:25:41 7 different things, some of them are
05:25:42 8 very similar, but that I feel very
05:25:49 9 comfortable saying the Governor's plan
05:25:52 10 is particularly compact.

05:25:53 11 Q. And what about the relative
05:25:54 12 performance of the house map or
05:25:54 13 HB-2146 with respect to compactness?

05:25:59 14 A. It's certainly one of the least
05:26:01 15 compact of these.

05:26:01 16 Q. Now, we've also spoken about
05:26:05 17 political boundaries today. And can
05:26:07 18 we pull up the response report,
05:26:11 19 Professor Duchin, page two, Table 1,
05:26:12 20 please?

05:26:12 21 So can you say again, what do
05:26:14 22 you understand respecting political
05:26:16 23 boundaries to mean?

05:26:18 24 A. So respecting political
05:26:20 25 boundaries means that once you know

05:26:21 1 which the relevant units are, you
05:26:25 2 should try not split them, try to keep
05:26:28 3 them whole. And when you must split
05:26:31 4 them, you should pay attention to how
05:26:34 5 many pieces you're splitting them
05:26:34 6 into.

05:26:34 7 As you heard from Doctor Rodden
05:26:34 8 --- and I heartily agree, this will
05:26:39 9 depend heavily on which data set you
05:26:40 10 use to define your terms. So what you
05:26:44 11 see here is the county subdivision
05:26:46 12 data set from the census borough that
05:26:47 13 Doctor Rodden spoke about earlier.
05:26:50 14 That's the basis of my municipality
05:26:57 15 numbers here. And it includes cities,
05:26:58 16 towns, townships and boroughs. I did
05:26:59 17 also look at wards, that's not
05:27:00 18 reflected in these numbers.

05:27:03 19 Q. So is it fair to say to make
05:27:05 20 sure you're comparing apples and
05:27:09 21 apples you have to make sure you know
05:27:09 22 what each party or expert means by
05:27:10 23 political subdivision?

05:27:11 24 A. Absolutely. And I think when
05:27:13 25 you compare the reports, it can become

05:27:14 1 obvious if you're reading a report of
05:27:16 2 someone who has thought a lot about
05:27:18 3 these different choices and certainly
05:27:20 4 --- certainly I did think about what
05:27:22 5 the best data set was to use for
05:27:25 6 correspondence to the terms of the
05:27:26 7 constitution.

05:27:26 8 Q. And when you applied your
05:27:28 9 analysis of respect for political
05:27:30 10 subdivisions to the maps in this case,
05:27:32 11 what conclusions do you draw?

05:27:35 12 A. Really broadly, these are all
05:27:38 13 excellent on this level. Just the way
05:27:40 14 --- you know, we see so many numbers
05:27:42 15 when we look at analyses like this, so
05:27:45 16 here I would just remind you, if
05:27:47 17 you're trying to make your way around
05:27:49 18 those numbers, we're dealing with 17
05:27:52 19 district plans. And so if you think
05:27:54 20 about it, plans that split 17 and even
05:27:58 21 fewer than 17 are, you know, in that
05:28:01 22 neighborhood, those should be really
05:28:03 23 considered excellent in the context of
05:28:06 24 trying to balance population finally.
05:28:08 25 And so what you see here is that, you

05:28:11 1 know, 13 to 16 county splits is true
05:28:14 2 for most of these, and 16 to 18
05:28:18 3 municipality splits is true for most
05:28:20 4 of these. And I consider those to be
05:28:23 5 excellent.

05:28:24 6 We've heard people talking
05:28:25 7 today about absolutely minimization of
05:28:28 8 these numbers, and to that I would
05:28:29 9 just remind you it's minimization in
05:28:32 10 view of the other --- the other
05:28:34 11 properties and criteria that must be
05:28:37 12 maintained. So everyone who thinks
05:28:39 13 about these numbers understands that
05:28:41 14 there are trade-offs, and that perhaps
05:28:43 15 if you split one more county you can
05:28:46 16 get a better compactness score and so
05:28:49 17 on. So these all reflect decisions
05:28:50 18 about those trade offs.

05:28:52 19 Q. And you mentioned a range that
05:28:56 20 most of the plans were in, which I
05:28:57 21 think you described as excellent, just
05:28:57 22 to be clear is the Governor's plan
05:29:00 23 within those ranges?

05:29:01 24 A. It is. And --- and as is also
05:29:02 25 noted in some of the reports. Some of

05:29:03 1 these county splits are really quite
05:29:06 2 minor, but are listed here nonetheless
05:29:09 3 such as that example of six stray
05:29:16 4 paper in Chester County.

05:29:16 5 Q. I understand. Now, are you
05:29:18 6 aware that several other experts in
05:29:19 7 this contact have focused on many
05:29:22 8 criticize the fact that the governor
05:29:24 9 maps splits the City of Pittsburgh?

05:29:26 10 A. Yes, I did notice that was a
05:29:28 11 theme in a number of the reports.

05:29:28 12 Q. And did you have any opinions
05:29:30 13 that you want to offer about that
05:29:31 14 focus?

05:29:32 15 A. Well, just to say that there
05:29:38 16 are many things you're balancing, as
05:29:39 17 I've already said, and particularly
05:29:40 18 when it comes to city splits, I think
05:29:40 19 that --- one thing that's called to
05:29:52 20 mind for me is a story from an
05:29:53 21 interview that I actually conducted
05:29:57 22 for a book that's in press with
05:30:01 23 Professor Nate Persily, who is a
05:30:01 24 longstanding and highly respected
05:30:02 25 redistricting expert. Indeed he's the

05:30:05 1 line drawer who drew the remedial plan
05:30:09 2 that we've all been praising today.

05:30:09 3 Q. In 2018?

05:30:12 4 A. In 2018 in Pennsylvania for the
05:30:15 5 court --- the Supreme Court of
05:30:15 6 Pennsylvania. So the plan that we're
05:30:17 7 using as the benchmark. And in this
05:30:22 8 interview Professor Persily talks
05:30:23 9 about having drawn lines for many
05:30:24 10 decades, including the State of New
05:30:26 11 York. And he gives a colorful example
05:30:33 12 of Buffalo, where he says, you know,
05:30:33 13 he sat down to draw a great plan, he
05:30:33 14 was looking at all the metrics, and he
05:30:35 15 saw that Buffalo had been split and
05:30:36 16 that he didn't have to split it.

05:30:37 17 And in fact, the way he
05:30:38 18 described it in the interview, he
05:30:40 19 could drive this really nice round
05:30:45 20 district around Buffalo, keeping it
05:30:45 21 whole and getting a great compactness
05:30:45 22 score and he was patting himself on
05:30:45 23 the back over that.

05:30:49 24 And then when the plan came out
05:30:50 25 to the public the news stories, the

05:30:52 1 headline was Buffalo loses district,
05:30:57 2 because having had two representatives
05:30:59 3 before and now they would have only
05:31:02 4 one. So what he thought was just a
05:31:04 5 win-win in terms of the metrics
05:31:08 6 actually turned out to be regarded as
05:31:11 7 getting a little bit less
05:31:11 8 representation to Buffalo.
05:31:13 9 That's not to say that you should
05:31:14 10 always split cities, that's to say
11 that there are also community of
12 interest considerations. And I
13 believe we've just heard about an
14 example in --- please correct me,
15 because there are many parties, but I
16 think it was the senate, Democratic
17 caucus brief of the city of controller
18 from Pittsburgh testifying that a
05:31:15 19 two-district split for Pittsburgh
05:31:18 20 could be a good choice in view of
05:31:18 21 communities of interest. So that was
05:31:18 22 --- sorry that was a bit of a long
05:31:18 23 answer.
05:31:18 24 But all to say, I think these
05:31:42 25 are all reasonable choices. Some of

05:31:46 1 the reports say that the Governor's
05:31:49 2 plan split of Pittsburgh is an obvious
05:31:52 3 Democratic gerrymandering ploy and
05:31:52 4 some reports say it's an obvious ploy
05:31:54 5 to get better compacting scores. I
05:31:57 6 just think there are good reasons as
05:31:59 7 well why a city split, particularly
05:32:02 8 into two districts that can comport
05:32:06 9 with the preferences of the City might
05:32:07 10 be the best for --- for
05:32:08 11 representational goals.

05:32:08 12 Q. Now, in that context of what
05:32:12 13 you just said, you mentioned
05:32:12 14 communities of interest, which you
05:32:14 15 also spoke about earlier. Could we
05:32:17 16 bring up opening report, page 11,
05:32:21 17 Figure 2, and can you start by
05:32:22 18 explaining about the principle of
05:32:24 19 communities of interest?

05:32:25 20 A. Yes. So the idea there in the
05:32:26 21 communities of interest norm is that
05:32:29 22 we should identify geographical areas
05:32:34 23 where the residents have shared
05:32:35 24 interests that are relevant to their
05:32:37 25 representation. So this could be

05:32:38 1 shared history, shared economics,
05:32:40 2 shared culture, many other examples.
05:32:44 3 And the principle says you should be
05:32:48 4 attentive to communities of interest,
05:32:50 5 especially in view of the example I
05:32:52 6 just gave.

05:32:53 7 It doesn't always mean a
05:32:55 8 community should be held whole.
05:32:58 9 Sometimes it's more effectively split.
05:32:58 10 But they should be kind of top of mind
05:33:00 11 for the line drawers, as they draw.
05:33:02 12 And for the plans that I was
05:33:04 13 considering in the initial report, I
05:33:07 14 know that the Governor's plan had a
05:33:09 15 public portal, collected hundreds of
05:33:12 16 submissions from the public about
05:33:15 17 their communities. The Citizens plan
05:33:17 18 was based on a mapping competition,
05:33:19 19 which ---.

05:33:19 20 Q. Again, this is the Draw the
05:33:22 21 Lines plan, just to be clear?

05:33:22 22 A. Yes. Thank you. Several of
05:33:23 23 them do use the word citizens. So the
05:33:28 24 Draw the Lines plan, which I've called
05:33:28 25 Citizens plan was the output of a

05:33:31 1 mapping competition that had hundreds
05:33:35 2 even maybe thousands of entries.
05:33:36 3 The House plan has its own
05:33:38 4 really nice origin story, in my
05:33:40 5 opinion. It's derived from a map
05:33:41 6 drawn from a map drawn Susan Amanda
05:33:44 7 Holt, engaged --- highly engaged
05:33:46 8 Pennsylvanian who really has taken a
05:33:49 9 --- has done a great job and taken a
05:33:51 10 great interest in mapping. My
05:33:53 11 understanding, which is not informed
05:33:55 12 by any special knowledge, but my
05:33:57 13 understanding from the coverage is
05:33:58 14 that that was drawn primarily in
05:34:01 15 isolation and in view of the metrics.
05:34:04 16 And I think that's a little bit
05:34:06 17 reflected. Here I've compared how the
05:34:08 18 three plans split up Philadelphia. So
05:34:12 19 Philadelphia city and county is
05:34:14 20 outlined in red in the plans, and I
05:34:16 21 think that you get divisions of the
05:34:20 22 City that are more logical from the
05:34:22 23 point of view of the COI testimony in
05:34:24 24 the Governor's plan and the Citizens
05:34:26 25 plan.

05:34:27 1 The Holt derived House map, you
05:34:30 2 can see a little sort of chomp into
05:34:34 3 Philadelphia in the north. What you
05:34:36 4 can't maybe see at this resolution is
05:34:39 5 that towards the south, that District
05:34:40 6 actually enters Philadelphia in two
05:34:43 7 different places. I don't --- I don't
05:34:46 8 know of any kind of community oriented
05:34:48 9 justification for the way that that
05:34:50 10 split is designed.

05:34:51 11 Q. I'd like to ask you about
05:34:53 12 another redistricting principle, which
05:34:54 13 is the least change principle.

05:34:56 14 Are you aware of that one?

05:34:58 15 A. Yes.

05:34:58 16 Q. And could you describe that for
05:34:59 17 the Court, please?

05:35:00 18 A. Yes. So least change and
05:35:05 19 associated metrics look to measure the
05:35:05 20 degree of a plan's resemblance to
05:35:07 21 another another plan. And in this
05:35:08 22 case to that benchmark plan drawn by
05:35:16 23 Professor Persily that I just
05:35:17 24 mentioned. And it's more
05:35:18 25 straightforward to measure this when

05:35:20 1 you have the same number of districts,
05:35:22 2 but as you heard from Doctor Rodden
05:35:24 3 earlier, you can still do that even
05:35:26 4 though the number of districts has
05:35:29 5 dropped just by looking for the best
05:35:29 6 matching. And I did look at that
05:35:31 7 metric in my report.

05:35:32 8 Q. And could we pull up opening
05:35:34 9 report, page ten, Table 4, please.
05:35:39 10 And I'll ask you, Professor Duchin,
05:35:40 11 does this represent the results of
05:35:40 12 your analysis on least change, at
05:35:42 13 least in your initial report?

05:35:43 14 A. That's right. This shows the
05:35:44 15 best matching of the new districts to
05:35:47 16 the amount of displacement, which is
05:35:49 17 really quite similar to the metric
05:35:52 18 Doctor Rodden described.

05:35:52 19 Q. And what does that show in
05:35:53 20 terms of the relative performance of
05:35:55 21 these three maps?

05:35:56 22 A. Of these three, the Governor's
05:35:59 23 plan is the most like the --- the
05:36:00 24 current plan, the remedial plan from
05:36:02 25 2018. I did later look at the rest of

1 the maps and I quickly tried to
2 compare my numbers to Doctor Rodden's
3 when they were on screen, and they ---
4 and they agree. So it is the case
5 that the Carter plan is the closest to
6 the remedial plan.

05:36:18

7 Q. And let me just zoom out here
8 for a moment and ask why is minimizing
9 changes from the old map, in this case
10 the 2018 remedial plan, why is that
11 redistricting value?

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12 A. If you believe that the old
13 plan is a good one, if you believe
14 that the old plan has shown itself to
15 perform in ways that are fair, if you
16 believe that the old plan represents
17 the principles that you're trying to
18 embody, then it does make some sense
19 that you try to look a lot like it.
20 Although I think this would clearly go
21 lower order priority than those
22 traditional principles that we
23 discussed in the first group.

24 Q. Can we pull up opening report
25 page ten, Table 5, please. And I want

05:37:03 1 to ask you, this --- this table
05:37:03 2 addresses the principal incumbent
05:37:08 3 pairing, and what does that principle
05:37:09 4 focus on?

05:37:09 5 A. So that looks at the question
05:37:11 6 of whether --- when you take the home
05:37:13 7 addresses of the incumbents for the
05:37:15 8 office that you're analyzing, have you
05:37:15 9 drawn the districts in a way that they
05:37:15 10 contain multiple incumbents.

05:37:15 11 This is sometimes colorfully
05:37:25 12 called double bunking. I really love
05:37:27 13 that image. It's like a fight over a
05:37:28 14 bunk bed and the idea these incumbents
05:37:31 15 will have to face each other if they
05:37:34 16 are planning to run for re-election in
05:37:34 17 a state that requires residency in the
05:37:37 18 district.

05:37:37 19 Q. And what conclusions, if any,
05:37:39 20 did you draw about the various maps
05:37:41 21 under the incumbent pairing principle?

05:37:44 22 A. Well, just from basic math,
05:37:45 23 we're going to have to compare some
05:37:47 24 incumbents to go down from 18 to 17
05:37:50 25 districts, so you'll need at least one

05:37:53 1 district that has multiplicity. And
05:37:53 2 these three plans all have two such
05:38:00 3 districts. One thing that I'll note
05:38:01 4 that is that it's my understanding
05:38:03 5 that District 5 and the Governor's
05:38:05 6 plan compares two Democratic
05:38:07 7 incumbents.

05:38:08 8 Just for the record, in my
05:38:10 9 view, when I'm trying to assess
05:38:12 10 whether a plan is a gerrymander for
05:38:15 11 one party, I think it would avoid
05:38:17 12 pairing the incumbents of that party.
05:38:18 13 So to me, this is a sign that this is
05:38:21 14 not a Democratic gerrymander plan.

05:38:24 15 Q. So if we take all the
05:38:25 16 traditional redistricting principles
05:38:26 17 that you considered, what conclusions
05:38:28 18 overall, did you draw about the
05:38:30 19 Governor's plan in relation to the
05:38:31 20 other plans before the Court?

05:38:32 21 A. I think it's really an
05:38:34 22 excellent plan on the grounds of the
05:38:35 23 traditional principles. It's one of
05:38:38 24 the very best. In my view it's
05:38:43 25 extremely compact. It is economical

05:38:46 1 in terms of political boundary splits
05:38:48 2 and the splits that it is has have a
05:38:51 3 good story. I find it to do well by
05:38:54 4 the likes of incumbent pairing and
05:38:56 5 lease change across the board. It's
05:38:57 6 an excellent plan on traditional
05:39:00 7 districting principles.

05:39:00 8 Q. I want to move on now from
05:39:03 9 traditional districting principles to
05:39:07 10 partisan fairness. That was one of
05:39:09 11 issues that you covered in your
05:39:10 12 reports.

05:39:10 13 Correct?

05:39:10 14 A. Yes.

05:39:11 15 Q. Okay.

05:39:11 16 And you compared the Governor's
05:39:12 17 maps with other maps, and specifically
05:39:12 18 the House map HB-2154 with partisan
05:39:20 19 fairness?

05:39:20 20 A. 2146, I think, if I have that
05:39:20 21 right? It's like drilled into my head
05:39:22 22 at this point

05:39:22 23 Q. Thank you. I will say the
05:39:23 24 House map so I won't get confused.

05:39:25 25 A. Yes, I did compare those.

05:39:28 1 Q. And I understand there are a
05:39:30 2 lot of different ways to talk about
05:39:30 3 partisan fairness. I think we've
05:39:31 4 already heard that, but in your report
05:39:33 5 we talked about a close votes, close
05:39:35 6 seats principle.

05:39:36 7 Can you just explain what that
05:39:37 8 means?

05:39:38 9 A. You're hearing a lot of
05:39:39 10 agreement from the experts for the
05:39:42 11 Court so far, and I think that should
05:39:44 12 be a good sign, that when you are
05:39:46 13 thinking about the small D Democratic
05:39:51 14 functioning of a plan, that is you're
05:39:53 15 thinking about how well it upholds the
05:40:00 16 norms and ideals of representative
05:40:01 17 democracy. You really want to see
05:40:02 18 that the plan has the ability to
05:40:06 19 translate more votes into more seats.
05:40:08 20 That's just bedrock principle. And so
05:40:08 21 I think I have a ---.

05:40:10 22 Q. I'm sorry, can you pull up
05:40:13 23 opening report, page 14, Figure 4,
05:40:14 24 please?

05:40:14 25 A. So hopefully, this plot isn't

05:40:17 1 too busy, but I think it has a lot of
05:40:20 2 information that I want to help
05:40:22 3 visualize. I'm a very geometric
05:40:22 4 thinker, so I like pictures. What I'm
05:40:27 5 saying is that I think we all broadly
05:40:28 6 agree that a plan that consistently
05:40:31 7 converts a majority of votes for one
05:40:39 8 party to a majority of seats for the
05:40:41 9 other party, I think we would agree,
05:40:43 10 broadly that that is unfair.

05:40:44 11 And so I've marked that here
05:40:45 12 with these quadrants and these
05:40:45 13 evocative Xs, because I thought a
05:40:53 14 skull and crossbones might be over the
05:40:53 15 top. But these are kind of no-go
05:40:55 16 zones in a sense. If you're spending
05:40:58 17 too much time in these quadrants, then
05:41:01 18 the map should really be scrutinized
05:41:02 19 very closely. And if it's possible to
05:41:03 20 do better, you should do better.

05:41:06 21 I guess while this is up I will
05:41:09 22 mention, in the other two quadrants,
05:41:13 23 the ones that are conducive to
05:41:15 24 majority rules, you know, reasonable
05:41:17 25 people can advance different norms

05:41:20 1 about what would be the best place for
05:41:21 2 data points to fall.

05:41:24 3 Should the vote share roughly
05:41:26 4 equal the C share, that's
05:41:28 5 proportionality, and I've marked that
05:41:31 6 in the reply. Should you have equal
05:41:33 7 numbers of wasted votes within a few
05:41:36 8 percentage points that are assigned,
05:41:37 9 that is the band that I've marked as
05:41:39 10 efficiency gap. Other people have
05:41:43 11 advanced other ideas about curves and
05:41:46 12 symmetry, but this is a zone in which
05:41:49 13 you have a plan that's performing well
05:41:53 14 by the likes of majority rules.

05:41:55 15 And I guess while this is up
05:41:57 16 --- and I'll be brief. I'll say that
05:41:59 17 close votes, close seats, we've also
05:41:59 18 heard about from multiple experts.
05:42:01 19 And that says if you have elections
05:42:03 20 that are close to 50 percent vote
05:42:05 21 share for the parties you like those
05:42:07 22 to give close to equal representation,
05:42:09 23 so if you're near 50 percent
05:42:16 24 horizontally you don't want to
05:42:16 25 consistently miss that bullseye by

05:42:18 1 always deviating to the north and
05:42:19 2 south. That would be a sign that
05:42:21 3 you're converting close voting to
05:42:23 4 consistent partisan advantage.
05:42:23 5 Q. And did you prepare an
05:42:25 6 animation to illustrate how the
05:42:27 7 analysis you just described would
05:42:28 8 apply to the various maps at issue in
05:42:30 9 this case?

05:42:31 10 A. I did. And I --- maybe this
05:42:34 11 will help wake us up at this point.

05:42:34 12 ATTORNEY WIYGUL:

05:42:36 13 And Your Honor, if we
05:42:37 14 could call up what we had pre-marked
05:42:39 15 for our own purposes, Exhibit 17. I
05:42:40 16 sent this around to other Counsel
05:42:42 17 earlier today. It's just an animation
05:42:42 18 that derives from the analysis in
05:42:57 19 this --- in Professor Duchin's report.

05:42:57 20 JUDGE MCCULLOUGH:

21 Okay. Hold on.

22 ATTORNEY HIRSCH:

23 Your Honor, I would like
24 to lodge a conditional objection here.
25 We received ---.

1 JUDGE MCCULLOUGH:

05:42:58 2 Can you state your name,
05:42:58 3 please.

05:42:58 4 ATTORNEY HIRSCH:

05:43:00 5 Sam Hirsch on behalf of
05:43:01 6 the Gressman Petitioners. We received
05:43:02 7 a set of exhibits during the course of
05:43:03 8 this afternoon electronically, but
05:43:04 9 they were not part of the five o'clock
05:43:06 10 expert report filed yesterday. And
05:43:08 11 under the extraordinary time sequence
05:43:10 12 here, I don't know if they had these
05:43:12 13 materials and didn't include them in
05:43:15 14 their five o'clock report or if they
05:43:15 15 developed them after they saw
05:43:17 16 everybody else's five o'clock report.

05:43:19 17 But if these additional
05:43:20 18 exhibits are going to come into
05:43:23 19 evidence, I would ask that we have a
05:43:24 20 chance, the two sets of Petitioners to
05:43:26 21 rebut with our experts anything that
05:43:28 22 comes out that's in these new exhibits
05:43:30 23 that we have not seen or studied at
05:43:35 24 this point.

05:43:35 25 JUDGE MCCULLOUGH:

05:43:35 1 Is this being submitted
05:43:37 2 as part of your expert report?

05:43:37 3 ATTORNEY WIYGUL:

05:43:38 4 Your Honor, I think this
05:43:38 5 is a demonstrative type exhibit to
05:43:42 6 further --- to further illustrate for
05:43:43 7 the Court the analysis that the expert
05:43:44 8 has employed and disclosed in her
05:43:46 9 report. It's a further illustration.

05:43:47 10 JUDGE MCCULLOUGH:

05:43:47 11 Hold on.

05:43:51 12 ATTORNEY MORGAN:

05:43:53 13 Your Honor, Robert
05:43:53 14 Tucker on behalf of House Republican
05:43:54 15 Intervenors, we were going to lodge
05:43:55 16 the same objection to these exhibits,
05:43:56 17 that we don't believe they should come
05:43:58 18 in as exhibits as they were not timely
05:44:01 19 disclosed by the five o'clock deadline
05:44:04 20 yesterday. Thank you.

05:44:04 21 ATTORNEY WIYGUL:

05:44:04 22 Your Honor, I'm sorry.
05:44:05 23 Would the Court like me to address
05:44:07 24 that.

05:44:07 25 JUDGE MCCULLOUGH:

05:44:08 1 Nope. There's another
05:44:09 2 crier standing.

05:44:09 3 ATTORNEY VOSS:

05:44:11 4 Joshua Voss for the
05:44:11 5 Congressional Intervenors. Your Honor
05:44:11 6 I've been in court all day with my
05:44:13 7 phone off. So if this was distributed
05:44:13 8 via email, you know, I'm honoring the
05:44:13 9 Court's rule. I haven't seen it. So
05:44:13 10 I have to lodge an objection. I
05:44:13 11 haven't seen this. I can't prepare
05:44:21 12 for it. It's --- it's prejudicial at
05:44:27 13 this point.

05:44:27 14 JUDGE MCCULLOUGH:

05:44:27 15 Okay.

05:44:27 16 Counsel, no one received
05:44:28 17 it by five o'clock yesterday. I know
05:44:28 18 you're saying it's demonstrative, but
05:44:32 19 Counsel hasn't even had a chance to
05:44:33 20 review it.

05:44:34 21 I'm a little concerned.
05:44:35 22 You may not move it into evidence, but
05:44:37 23 you're going to make it part of the
05:44:39 24 evidentiary record by examining your
05:44:42 25 witness on the basis of it. And I

05:44:44 1 have three counsels standing up
05:44:47 2 representing three different parties
05:44:48 3 objecting to the fact that they didn't
05:44:50 4 even get a chance to review it.

05:44:53 5 Is this something that is
05:44:55 6 necessary for you to use today since
05:44:59 7 it wasn't produced by five o'clock
05:45:01 8 yesterday?

05:45:02 9 ATTORNEY WIYGUL:

05:45:02 10 Well, I think, Your
05:45:03 11 Honor, it's an animation --- it's kind
05:45:07 12 of an animation over time of a still
05:45:07 13 that we did have in the report.

05:45:10 14 JUDGE MCCULLOUGH:

05:45:10 15 Well, you're making it
05:45:11 16 sound really pretty and fun, but the
05:45:13 17 substance of it can be --- can go to
05:45:16 18 the substance of this case. And I
05:45:19 19 think that the fact that it wasn't
05:45:20 20 provided to counsel by five o'clock
05:45:23 21 yesterday and you are examining your
05:45:24 22 report on it, if you cannot use it, it
05:45:28 23 would be better to move on.

05:45:31 24 ATTORNEY WIYGUL:

05:45:31 25 Okay.

05:45:32 1 JUDGE MCCULLOUGH:

05:45:32 2 I mean, you state your

05:45:33 3 position. If you feel you must use

05:45:34 4 it, go ahead, but then we're going to

05:45:37 5 lose time for counsel to now review

05:45:39 6 something that they didn't get by

05:45:43 7 five o'clock yesterday, and then we're

05:45:44 8 going to have to wait just, you know,

05:45:45 9 on the Cross Examination. We can do

05:45:47 10 it if you tell me it's very important

05:45:53 11 to your case.

05:45:54 12 ATTORNEY WIYGUL:

05:45:54 13 Your Honor, let me see

05:45:55 14 if I can rely on other materials.

05:45:57 15 JUDGE MCCULLOUGH:

05:45:57 16 I think that would be

05:45:58 17 great.

05:45:59 18 ATTORNEY WIYGUL:

05:45:59 19 I appreciate the Court's

05:46:01 20 concern.

05:46:01 21 JUDGE MCCULLOUGH:

05:46:01 22 Thank you.

05:46:01 23 THE WITNESS:

05:46:01 24

05:46:02 25 Would it be helpful to

05:46:04 1 clarify what's in it or not?

05:46:07 2 ATTORNEY WIYGUL:

05:46:07 3 We're not going to use
05:46:08 4 the animations at the moment.

05:46:12 5 JUDGE MCCULLOUGH:

05:46:13 6 Sure.

05:46:14 7 ATTORNEY WIYGUL:

05:46:14 8 If the Court would just
05:46:14 9 give me one second in light of that to
05:46:15 10 find ---.

05:46:15 11 JUDGE MCCULLOUGH:

05:46:15 12 Sure. Take your time.

05:46:15 13 Well, don't take too much time,

05:46:15 14 though. Whatever you need.

05:46:15 15 THE WITNESS:

05:46:15 16
05:46:16 17 This is the same
05:46:17 18 picture.

05:46:20 19 BY ATTORNEY WIYGUL:

05:46:22 20 Q. Thank you. This is
05:46:24 21 essentially, is it fair to say, a 2D
05:46:24 22 version of hat the animation was, at
05:46:24 23 least in part?

05:46:24 24 A. This is the identical picture
05:46:26 25 that is drawn in the animation.

05:46:28 1 Q. And what does this illustrate?

05:46:30 2 A. Great. Okay.

05:46:32 3 So let's see. Actually, could
05:46:38 4 we rewind one moment since we had that
05:46:38 5 intervening discussion and just go
05:46:39 6 back ever so briefly to that last plot
05:46:43 7 of the seats votes space?

05:46:47 8 Great.

05:46:47 9 So this just sets up the next
05:46:49 10 picture. So this is exactly what
05:46:50 11 you'll see. So you have the votes for
05:46:53 12 Republicans in the horizontal
05:46:55 13 direction and the seats for
05:46:56 14 Republicans in the vertical direction.
05:47:00 15 And the way that I propose that we
05:47:01 16 understand a plan is we look at how it
05:47:06 17 converts for votes, how it converts
05:47:08 18 votes to seats.

05:47:10 19 And so that means over all the
05:47:10 20 elections in the dataset, which are a
05:47:12 21 series of observations from recent
05:47:14 22 actual elections in Pennsylvania, I'm
05:47:19 23 going to plot one point for every
05:47:19 24 election. So you should maybe think
25 about this like a kind of paint ball

1 plot that shows you aiming at that
2 target for close elections, how do you
3 do? Do you come close to hitting that
4 target? Great.

05:47:32 5 So now we can go forward to the
05:47:35 6 still image that compares the plots,
05:47:38 7 and I will tell you --- excellent.
05:47:40 8 Thank you so much. So these are the
05:47:43 9 two plans that the Court considered in
05:47:46 10 2018. On the left is the 2011 enacted
05:47:49 11 plan. So this was passed into law in
05:47:49 12 the usual course of post-dicennial
05:47:57 13 census redistricting. And these are
05:47:58 14 the dataset of 12 elections that I've
05:48:02 15 considered. So this is all the
05:48:04 16 statewide non-judicial elections going
05:48:08 17 back to 2014.

05:48:10 18 And for those elections you see
05:48:12 19 a lot of them that have roughly equal
05:48:14 20 vote share for the two major parties.
05:48:16 21 In the horizontal direction, they're
05:48:19 22 pretty close to even. Not always but
05:48:21 23 much of the time.

05:48:22 24 And what you see about the
05:48:23 25 enacted plan is that it is

05:48:26 1 consistently converting even voting to
05:48:28 2 a heavily Republican representational
05:48:32 3 advantage. And below --- I've just
05:48:34 4 traced that out. That's all the
05:48:36 5 animation was going to show you is how
05:48:36 6 the picture below traces out the
05:48:36 7 points above, nothing else.

05:48:42 8 So you can see from that shape
05:48:43 9 that if your aim is for the bullseye,
05:48:43 10 you're just missing. And you're
05:48:50 11 missing in an always Republican
05:48:50 12 direction.

05:48:50 13 By contrast, the remedial plan
05:48:52 14 that the Court ordered and adopted
05:48:54 15 hits the bullseye. It really does
05:48:57 16 quite well. And when I've outlined it
05:49:00 17 in the same way that's captured in the
05:49:02 18 picture below. And so this shows you
05:49:04 19 several things. It shows you that the
05:49:06 20 remedial plan converts closed votes to
05:49:10 21 closed seats much of the time, not all
05:49:12 22 of the time but much of the time. And
05:49:16 23 it also shows you something about
05:49:17 24 responsiveness, which is a word that
05:49:20 25 we've heard used by multiple experts.

05:49:21 1 Responsiveness has to do with how when
05:49:21 2 electoral conditions change, does the
05:49:21 3 representational outcome go with it.
05:49:28 4 So if the kind of sea level rises and
05:49:29 5 falls with respect to voter
05:49:32 6 preferences, you'd like to see the
05:49:33 7 outcomes change, too. They shouldn't
05:49:35 8 be locked in. They should be able to
05:49:39 9 change.

05:49:40 10 Q. And can we go to the figure on
05:49:42 11 the next page of that initial report
05:49:44 12 please, page 16? And what does this
05:49:52 13 show? It looks like a similar set of
05:49:52 14 graphs.

05:49:53 15 A. It's the identical concept now
05:49:54 16 for the House map, HB-2146, the Draw
05:49:55 17 of the Lines, Citizens plan and the
05:49:57 18 Governor's plan across the same
05:50:00 19 dataset of statewide elections since
05:50:02 20 2014. And what I really think it
05:50:06 21 shows you is that the House map
05:50:10 22 behaves very much like the 2011
05:50:13 23 enacted plan in consist --- in missing
05:50:13 24 the bullseye, in consistently
05:50:20 25 converting close elections to heavy

05:50:24 1 Republican representational
05:50:25 2 advantages.

05:50:25 3 By contrast, the Citizens plan
05:50:27 4 does cross over that center point
05:50:29 5 right where you'd hope, right at the
05:50:32 6 bullseye, and the Governor's plan does
05:50:34 7 an excellent job of --- you know, if
05:50:38 8 we're playing paint ball, it's does an
05:50:40 9 excellent job of hitting that target.

05:50:40 10 Q. And just at the risk of beating
05:50:43 11 a dead horse, Citizens plan is Draw
05:50:43 12 the Lines?

05:50:46 13 A. Yes, that's the Draw the Lines
05:50:48 14 competition derived.

05:50:48 15 Q. Now, each of these dots here
05:50:51 16 represents the results of a different
05:50:51 17 actual election under these different
05:50:54 18 maps.

05:50:54 19 Correct?

05:50:55 20 A. Yes, that's right.

05:50:55 21 Q. Now I think we have heard
05:50:57 22 testimony this morning or we've seen
05:50:57 23 in some of the other expert reports
05:50:59 24 for experts who have not yet testified
05:51:00 25 that not all the experts did this

05:51:02 1 analysis on an individual election
05:51:03 2 basis. Some of them averaged
05:51:05 3 elections.
05:51:06 4 Is that right?
05:51:07 5 A. Yes, that's right. I think
05:51:08 6 you'll see that some of the analyses
05:51:12 7 before the Court they don't look at
05:51:13 8 the elections one at a time, and so
05:51:15 9 they're not looking at the fact that
05:51:18 10 there were these razor-thin, you know,
05:51:21 11 presidential and senate races or as,
05:51:21 12 you know, the Governor's race in a few
05:51:26 13 instances was a lot less close, this
05:51:26 14 is showing you something about change
05:51:29 15 over time. And it's showing you
05:51:30 16 something about different kinds of
05:51:32 17 offices being elected. When you
05:51:34 18 average those into a single election
05:51:34 19 index, you're losing all that
05:51:41 20 information about durability, about
05:51:42 21 responsiveness. You're effectively
05:51:44 22 taking all these points that you see
05:51:47 23 here and just collapsing them. An
05:51:48 24 animation for you not disclosed to the
05:51:50 25 other parties. But you're taking all

05:51:51 1 these points and you're collapsing
05:51:53 2 them to a single data point. And
05:52:00 3 you're systematically losing
05:52:01 4 information when you do that, and it
05:52:04 5 can be extremely misleading.

05:52:04 6 Q. And the information that is
05:52:05 7 represented in these pictures and that
05:52:07 8 could have been represented for the
05:52:09 9 other maps as well, can you
05:52:10 10 reconstruct this picture from the
05:52:10 11 information in any of the other expert
05:52:13 12 reports?

05:52:14 13 A. Some of the expert reports
05:52:16 14 provide you enough detail to see the
05:52:18 15 results election by election. Others,
05:52:21 16 and in particular, if I understand
05:52:23 17 right, I have --- I have made a great
05:52:24 18 effort to review all of the expert
05:52:27 19 materials in the time that was
05:52:29 20 available. And from my review, it's
05:52:31 21 my understanding in particular that
05:52:33 22 Doctor Barber's reports do not. And
05:52:34 23 so when I was looking --- you know, I
05:52:36 24 think all the experts will look at
05:52:39 25 each other's materials and will try to

05:52:41 1 find spot checks and make sure we
05:52:43 2 agree on things. For instance, I
05:52:45 3 noticed that in one of Doctor DeFord's
05:52:48 4 reports he says why are there only
05:52:49 5 11 points in these plots when there
05:52:52 6 are 12 elections. And that's because
05:52:54 7 it turns out that each of these three
05:52:55 8 plans has two points exactly on top of
05:52:59 9 each other, but good observation. And
05:53:00 10 that's exactly how you want experts to
05:53:00 11 be thinking about each other's work.

05:53:03 12 I will note that it was much
05:53:06 13 harder to audit and spot---check some
05:53:08 14 of Doctor Barber's findings because
05:53:10 15 there's so much averaging happening.
05:53:11 16 But in the instances where I was able
05:53:13 17 to, I found some clear errors of
05:53:16 18 calculation.

05:53:19 19 Q. And does that matter in terms
05:53:20 20 of, you know, the accuracy of a
05:53:25 21 partisan fairness analysis?

05:53:25 22 A. If your partisan fairness
05:53:25 23 analysis amounts to averaging and
05:53:26 24 you're systemically off by one seat
05:53:28 25 out of 17, yes, I would call that

05:53:30 1 substantial.

05:53:31 2 Q. Okay.

05:53:31 3 Can we pull up page four, Table 3, of
05:53:31 4 your response report, please? And I'm
05:53:42 5 going to ask, Professor Duchin, did
05:53:42 6 you use any other methods to analyze
05:53:46 7 the partisan fairness of the 13 maps?

05:53:54 8 A. I did. I used quite a few. So
05:53:54 9 such a standard technique that it
05:53:54 10 barely needs a name, and I think it's
05:53:54 11 an excellent one. However, there are
05:54:05 12 also metrics. There are metrics for
05:54:06 13 everything. And I think for these I
05:54:12 14 really spend a lot of time thinking
05:54:14 15 about these metrics and what they
05:54:14 16 mean. I'm intimately familiar with
05:54:16 17 them and how to calculate them and
05:54:18 18 what they do and don't tell you. And
05:54:20 19 in this case I think they help give us
05:54:22 20 a picture of the partisan fairness
05:54:25 21 landscape.

05:54:26 22 So I've highlighted efficiency
05:54:29 23 gap, which we've already heard about,
05:54:31 24 the mean-median score, which we
05:54:33 25 already heard about, partisan bias,

05:54:33 1 which is another symmetry measure that
05:54:33 2 we may have already heard about, and
05:54:33 3 one that we have not yet heard about
05:54:33 4 called the AGIA metric.

05:54:40 5 I'll be super brief. The AGIA
05:54:43 6 metric basically says I'm going to
05:54:44 7 compare the performance in districts
05:54:49 8 to the performance in another
05:54:50 9 geographical subdivision that isn't
05:54:53 10 gerrymandered, namely counties. So it
05:54:53 11 compares district performance to
05:54:57 12 county performance and tries to
05:54:57 13 control for the unequal populations in
05:54:59 14 the counties. It's one of several
05:55:01 15 kinds of metrics like that.

05:55:09 16 There's another one in the
05:55:09 17 literature co-authored by Drs. Rodden
05:55:09 18 and DeFord that uses a similar idea
05:55:12 19 that you should compare districts to
05:55:13 20 just the metric neighborhoods. Are
05:55:16 21 you like your neighbors? Is your
05:55:18 22 district like your neighborhood? I
05:55:19 23 think that's a very interesting metric
05:55:21 24 and I would have concluded it if I had
05:55:24 25 it coded at hand. The AGIA metric is

05:55:28 1 a little bit in the same direction.

05:55:31 2 Q. So bottom line, what does this

05:55:33 3 --- what does this table show?

05:55:33 4 A. Well, you're seeing a lot of

05:55:34 5 numbers here, and so I've tried to

05:55:36 6 color code it to be helpful. And

05:55:37 7 again, I haven't cherry picked the

05:55:39 8 elections at all, so this is across

05:55:41 9 all of the elections.

05:55:42 10 It's worth noting, though,

05:55:44 11 since I just critiqued averaging the

05:55:46 12 elections, performing the scores one

05:55:49 13 at a time and then averaging the

05:55:51 14 scores is not the same as averaging

05:55:52 15 the elections, and I think it gives

05:55:55 16 you a much better picture of the

05:55:57 17 situation.

05:55:58 18 So the color coding here is the

05:56:02 19 palist when the scores are closest to

05:56:02 20 zero, which is where you want to be in

05:56:04 21 all four cases. The darker reds are

05:56:09 22 more Republican favoring. The darker

05:56:11 23 blues are more Democratic favoring on

05:56:12 24 these scores.

05:56:12 25 Q. And what does this show you

05:56:14 1 about the relative partisan fairness
05:56:20 2 of the various maps at issue?

05:56:20 3 A. I think one thing that stands
05:56:22 4 out is that the Governor's plan is
05:56:23 5 excellent across the board, that in
05:56:25 6 all four of these metrics it gives
05:56:28 7 scores that are either the closest or
05:56:31 8 nearly the closest to zero.

05:56:32 9 Q. And do any of the other experts
05:56:34 10 dispute any of these numbers?

05:56:35 11 A. Not as far as I could tell.
05:56:38 12 It's not totally clear to me the way
05:56:40 13 all the experts are doing their
05:56:42 14 calculations or whether they're just
05:56:44 15 relying on prepackaged software to do
05:56:46 16 so, but I wasn't able to find any
05:56:50 17 contradictions to these numbers. I
05:56:54 18 think they're not in dispute.

05:56:54 19 Q. So I think we've sort of
05:56:56 20 already covered this, but this does
05:56:58 21 look like a bill wall of numbers. You
05:57:01 22 know, at the end of the day, what does
05:57:03 23 it actually mean?

05:57:04 24 A. Right. Walls of numbers can be
05:57:06 25 tough. You heard the phrase

05:57:08 1 multi-objective optimization before.
05:57:11 2 And that's a very mathy way of saying
05:57:13 3 you have multiple things and maybe
05:57:15 4 some things are better at one and some
05:57:17 5 things are better at another. So how
05:57:19 6 should we compare across multiple
05:57:21 7 scores?

05:57:21 8 Well, in mathematical data
05:57:27 9 science we have this concept called
05:57:29 10 the Pareto Frontier, which I think is
05:57:31 11 discussed perhaps in some of the
05:57:33 12 reports. And that's the idea of
05:57:34 13 asking which plans are --- dominate
05:57:37 14 others. So you say a plan dominates
05:57:40 15 another if it's better or equal on all
05:57:43 16 the scores. And what you see here if
05:57:47 17 you do an analysis, if you do a
05:57:49 18 comparison of the plans, in that way
05:57:51 19 is that there are three plans, the
05:57:52 20 Governor's plan, the Carter plan and
21 House Democratic Caucus. None of
22 those dominate the others. They're
23 each best in some of the scores. So
24 they're in what you might call the
25 trade-off zone. But the Governor's

05:58:11 1 plan dominates every other plan in the
05:58:11 2 grid in that mathematical sense. I
05:58:11 3 know that sounds a little aggressive,
05:58:11 4 but in that mathematical sense of
05:58:12 5 being superior in all the scores.

05:58:14 6 Q. Now, we've talked about an
05:58:16 7 overlay method that you employed. Did
05:58:19 8 you use any other methods to evaluate
05:58:21 9 the partisan fairness of the various
05:58:23 10 maps?

05:58:23 11 A. So this constitutes a method.
05:58:26 12 And I would clarify that on that
05:58:31 13 Pareto Frontier, there's still ways of
05:58:32 14 sort of preferring one plan to the
05:58:34 15 other. The Governor's plan is the
05:58:35 16 only one that dominates all of the
05:58:37 17 others. So in that sense it does
05:58:41 18 stand out if you want to use these
05:58:43 19 metrics. You know, because I really
05:58:45 20 think it's important --- as we heard,
05:58:46 21 I believe, just a moment ago it's
05:58:49 22 important not to cherry pick and just
05:58:52 23 try to make things look the best for
05:58:55 24 you. And so I'd say this kind of
05:58:57 25 analysis certainly would shift a

05:58:59 1 little if you used a larger set of
05:58:59 2 elections or smaller set of elections.
05:59:03 3 But the advantages here of the
05:59:03 4 Governor's plan are fairly substantial
05:59:05 5 and I don't think --- it might not be
05:59:09 6 literally be Pareto dominant, Pareto
05:59:11 7 optimal for a different set of
05:59:12 8 elections, but I think this shows that
05:59:14 9 it would be in a very strong position
05:59:19 10 under any reasonable way of
05:59:21 11 calculating these scores.

05:59:21 12 Q. We talked about at least, you
05:59:23 13 know, a couple of different methods,
05:59:24 14 maybe more. We've heard also
05:59:26 15 reference today to something called an
05:59:27 16 ensemble method. Are you aware of
05:59:29 17 what that is and did you employ that
05:59:31 18 in your analysis here?

05:59:32 19 A. Absolutely. So yes, the
05:59:33 20 ensemble method broadly is the use of
05:59:40 21 algorithmic techniques to generate
05:59:40 22 alternative plans. And I'm a
05:59:44 23 practitioner. I think maybe my
05:59:48 24 research group is one of the leading
05:59:48 25 groups in developing methods for

05:59:51 1 ensemble analysis.

05:59:51 2 Q. And how did you employ that
05:59:53 3 method here?

05:59:54 4 A. So as I mentioned earlier, I
05:59:55 5 created a comparison set of 100,000
05:59:59 6 alternative plans. And I didn't put a
06:00:03 7 great deal of detail about that into
06:00:05 8 these reports, but I'm happy to answer
06:00:07 9 questions.

06:00:07 10 Q. Can we call up opening report
06:00:10 11 pages 18 and 19, Figures 7 and 8,
06:00:14 12 please?

06:00:14 13 A. Thank you. Yeah, if I could
06:00:15 14 just say very briefly these plans were
06:00:18 15 made with a leading method of plan
06:00:22 16 generation that enforces contiguity
06:00:26 17 that has a strong preference for
06:00:29 18 compactness, that enforces the
06:00:31 19 threshold of population balance and
06:00:34 20 that aims to keeps counties and
06:00:40 21 municipalities whole. So those are
06:00:41 22 all taken into account in the creation
06:00:42 23 of these comparison plans.

06:00:42 24 Q. And how many different randomly
06:00:44 25 generated plans did you work with

06:00:46 1 here?

06:00:46 2 A. So this is 100,000, which I did
06:00:49 3 check and deemed to be enough to get
06:00:51 4 stable results. It's not hard these
06:00:54 5 days, we --- our leading
06:00:56 6 implementations can get to millions or
06:01:02 7 billions if you want them, but they
06:01:03 8 won't be more informative than what
06:01:06 9 you see here.

06:01:06 10 Q. And did you then compare the
06:01:09 11 Governor's map and the other 12 maps
06:01:09 12 in this case with the ensemble to see
06:01:10 13 how the maps would perform across
06:01:11 14 recent elections?

06:01:12 15 A. I did. And I don't know how
06:01:14 16 easy it is to see here, but the kind
06:01:18 17 of violins that you're seeing in gray,
06:01:18 18 those are the --- thank you, those are
06:01:24 19 the values that you see in the 100,000
06:01:25 20 alternative plans. And in this case,
06:01:27 21 because it was the initial report, the
06:01:28 22 Governor's plan, the Citizen a/k/a
06:01:31 23 Draw the Lines plan, and the House
06:01:33 24 a/k/a HB-2146 are shown.

06:01:39 25 Q. And did you conclude anything

06:01:42 1 about the districting landscape of
06:01:45 2 Pennsylvania based on your ensemble
06:01:45 3 analysis?

06:01:46 4 A. I did. And I think this is
06:01:47 5 another point on which you will hear
06:01:51 6 broad expert agreement. The landscape
06:01:52 7 in Pennsylvania as a function of where
06:01:53 8 people live and how they vote in these
06:01:56 9 elections regarded serially or
06:02:00 10 together, the landscape is somewhat
06:02:03 11 tilted towards Republicans.

06:02:05 12 And you can --- this plot shows
06:02:06 13 you negative scores here indicate a
06:02:06 14 Republican advantage. And those
06:02:06 15 violins spend a lot of time below
06:02:18 16 zero, right. That's showing you that
06:02:18 17 if you draw blind, you will get a plan
06:02:23 18 with a significant --- often, not
06:02:23 19 always, you'll get a plan with a
06:02:24 20 significant Republican advantage.

06:02:25 21 And if you look the at red dots
06:02:27 22 you can see the story behind the House
06:02:30 23 map is that it was drawn without
06:02:33 24 partisan data. That's my
06:02:36 25 understanding. And you know, that's

06:02:37 1 supported by what you see here. It
06:02:40 2 performs a lot like a typical blind
06:02:40 3 plan.

06:02:41 4 On the other hand, if you look
06:02:42 5 at the purple dots you will see that
06:02:44 6 they tend to deviate, but they deviate
06:02:47 7 in a direction of fairness. I would
06:02:51 8 call up an analogy to compactness.
06:02:51 9 You know, I'd say that, you know,
06:02:56 10 there's a --- there's a frequent
06:02:57 11 conceptual mistake that people make
06:03:01 12 with ensemble analysis, and that
06:03:04 13 mistake is that typical is best.

06:03:05 14 If you were drawing plans and
06:03:07 15 you looked at a range of compactness
06:03:09 16 scores, you wouldn't want a typical
06:03:11 17 compactness score, you'd want a good
06:03:13 18 one. And the same principal is
06:03:13 19 operative here.

06:03:17 20 And if we can switch to another
06:03:19 21 one of these plots just to see. Some
06:03:20 22 of these scores are more chunky and
06:03:23 23 some very in bigger jumps, but we can
06:03:25 24 see, for instance, the partisan bias,
06:03:29 25 which is the last ---.

06:03:29 1 Q. The bottom right?

06:03:30 2 A. Thanks. You know, that line at
06:03:31 3 zero is showing you ideal fairness by
06:03:37 4 the likes of this one metric. And you
06:03:39 5 can see that the Governor's plan in
06:03:42 6 purple is sometimes above and
06:03:42 7 sometimes below zero, but that it's
06:03:44 8 performing very well at trying to hit
06:03:47 9 that fairness benchmark while the red
06:03:50 10 dots of the House map are often quite
06:03:54 11 far.

06:03:54 12 Q. And we heard reference in some
06:03:54 13 of the earlier testimony to the
06:03:57 14 concept of human geography. I've also
06:03:57 15 heard the term political geography. I
06:03:59 16 want to ask you, does the political or
06:04:01 17 human geography of Pennsylvania
06:04:03 18 prevent the selection of a map that
06:04:08 19 treats Democratic and Republican
06:04:09 20 voters fairly and evenhandedly?

06:04:09 21 A. It manifestly doesn't prevent
06:04:13 22 you from drawing a fair map. And I
06:04:14 23 would just, again, briefly contrast
06:04:16 24 this to another situation that I've
06:04:18 25 published about. I've looked at ---

06:04:22 1 in an article in the Election Law
06:04:26 2 Journal in 2019 I looked at the
06:04:28 3 political geography in my home state
06:04:31 4 in Massachusetts. And in
06:04:33 5 Massachusetts I observed that even
06:04:34 6 though in Senate and Presidential
06:04:36 7 races, there's a 2 to 1 preference for
06:04:41 8 Democratic candidates. So you'd think
06:04:42 9 that with a third of the votes,
06:04:42 10 Republicans could get a third of the
06:04:43 11 congressional seats.

06:04:44 12 And what we showed in that
06:04:45 13 analysis is that they're actually
06:04:47 14 locked out. And that's not a function
06:04:49 15 of gerrymandering. It's a function of
06:04:53 16 the geography of where people live.
06:04:53 17 Republicans are just spread out too
06:04:59 18 evenly across Massachusetts to ever be
06:05:00 19 the majority of the district. And
06:05:00 20 that was true --- we looked at a full
06:05:02 21 ten years of elections and found that
06:05:04 22 lockout effect to be present.

06:05:06 23 We even looked at what would
06:05:08 24 happen if you let yourself just
06:05:10 25 sacrifice the traditional principles

06:05:10 1 to various extents. We even looked at
06:05:10 2 what would happen if you dropped
06:05:10 3 contiguity. So now you allow your
06:05:17 4 maps to be in many little pieces, and
06:05:18 5 we found that you still cannot draw a
06:05:18 6 Republican district in Massachusetts.

06:05:22 7 That is not the case in
06:05:24 8 Pennsylvania. You can draw a fairer
06:05:26 9 districts in Pennsylvania. You can do
06:05:28 10 so at no cost at all to the
06:05:30 11 traditional principles.

06:05:32 12 Q. That's what I was going to ask
06:05:34 13 you. I mean, you're saying it's
06:05:34 14 possible to draw fair districts, but
06:05:34 15 do you have to sacrifice the
06:05:38 16 traditional principles in the process?

06:05:38 17 A. Sorry, didn't mean to
06:05:40 18 anticipate the question, but yes,
06:05:43 19 that's where I'm going with this. I
06:05:45 20 studied in several ways whether
06:05:49 21 seeking fairness came at a cost. I
06:05:54 22 have other papers in which I've shown,
06:05:55 23 for instance, in Virginia that if you
06:05:57 24 highlight some principles, it comes at
06:06:01 25 a cost to others. That is not the

06:06:03 1 case here in Pennsylvania today. You
06:06:03 2 can get to better scores of fairness
06:06:05 3 with no cost at all in terms of
06:06:09 4 compactness, contiguity, political
06:06:10 5 subdivisions and so on.

06:06:12 6 Q. So I think some of the other
06:06:14 7 expert --- at least one other expert
06:06:14 8 report or brief has characterized the
06:06:16 9 Governor's map under an ensemble
06:06:20 10 analysis as an outlier. Is that ---
06:06:21 11 is that right or how would you assess
06:06:22 12 that?

06:06:22 13 A. Sometimes it's an outlier. And
06:06:24 14 you can see that here by being up, you
06:06:27 15 know, at an end of the violin. But
06:06:30 16 when it's an outlier, it's an outlier
06:06:32 17 in the direction of fairness. And I
06:06:34 18 would caution against the conceptual
06:06:38 19 mistake that typical is necessarily
06:06:42 20 fair. Blind is not necessarily fair.
06:06:47 21 Sometimes we have a benchmark such as
06:06:47 22 with compactness. You want to be more
06:06:47 23 compact. And I think with fairness,
06:06:56 24 you want to be more fair.

06:06:56 25 Q. Can we look at page four,

06:06:58 1 Table 3, of your response report, the
06:06:59 2 bottom ensemble line here included,
06:06:59 3 which I don't think we had that bottom
06:06:59 4 line before. And can you summarize
06:06:59 5 your overall conclusions on the
06:06:59 6 Governor's map versus the other maps
06:07:11 7 you analyzed?

06:07:11 8 A. Sure. Absolutely. What you
06:07:13 9 see here on the bottom is I took those
06:07:15 10 100,000 blind maps and I scored those
06:07:18 11 for fairness. And you see how those
06:07:20 12 are medium to bright red? That is
06:07:22 13 another indication that if you draw
06:07:25 14 blind you will not stumble on a fair
06:07:28 15 map, you have to seek a fair map. You
06:07:30 16 have to take that among --- you take
06:07:32 17 that sort of into consideration.
06:07:34 18 Now, like Professor DeFord, whom you
06:07:39 19 heard from before --- I did not draw
06:07:41 20 this plan, I just assessed it, but I
06:07:44 21 assess it to remediate this tilt of
06:07:46 22 the landscape at no cost to the
06:07:50 23 fundamental principles that gave us
06:07:52 24 our floor for ensuring no vote
06:07:57 25 dilution in Pennsylvania.

06:07:58 1 Q. Is it fair to say you can have
06:07:58 2 your traditional redistricting
06:08:00 3 principles and also have fairness at
06:08:02 4 least in Pennsylvania?

06:08:02 5 A. That's right. And once you're
06:08:04 6 in a zone of excellence with the
06:08:05 7 traditional principles, I see it as,
06:08:09 8 in my understanding, in my reading of
06:08:09 9 the League of Woman Voters Supreme
06:08:16 10 Court Decision from 2018, the Court
06:08:16 11 anticipated this and said in the
06:08:18 12 future it may be possible to draw
06:08:20 13 plans that are better, that are more
06:08:22 14 ideal, districts that are more ideal,
06:08:25 15 to harness technology to do better.
06:08:26 16 And I would say that this is just such
06:08:28 17 an example where the Governor's plan
06:08:30 18 upholds excellent neutral criteria and
06:08:34 19 just does better when it comes to
06:08:38 20 partisan fairness.

06:08:40 21 Q. Thank you. I want to ask you a
06:08:41 22 bit about the other expert testimony
06:08:43 23 reports that have been entered in this
06:08:44 24 case. First of all, have you been
06:08:46 25 able to read the other expert reports

06:08:46 1 in this case? I know it's been a
06:08:47 2 condensed timeline.

06:08:47 3 A. The word read might be
06:08:49 4 overstated, but I have been able to
06:08:51 5 look through and try to assimilate
06:08:54 6 everything in the other expert
06:08:55 7 reports.

06:08:55 8 Q. And do they generally reach
06:08:58 9 conclusions about whether blind
06:09:01 10 redistricting is the only option?

06:09:05 11 A. About whether blind
06:09:06 12 redistricting is the only option? I'm
06:09:08 13 not sure I saw that exactly, but I did
06:09:10 14 see comments in other reports to the
06:09:15 15 effect that we're bound by the
06:09:17 16 properties --- by the properties of a
06:09:20 17 blind process.

06:09:22 18 Q. And do you agree with that?

06:09:23 19 A. I don't. I think that it ---
06:09:27 20 again, it's an example of this idea
06:09:30 21 that I've called in some of my
06:09:31 22 publications the tyranny of the
06:09:33 23 median. It's just a mistake to think
06:09:37 24 that's what at the top of the hill
06:09:37 25 must be best. Sometimes you want to

06:09:39 1 be an outlier and you want to be an
06:09:41 2 outlier in the direction of better
06:09:43 3 scores and better upholding the
06:09:45 4 principles.

06:09:46 5 Q. I'd like to ask you some
06:09:47 6 questions about some discreet points
06:09:49 7 in the other expert reports. I think
06:09:52 8 we heard Doctor Rodden talk about a
06:09:54 9 table that was showing a razor's edge
06:09:59 10 analysis. Do you remember seeing that
06:10:00 11 with elections that were very close
06:10:03 12 percentage-wise to 50 percent or
06:10:06 13 within 2 percent or so. Do you
06:10:06 14 remember that?

06:10:07 15 A. Sure. I don't suppose it's
06:10:08 16 possible to bring that up.

06:10:09 17 Q. I don't know. Can we show
06:10:11 18 that?

06:10:11 19 A. That's okay. I do remember the
06:10:13 20 table.

06:10:14 21 Q. Okay.

06:10:15 22 Did you --- did you agree with
06:10:16 23 that analysis? Do you have any
06:10:17 24 opinions to offer on that analysis?

06:10:19 25 A. Well, while saying that I hold

06:10:21 1 Doctor Rodden in the very highest
06:10:24 2 regard, I do think that it is --- it's
06:10:26 3 making that averaging mistake to call
06:10:28 4 those razor's edge or close districts.
06:10:33 5 I would --- I would call to mind ---
06:10:34 6 again, let's think about the example
06:10:40 7 of Massachusetts, where you have
06:10:40 8 Presidential and Senate elections that
06:10:46 9 are heavily Democratic. We really
06:10:46 10 love our Republican Governors in
06:10:47 11 Massachusetts, and so you could
06:10:48 12 imagine taking an average of two
06:10:50 13 elections that are very blue, two that
06:10:54 14 are very red, and what that gives you
06:10:55 15 is a kind of purple stew that doesn't
06:10:59 16 resemble any election that ever
06:11:00 17 actually occurred. And so I do think
06:11:01 18 it would be a mistake to call that
06:11:04 19 competitive close coin flip or razor's
06:11:10 20 edge. It's just an average over
06:11:13 21 things that may never have been close.
06:11:17 22 Q. Okay. I understand.
06:11:17 23 Now, Doctor Barber, who is the
06:11:19 24 expert who submitted a House --- a
06:11:21 25 report for the House Republicans, he

06:11:22 1 relies on an ensemble analysis as
06:11:25 2 well?

06:11:25 3 Is that right?

06:11:26 4 A. Yes.

06:11:26 5 Q. And do you have any opinions
06:11:27 6 about his ensemble analysis?

06:11:35 7 A. Well, there's --- there's not a
06:11:36 8 great deal of information in here
06:11:37 9 about how it was done. But from what
06:11:39 10 I understand about how it was done, it
06:11:41 11 uses, in fact, a graph algorithm that
06:11:46 12 was developed by my research group but
06:11:49 13 in a manner that has not been peer
06:11:52 14 reviewed. So I would flag that as an
06:11:55 15 observation.

06:11:55 16 But really I think more
06:11:57 17 saliently I'm just not sure of his
06:11:59 18 handling of election data. And in a
06:12:00 19 few cases where I was able to check an
06:12:02 20 outcome, I think he may be
06:12:05 21 systematically off by a seat. And
06:12:08 22 when he's reporting his averages and
06:12:08 23 making a big difference about 9/8
06:12:08 24 versus 8/9, being off by a seat can
06:12:14 25 really matter.

06:12:14 1 Q. And what about his general
06:12:15 2 approach to the concept of partisan
06:12:18 3 fairness, do you have any opinions on
06:12:20 4 that?

06:12:21 5 A. It is squarely in the top of
06:12:23 6 the hill camp, making what I have just
06:12:25 7 called the conceptual mistake that the
06:12:31 8 properties of the middle of an
06:12:32 9 ensemble are necessarily and
06:12:32 10 normatively desirable.

06:12:32 11 ATTORNEY WIYGUL:

06:12:38 12 Can we pull up
06:12:39 13 page seven of Doctor Barber's report,
06:12:42 14 the paragraph starting with as a
06:12:43 15 result? Thank you.

06:12:43 16 BY ATTORNEY WIYGUL:

06:12:43 17 Q. So Professor Duchin, I want to
06:12:43 18 show you this paragraph and call your
06:12:43 19 attention to a few things that Doctor
06:12:55 20 Barber's rebuttal report says here.
06:12:55 21 He criticizes you for explicitly
06:12:59 22 considering partisanship in the
06:13:02 23 creation of districts. He says that
06:13:02 24 the previous decade shows us that
06:13:06 25 partisan preferences can be dynamic,

06:13:11 1 and then he exhorts the Court to let
06:13:11 2 the chips fall where they may.

06:13:11 3 Do you see that?

06:13:11 4 A. Great.

06:13:11 5 Q. What's your reaction to that?

06:13:13 6 A. No, this is great because it
06:13:14 7 has a lot all in the same paragraph
06:13:16 8 that I think is worth thinking about
06:13:18 9 together. So explicitly considering
06:13:24 10 partisanship in the creation of
06:13:27 11 districts, so first of all, again
06:13:27 12 again agreeing with a comment by
06:13:30 13 Doctor DeFord, that's not an accurate
06:13:32 14 description of the ensemble method.
06:13:32 15 Often you use a neutral ensemble that
06:13:36 16 doesn't look at partisan data at all
06:13:36 17 and then you just study the partisan
06:13:39 18 properties of the maps.

06:13:40 19 So however, for a process that
06:13:45 20 does consider partisanship in the
06:13:49 21 creation of districts, I think that
06:13:49 22 that can be a perfectly reasonable way
06:13:49 23 to achieve partisan fairness. An
06:13:54 24 analogy would be if you would like a
06:13:56 25 districting plan that doesn't split

06:13:59 1 counties, no one would propose that
06:13:59 2 you shouldn't know where the counties
06:13:59 3 are. If you want to do well at
06:14:07 4 something, it helps to have the data.
06:14:07 5 Having said that, you can also create,
06:14:11 6 as my ensembles did create, many
06:14:11 7 thousands, tens of thousands of
06:14:16 8 examples that do well on partisan
06:14:16 9 fairness but were made with no
06:14:18 10 partisan data.

06:14:19 11 Next, the previous decade shows
06:14:20 12 us that partisan preferences can be
06:14:22 13 dynamic. Yes, it does. And that's
06:14:24 14 why it's such a good idea to consider
06:14:28 15 the elections serially and not blend
06:14:29 16 them all together into a single stew.
06:14:30 17 So I think my approach does capture
06:14:32 18 the range of electoral preferences and
06:14:32 19 behavior that we've seen in
06:14:32 20 Pennsylvania in the recent cycle.

06:14:32 21 And this is a great place
06:14:46 22 perhaps to close. As you said, he
06:14:46 23 exhorts the Court to let the chips
06:14:48 24 fall where they may. And I would just
06:14:49 25 say there's no reason to do that when

06:14:54 1 you can do better, that we've got
06:14:55 2 techniques now that let you create
06:14:59 3 maps that do well by the likes of the
06:15:02 4 traditional principles and improve on
06:15:02 5 the properties of blind plans.

06:15:04 6 And so I'm not sure why we
06:15:07 7 should be bound to the pattern of
06:15:09 8 falling chips when we can create a
06:15:12 9 configuration that literally by the
06:15:15 10 likes of what the Court has called for
06:15:17 11 the Supreme Court has called for us to
06:15:19 12 consider. Why let the chips fall
06:15:19 13 where they may when we can do better?

06:15:25 14 Q. And in your view is the
06:15:26 15 Governor's plan among the few plans
06:15:29 16 before the Court that does do better?

06:15:30 17 A. It is. And in fact, as you'll
06:15:32 18 see in my report, if you take the
06:15:35 19 first tier of plans in the traditional
06:15:38 20 principles and you intersect them with
06:15:40 21 that Pareto Frontier and the partisan
06:15:43 22 fairness, I didn't know this would
06:15:45 23 happen in advance, but it turns out
06:15:48 24 there's only one map in both sets, and
06:15:51 25 that's the Governor's plan.

06:15:51 1 Q. Thank you, Professor Duchin. I
06:15:52 2 have no further questions.

06:15:53 3 JUDGE MCCULLOUGH:

06:15:53 4 All right. Thank you,
06:15:53 5 Counsel.

06:15:55 6 Now, we will allow
06:15:56 7 Petitioners Carter Counsel to begin
06:16:18 8 Cross.

06:16:18 9 ATTORNEY POSIMATO:

06:16:19 10 Good afternoon, Your
11 Honor.

12 JUDGE MCCULLOUGH:

13 Good afternoon.

14 ATTORNEY POSIMATO:

15 Joe Posimato on behalf
16 of the Carter Petitioners.

17 JUDGE MCCULLOUGH:

18 Team tagging each other.

19 Okay.

20 ---

21 CROSS EXAMINATION

22 ---

23 BY ATTORNEY POSIMATO:

06:16:23 24 Q. Good afternoon, Doctor Rodden.

06:16:23 25 A. Hi.

06:16:23 1 Q. Doctor Duchin. I'm sorry.

06:16:23 2 A. That's okay.

06:16:24 3 Q. Doctor Duchin, you produced two

06:16:26 4 reports in this proceeding.

06:16:27 5 Correct?

06:16:27 6 A. Yes.

06:16:28 7 Q. And the first was filed on

06:16:30 8 January 24th, 2022?

06:16:31 9 A. That sounds right, Monday.

06:16:33 10 Q. Monday. It's been a long week.

06:16:37 11 A. Wow.

06:16:40 12 Q. And the second filed January

06:16:41 13 26th, 2022?

06:16:41 14 A. Yesterday.

06:16:41 15 Q. Yes. So I'm going to focus

06:16:43 16 mostly on your second report start.

06:16:45 17 In your second report you state that

06:16:47 18 all plans are contiguous.

06:16:51 19 Right?

06:16:51 20 A. Yes.

06:16:51 21 Q. And that includes the Carter

06:16:53 22 plan?

06:16:53 23 A. It does.

06:16:53 24 Q. And in your second report that

06:16:56 25 all plans are closely population

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balanced.

Right?

A. Right.

Q. In fact you testified earlier on Direct?

A. I did.

Q. And that includes the Carter plan?

A. It does.

Q. Because all the plans comply with these criteria, including the Carter plan, you focus your second report on the criteria of compactness and county and municipality splits.

Correct?

A. Right.

Q. And you state in your report that you evaluate the plans, compliance with these criteria on an excellent standard?

A. That's right.

Q. Is there an objective metric for measuring a plan's compliance with traditional redistricting criteria?

A. I think part of the challenge

06:17:41 1 is that there are so many.

06:17:42 2 Q. And so is there an objective
06:17:42 3 measure you'd say or ---?

06:17:48 4 A. Am I right that you're asking
06:17:48 5 if all the metrics can be combined
06:17:50 6 into a single one?

06:17:51 7 Q. No. I'm asking whether under
06:17:52 8 any criterion, whether --- you know,
06:17:54 9 today let's take subdivision splits.
06:17:56 10 Is there an objective measure to
06:17:57 11 determine whether a map plan complies
06:17:59 12 with traditional criterion of respect
06:18:02 13 for subdivision splits?

06:18:04 14 A. Yes. And I promise I'm not
06:18:04 15 combative when I say there's one, but
06:18:09 16 there are a few different ways of
06:18:12 17 measuring that, but it is objective.

06:18:14 18 Q. Okay.

06:18:15 19 But compliance --- I understand
06:18:15 20 that there's an objective measure, but
06:18:16 21 is there an objective way to say that
06:18:16 22 one plan's, you know, take, you know,
06:18:16 23 five splits, another plan six splits,
06:18:16 24 follow on one side of a line or the
06:18:25 25 other side of a line, some objective

06:18:26 1 measure?

06:18:27 2 A. I think I understand now.

06:18:28 3 You're asking is there an objective
06:18:31 4 threshold.

06:18:31 5 Is that right?

06:18:31 6 Q. That's right.

06:18:33 7 A. Okay. Yes. No.

06:18:33 8 I think that here you can ---
06:18:34 9 you have to look at a plan compared to
06:18:36 10 alternatives. And then typically
06:18:38 11 there's no great bright line
06:18:40 12 threshold. I think that's what you're
06:18:42 13 asking.

06:18:42 14 Q. That's right. Thank you.

06:18:49 15 In fact, you state in your second
06:18:49 16 report that redistricting is not a
06:18:49 17 literal optimization problem.

06:18:49 18 Correct?

06:18:51 19 A. Yes I believe that strongly.

06:18:52 20 Q. And you also state that there
06:18:54 21 is no standard or universal way to
06:18:56 22 optimize universal factors at once?

06:19:00 23 A. That's right.

06:19:02 24 Q. And so is it fair to say that
06:19:04 25 complying with traditional or at least

06:19:06 1 measuring with traditional is more of
06:19:09 2 a balancing act?

06:19:11 3 A. Fundamentally.

06:19:14 4 Q. And so, for example, is it
06:19:16 5 possible for a map drawer to create as
06:19:19 6 part of this balancing act one or two
06:19:22 7 more county splits or subdivision
06:19:24 8 splits to comply better with a
06:19:27 9 different redistricting criteria?

06:19:32 10 A. Certainly and you heard this by
06:19:34 11 several.

06:19:35 12 Q. Right. And so is it fair to
06:19:39 13 say a plan may still be excellent
06:19:39 14 overall even if it's not excellent as
06:19:42 15 to any one redistricting criteria?

06:19:49 16 A. Yes, it will depend on how
06:19:53 17 UCONN instruct and there are judgment
06:20:01 18 calls to make I think that is what you
06:20:03 19 mean.

06:20:03 20 Q. Sure. And an excellent so
06:20:08 21 plans --- or several --- so plans may
06:20:09 22 be excellent but balance the
06:20:11 23 traditional criterion different ways?

06:20:16 24 A. They will have to balance the
06:20:17 25 traditional criterion different ways.

06:20:17 1 Q. And so to this point in your
06:20:19 2 report, you state that we are not
06:20:21 3 required to choose by a beauty
06:20:22 4 contest, for example? Beauty comes
06:20:22 5 with a numerical optimization which
06:20:27 6 plan's best.

06:20:27 7 A. Yes and I actually think we
06:20:29 8 heard the beauty contest quote, which
06:20:32 9 I think goes back to Sean Marino if I
06:20:36 10 remember right, cited earlier today
06:20:37 11 --- and I think that's right. It's
06:20:38 12 not simply a matter of focusing on one
06:20:41 13 number and trying to make that very
06:20:43 14 best number we can make it. We are
06:20:45 15 doing this view in many factors, some
06:20:51 16 holistic.

06:20:51 17 Q. And you've heard the statement
06:20:52 18 in your second report that rather than
06:20:54 19 this beauty contest measure, a plan
06:20:56 20 should be judged in addition to it's
06:21:00 21 compliance with traditional
06:21:00 22 restructuring criteria whether the
06:21:02 23 ultimate affect of the plan would
06:21:03 24 treat political parties fairly and
06:21:08 25 even handedly?

06:21:08 1 A. Yes I would say that is
06:21:09 2 expressly a goal at issue here.

06:21:11 3 Q. And you identify the Carter
06:21:12 4 plan as one of the very few plans
06:21:13 5 dominating the field of partisan
06:21:16 6 fairness.

06:21:16 7 Correct?

06:21:17 8 A. Let me try to say this
06:21:18 9 precisely because I actually don't
06:21:20 10 think I worded this perfectly in ---
06:21:27 11 in the report. So the Poreto Frontier
06:21:27 12 consists of plans that are in a kind
06:21:27 13 of trade-off zone against each other.
06:21:29 14 And Carter is one of those, which
06:21:32 15 means that it is not dominated by any
06:21:35 16 plan. That's a little bit different
06:21:38 17 than saying it dominates all the
06:21:40 18 others.

06:21:41 19 In fact, the Governor's plan is
06:21:42 20 the one that dominates all others that
06:21:44 21 are not on the frontier. But the
06:21:46 22 Carters plan is very strong. I want
06:21:49 23 to be clear. The Carters plan is very
06:21:53 24 strong when it comes to the partisan
06:21:54 25 fairness criteria.

06:21:54 1 Q. Okay.

06:21:54 2 So am I --- is it --- is it

06:21:55 3 right to say that the Carter plan

06:21:57 4 being very strong in this measure is

06:21:59 5 one of the very few that maybe doesn't

06:22:02 6 dominates that particular --- but I

06:22:04 7 mean, does it dominates (sic) the

06:22:05 8 criterion of partisan fairness?

06:22:05 9 A. It means it was dominated by

06:22:07 10 any other plan.

06:22:08 11 Q. Fair enough.

06:22:09 12 A. I just wanted to say this

06:22:10 13 right.

06:22:11 14 Q. Fair enough.

06:22:12 15 A. And if I remember right that is

06:22:13 16 because it has especially excellent

06:22:17 17 efficiency gap. So one of the scores

06:22:22 18 is the best one.

06:22:23 19 Q. And further to this point, you

06:22:24 20 explain in your second report that the

06:22:26 21 Carter petitioner's expert Doctor

06:22:29 22 Rodden was one of only three

06:22:30 23 responsible monitors of Pennsylvania's

06:22:32 24 voting day?

06:22:33 25 A. To be clear what I said was

06:22:35 1 that there are a few approaches that I
06:22:37 2 would characterize as responsible
06:22:40 3 modeling. And I did identify that
06:22:42 4 approach as responsible. I would not
06:22:44 5 take that to say I reviewed all the
6 methods of all the experts and found
7 everyone else to be irresponsible.

8 Q. Sure.

9 A. I just want to be clear.

10 Q. But Doctor Rodden's method was
11 responsible?

06:22:55 12 A. Yes. And what I was referring
06:22:55 13 to there, that I appreciated in his
06:23:04 14 report is that he was the --- the only
06:23:04 15 one that I remember seeing who took an
06:23:05 16 index and compared it to the local
06:23:05 17 races. And I think that's just a very
06:23:08 18 valuable thing to do if we're going to
06:23:09 19 use statewide elections as we all do
06:23:12 20 to think about how they comport with
06:23:14 21 local races that we're modelling.
06:23:14 22 That's something that I've also done
06:23:20 23 in previous work.

06:23:20 24 Q. So one of the criterion you
06:23:23 25 analyzed in your report was

06:23:23 1 compactness.

06:23:23 2 Correct?

06:23:24 3 A. Yes.

06:23:24 4 Q. And I believe you testified

06:23:25 5 earlier that the Carter plan is

06:23:27 6 recently compact?

06:23:32 7 A. We could pull up the numbers.

06:23:33 8 I don't quite remember the number. I

06:23:35 9 think --- should we do that? Should

06:23:36 10 we pull up the numbers?

06:23:37 11 Q. We can but you testified

06:23:39 12 earlier that all the --- all the plans

06:23:39 13 that you had reviewed are reasonably

06:23:42 14 compact with --- fall within a ---?

06:23:43 15 A. A few of them are markedly less

06:23:45 16 compact than the others, but by memory

06:23:47 17 I think Carter was --- has a

06:23:55 18 Polsby-Popper score of 32 or 33. But

06:23:57 19 we --- you know, we could pull them up

06:23:58 20 if we wanted to actually ---.

06:23:58 21 Q. Sure. But in your report, you i

06:24:01 22 didn't conclude that the --- the

06:24:01 23 Carter was not compact?

06:24:02 24 A. It's --- it's less compact.

06:24:04 25 Q. But to be clear you didn't make

06:24:06 1 a finding that it was not --- like ti
06:24:09 2 didn't comply with the criterion of
06:24:09 3 compactness?

06:24:10 4 A. That is right. There is no
06:24:13 5 bright line that it's on the wrong
06:24:14 6 side of.

06:24:14 7 Q. Sure. And you also analyzed
06:24:16 8 had proposed plans for the respect of
06:24:19 9 political subdivisions.

06:24:19 10 Correct?

06:24:21 11 A. I did.

06:24:25 12 Q. And as part of that you stated
06:24:26 13 that the Carter plan is possibly not
06:24:28 14 excellent when it comes to subdivision
06:24:30 15 splits?

06:24:31 16 A. To --- to really back that up,
06:24:32 17 I would may need to see the table I'm
06:24:35 18 afraid. But I believe you.

06:24:36 19 Q. Can --- I think we can pull
06:24:38 20 that up it is on page two of your
06:24:40 21 second report. I think there's ---
06:24:47 22 the text --- the text below is where
06:24:50 23 the possibly not excellent --- you
06:24:52 24 know.

06:24:52 25 A. Okay.

06:24:52 1 So when it comes to splits, I
06:25:00 2 judge all the plans to be excellent.
06:25:00 3 Yes, I see. Yeah, I think that's on
06:25:02 4 the basis of these split county
06:25:03 5 subdivisions where it has the most
06:25:06 6 splits 20 and the most pieces 41. So
06:25:10 7 if you are going to draw a line among
06:25:12 8 these plans that on the table it's the
06:25:15 9 least respectful of that particular
06:25:18 10 criteria while being very strong at
06:25:20 11 other things.

06:25:21 12 Q. Right.

06:25:21 13 So just like compactness, there
06:25:23 14 was no finding that the Carter plan
06:25:25 15 did not comply with the criterion of
06:25:28 16 respect for subdivision splits?

06:25:30 17 A. There is no bright line there
06:25:33 18 either.

06:25:33 19 Q. Sure.

06:25:41 20 Q. And as part of your report, you
06:25:42 21 --- you didn't analyze whether any of
06:25:44 22 splits in Doctor Rodden's map were the
06:25:44 23 result of his balancing other
06:25:53 24 redistricting criteria?

06:25:54 25 A. I didn't analyze that and I

06:25:58 1 assume they were the result of of
06:25:59 2 balancing other priorities.
06:26:02 3 Q. So ultimately, is it fair to
06:26:02 4 say that the Carter plan is comparable
06:26:04 5 to or matches all other plans on the
06:26:04 6 criteria of contiguity, population
06:26:06 7 deviation, compactness and subdivision
06:26:08 8 splits?
06:26:10 9 A. I wouldn't go so far as it is
06:26:12 10 comparable to or better on all of
06:26:14 11 those. But I --- yeah I wouldn't go
06:26:19 12 that far.
06:26:20 13 Q. Comparable or matches?
06:26:20 14 A. It is --- it splits the most
06:26:20 15 municipalities of the ones in
06:26:20 16 contention. So I wouldn't use that
06:26:32 17 sentence. But I --- I --- I think
06:26:34 18 it's ---if you are asking for my
06:26:35 19 evaluation of the plan overall, I
06:26:37 20 think this should be regarded in view
06:26:37 21 of it's superlative least change
06:26:37 22 score. And we heard testimony from
06:26:44 23 earlier that that was top of mind in
06:26:46 24 the design of that plan. It just laps
06:26:50 25 had field when it comes to least

06:26:52 1 change.

06:26:53 2 And so sometimes I like to
06:26:55 3 think about the redistricting
06:26:57 4 principles a little bit like a game of
06:26:59 5 twister. If you have to put your hand
06:27:00 6 on this dot and this foot over here
06:27:03 7 and that foot over there, the more
06:27:05 8 things you're trying to do, the less
9 elegant you might look trying to do
10 it.

11 Right?

12 And so these should be viewed
13 in light of it's --- it's expressed
14 goal and it's excellent performance in
06:27:15 15 something not pictured, which is least
06:27:16 16 change.

06:27:16 17 Q. Sure.

06:27:22 18 And circling back to
06:27:23 19 subdivision splits, you didn't analyze
06:27:24 20 VTD splits.

06:27:24 21 Right?

06:27:25 22 A. I did actually look at split
06:27:27 23 VTDs, but I didn't report on it.

06:27:29 24 Q. But it is not in the report?

06:27:30 25 Okay.

06:27:31 1 Moving onto least change
06:27:35 2 actually. Are you --- you are
06:27:36 3 familiar with the principal.
06:27:37 4 Correct?
06:27:38 5 A. Of least change?
06:27:39 6 Q. Yes?
06:27:41 7 A. I am.
06:27:41 8 Q. And can you just explain that
06:27:43 9 principle briefly?
06:27:44 10 A. Sure. It's a principal of
06:27:45 11 resemblance to a benchmark. And it's
06:27:49 12 typically assessed by making a
06:27:51 13 matching of District numbers between
06:27:53 14 two plans and then looking at the
06:27:54 15 number or the percentage of people who
06:27:57 16 are in the same district with respect
06:28:01 17 to an all plan.
06:28:02 18 Q. Okay.
06:28:02 19 And --- and in your second
06:28:03 20 report, you did not --- you didn't
06:28:04 21 analyze the proposed plans for least
06:28:06 22 change?
06:28:06 23 Correct?
06:28:07 24 A. I --- I think I mentioned in my
06:28:09 25 testimony that I --- I did compute

06:28:11 1 that. It's not in the report, but
06:28:15 2 that my findings agreed to the extent
06:28:17 3 that I was able to quickly compare
06:28:22 4 with the findings shown by Doctor
06:28:23 5 Rodden.

06:28:23 6 Q. Right. You testified to that
06:28:24 7 earlier.

06:28:24 8 Right?

06:28:25 9 And in your first report, you
06:28:25 10 acknowledge that the Pennsylvania
06:28:27 11 Supreme Court in it's 2018 League of
06:28:27 12 Women Voters' Opinion recognized the
06:28:27 13 principle of least change as a
06:28:27 14 traditional redistricting criterion to
06:28:27 15 be complied with after compliance with
06:28:36 16 the neutral traditional criteria?

06:28:37 17 A. My recollection is that it is
06:28:39 18 cited that something that can be
06:28:43 19 legitimately considered.

06:28:43 20 Q. And you also note that based on
21 this opinion in your first report,
22 that it would be reasonable to prefer
23 a plan that is least disruptive to the
24 2018 remedial plan.

25 Is that correct?

06:28:50 1 A. Yes. On least change, I think
06:28:52 2 it's reasonable to regard less as
06:28:54 3 better in this context.

06:28:55 4 Q. And you if further explained
06:28:56 5 that it is reasonable to prefer plans
06:28:58 6 with lower displacement from the
06:28:58 7 original plan given that is was put in
06:28:58 8 place by the court as a model of fair
06:29:02 9 districting?

06:29:02 10 A. Yes.

06:29:03 11 Q. And you state in your first
06:29:05 12 report that it would be reasonable
06:29:07 13 that --- to prefer plan that performs
06:29:09 14 best on that metric?

06:29:11 15 A. By the likes of all the others.
06:29:13 16 So if I could give a quick example. I
06:29:16 17 was recently working in Alabama in the
06:29:21 18 --- in the challenge to the
06:29:22 19 Congressional plan for which we just
06:29:22 20 had a decision last --- some time this
06:29:27 21 week. An in that case the question
06:29:29 22 was can you make an additional
06:29:32 23 majority/minority District. Well
06:29:33 24 doing so required quite a lot of
06:29:35 25 change over a map that didn't have

1 map or the GMS plan. Different names.

2 But anyway, wonderful to see
3 you. In --- in the interest of full
4 disclosure and because I might slip
5 and actually call you Moon, you and I
6 have worked together in redistricting
7 litigation in other states.

8 Right?

9 A. We have and we're also
10 co-authors on a published paper.

06:30:59

11 Q. Right. So we've worked
12 together in North Carolina.

06:30:59

06:31:00

13 Yes?

06:31:03

14 A. We --- we did.

06:31:03

15 Q. In Wisconsin?

06:31:03

16 A. Yes.

06:31:03

17 Q. And we recently co-authored an
18 article on computational redistricting
19 and the Voting Rights Act.

06:31:03

06:31:05

20 Correct?

06:31:07

21 A. That's the one.

06:31:08

22 Q. That's the one.

06:31:09

23 Let's start by talking about
24 what you refer to with Mr. Persily who
25 drew the League of Women's Voter's map

06:31:10

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06:31:17 1 for the Pennsylvania Supreme Court.

06:31:18 2 And you told the story about

06:31:20 3 how he kept Buffalo intact and then

06:31:24 4 caught all sorts of grief for it and

06:31:26 5 learned his lesson.

06:31:27 6 Do you know when that took

06:31:28 7 place?

06:31:28 8 A. If I remember right, and I wish

06:31:31 9 I had this in hand, I think that was

06:31:31 10 the 2000 redistricting.

06:31:33 11 Q. Yes, I believe that's right.

06:31:34 12 And so that was before --- before the

06:31:36 13 2018 map that he drew in Pennsylvania

06:31:38 14 for sure?

06:31:39 15 A. Oh, quite a bit before.

06:31:40 16 Q. And despite having caught all

06:31:42 17 that grief, he kept Pittsburgh in one

06:31:46 18 district in the 2018 map.

06:31:48 19 Correct?

06:31:51 20 A. Yes, he did. Definitely.

06:31:52 21 Q. And --- and are you aware of

06:31:55 22 the fact that there is no provision in

06:31:57 23 the New York State Constitution saying

06:31:59 24 that a city must be preserved intact

06:32:03 25 unless absolutely necessary?

06:32:06 1 A. I'm willing to believe you.

06:32:08 2 Q. But in the Pennsylvania
06:32:09 3 Constitution there is exactly that
06:32:11 4 provision, a provision that says no
06:32:13 5 county, city incorporated town,
06:32:17 6 borough, township or ward should be
06:32:21 7 divided among districts unless
06:32:24 8 absolutely necessary, something to
06:32:25 9 that effect.

06:32:25 10 Yes?

06:32:25 11 A. Something to that effect, yes
06:32:26 12 And I think if you take that very
06:32:27 13 literally, that is no individual city.

06:32:32 14 Q. I'm just asking if you're aware
06:32:34 15 of the provision of the State
06:32:35 16 Constitution?

06:32:36 17 A. Well I'm trying to describe my
06:32:38 18 understanding of it. I think it can't
06:32:40 19 be taken literally to say that no city
06:32:43 20 can be divided unless it must, because
06:32:47 21 then --- right, you see what I mean?

06:32:50 22 Q. Let's turn to your reports now,
06:32:53 23 Professor. Is it correct you filed a
06:32:55 24 response report yesterday?

06:32:56 25 A. Yes, I remembered.

06:33:00 1 Q. And in that report, you looked
06:33:02 2 at 13 plans submitted to the Court.

06:33:04 3 Correct?

06:33:05 4 A. Yes.

06:33:05 5 Q. And you wrote primarily about
06:33:07 6 two topics, first was an excellence
06:33:07 7 standard for traditional criteria,
06:33:07 8 like compactness and respect for
06:33:15 9 counties and municipalities?

06:33:16 10 A. Yes.

06:33:17 11 Q. And the second one was partisan
06:33:20 12 fairness.

06:33:21 13 Correct?

06:33:21 14 A. Yes, that is sounds right.

06:33:22 15 Q. And as the traditional criteria
06:33:24 16 you placed four plans out of the 13.
06:33:29 17 In the top tier plans that meet a high
06:33:31 18 excellent standard followed by two
06:33:34 19 more plans that also meet an
06:33:36 20 excellence standard.

06:33:37 21 Right?

06:33:37 22 A. I believe that is accurate to
06:33:45 23 how I phrased it.

06:33:45 24 Q. So out of 13 plans, that's 6
06:33:46 25 plans that you deemed excellent on

06:33:46 1 traditional criteria.

06:33:48 2 Correct?

06:33:48 3 A. Yes, I made what I termed
06:33:53 4 tiers.

06:33:53 5 Q. And turning to the other half,
06:33:57 6 the partisan fairness metrics, you
06:33:57 7 identified three plans as, quote,
06:33:59 8 dominating the field, but you just
06:34:01 9 explained a few minutes ago that you
06:34:02 10 had a very precise idea of what that
06:34:05 11 meant and I accept --- every time I
06:34:07 12 refer to that I'm accepting your
06:34:08 13 understanding of what dominating the
06:34:09 14 field meant. But it's correct that
06:34:11 15 there were three plans that you cited
06:34:13 16 for that.

06:34:14 17 Correct?

06:34:14 18 A. Three plans were dominated by
06:34:16 19 no other. That's correct.

06:34:18 20 Q. And the phrase dominating the
06:34:19 21 field is the one you used in the your
06:34:21 22 report. I understand that you may not
06:34:24 23 perfectly love that phraseology.

06:34:28 24 So the Governor's plan was the
06:34:29 25 only one that you deemed both

06:34:31 1 excellent on the traditional criteria
06:34:35 2 and dominating the field on the
06:34:37 3 partisan fairness metrics as we
06:34:40 4 described it.

06:34:40 5 Right? It's that intersection
06:34:42 6 of the two?

06:34:42 7 A. That's right. And I don't want
06:34:44 8 to overstate the, you know, perfection
06:34:49 9 of these classifications. I'd like
06:34:51 10 that to be understood.

06:34:51 11 Q. Sure.

06:34:51 12 A. But that --- by the likes of
06:34:54 13 that analysis it was the intersection
06:34:54 14 of those two.

06:34:54 15 Q. And my clients Gressman
06:35:01 16 Mathematicians and Scientist plan,
06:35:01 17 also known as the GMS plan did not
06:35:03 18 make it on to any of those lists that
06:35:05 19 we just described.

06:35:05 20 Correct?

06:35:06 21 A. That's correct. But I would
06:35:08 22 like to specify if ---.

06:35:09 23 Q. I'm sorry, I just asked you if
06:35:09 24 it's on any of those lists.

06:35:12 25 Is it on any of those lists?

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1 A. No.

2 Q. So let's talk about first
3 excellence on the traditional
4 criteria. The six plans that you
5 deemed excellent included the Citizens
6 plan in the highest tier and the
7 Reschenthaler 2 and Khalif Ali plans
8 in the next tier.

9 Correct?

10 A. We can pull it up, but I'm
11 willing to believe.

12 Q. Well, let's pull it up. Do I
13 need to press this? I hope that's
14 visible. We tried to blow that up.
15 This is Table 1 from your report. The
16 only difference is I drew a line under
17 our Gressman plan just because I'm
18 going to be referring to it, and it's
19 a little easier on the eye if you have
20 a pointer.

21 So turning to this, the first
22 tier excellent Citizens plan, which is
23 second on that list had a worse Convex
24 Hull compactness score than the GMS
25 plan.

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Right?

A. Convex Hull is an example where higher and better ---.

Q. I'm sorry, I'm just asking you a yes or no question.

A. I'm trying --- I'm trying to work out the answer to your question. So Convex Hull is a score of higher is better, so I agree that Gressman is better than Citizens on that.

Q. And the also excellent Reschenthaler 2 plan did worse than the GMS plan on both the Convex Hull compactness score and the REOC compactness score.

Correct?

A. Okay.

I will try to make the comparison. Reschenthaler 2 is worse on Convex Hull. And what's the second one.

Q. REOC.

A. Let's see. Reschenthaler 2 is worse on REOC. That's correct.

Q. And the also excellent Khalif

06:37:01 1 Ali plan did worse than the GMS plan
06:37:01 2 on both the Convex Hull compactness
06:37:01 3 score and the population polygon
06:37:01 4 compactness score.

06:37:01 5 Right?

06:37:12 6 A. So let's try. So population
06:37:13 7 polygon higher is better, so I agree
06:37:15 8 Gressman beats Khalif Ali. And remind
06:37:19 9 me the other.

06:37:19 10 Q. Convex Hull for Khalif Ali.

06:37:25 11 A. Convex Hull. I agree, yes.

06:37:26 12 Q. And that Khalif Ali plan,
06:37:29 13 that's the excellent plan on
06:37:29 14 traditional criteria that has more
06:37:30 15 than an 8,000 person census population
06:37:34 16 deviation.

06:37:34 17 Correct?

06:37:35 18 A. It depends on your basis for
06:37:37 19 balancing ---.

06:37:37 20 Q. Census?

06:37:38 21 A. Census population, yes.

06:37:40 22 Q. Yes.

06:37:41 23 A. I think that's the right way to
06:37:42 24 say it.

06:37:43 25 Q. And in turning to the political

06:37:44 1 subdivisions protected by the
06:37:46 2 Pennsylvania Constitution, is it
06:37:48 3 correct that the GMS plan has fewer
06:37:51 4 split counties on table one than the
06:37:55 5 excellent Governor's plan?

06:37:59 6 A. It does have fewer. Yes, 15
06:38:01 7 and 16.

06:38:01 8 Q. And the GMS plans also has
06:38:04 9 fewer county pieces than the
06:38:05 10 Governor's plan.

06:38:06 11 Right?

06:38:06 12 A. As you would expect.

06:38:06 13 Q. That was yes?

06:38:09 14 A. Yes.

06:38:10 15 Q. And the GMS plan has fewer
06:38:12 16 split municipalities than the
06:38:15 17 Governor's plan, too; doesn't it?

06:38:21 18 A. Yes.

06:38:21 19 Q. In fact the GMS plan ties or
06:38:22 20 beats all six of these standard of
06:38:23 21 excellence plans on split
06:38:26 22 municipalities.

06:38:27 23 Correct?

06:38:28 24 A. I'm willing to believe you.
06:38:29 25 I'd have to think it through.

06:38:31 1 Q. And the GMS plan also beats the
06:38:35 2 Governor's plans on municipal pieces.

06:38:37 3 Right?

06:38:38 4 A. Yeah. Again, that goes hand in
06:38:41 5 hand with splits.

06:38:41 6 Q. And the GMS plan ties or beats
06:38:44 7 every one of the six standards of
06:38:46 8 excellence plans on municipal pieces;
06:38:53 9 doesn't it?

06:38:53 10 A. Yes. It's tied for best of
06:38:54 11 all.

06:38:54 12 Q. Professor Duchin does the word
06:38:59 13 ward or the word wards appear anywhere
06:39:00 14 in either of your two expert reports?

06:39:02 15 A. We would have to search, but I
06:39:05 16 believe it did not make its way into
06:39:08 17 the reports.

06:39:08 18 Q. Professor Duchin, you're aware,
06:39:11 19 aren't you that the very same sentence
06:39:14 20 in the Pennsylvania Constitution that
06:39:16 21 prohibits the unnecessary splitting of
06:39:18 22 counties and municipalities which you
06:39:20 23 report on, says the exact same things
06:39:22 24 about wards.

06:39:23 25 Correct?

06:39:23 1 A. Yes.

06:39:23 2 Q. And Professor Duchin, you did
06:39:27 3 not include in your Table 1, a column
06:39:29 4 for split wards or a column for ward
06:39:33 5 pieces, did you?

06:39:34 6 A. I did not.

06:39:34 7 Q. Professor Duchin, at the time
06:39:37 8 you made the decision to omit wards
06:39:44 9 from Table 1, had you --- I want to
06:39:46 10 put this diplomatically --- had you
06:39:48 11 forgotten that the Governor's plan
06:39:52 12 split 25 wards while the GMS plan
06:39:55 13 split only 15?

06:39:55 14 A. I didn't do a ward computation
06:39:58 15 for the GMS plan. I did do a ward
06:39:58 16 computation for the original three
06:40:04 17 ---.

06:40:04 18 Q. So you had not. Did Counsel
06:40:10 19 for the Governor instruct you not to
06:40:12 20 report on wards?

06:40:13 21 A. No.

06:40:13 22 Q. All right.

06:40:14 23 Now that we've discussed your
06:40:15 24 tiers of excellence, I'd like to turn
06:40:21 25 to Table 2 of your response report.

06:40:22 1 Again, I drew a line under the
06:40:26 2 Gressman plan because it's of
06:40:28 3 particular interest here.
06:40:33 4 Now, this is where you analyze
06:40:34 5 partisan outcomes or partisan
06:40:37 6 performance by looking at 12 statewide
06:40:39 7 general elections.

06:40:39 8 Correct?

06:40:41 9 A. Yes.

06:40:41 10 Q. In this table you report how
06:40:43 11 many districts were carried by the
06:40:44 12 Democratic candidate in each of those
06:40:46 13 elections under each plan.

06:40:48 14 Right?

06:40:49 15 A. I wouldn't say carried, I would
06:40:50 16 say how many districts have more
06:40:52 17 Democrat votes, yes. The Democrat
06:40:56 18 wasn't actually running in the
06:40:57 19 District.

06:40:58 20 Q. Fair enough. So the first row
06:41:00 21 in this table shows the numbers for
06:41:04 22 the Governor's plan.

06:41:05 23 Right?

06:41:05 24 A. Yes.

06:41:05 25 Q. And the fifth rows show similar

06:41:06 1 numbers for the GMS --- equivalent
06:41:08 2 numbers for the GMS plan.

06:41:08 3 Right?

06:41:10 4 A. Yes.

06:41:10 5 Q. And all other things being
06:41:13 6 equal, an important qualification ---
06:41:14 7 if a plan has higher numbers in its
06:41:17 8 row, it might be more Democratic
06:41:19 9 favoring, and if a plan has lower
06:41:22 10 numbers in its row, it might be more
06:41:24 11 Republican favoring.

06:41:24 12 Fair?

06:41:26 13 A. You're dealing with a range of
06:41:27 14 numbers, and so typically just as we
06:41:30 15 were talking about before, some will
06:41:31 16 be higher and some will be lower. But
06:41:33 17 if it were higher in all numbers then,
06:41:36 18 yes, it would be more --- is that what
06:41:36 19 you mean?

06:41:36 20 Q. All things being equal, higher
06:41:38 21 numbers suggest a more Democratic
06:41:40 22 favoring map and lower maps suggest a
06:41:40 23 more Republican favoring map.

06:41:43 24 Correct?

06:41:43 25 A. I would go along with that if

06:41:45 1 it was higher across the board.
06:41:48 2 Q. So in the top left cell we see
06:41:48 3 the number ten. I just want to make
06:41:51 4 sure that means --- that means that
06:41:53 5 the Democratic candidate for Governor
06:41:55 6 in 2014 got more votes than his
06:41:59 7 opponent of ten of the 17
06:42:01 8 Congressional districts in the
06:42:02 9 Governor's plan.

06:42:04 10 Right?

06:42:04 11 A. Yes.

06:42:04 12 Q. Yes.

06:42:05 13 And if you go across that first
06:42:07 14 row, you'll see that each of these 12
06:42:08 15 elections, anywhere from 6 districts
06:42:11 16 from 11 districts in the Governor's
06:42:13 17 plan were ones that the Democratic
06:42:16 18 candidate out-pollled his opponent.

06:42:18 19 Correct?

06:42:18 20 A. Six to 11 is what I see, yes.

06:42:20 21 Q. All right.

06:42:21 22 Now, because we work together I
06:42:23 23 know you have one of the fastest,
06:42:31 24 arithmetic brains ever seen, so I'm
06:42:31 25 going to put that to work now. If we

06:42:31 1 go across that row and total those up
06:42:31 2 --- and you can take a second and do
06:42:31 3 this, or we can do it together, and we
06:42:35 4 add up those numbers, what would be
06:42:35 5 the sum of those 12 numbers in that
06:42:35 6 first row of table two that explains
06:42:42 7 or describes the Governor's plan?

06:42:44 8 A. I always say when I teach these
06:42:46 9 you shouldn't try to do arithmetic in
06:42:49 10 front of an audience, so I'm not sure.
06:42:53 11 But if you have that precomputed I
06:42:55 12 have every reason to believe that
06:42:58 13 you've done it right.

06:42:58 14 Q. Well, if you're willing to
06:42:58 15 accept my representation, the answer
06:43:00 16 is 111 across 12 elections, which
06:43:00 17 sounds about right when you look at
06:43:00 18 it.

06:43:04 19 A. Definitely ---.

06:43:04 20 Q. All right.

06:43:04 21 I'm not going to ask you to do
06:43:05 22 it for fifth row either?

06:43:08 23 A. I'm sorry, did you say 111.

06:43:10 24 Q. 111.

06:43:10 25 A. Yeah.

06:43:12 1 Q. You accept that?

06:43:12 2 A. In fact, I remember that,
06:43:13 3 having done that in the past. That
06:43:14 4 sounds right.

06:43:15 5 Q. Thank you.

06:43:16 6 Well, it turns out if you do
06:43:18 7 the fifth row, it is also 111. You're
06:43:22 8 welcome to check that if you'd like?

06:43:26 9 A. I believe that to be correct.

06:43:27 10 Q. So the difference between the
06:43:33 11 number of districts where the
06:43:33 12 Democratic statewide candidates in
06:43:34 13 these 12 elections got the most votes
06:43:34 14 in the Governor's plan versus in the
06:43:36 15 GMS plan is 111, minus 111, and
06:43:42 16 although I'm not as good a
06:43:44 17 mathematician as you, that might be a
06:43:46 18 difference of zero.

06:43:47 19 Correct?

06:43:48 20 A. That sum is what I sometimes
06:43:49 21 call the aggregate proportionality, so
06:43:52 22 yes, they're equal in aggregate.

06:43:54 23 Q. Thank you. Let's turn to
06:43:56 24 Table 3 of the same report. Now
06:44:06 25 Professor, this is your and the total

06:44:07 1 efficiency gap for the Governor's
06:44:09 2 plan.

06:44:09 3 Right?

06:44:10 4 A. That's right.

06:44:10 5 Q. And that number is .1007.

06:44:13 6 Right?

06:44:13 7 A. Yes.

06:44:13 8 Q. And am I correct that of the
06:44:15 9 other dozen plans listed in this
06:44:17 10 table. The one with the closest score
06:44:19 11 to that is the Senate Democratic
06:44:24 12 Caucus 2 plan and the second closest
06:44:25 13 is the GMS plan?

06:44:27 14 A. That looks correct.

06:44:28 15 Q. And let's go over to the
06:44:29 16 right-hand column which is for total
06:44:34 17 partisan bias, am I correct that the
06:44:35 18 closest score to the Governor's plan
06:44:36 19 in that column is also the GMS plan?

06:44:38 20 A. It's hard to read, but I trust
06:44:40 21 my coloring so, yes. Wait. Hang on.
06:44:44 22 GMS is closest to the Governor's
06:44:48 23 scores?

06:44:51 24 Q. Yes.

06:44:55 25 A. Isn't the House Dem caucus .1

06:44:58 1 --- oh that's positive.

06:45:00 2 Yes. I agree with you.

06:45:00 3 Q. Yes. So and let's now turn to
06:45:03 4 the second column, the total AGIA
06:45:06 5 metric. And in that one, isn't it the
06:45:08 6 exact same score for the GMS as for
06:45:09 7 the Governor's plan minus 0.0486 our
06:45:13 8 two four decimal places?

06:45:14 9 A. Yes. So to this degree of
06:45:15 10 precision they are equal.

06:45:17 11 Q. But the GMS plan is not one of
06:45:19 12 the three plans that you report
06:45:22 13 dominated the field according to these
06:45:26 14 partisan fairness metrics.

06:45:26 15 Correct?

06:45:26 16 A. That's just a fact, based on
06:45:27 17 these numbers.

06:45:28 18 Q. But the Carter plan was one of
06:45:29 19 those three, as was just discussed
06:45:32 20 with the Carter attorney?

06:45:33 21 A. Yes.

06:45:36 22 Q. And on all these scores, you
06:45:38 23 already mentioned that being closer to
06:45:39 24 zero is better?

06:45:40 25 A. Yes.

06:45:40 1 Q. But the GMS plan has a score
06:45:41 2 closer to zero and thus better than
06:45:46 3 the dominating Carter plan on the
06:45:46 4 total AGIA metric.

06:45:48 5 Correct?

06:45:52 6 A. Okay. Hang on.

06:45:52 7 Q. GMS is closer to zero than the
06:45:57 8 Carter plan on total AGIA.

06:45:57 9 A. I'm just checking. Yes, it is.

06:45:59 10 Q. And the GMS plan is closer to
06:46:00 11 zero than the dominating Carter plan
06:46:02 12 on total mean median.

06:46:03 13 Correct?

06:46:05 14 A. Yes. Probably on all, but one.

06:46:08 15 Q. Indeed, it's closer to zero on
06:46:11 16 total partisan bias as well.

06:46:13 17 Correct?

06:46:14 18 A. I believe it is.

06:46:15 19 Q. So as you just mentioned, the
06:46:15 20 GMS plan outperforms the Carter plan,
06:46:15 21 one of the three dominant ones on
06:46:19 22 partisan fairness metrics on three out
06:46:21 23 of the four partisan fairness metrics.

06:46:25 24 Correct? I think you just said
06:46:26 25 that?

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1 A. Can I explain what dominating
2 means?
3 Q. No. You've already talked
4 about that.
5 A. Okay.
6 Q. Professor Duchin, I see my time
7 is almost up. So in the interest of
8 that, in the very last sentence of
9 your last report, did you conclude by
10 saying that the Governor's plan is ---
11 I'm going to quote now from the last
12 sentence of your last report, the
13 Governor's plan is not, not the only
14 reasonable choice as the best plan
15 before the Court?
16 A. Absolutely. I'm so glad you
17 gave me a chance to say that.
18 Q. Thank you.
19 A. I think the Gressman plan is an
20 excellent plan.

21 ATTORNEY HIRSCH:

22 Your Honor, I have no
23 further questions and I pass the
24 witness.

25 JUDGE MCCULLOUGH:

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Okay.

CROSS EXAMINATION

BY ATTORNEY VANCE:

Q. Good afternoon, Doctor Duchin.

A. Hello.

Q. I want to start by just confirming a point in your report, which is you've opined that the Congressional districting plan passed by the General Assembly or passed by the Pennsylvania House of Representatives, HB-2146 is population balanced and contiguous, shows strong respect for political boundaries, and is reasonably compact.

Correct?

A. You're asking if that's what I wrote?

Q. Correct.

A. We can take a look and I can be sure.

Q. Do you have not have a copy of your report?

06:48:18 1 A. What page are we on?

06:48:18 2 Q. If you want to look at page two

06:48:18 3 of your report?

06:48:18 4 A. Sure.

06:48:19 5 Q. If you look in the very first

06:48:21 6 paragraph?

06:48:24 7 A. Yes, that is exactly what it

06:48:26 8 says.

06:48:26 9 Q. But HB-2146 does not meet your

06:48:31 10 quote unquote excellence standard.

06:48:33 11 Correct?

06:48:34 12 A. That's right.

06:48:34 13 Q. But, in fact, on splits, and

06:48:38 14 whether you are looking at it by

06:48:40 15 counties, by municipalities, by

06:48:42 16 precincts, and by total splits,

06:48:45 17 HB-2146 is in fact better than the

06:48:49 18 Governor's plan.

06:48:49 19 Correct?

06:48:50 20 A. On splits it's better.

06:48:52 21 Q. So the only criteria of what

06:48:54 22 the Governor's plan is better is

06:49:02 23 compactness.

06:49:02 24 Correct?

06:49:02 25 A. Right. I think possibly all

06:49:04 1 six metrics of compactness. We can
06:49:05 2 check.

06:49:05 3 Q. And part of the reason the
06:49:06 4 Governor's plan can achieve a higher
06:49:09 5 compactness score is because it splits
06:49:11 6 the City of Pittsburgh.

06:49:11 7 Right?

06:49:13 8 A. It's one of many factors that
06:49:16 9 contributes to the scores.

06:49:19 10 Q. Does splitting the City of
06:49:22 11 Pittsburgh allow for the creation of
06:49:24 12 two Democratic leaning seats as
06:49:26 13 opposed to one?

06:49:28 14 A. To answer that, I'd have to
06:49:30 15 look at the seats surrounding it in
06:49:34 16 plans that keep it whole. And that's
06:49:36 17 not an specific analysis that I've
06:49:38 18 done to say that it's two instead one.

06:49:39 19 Q. You didn't look at that?

06:49:41 20 A. I didn't look at whether the
06:49:42 21 district surrounding the one that
06:49:44 22 contains Pittsburgh specifically would
06:49:46 23 be Democratic leaning.

06:49:51 24 Q. Who drew the Governor's plan?

06:49:55 25 A. I'm not sure and I wasn't

06:49:58 1 involved in the drawing of the lines,
06:49:59 2 but my understanding is that it was
06:50:02 3 internally drawn in the Governor's
06:50:04 4 office.

06:50:04 5 Q. But you're not aware who
06:50:07 6 actually internally in the Governor's
06:50:08 7 office was responsible for drawing it?

06:50:10 8 A. Definitely not.

06:50:10 9 Q. Do you know partisan data was
06:50:11 10 used in the drawing of the Governor's
06:50:12 11 plan?

06:50:13 12 A. In the drawing of --- I
06:50:14 13 couldn't speak to that.

06:50:18 14 Q. So the Governor, to your
06:50:20 15 knowledge, has not made public who
06:50:22 16 actually drew his plan, has he?

06:50:25 17 A. To my knowledge that's not
06:50:26 18 public.

06:50:27 19 Q. And the Governor's plan has not
06:50:28 20 gone through any sort of legislative
06:50:32 21 practice, has it?

06:50:34 22 A. That's right. It has not, to
06:50:37 23 be clear.

06:50:37 24 Q. Do you know when the Governor
06:50:39 25 first made his plan public?

06:50:44 1 A. It would be in the last few
06:50:47 2 weeks. It was posted publicly on the
06:50:49 3 same portal that took public feedback,
06:50:52 4 but I can't remember the exact date.

06:50:54 5 Q. If I represented to you that it
06:50:56 6 was January 15th, does that sound
06:50:57 7 about right?

06:50:58 8 A. That does sound reasonable.

06:50:59 9 Q. Are you aware of when HB-2146
06:51:02 10 was first made public?

06:51:03 11 A. In that forum, I'm not sure.
06:51:05 12 But I know that it's one of a number
06:51:08 13 of maps. There were a number of maps
06:51:10 14 drawn by Amanda Holt and made public
06:51:13 15 over a long period of time and this is
06:51:15 16 a modification of one of them.

06:51:20 17 Q. Doctor Duchin, I assume you
06:51:21 18 agree that district lines should not
06:51:23 19 be drawn to intentionally give a
06:51:25 20 benefit to one political party at the
06:51:28 21 disadvantage to another.

06:51:29 22 Correct?

06:51:32 23 A. I agree that plans should not
06:51:34 24 be drawn to maximize partisan
06:51:38 25 advantage.

06:51:38 1 Q. Now, you state that HB-2146
06:51:39 2 systematically advantages one
06:51:40 3 political party over the other,
06:51:41 4 largely due to the political geography
06:51:43 5 of Pennsylvania.

06:51:44 6 Correct?

06:51:45 7 A. I can't say that it's due to
06:51:47 8 that in the substantiation of the one
06:51:51 9 plan, but I would say that blindly
06:51:54 10 drawn plans tend to have that property
06:51:56 11 due to the political geography and the
06:51:57 12 rules of Pennsylvania.

06:51:58 13 Q. And that perceived political
06:52:02 14 advantage, that exists before anyone
06:52:04 15 even starts drawing any lines.

06:52:05 16 Correct?

06:52:08 17 A. It's a combination of the lines
06:52:10 18 and the votes.

06:52:10 19 Q. But it's based upon where the
06:52:13 20 voters live, where voters with certain
06:52:15 21 preferences have, where they live and
06:52:17 22 where they're located?

06:52:18 23 A. It's definitely a function of
06:52:21 24 that together with the rules of
06:52:23 25 redistricting.

06:52:23 1 Q. And I think, as you've opined,
06:52:25 2 the concentration of Democrats creates
06:52:27 3 a landscape that is tilted towards
06:52:31 4 Republicans.

06:52:31 5 Correct?

06:52:32 6 A. To be clear, and this is
06:52:33 7 something I published and think about
06:52:34 8 a lot, it's not just the
06:52:36 9 concentration. It's the location.
06:52:41 10 It's the spacial arrangement.

06:52:41 11 Q. And as I understand it, one of
06:52:44 12 the purposes or at least benefits of
06:52:45 13 the Governor's plan in your opinion is
06:52:48 14 that it over comes this tilt. Is that
06:52:53 15 fair?

06:52:54 16 A. Yes.

06:52:54 17 Q. And in fixing this tilt, that's
06:52:56 18 something that benefits the Democrats.

06:52:58 19 Correct?

06:52:59 20 A. My view is that it benefits all
06:53:01 21 Pennsylvanians to have plans that are
06:53:03 22 responsive and fair.

06:53:04 23 Q. But particularly, it's going to
06:53:06 24 be more likely to result in a better
06:53:08 25 chance for Democrats to win additional

06:53:11 1 seats or to achieve more Democratic
06:53:13 2 leaning seats. Isn't that true?

06:53:15 3 A. Only if the votes go that way.
06:53:17 4 It's a function of the votes.

06:53:28 5 Q. So in drawing lines to
06:53:30 6 specifically negate this tilt, isn't
06:53:33 7 that drawing lines specifically to
06:53:36 8 benefit one political party over the
06:53:38 9 other?

06:53:38 10 A. Oh, I think not. So that's
06:53:39 11 actually pivotal to this analysis is
06:53:39 12 that something these metrics are
06:53:39 13 trying to guide you to is treating the
06:53:46 14 parties evenhandedly.

06:53:46 15 Q. But by evenhandedly, you're
06:53:50 16 saying you have to get rid of a
06:53:50 17 natural advantage that the Republicans
06:53:52 18 have.

06:53:52 19 Correct?

06:53:52 20 A. By evenhandedly, I mean the
06:53:54 21 party with more votes should tend to
06:53:58 22 more seats and that cuts both ways.

06:54:00 23 Q. But in order to do that, you
06:54:02 24 need to negate this Republican tilt
06:54:03 25 that you recognize?

06:54:04 1 A. Yeah, and I'm really trying to
06:54:06 2 answer the question responsively. So
06:54:09 3 the --- in Pennsylvania, there is a
06:54:10 4 structural advantage towards
06:54:12 5 Republicans and getting to better
06:54:14 6 partisan fairness does require you to
06:54:16 7 overcome that.

06:54:16 8 Q. You're not here saying it's
06:54:18 9 going to benefit Republicans by
06:54:19 10 getting rid of the structural
06:54:21 11 advantage, are you?

06:54:23 12 A. In the long-term, it might be
06:54:24 13 beneficial. But in the short-term
06:54:27 14 based on the recent elections that I
06:54:29 15 analyzed certainly, certainly it's the
06:54:31 16 case that it gives a better chance for
06:54:33 17 Democrats to be elected.

06:54:35 18 Q. Is it appropriate to ignore
06:54:37 19 traditional redistricting criteria to
06:54:41 20 negate a tilt or some advantage that
06:54:42 21 results because of the political
06:54:44 22 geography of a state?

06:54:47 23 A. To ignore, certainly not.

06:54:48 24 Q. But where is that line then?
06:54:50 25 What if it requires you to split more

06:54:52 1 than five counties in it than an
06:54:54 2 average plan in order to negate that
06:55:01 3 tilt? Would that be appropriate?

06:55:01 4 A. This is what I've sometimes
06:55:02 5 called a trade-off zone. And so a
06:55:04 6 little bit of trading off is
06:55:06 7 inevitable. But when you're far
06:55:09 8 behind other options, then I think
06:55:11 9 that's notable in analysis like the
06:55:13 10 one that I've conducted.

06:55:14 11 Q. So if a plan had to split five
06:55:17 12 more counties, then all the other
06:55:19 13 plans in order to negate this natural
06:55:22 14 tilt, would that be appropriate?

06:55:23 15 A. In the context of these
06:55:25 16 specific plans, I think five
06:55:28 17 additional county splits would be
06:55:28 18 something that you sort of need to see
06:55:31 19 a great path in many other principles
06:55:37 20 in order to --- to account that.

06:55:37 21 Q. What about three county splits?

06:55:40 22 A. This is a speculation that's
06:55:41 23 really hard to entertain without
06:55:42 24 looking at concrete examples.

06:55:44 25 Q. So you can't tell us where that

06:55:46 1 line would be?

06:55:46 2 A. I will repeat, and very
06:55:48 3 sincerely, that most of these matters
06:55:51 4 have no bright line.

06:55:57 5 Q. Now, Doctor Duchin, according
06:55:58 6 to your report, you prepared a
06:55:58 7 simulation where you created an
06:56:00 8 ensemble of 100,000 different maps.

06:56:04 9 Correct?

06:56:05 10 A. Well, I think the word
06:56:06 11 simulation is a misnomer here.
06:56:10 12 They're not imaginary plans. They're
06:56:10 13 real plans. They're real districting
06:56:12 14 plans. So I prefer to call it a
06:56:14 15 sampling process.

06:56:15 16 Q. As I heard you earlier, you
06:56:21 17 believe that Doctor Barber didn't
06:56:23 18 provide a lot of detail about his
06:56:25 19 methodology in his report, but you
06:56:25 20 don't provide any detail about your
06:56:27 21 methodology anywhere in your reports,
06:56:28 22 do you?

06:56:29 23 A. About the methodology for the
06:56:30 24 plans, I think I'm on the record and
06:56:35 25 everything's open source.

06:56:35 1 Q. But there's nothing in your
06:56:36 2 reports about the methodology you used
06:56:38 3 to create these on ensemble of 100,000
06:56:42 4 plans, is there?

06:56:42 5 A. The graph algorithm is not
06:56:45 6 described in the reports.

06:56:45 7 Q. But not just the algorithm,
06:56:47 8 Doctor Duchin. You don't report
06:56:48 9 anything about the population
06:56:50 10 deviation threshold you used, do you?

06:56:51 11 A. We'd have to look, but I
06:56:52 12 believe you. If you represent that I
06:56:53 13 did not, I believe you.

06:56:54 14 Q. You don't report about any
06:56:56 15 minimum or maximum compactness scores
06:57:03 16 you may have used?

06:57:04 17 A. I don't. I certainly don't
06:57:04 18 because there's no such thing in the
06:57:05 19 method.

06:57:05 20 Q. You didn't report how you went
06:57:07 21 about trying to minimize political
06:57:09 22 subdivision splits?

06:57:11 23 A. No.

06:57:15 24 Q. Now, I assume you agree that
06:57:24 25 when you you use different sets of

06:57:27 1 elections data, you can get different
06:57:30 2 outcomes.

06:57:30 3 Correct?

06:57:31 4 A. I've actually testified to
06:57:32 5 that.

06:57:32 6 Q. And my understanding is you
06:57:34 7 have a criticism of Doctor Barber
06:57:35 8 because he uses what we call an index
06:57:37 9 of elections.

06:57:38 10 Is that fair?

06:57:39 11 A. I think it's misleading. So
06:57:40 12 yes, that is fair.

06:57:42 13 Q. And I think you said in your
06:57:44 14 report and testified to earlier, one
06:57:46 15 of the reasons you don't like an index
06:57:48 16 is because if you have big swings in
06:57:51 17 election outcomes, it can really skew
06:57:53 18 the results.

06:57:53 19 Is that fair?

06:57:56 20 A. To be precise, it erases and
06:58:02 21 makes invisible the difference between
06:58:05 22 something responsive and something
06:58:06 23 stable.

06:58:06 24 Q. But as Doctor Rodden showed in
06:58:10 25 his report, we don't have big massive

06:58:14 1 swings in Pennsylvania elections, do
06:58:15 2 we?

06:58:16 3 A. Well, if we look at the
06:58:17 4 elections in the data set that I
06:58:19 5 analyzed, which is the same as I
06:58:22 6 believe, the same as Doctor Barber's
06:58:24 7 11 elections, plus an additional one
06:58:26 8 from 2014, I think the range was from
06:58:29 9 about 59 percent Democratic to about
06:58:33 10 53 percent Republican. That's a
06:58:35 11 pretty substantial range.

06:58:37 12 Q. A couple of percentage points
06:58:38 13 to you is a substantial range?

06:58:40 14 A. That's 12 percentage points.

06:58:42 15 Q. I'm sorry. I thought you said
06:58:42 16 --- maybe I misheard what you said.

06:58:44 17 A. Fifty-nine (59) one way to 53
06:58:45 18 the other is 12 percentage point.

06:58:48 19 Q. I understand what you're saying
06:58:49 20 now. Okay.

06:58:50 21 A. That's an approximation. We
06:58:52 22 could look at the actual numbers if it
06:58:54 23 would be helpful.

06:58:54 24 Q. Now, you also don't report the
06:58:57 25 predicted number of Democratic leaning

06:58:59 1 seats and Republican leaning seats for
06:59:02 2 each of your simulations, do you?
06:59:02 3 A. For each of the maps in my
06:59:06 4 ensemble? I --- actually that
06:59:06 5 information is contained in the
06:59:08 6 report. It's in, let's see if I can
06:59:11 7 find it, the violin plot of the
06:59:11 8 efficiency gap. So for people who
06:59:11 9 know the metrics, as I assume that all
06:59:22 10 these experts do, you can read the
06:59:23 11 seats outcome off the efficiency gap
06:59:28 12 fund.
06:59:28 13 Q. Can you explain that further?
06:59:30 14 A. Oh, sure. Gladly.
06:59:31 15 So the efficiency gap is
06:59:33 16 closely related to twice the votes,
06:59:37 17 minus the seats, minus the half. So
06:59:40 18 in other words, there's this
06:59:41 19 combination of seats and votes that
06:59:44 20 gives you the efficiency gap up to a
06:59:46 21 factor that has to do with relative
06:59:49 22 turnout. So up to this sort of turn
06:59:51 23 out factor, you can just convert
06:59:54 24 efficiency gap to seats if you know
06:59:57 25 the votes total for each election.

06:59:59 1 Q. Now, as I understand what
07:00:03 2 you're saying is that you agree that
07:00:03 3 the random plans that are drawn in
07:00:03 4 your ensemble without any partisan
07:00:07 5 data, Exhibit A, pronounced advantage
07:00:09 6 to Republicans.

07:00:10 7 Correct?

07:00:10 8 A. That's a qualitative
07:00:12 9 assessment, but I would call this
07:00:14 10 pronounced.

07:00:15 11 Q. You would call it pronounced?

07:00:17 12 A. I would.

07:00:17 13 Q. Okay.

07:00:22 14 And so, again, you have to
07:00:23 15 intentionally draw a plan to correct
07:00:25 16 for that advantage?

07:00:26 17 A. No. You don't have to
07:00:28 18 intentionally draw it to correct for
07:00:30 19 that. You can draw it neutrally and
07:00:32 20 then select for that.

07:00:33 21 Q. But Doctor Duchin, I think both
07:00:35 22 your report and Doctor Barber's report
07:00:39 23 show if you draw a bunch of maps using
07:00:41 24 a computer without, which is using
07:00:43 25 traditional redistricting criteria and

07:00:44 1 not using any partisan data, you
07:00:47 2 result in a bunch of maps that have a
07:00:50 3 Republican tilt as you call it.

07:00:52 4 Correct?

07:00:53 5 A. So that's a mistake. That's
07:00:54 6 the most typical outcome. But when
07:00:56 7 you draw enough plans, you will have
07:00:59 8 thousands that have better partisan
07:00:59 9 fairness properties

07:00:59 10 Q. But the most typical outcome is
07:01:01 11 plans with a Republican tilt.

07:01:02 12 Fair?

07:01:03 13 A. Absolutely. And I'm not aware
07:01:05 14 of any rule that requires that we pick
07:01:08 15 the most typical. I think we're
07:01:09 16 trying to choose an excellent plan.

07:01:09 17 Q. So you would pick a plan that
07:01:12 18 does not go with the most typical
07:01:14 19 outcome?

07:01:15 20 A. So the analogy that I gave
07:01:18 21 earlier is to compactness. I wouldn't
07:01:21 22 prefer a plan over typical compactness
07:01:24 23 score. I would prefer an excellent
07:01:26 24 compactness score.

07:01:27 25 Q. Turning to page 19 of your

07:01:39 1 report, Doctor Duchin. You were
07:01:42 2 looking at this earlier with counsel
07:01:43 3 in your partisan bias. And as I
07:01:47 4 understand it in that chart, all of
07:01:49 5 the dots that represent the Governor's
07:01:51 6 plan are all on the most Democratic
07:01:57 7 leaning portion of your violin plot.

07:02:05 8 Correct?

07:02:05 9 A. Yes. Let's check.

07:02:05 10 Q. All with the exception ---

07:02:05 11 A. Not the first.

07:02:06 12 Q. --- of the 2014 election?

07:02:07 13 A. Yeah. It looks like 2014,
07:02:07 14 Governor is in the second visible
07:02:11 15 position. And then the others are ---
07:02:13 16 I'm reviewing now. The others are in
07:02:17 17 the last visible position.

07:02:17 18 Q. So this means, Doctor Duchin,
07:02:21 19 that with the exception of one
07:02:22 20 election, so for the 11 of the 12
07:02:24 21 elections you looked at, the
07:02:26 22 Governor's plan produces a higher
07:02:30 23 partisan bias for Democrats than
07:02:30 24 nearly all of the ensemble maps.

07:02:31 25 Correct?

07:02:31 1 A. No, a lower partisan bias.
07:02:33 2 That's the thing. Zero here is the
07:02:36 3 lowest. And so it produces --- I
07:02:39 4 agree with almost every piece of your
07:02:41 5 sentence, except that the other
07:02:43 6 direction. It's that in almost every
07:02:46 7 election, it produces the lowest
07:02:48 8 partisan bias level available.

07:02:50 9 Q. You're saying a partisan bias
07:02:55 10 when compared to zero.

07:02:55 11 Correct?

07:02:56 12 A. That's how it works.

07:02:56 13 Q. But when you compare it to the
07:02:56 14 ensemble of maps, it's more
07:02:57 15 pro-Democrat than almost all of the
07:02:57 16 ensemble of maps on partisan bias.

07:03:00 17 Correct?

07:03:00 18 A. I don't think that's the right
07:03:02 19 way to summarize what we see here.

07:03:04 20 Q. Well, how else would you
07:03:06 21 describe that the purple dots being on
07:03:07 22 the very top part of this graph? It
07:03:12 23 is an outlier when compared to the
07:03:14 24 ensemble of maps, is it not?

07:03:15 25 A. We agree that it's an outlier.

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Q. An outlier in the favor of Democrats?

A. I can't agree with that. An outlier in favor of minimal partisan bias.

Q. When you're comparing it to zero?

A. Yes.

ATTORNEY VANCE:
No further questions.
Thank you, Your Honor.

ATTORNEY GORDON:
Preparing in a hotel room and there are a lot of papers that you've to walk around with.

THE WITNESS:
I understand.

CROSS EXAMINATION

BY ATTORNEY GORDON:
Q. Okay.
So I represent the Congressional Intervenors.
Reschenthaler 1 and Reschenthaler 2 is

07:03:59 1 what we submitted to the Court?

07:03:59 2 JUDGE MCCULLOUGH:

07:04:01 3 Counsel, you can take

07:04:04 4 off your mask?

07:04:04 5 ATTORNEY GORDON:

07:04:05 6 Oh, delightful.

07:04:05 7 BY ATTORNEY GORDON:

07:04:05 8 Q. Just real quick while I'm

07:04:06 9 thinking about it, on Table 4.3 that

07:04:08 10 you were just talking about, at the

07:04:08 11 bottom there's an ensemble mean. Do

07:04:08 12 you happen to do an ensemble range?

07:04:14 13 A. Do you have a page number?

07:04:14 14 Q. It is page four of your last

07:04:17 15 report of yesterday's report.

07:04:19 16 A. Yes, the red and blue table.

07:04:21 17 Yes, that's the one.

07:04:21 18 Q. Do you have a range as opposed

07:04:26 19 to a mean for the ensemble line?

07:04:29 20 A. I certainly have it available

07:04:31 21 in my data. But since I didn't put it

07:04:34 22 in the report, I don't know it by

07:04:35 23 heart.

07:04:35 24 Q. Fair enough.

07:04:37 25 And are these numbers percents

07:04:38 1 that are in this table?

07:04:40 2 A. Oh, okay. Good question. So
07:04:42 3 what are the units of these numbers.

07:04:44 4 Q. Yes.

07:04:44 5 A. Yeah, okay. It varies. So
07:04:46 6 efficiency gap is in terms of wasted
07:04:50 7 votes over total votes. So you can
07:04:52 8 interpret that as a vote share.

07:04:54 9 Q. Is that a percent?

07:04:58 10 A. If you --- it's not a percent.
07:04:58 11 It's a share. So the number 1 would
07:04:58 12 be 100 percent. But it's --- you can
07:05:01 13 ---.

07:05:01 14 Q. And I'm really only concerned
07:05:03 15 with that first column and here's why.

07:05:03 16 A. Sure.

07:05:05 17 Q. When Professor Persily
07:05:05 18 presented to the Pennsylvania Supreme
07:05:13 19 Court in 2018, he talked about his
07:05:14 20 model, then he talked about percent
07:05:16 21 range. So I'm just trying to make a
07:05:18 22 one to one.

07:05:18 23 A. Sure.

07:05:18 24 Q. And he said in his range, it
07:05:19 25 was .1 to 4.5 percent. So I'm just

07:05:24 1 trying to translate your ---.

07:05:24 2 A. Let me help you with that.

07:05:26 3 Q. Yes.

07:05:26 4 A. So if you wanted to turn these

07:05:28 5 into something comparable to an

07:05:29 6 individual election, you'd need to

07:05:30 7 divide by 12 because this is the sum

07:05:32 8 over 12 elections.

07:05:33 9 Q. So if you divide by 12, you get

07:05:35 10 a percent?

07:05:36 11 A. Yes. Then you can interpret it

07:05:39 12 that way.

07:05:40 13 Q. Lovely. Okay. Now I'm on

07:05:41 14 board. All right. I'm learning as I

07:05:43 15 go. This is some fancy math.

07:05:45 16 A. I guess.

07:05:46 17 Q. We've heard you say, but I just

07:05:49 18 want to make sure it's clear. The

07:05:51 19 best plan before the Court is in your

07:05:54 20 opinion is the Governor's plan.

07:05:56 21 Is that correct?

07:05:57 22 A. I think a term like best, you

07:06:02 23 know, it is in the intersection of two

07:06:03 24 ways of slicing the maps and it's the

07:06:06 25 only plan that is so. I think it's an

07:06:08 1 excellent map.

07:06:08 2 Q. And frankly, I'm just quoting

07:06:11 3 the terminal sentence from your report

07:06:11 4 ---

07:06:11 5 A. Sure.

07:06:13 6 Q. --- where you declare it to be

07:06:13 7 the best.

07:06:13 8 A. Well then, let's go with that.

07:06:15 9 Q. Fair enough. And you realize

07:06:16 10 you're the third expert today to give

07:06:19 11 the third opinion on which one's the

07:06:21 12 best?

07:06:21 13 A. I am sure that there will be as

07:06:23 14 many opinions as there are experts.

07:06:25 15 Q. I agree. Okay.

07:06:26 16 So let's look at your report. Are you

07:06:29 17 confident in the numbers that are in

07:06:30 18 this report?

07:06:31 19 A. I'm glad you asked that. It

07:06:32 20 can be really hard to produce good

07:06:34 21 numbers under time pressure.

07:06:34 22 Q. Uh-huh (yes).

07:06:37 23 A. But I have an excellent team of

07:06:39 24 research assistants and we subjected

07:06:41 25 these numbers to really rigorous

07:06:44 1 checks. So I am very confident.

07:06:45 2 Q. Very good. All right.

07:06:47 3 So 2B, excuse me, Section 31,

07:06:50 4 you talk about all plans are

07:06:55 5 contiguous. That includes

07:06:57 6 Reschenthaler 1 and Reschenthaler 2.

07:06:58 7 Correct?

07:06:58 8 A. Yes.

07:06:58 9 Q. And closely population balance,

07:07:01 10 that includes Reschenthaler 1 and

07:07:02 11 Reschenthaler 2.

07:07:02 12 Is that correct?

07:07:03 13 A. Yes.

07:07:03 14 Q. Okay.

07:07:04 15 And then you analyze the compactness,

07:07:08 16 and hopefully I can short circuit

07:07:10 17 this. You would agree that

07:07:10 18 Reschenthaler 1 and Reschenthaler 2

07:07:12 19 are compact?

07:07:13 20 A. Yes, and I'm looking just to

07:07:15 21 verify. Yes, they are. They are

07:07:22 22 reasonably compact.

07:07:23 23 Q. Okay.

07:07:23 24 And we'll look at our county

07:07:26 25 splits there just for Reschenthaler 1

07:07:27 1 and Reschenthaler 2. You would agree
07:07:29 2 with me that Reschenthaler 1 and
07:07:30 3 Reschenthaler 2 split 13 counties?

07:07:33 4 A. Yes.

07:07:33 5 Q. And you would agree with me
07:07:35 6 that's the lowest county split of all
07:07:37 7 the maps that you reviewed?

07:07:38 8 A. Yes, I would characterize that
07:07:38 9 as aggressive pursuit of county
07:07:41 10 integrity.

07:07:41 11 Q. That's what we're going for.

07:07:41 12 A. Yeah.

07:07:42 13 Q. And county pieces 29, also the
07:07:44 14 lowest number.

07:07:45 15 Is that correct?

07:07:46 16 A. Yes. Those are closely
07:07:48 17 related.

07:07:48 18 Q. Uh-huh (yes). And then
07:07:49 19 municipal splits, 16 tied for the
07:07:52 20 lowest?

07:07:53 21 A. That's correct.

07:07:53 22 Q. And 33 also tied for the lowest
07:07:56 23 in terms of municipal pieces.

07:07:59 24 That's correct?

07:07:59 25 A. Yes.

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1 Q. Okay.

2 So do you agree with me that a

3 17 district compact, contiguous, and

4 equal population map can be drawn with

5 just 13 county splits?

6 A. Well, I think it can be drawn

7 with fewer if you're willing to

8 sacrifice compactness a little bit

9 more.

10 Q. But would you agree that could

11 be done with 13?

12 A. You'd have to tell me what the

13 threshold is for reasonable

14 compactness. I am trying to answer

15 your question truly.

16 Q. I think the answer --- well,

17 it's your question to answer. But

18 what I think we just went through is

19 you agreed ours were compact,

20 contiguous, and equal population that

21 had 13 districts. So I think you

22 agree it can be done.

23 Is that right?

24 A. The problem is that compactness

25 is a graduated phenomenon.

07:08:41 1 Q. Is Reschenthaler 1 and
07:08:43 2 Reschenthaler 2 compact?
07:08:45 3 A. It's reasonably compact, but
07:08:46 4 others are more compact.
07:08:48 5 Q. That's not the question. The
07:08:50 6 question is, and I'll repeat it. Do
07:08:52 7 you agree a 17 district map can be
07:08:55 8 drawn that is compact, contiguous,
07:08:58 9 equally populations and splits just 13
07:08:58 10 counties?
07:09:00 11 A. Add the word reasonably compact
07:09:02 12 and I agree.
07:09:02 13 Q. Reasonably compact?
07:09:03 14 A. Yes, I agree.
07:09:04 15 Q. Ideal. Okay.
07:09:05 16 Same question. Do you agree that a 17
07:09:08 17 district compact, reasonably compact
07:09:11 18 if nothing else, contiguous and equal
07:09:14 19 population can be drawn with just 16
07:09:16 20 municipal splits?
07:09:18 21 A. Yes.
07:09:18 22 Q. Okay. All right.
07:09:21 23 So I just want to quick go
07:09:23 24 through this chart, and we'll just
07:09:25 25 focus on Reschenthaler 1. If you go

07:09:27 1 through this chart, there's ten lines.
07:09:29 2 And I will ask the question, and then
07:09:33 3 if you need help, I'll tell you what
07:09:35 4 the answer is. But would you agree
07:09:37 5 with me that Reschenthaler 1 beats the
07:09:39 6 Governor's map on seven of the ten
07:09:42 7 columns in this chart?
07:09:43 8 A. We're still on table one.
07:09:45 9 Right?
07:09:46 10 Q. We are indeed.
07:09:47 11 A. Okay. Okay.
07:09:48 12 Let's check. We're talking
07:09:49 13 Reschenthaler 1 versus Governor?
07:09:51 14 Q. Uh-huh (yes).
07:09:53 15 A. Okay.
07:09:59 16 I bet that that's --- so you
07:10:01 17 said seven out of the ten?
07:10:02 18 Q. Correct.
07:10:02 19 A. Yeah. I think you'll find the
07:10:02 20 Governor's plan better on three
07:10:02 21 compactness scores and Reschenthaler
07:10:07 22 better on the other three compactness
07:10:08 23 scores and on the splitting scores.
07:10:10 24 Q. So across the board, seven out
07:10:12 25 of ten. And just on the compactness

07:10:14 1 scores, three to three?

07:10:15 2 A. I think that's right.

07:10:16 3 Q. Okay.

07:10:16 4 And just so the record's clear,

07:10:16 5 Pawsbee, Schwartz, Reok, Kahn, Holl,

07:10:20 6 Popolli, we want the top number, and

07:10:26 7 then the last one, we want the bottom?

07:10:29 8 A. Schwartzburg also you want a

07:10:31 9 smaller number.

07:10:31 10 Q. Schwartzburg you want smaller?

07:10:37 11 A. Yeah.

07:10:37 12 Q. Okay. All right.

07:10:38 13 A. Does that change the count?

07:10:40 14 That might change ---.

07:10:40 15 Q. That does change the count.

07:10:40 16 A. Oh, okay.

07:10:42 17 Q. Let's let the record be clear,

07:10:44 18 six out of ten. And that's why we ask

07:10:46 19 the questions, to make our record.

07:10:46 20 A. I'm glad we went through it.

07:10:48 21 Q. All right.

07:10:49 22 I want to flip to the, back to

07:10:52 23 that first table, table three in your

07:10:54 24 report. Which of these maps that's

07:11:01 25 reflected in this chart under the

07:11:03 1 partisan fairness metrics, which one
07:11:05 2 has the least splits, least county
07:11:09 3 splits?

07:11:10 4 A. Sorry. Which table are we on?

07:11:12 5 Q. Four point or Section 4.3,
07:11:15 6 Table 3.

07:11:15 7 A. Yes. And the question again?

07:11:17 8 Q. And which maps in that chart
07:11:19 9 have the least county splits?

07:11:23 10 A. Those are not recorded here.
07:11:24 11 We can refer back and say
07:11:26 12 Reschenthaler 1, 2 of all the 13 maps
07:11:29 13 have the fewest county splits.

07:11:33 14 Q. And you would agree that in
07:11:34 15 this chart, again table three, the two
07:11:36 16 maps with the least municipal splits
07:11:39 17 tied is Reschenthaler 1 and
07:11:40 18 Reschenthaler 2?

07:11:42 19 A. Slight astricks. Since the
07:11:44 20 ensemble is in this table, the
07:11:44 21 ensemble probably contains things with
07:11:45 22 fewer splits.

07:11:45 23 Q. And my question is solely about
07:11:48 24 the maps that were submitted for
07:11:49 25 review.

07:11:50 1 A. Then yes.

07:11:51 2 Q. Okay. Very good.

07:11:53 3 So if you changed the county
07:11:54 4 splits for all these other maps to
07:11:56 5 make them just 13, would their scores
07:11:58 6 in this chart change?

07:12:00 7 A. Well, that's a great question.

07:12:01 8 Q. And it's just a yes or no
07:12:03 9 question.

07:12:03 10 A. But it's not.

07:12:03 11 Q. I know you want to explain why.

07:12:03 12 A. I can't.

07:12:05 13 Q. It's just yes or no.

07:12:06 14 A. If you want yes or no, it's
07:12:09 15 neither yes nor no.

07:12:10 16 Q. So your representation to the
07:12:12 17 Court is if these maps changed or
07:12:14 18 produced fewer county splits, the
07:12:16 19 scores don't change?

07:12:18 20 A. They might remain unchanged.

07:12:19 21 Q. They might remain unchanged,
07:12:19 22 but they might change?

07:12:29 23 A. But they might change.

07:12:30 24 Q. Indeed.

07:12:36 25 A. I agree.

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Q. Okay.

Do you think fairness is the same thing as neutrality when we're talking about the drawing of district maps?

A. I do not.

Q. You do not? In fact, you emphatically do not.

Is that right?

A. Well, I do not think of them as the same.

Q. Okay.

Do you recall doing an interview for Political Magazine in May of last year, May 27th?

A. I believe you that it was May.

Q. Yes. And do you recall seeing that article where that very same question was asked and your response was emphatically not?

A. Right. That sounds totally reasonable.

Q. Okay.

Does the efficiency gap take into account political geography?

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1 A. Can you rephrase that? I want
2 to answer it exactly.
3 Q. When you're calculating the
4 efficiency gap, is there any part of
5 variables that account for political
6 geography or human geography of a
7 party? It's called a couple things
8 today.
9 A. In a sense because it matters
10 where the district lines are and
11 you're assessing it with respect to an
12 election. So it does look at how the
13 lines compare to the votes. Is that
14 what you mean?
15 Q. Is it one of the variables in
16 the equation?
17 A. Yes. It goes into the variable
18 of wasted votes.
19 Q. That where people live ---
20 A. Yes.
21 Q. --- in relation to the
22 Commonwealth?
23 A. Yes.
24 ATTORNEY GORDON:
25 Okay. All right.

07:14:13 1 Well, boy, I hate to
07:14:13 2 give up four and a half minutes, but
07:14:15 3 I'm going to. That's all the
07:14:17 4 questions I have, Your Honor. Thank
07:14:17 5 you for your time.

07:14:17 6 JUDGE MCCULLOUGH:

07:14:17 7 Thank you, Counsel. Now
07:14:18 8 we'll move to counsel for
07:14:19 9 Representative McClinton.

07:14:19 10 ---

07:14:19 11 CROSS EXAMINATION

07:14:49 12 ---

07:14:49 13 BY ATTORNEY SENOFF:

07:14:49 14 Q. Thank you. This is David
07:14:49 15 Senoff. I represent Representative
07:14:49 16 McClinton and the Pennsylvania House
07:14:50 17 Democratic Caucus Intervenors. I
07:14:50 18 think you testified earlier, and
07:14:52 19 please correct me if I'm wrong because
07:14:53 20 it's been a long day, that you believe
07:14:57 21 that all of these maps are within a
07:14:59 22 certain, and these are my words, not
07:15:01 23 your, range of reasonableness? Do you
07:15:03 24 agree with me that they're pretty
07:15:07 25 close together?

07:15:08 1 A. It's probably true, with some
07:15:11 2 exceptions. There are some few cases
07:15:11 3 in which some maps are farther from
07:15:13 4 the pack.

07:15:13 5 Q. So I think you talked about the
07:15:15 6 big six metrics.

07:15:15 7 Right?

07:15:18 8 A. Big six traditional principles.

07:15:20 9 Q. Yes, okay. The big six.

07:15:22 10 And all those, all the maps are
07:15:24 11 in a range that you would consider
07:15:28 12 reasonable for those big six
07:15:30 13 traditional principles?

07:15:32 14 A. With maybe a few exceptions
07:15:34 15 where maps are noticeably less compact
07:15:37 16 or have a few more splits.

07:15:40 17 Q. But you would agree with me
07:15:42 18 that compared to say the 2011 map,
07:15:44 19 which produced a 15 Republican
07:15:53 20 Congressional delegation and a three
07:15:59 21 Democratic delegation, none of the
07:16:00 22 maps that are proposed here are
07:16:01 23 lopsided like that?

07:16:03 24 A. I think it was 13-5 a lot of
07:16:03 25 the time.

07:16:03 1 Q. Oh, okay.

07:16:04 2 A. Just because let's be precise.

07:16:04 3 Q. I wish you were my political
07:16:07 4 statistics professor because I can't
07:16:08 5 do arithmetic in public.

07:16:12 6 A. One should not. Are you asking
07:16:14 7 if any is as skewed as that?

07:16:17 8 Q. Yes.

07:16:17 9 A. I do find some of these maps to
07:16:19 10 be extraordinarily skewed. It's hard
07:16:23 11 to make an apples to apples comparison
07:16:25 12 with a different number of districts.
07:16:25 13 But I think that red and blue table
07:16:27 14 we've come back to a few times does
07:16:30 15 reflect extraordinary skew in a few of
07:16:32 16 the maps.

07:16:33 17 Q. Okay.

07:16:33 18 And I'm just, I'm not trying to
07:16:34 19 quarrel with you, I'm just wondering,
07:16:36 20 because I do agree with you that these
07:16:39 21 maps, with a few exceptions are within
07:16:48 22 a range, a certain range of
07:16:50 23 reasonableness. What factor do you
07:16:51 24 then have to look at in order to sort
07:16:52 25 of break the tie?

07:16:52 1 Right? If everybody is in this
07:16:54 2 range and we have to select, how do we
07:16:58 3 do that?

07:16:58 4 A. Great.

07:16:58 5 So that's the approach I've
07:17:00 6 tried to take here is to look at the
07:17:04 7 fundamental principles, the ones that
07:17:07 8 the Supreme Court describes as
07:17:10 9 establishing a floor, and examine
07:17:11 10 those and say if you want reasonable,
07:17:13 11 then everything's on the table. If
07:17:15 12 you want excellent, you might be able
07:17:17 13 to narrow it a bit. Once you've
07:17:19 14 passed that threshold, there are many
07:17:23 15 other things you can consider. And I
07:17:25 16 talked about a few, incumbency, and
07:17:28 17 least change, but especially partisan
07:17:30 18 fairness.

07:17:30 19 Q. And when you say partisan
07:17:32 20 fairness, are you including in that
07:17:35 21 term factors like potential voter
07:17:40 22 dilution or dilution of votes, an
07:17:43 23 individual vote's power?

07:17:45 24 A. Yes. My understanding as a
07:17:47 25 redistricting expert of the way that

07:17:49 1 the Supreme Court decision wrote about
07:17:52 2 vote dilution is that they were
07:17:55 3 referring to, in part, partisan
07:17:57 4 dilution.

07:17:58 5 Q. Okay.

07:17:59 6 And for you, when you talk
07:18:04 7 about the partisan balance, is another
07:18:06 8 factor to consider potential
07:18:13 9 disenfranchisement of groups of voters
07:18:13 10 generally?

07:18:20 11 A. Absolutely.

07:18:21 12 Q. Now, we --- I think --- I
07:18:22 13 forget who asked you. Somebody
07:18:23 14 started talking to you and asking you
07:18:25 15 questions, and one of your responses
07:18:28 16 about the tilting of the typical way
07:18:31 17 that maps have been drawn in
07:18:33 18 Pennsylvania, and I'm conflating now
07:18:37 19 all this testimony, tilted towards
07:18:39 20 Republicans. Do you remember that or
07:18:41 21 it had typically tilted towards
07:18:43 22 Republicans?

07:18:44 23 A. Yeah. One --- it's probably
07:18:48 24 right. One reflection of that is I
07:18:51 25 reported these ensemble mean

07:18:52 1 statistics, which indicate that if you
07:18:55 2 draw blindly, much of the time, but
07:18:57 3 not all of the time, you'll get a map
07:18:59 4 with a heavy Republican structural
07:19:01 5 tilt.

07:19:01 6 Q. So if we look at, for example,
07:19:04 7 starting in 2011, the Democratic
07:19:08 8 registration advantage was 1.1 million
07:19:11 9 votes. And we had the lopsided result
07:19:15 10 either 15 to 3 or 13 to 5, like I
07:19:19 11 can't remember, but a more lopsided
07:19:22 12 result than we have currently. Do you
07:19:25 13 --- is there anything you attribute
07:19:27 14 that result to?

07:19:28 15 A. The relationship between
07:19:31 16 registration and the seats in the
07:19:33 17 delegations?

07:19:33 18 Q. The fact that the Democrats had
07:19:37 19 more than 1,000,000 voters registered
07:19:39 20 but had such a lower partisan
07:19:43 21 representation in Congress and from
07:19:45 22 the state?

07:19:48 23 A. I regard Congressional and
07:19:51 24 other districting plans as ways of
07:19:52 25 converting vote preferences into

07:19:54 1 representational outcomes. So it's a
07:19:55 2 property of the map, which I think is
07:19:56 3 what you're getting at.

07:19:58 4 Q. I was wondering. Okay. So in
07:20:01 5 2018, ---

07:20:01 6 A. Right.

07:20:02 7 Q. --- after the new map was put
07:20:04 8 into place, the Democratic advantage
07:20:07 9 had dropped to 840,000 votes by way of
07:20:09 10 registration. And the result was a
07:20:13 11 nine to nine, an even split in the
07:20:15 12 delegation at that time.

07:20:16 13 Is that accurate?

07:20:19 14 A. Well, let me --- I can't say
07:20:21 15 about the registration numbers, but I
07:20:24 16 believe you. But I will say that
07:20:26 17 Pennsylvania does have --- I think
07:20:27 18 it's an under appreciated fact about
07:20:33 19 Pennsylvania that there's quite a bit
07:20:33 20 of split ticket voting, in fact. I've
07:20:34 21 analyzed this in the past and so have
07:20:37 22 others in the room. And so I'm not
07:20:39 23 sure because I haven't analyzed how
07:20:41 24 well registration numbers track with
07:20:43 25 voting patterns. But I will agree

07:20:45 1 with you that they're often a useful
07:20:48 2 indicator.

07:20:49 3 Q. And certainly, were you in the
07:20:51 4 room when we discussed the 2016
07:20:52 5 election where the federal candidates
07:20:58 6 garnered more votes than the
07:20:58 7 state-wide Democratic candidates?

07:20:59 8 A. Yeah. Not only that, and I'll
07:21:01 9 be brief and say this in one sentence.
07:21:03 10 That even if you compare the Senate to
07:21:03 11 the Presidential race that year,
07:21:03 12 there's just a fascinatingly high
07:21:08 13 number of ticket splitters, even
07:21:08 14 though the top line results are
07:21:10 15 identical.

07:21:10 16 Q. So given that, now, because I
07:21:14 17 was up late last night, I'm was on the
07:21:17 18 department's website, and the voter
07:21:19 19 registration advantage as of Monday
07:21:21 20 was 591,000 Democrats more registered
07:21:25 21 Democrats than Republicans. We also
07:21:28 22 now will not have 18 seats, we'll have
07:21:31 23 17 seats. So as a result of that, and
07:21:35 24 based not only your big six, but also
07:21:37 25 the other factors we talked about, can

07:21:40 1 you give us an idea of what, in your
07:21:44 2 opinion, would seem to be a reasonable
07:21:46 3 or fair result for the partisan
07:21:49 4 breakdown of the Congressional
07:21:51 5 representatives?

07:21:52 6 A. It's a great question. And the
07:21:54 7 answer is that you can't do such a
07:21:55 8 thing. You can't take those numbers
07:21:57 9 and kind of project them forward to
07:22:04 10 like idealized representation because
07:22:04 11 it depends so much on the spatiality.
07:22:05 12 But I think that's what comes out in
07:22:08 13 these various reports and I think what
07:22:11 14 we've seen is that it's possible to
07:22:12 15 draw a fair plan by the likes of many
07:22:15 16 quantitative approaches.

07:22:17 17 Q. So is it fair to say that
07:22:19 18 regardless of what the difference is
07:22:23 19 between voter registration, whether
07:22:25 20 it's 1,000,000 votes for one party, or
07:22:27 21 900,000, or 800,000, that where you
07:22:31 22 draw the lines around those 1,000,000
07:22:34 23 or however many people, plays a
07:22:41 24 substantial role in determining of
07:22:42 25 what the outcome of the election will

07:22:44 1 be in those individual districts?

07:22:46 2 A. Absolutely fundamental role.

07:22:50 3 ATTORNEY SENOFF:

07:22:50 4 Thank you, Doctor. I

07:22:51 5 don't have any further questions.

07:22:52 6 Thank you, Your Honor.

07:22:52 7 JUDGE MCCULLOUGH:

07:22:53 8 Okay. Thank you,

07:22:53 9 Counsel.

07:22:54 10 And then Senator Costa's

07:22:54 11 Counsel, Mr. Attisano?

07:22:54 12 ---

07:22:54 13 CROSS EXAMINATION

07:23:31 14 ---

07:23:31 15 BY ATTORNEY ATTISANO:

07:23:35 16 Q. Hi, Professor. My name is

07:23:35 17 Marco Attisano and I represent Senate

07:23:38 18 Democratic Caucus.

07:23:38 19 A. Hi.

07:23:39 20 Q. You recognize that photo up

07:23:41 21 there, the document, excuse me, that's

07:23:45 22 page 11 from your first report.

07:23:47 23 Correct?

07:23:48 24 A. Yes.

07:23:48 25 Q. Okay.

07:23:49 1 Now, you answered some questions about
07:23:51 2 it earlier today?

07:23:51 3 Right?

07:23:53 4 A. Yes.

07:23:54 5 Q. And I have a clarifying
07:23:56 6 question. When you have the word
07:23:59 7 citizen plan there, are you referring
07:24:01 8 to the map that was drawn by former
07:24:05 9 Republican County Commissioner Amanda
07:24:08 10 Holt or are you referring to a ---

07:24:08 11 A. No.

07:24:10 12 Q. --- a different plan?

07:24:10 13 A. The Holt derived map is
07:24:14 14 HB-2146.

07:24:14 15 Q. Okay.

07:24:15 16 A. Citizens plan --- and I
07:24:16 17 apologize that so many maps have
07:24:19 18 similar names. But this is the name
07:24:22 19 given to the draw the lines
07:24:22 20 submission, ---

07:24:22 21 Q. Okay.

07:24:29 22 A. --- which was derived from a
07:24:29 23 mapping competition.

07:24:29 24 Q. Thank you for clarifying that.
07:24:33 25 Allegheny County has to be

07:24:38 1 split.

07:24:38 2 Correct?

07:24:39 3 A. Yes. It's one of three.

07:24:40 4 Q. Okay.

07:24:40 5 And some people asked you about

07:24:41 6 splitting Pittsburgh?

07:24:42 7 Correct?

07:24:43 8 A. Yes.

07:24:43 9 Q. And whenever splits are to be

07:24:46 10 made, it's appropriate and beneficial

07:24:50 11 even to consider communities of

07:24:52 12 interest when making splits.

07:24:54 13 Correct?

07:24:54 14 A. I think it's very important.

07:24:55 15 Q. Yes. And you've looked at the

07:24:59 16 2018 map.

07:25:00 17 Correct?

07:25:01 18 A. I have.

07:25:01 19 Q. And do you know off the top of

07:25:05 20 your head how many splits of

07:25:06 21 municipalities were made in Allegheny

07:25:09 22 County in 2018 map?

07:25:13 23 A. I certainly don't have that

07:25:16 24 number memorized.

07:25:17 25 Q. At one time --- so you don't

07:25:17 1 remember.

07:25:17 2 Right?

07:25:17 3 A. Right.

07:25:18 4 Q. If I showed you the 2018 map
07:25:20 5 and pointed at some things on it, you
07:25:20 6 think you might remember?

07:25:23 7 A. Well, we'd have to see the
07:25:24 8 county subdivisions on the map. But
07:25:28 9 if you had such a plan, we could
07:25:29 10 count. But I'm also prepared to
07:25:29 11 believe you.

07:25:37 12 Q. Do you have any reason to doubt
07:25:37 13 there's two municipal splits in
07:25:39 14 Allegheny County in the 2018 plan?

07:25:40 15 A. I have no first principles
07:25:41 16 reason to doubt that.

07:25:42 17 Q. Any reason to doubt the splits
07:25:44 18 are South Fayette and Penn Hills?

07:25:54 19 A. I'm willing to believe that.

07:25:54 20 Q. Is there any redistricting
07:25:57 21 principle you're aware of that should
07:25:59 22 influence splits of municipalities
07:26:01 23 based on the size of municipalities?

07:26:05 24 A. Can I just try to rephrase
07:26:09 25 that?

07:26:09 1 Q. Yes.

07:26:10 2 A. Are you asking if the size
07:26:11 3 influence is whether we should split a
07:26:14 4 municipality?

07:26:14 5 Q. Yes. Can you answer that?

07:26:15 6 A. There's no traditional
07:26:16 7 preference in that regard that I'm
07:26:18 8 aware of.

07:26:18 9 Q. Would considering the affect
07:26:22 10 --- let me rephrase that. Would vote
07:26:27 11 dilution be a consideration when
07:26:28 12 determining whether or not to split a
07:26:30 13 municipality if you must split a
07:26:33 14 municipality within a county split?

07:26:36 15 A. If you must split a
07:26:37 16 municipality, you should certainly
07:26:39 17 think about the prospects for vote
07:26:50 18 dissolution when you do so.

07:27:05 19 Q. I'm on page four of your reply
07:27:08 20 report.

07:27:08 21 A. Yes.

07:27:08 22 Q. And there's a top Section 4.2
07:27:10 23 and it has a table on there and then
07:27:14 24 underneath, there's 4.3 and it has
07:27:19 25 another table with color coding on it.

07:27:21 1 Correct?

07:27:22 2 A. Yes.

07:27:22 3 Q. And earlier we saw a nice graph

07:27:24 4 with four quadrants in it?

07:27:26 5 A. Yes.

07:27:27 6 Q. Do either of those data sets

07:27:29 7 correlate to that graph?

07:27:31 8 A. They do, thank you. This

07:27:32 9 table is exactly what's illustrated in

07:27:36 10 those kind of paint ball graphs.

07:27:38 11 Q. Okay.

07:27:38 12 A. It's the same data.

07:27:38 13 Q. So the data in this report is

07:27:41 14 in those graphs. It's just

07:27:43 15 represented by different visual.

07:27:45 16 Is that fair?

07:27:46 17 A. Yes, except that the visuals

07:27:55 18 are only there for 3 of the 13 plans.

07:27:55 19 Q. Okay.

07:27:56 20 A. But it's the same data.

07:28:00 21 Q. Okay.

07:28:03 22 The upper left hand quadrant of

07:28:06 23 the graph, tell me about that

07:28:07 24 quadrant?

07:28:08 25 A. Yes, I will try to do so. So

07:28:09 1 that, since we're doing it from the
07:28:10 2 Republican point of view, that would
07:28:12 3 be where you have more Democratic
07:28:15 4 votes, but more Republican seats in
07:28:19 5 the upper left where the X is. Thank
07:28:20 6 you. The visual helps.

07:28:20 7 Q. Okay.

07:28:20 8 And that quadrant graph I'm
07:28:21 9 referring to is on page 14 of your
07:28:23 10 first report. And when there's a red
07:28:28 11 X in there, that's representing your
07:28:31 12 interpretation that something failed
07:28:32 13 this test?

07:28:32 14 A. Yes. Those quadrants,
07:28:38 15 especially when you get deep into
07:28:38 16 those quadrants, represent
07:28:54 17 anti-majoritarian outcomes.

07:28:54 18 Q. Okay.

07:28:55 19 And now, back to your reply
07:28:58 20 brief in section 4.2, which maps
07:29:06 21 failed those quadrants if you can
07:29:06 22 remember?

07:29:09 23 A. Well, so let me try to answer
07:29:10 24 that as well as I can and as
07:29:11 25 succinctly. When you're very close to

07:29:12 1 a 50/50 election, then it might be
07:29:15 2 reasonable if you have a .5001 to have
07:29:19 3 an odd number of seats, you know, one
07:29:21 4 more or one less.

07:29:21 5 Q. Uh-huh (yes).

07:29:22 6 A. So I think the more meaningful
07:29:25 7 failures are when you have a less
07:29:27 8 close election and still have a
07:29:29 9 majoritarian, anti-majoritarian
07:29:33 10 outcome.

07:29:34 11 Now, I believe we've seen
07:29:35 12 tables from other experts, perhaps
07:29:37 13 from Doctor Rodden if I remember
07:29:41 14 right, where those were color coded as
07:29:43 15 well. And I remember from that table,
07:29:45 16 which I have no reason to disbelieve,
07:29:51 17 there were two --- in that data set of
07:29:51 18 collections, two anti-majoritarian
07:29:54 19 outcomes in the Governor's plan
07:29:54 20 favoring Democrats and two favoring
07:29:58 21 Republicans. I believe that's what we
07:30:04 22 saw. We could check if we want to be
07:30:04 23 sure.

07:30:04 24 Q. And with respect to table
07:30:07 25 three, you agree that the Senate

07:30:09 1 Democratic Caucus plan, all of the
07:30:11 2 highlights there are red on this
07:30:13 3 metric.

07:30:14 4 Correct?

07:30:16 5 A. The Senate Democratic Caucus
07:30:22 6 plan?

07:30:25 7 Q. Yes, plan number one.

07:30:26 8 A. Oh, yes. Yes, I see.

07:30:26 9 Q. And if --- is that showing
07:30:27 10 Democratic advantage or Republican
07:30:29 11 advantage?

07:30:29 12 A. That's showing Republican
07:30:31 13 advantage.

07:30:31 14 Q. Okay.

07:30:36 15 And with respect to HB-2146,
07:30:39 16 that's the darkest red in each one.
07:30:41 17 Does that represent that that is
07:30:43 18 showing the most Republican advantage?

07:30:45 19 A. Yes. It's showing a strong
07:30:47 20 Republican advantage.

07:30:47 21 Q. Okay.

07:30:47 22 And when ---?

07:30:49 23 A. But again, ---

07:30:50 24 Q. Yes.

07:30:50 25 A. --- by the likes of these

07:30:52 1 metrics.

07:30:52 2 Q. Okay.

07:30:54 3 And it's possible to have a map
07:30:59 4 drawn randomly through an algorithm
07:31:05 5 and then select one of the maps that
07:31:07 6 is produced. That's possible?

07:31:09 7 Right?

07:31:09 8 A. Yes, and people have done so,
07:31:09 9 picked maps out of an algorithmic
07:31:10 10 output to consider for adoption.

07:31:18 11 Q. So even if somebody doesn't
07:31:20 12 draw a map intentionally for certain
07:31:22 13 outcomes, if they select a map, it
07:31:26 14 communicates certain trade-offs
07:31:28 15 between different factors we've been
07:31:29 16 discussing today.

07:31:30 17 Is that correct?

07:31:31 18 A. Yes. There are trade-offs
07:31:33 19 reflected in all of the maps.

07:31:34 20 Q. And the sixth traditional
07:31:46 21 redistricting factors, we make
07:31:47 22 trade-offs between them when
07:31:48 23 determining how far in one direction
07:31:49 24 we're going to go for one of those
07:31:53 25 factors and how far in one direction

07:31:53 1 we're going to go for another factor.

07:31:53 2 Correct?

07:31:54 3 A. We inevitably make trade-offs,
07:31:57 4 yes.

07:31:57 5 Q. And the same trade-offs are
07:31:58 6 made when optimizing a map for
07:32:01 7 partisanship while still attempting to
07:32:03 8 maintain a reasonableness related to
07:32:06 9 the sixth traditional redistricting
07:32:09 10 factors.

07:32:09 11 Correct?

07:32:10 12 A. It's certainly true that you
07:32:15 13 could optimize a map for partisanship
07:32:15 14 where what I think you mean by that is
07:32:16 15 to get the most possible seats for one
07:32:18 16 party or the other.

07:32:18 17 Right?

07:32:18 18 Q. Correct. Even while facially
07:32:21 19 presenting reasonable redistricting
07:32:25 20 principles that we've discussed?

07:32:26 21 A. Sure. You could search through
07:32:28 22 a large collection of alternatives for
07:32:30 23 something that had most of whatever
07:32:33 24 you're looking for.

07:32:34 25 ATTORNEY GORDON:

07:32:35 1 Okay. Thank you. No
07:32:36 2 further questions.

07:32:36 3 JUDGE MCCULLOUGH:

07:32:37 4 All right. Thank you,
07:32:37 5 Counsel.

07:32:38 6 And we will turn now to
07:32:41 7 Counsel for Governor, Mr. Wiygul, if
07:32:45 8 you have redirect, I assume. Okay.

07:33:01 9 ATTORNEY WIYGUL:

07:33:01 10 Thank you, Your Honor.

07:33:01 11 ---

07:33:01 12 REDIRECT EXAMINATION

07:33:03 13 ---

07:33:03 14 BY ATTORNEY WIYGUL:

07:33:03 15 Q. Hello again, Professor Duchin.

07:33:04 16 I know it's been a long day and I

07:33:05 17 appreciate your time. Your work has

07:33:08 18 already garnered a lot of interest, as

07:33:11 19 you can see. I just want to address a

07:33:13 20 few discreet points that were made

07:33:15 21 during the Cross Examination. You may

07:33:17 22 remember that Counsel for the Gressman

07:33:19 23 Petitioners had a number of very

07:33:20 24 energetic questions for your about

07:33:21 25 particular data points that you had

07:33:23 1 calculated in your tables. Do you
07:33:25 2 recall that?

07:33:26 3 A. I do.

07:33:26 4 Q. And Counsel pointed out that
07:33:30 5 with respect to certain specific data
07:33:31 6 points, you concluded that those data
07:33:33 7 points showed that the Gressman plan
07:33:37 8 performed well.

07:33:37 9 Correct?

07:33:38 10 A. Yes.

07:33:38 11 Q. Okay.

07:33:38 12 Now, have you overlooked any of
07:33:40 13 that when you did your report?

07:33:43 14 A. No, I didn't. I tried very
07:33:45 15 hard in the report to just, like I
07:33:47 16 said, call balls and strikes and to
07:33:47 17 explain the reasoning that I was using
07:33:54 18 for making certain distinctions, for
07:33:57 19 looking at zones in some places, for
07:33:58 20 looking at small differences in other
07:33:59 21 places. I tried to give principle
07:34:01 22 reasons for that. What I wasn't able
07:34:03 23 to say before is that I think the
07:34:05 24 Gressman plan is an excellent plan. I
07:34:07 25 think it performs really well if all

07:34:10 1 of these measurable ways, but that if
07:34:14 2 you need to take the field and narrow
07:34:17 3 it in some of the specific ways I
07:34:19 4 described, that it doesn't end up in
07:34:23 5 those tiers.

07:34:24 6 Q. Not to quote the highlander,
07:34:27 7 but where in a situation where there
07:34:27 8 can only be one at the end of the day.

07:34:27 9 Right?

07:34:31 10 A. Well, or as in some states,
07:34:32 11 there can be many over the course of
07:34:33 12 ten years, but that's right. I think
07:34:35 13 our goal is to select for now one map.

07:34:37 14 Q. But you're not saying
07:34:39 15 everything else is terrible?

07:34:40 16 A. I'm expressly not. I think is
07:34:42 17 the last sentence; that I think the
07:34:45 18 Governor's plan is an excellent
07:34:48 19 choice, but not the only reasonable
07:34:49 20 choice.

07:34:50 21 Q. Similarly, I want to ask you
07:34:52 22 about some questions that Counsel for
07:34:57 23 Congressman Reschenthaler asked you.
07:34:57 24 There was a focus on the scores, and
07:34:58 25 maybe we can call this up, in table

07:34:59 1 one of your rebuttal report. And
07:35:00 2 there were ten scores and I think came
07:35:03 3 out that you said --- would it be
07:35:05 4 easier to just --- yes, thank you.
07:35:08 5 Ten scores. And I think, you know,
07:35:12 6 you agreed with each other at the end
07:35:14 7 that six of them went to the
07:35:16 8 Reschenthaler plan and four of them
07:35:18 9 went to the Governor.

07:35:19 10 Correct?

07:35:19 11 A. Yes.

07:35:20 12 Q. Okay.

07:35:20 13 Had you overlooked that when
07:35:22 14 you formulated the conclusions in your
07:35:24 15 rebuttal report?

07:35:25 16 A. No, that's fully accounted for
07:35:26 17 in what I hope is fairly clearly --- I
07:35:31 18 hope clearly presented reasoning.

07:35:31 19 Q. And one of the things that
07:35:33 20 Counsel for Congressman Reschenthaler
07:35:36 21 was asking you about was about splits
07:35:38 22 and municipal splits. Do you remember
07:35:40 23 that? And I think that was one where
07:35:42 24 you conceded that the Reschenthaler
07:35:42 25 plan was a bit better than the

07:35:44 1 Governor plan just on that metric.

07:35:46 2 Correct?

07:35:47 3 A. Yes. If you are singularly
07:35:49 4 focused on splits, the Reschenthaler 1
07:35:51 5 and 2 plans have fewest.

07:35:55 6 Q. But when we need to formulate
07:35:58 7 an overall conclusion or analysis, do
07:36:00 8 we also need to look not just on
07:36:02 9 whether one is better in a bimodal
07:36:09 10 sense, but what the margin between
07:36:09 11 them is?

07:36:12 12 A. Yeah. We should look at
07:36:12 13 margins and we should think about
07:36:13 14 trade-offs.

07:36:13 15 Q. And how would you generally
07:36:14 16 characterize the margins between the
07:36:15 17 various plans at issue here on say
07:36:18 18 county splits?

07:36:18 19 A. Well, my view wasn't as that in
07:36:21 20 a 17 district plan, if you're
07:36:23 21 splitting fewer than 17 counties, you
07:36:25 22 are giving high regard to that
07:36:28 23 traditional principal.

07:36:30 24 Q. And just for a reference point,
07:36:31 25 how many --- let's talk about

07:36:32 1 municipal splits, because we know, I
07:36:34 2 think we all know how many counties
07:36:36 3 there are in Pennsylvania.

07:36:37 4 A. Sixty-seven (67).

07:36:39 5 Q. Correct. How many --- and I
07:36:39 6 know this may depend on the specific
07:36:41 7 list, but how many municipalities?

07:36:43 8 A. It really does depends on how
07:36:45 9 you count, but around 2,500.

07:36:46 10 Q. So when the numbers in your
07:36:48 11 cart, we should be comparing to a
07:36:50 12 number around 2,500?

07:36:51 13 A. Yes. And so it's remarkable
07:36:53 14 that these split so few of these over
07:36:56 15 2,000 political subdivisions.

07:37:00 16 Q. I want to ask you about a few
07:37:03 17 questions that Counsel for the House
07:37:04 18 Republicans posed to you. There was a
07:37:06 19 question, I think it was a
07:37:08 20 hypothetical, along the lines of
07:37:10 21 asking do you think it would be okay
07:37:12 22 to ignore traditional redistricting
07:37:14 23 criteria to get the fairness, and I
07:37:16 24 think your answer was no.

07:37:18 25 Correct?

07:37:18 1 A. Yes.

07:37:18 2 Q. Is that what is going on with
07:37:20 3 the Governor's plan or any of the
07:37:22 4 other plans that you assessed as high
07:37:26 5 performing in your rebuttal report?

07:37:27 6 A. I don't think any of these can
07:37:30 7 be said to ignore the traditional
07:37:33 8 principles, but they do make
07:37:33 9 trade-offs and some manage those
07:37:36 10 trade-offs somewhat more effectively
07:37:37 11 than others.

07:37:37 12 Q. Counsel also asked you about
07:37:42 13 the methodology that you employed, and
07:37:43 14 I think with specific respect to the
07:37:43 15 ensemble analysis. And you said the
07:37:46 16 algorithm isn't in the report. To
07:37:48 17 your knowledge, do any of the reports
07:37:49 18 contain the algorithms used by the
07:37:51 19 analyst?

07:37:52 20 A. You know, from long ago, I have
07:37:54 21 seen expert reports with pseudo-code,
07:37:56 22 but I take that not to be a standard
07:37:59 23 thing to include in your report.

07:38:01 24 Q. Now, do you --- how familiar
07:38:03 25 --- let me put it this way. How

07:38:05 1 familiar are you with the algorithm
07:38:08 2 that you used?

07:38:09 3 A. I would be so delighted to be
07:38:11 4 asked in great detail about the
07:38:16 5 workings of these algorithms. It's
07:38:17 6 something that you can read about in
07:38:19 7 my published work. All of the code is
07:38:21 8 open source and available on Get HUB.
07:38:26 9 This is in contrast to earlier
07:38:26 10 generations of redistricting
07:38:29 11 algorithms that were only turned over
07:38:29 12 in the discovery process, and so were
07:38:31 13 hard to audit. Our work is out there
07:38:32 14 in the public domain and I'm very
07:38:35 15 proud of it.

07:38:35 16 Q. And it's the methodology
07:38:40 17 developed, and peer---tested, and
07:38:42 18 reviewed in that domain that you
07:38:42 19 employ here.

07:38:42 20 Is that correct?

07:38:42 21 A. Yes. And as I said, the graph
07:38:46 22 algorithm that underlies it, it is the
07:38:47 23 one that Doctor Barber's drawing on as
07:38:51 24 well.

07:38:51 25 Q. And is it always the case ---

07:38:53 1 well, let me ask you, were you
07:38:55 2 involved in the development of that
07:38:57 3 algorithm personally?

07:38:59 4 A. Yes.

07:38:59 5 Q. Okay.

07:38:59 6 And is that true for all of the
07:39:01 7 experts that work in this field when
07:39:04 8 they compute their scores and they do
07:39:06 9 ensemble analyses, are they always ---
07:39:08 10 are they designing the algorithm? Are
07:39:09 11 they part of the creation of the
07:39:10 12 algorithm themselves or do they
07:39:11 13 sometimes just, you know, go to a
07:39:13 14 website, or pluck something off the
07:39:15 15 shelf that someone else has done?

07:39:19 16 A. No. I don't think it's the
07:39:20 17 case that the experts are always
07:39:22 18 involved in the creation of or even
07:39:24 19 especially knowledgeable about the
07:39:27 20 algorithms.

07:39:28 21 Q. And is that something that you
07:39:30 22 would urge the Court or others
07:39:30 23 evaluating expert work to take into
07:39:33 24 account when assessing different
07:39:34 25 expert reports?

07:39:35 1 A. I would hope it lends
07:39:37 2 additional credibility to my work.
07:39:39 3 Let me put it that way. That I have
07:39:44 4 put years of thought into not only
07:39:47 5 algorithms that sample effectively,
07:39:50 6 but how to use them responsibly.

07:39:55 7 Q. And how about the data, the
07:39:55 8 electoral data that you used in your
07:39:57 9 report? Is that something that you
07:39:58 10 got from a website? Is it something
07:40:01 11 that you or your team quality checked
07:40:03 12 yourselves or something in the middle?

07:40:05 13 A. We spent actually I think it's
07:40:08 14 fair to say years preparing the
07:40:10 15 Pennsylvania data, which is quite hard
07:40:13 16 to collect, align, and curate. And
07:40:19 17 whenever we used external sources, we
07:40:23 18 have quite rigorous quality assurance
07:40:25 19 checks. We use our own proration and
07:40:27 20 segregation tools. So I'm very
07:40:30 21 confident that our handling of the
07:40:32 22 electoral data is as good as possible
07:40:35 23 under the difficult conditions in
07:40:38 24 Pennsylvania.

07:40:39 25 Q. Can we put up Figure 8, page 19

07:40:43 1 of Professor Duchin's, I think it's
07:40:43 2 her rebuttal report. Yes. No, I'm
07:40:48 3 sorry. It's your opening report there
07:40:49 4 it is. We've seen this before and I
07:40:52 5 just, I want to go back to a set of
07:40:53 6 questions that was posed to you by
07:40:55 7 Counsel for the House Republicans.
07:40:57 8 Particular, maybe we could zoom in on
07:41:01 9 --- I would like to show the 0.00
07:41:03 10 line. And can you just remind us what
07:41:07 11 does that represent, 0.00?
07:41:10 12 A. So these metrics all have
07:41:15 13 different stories behind them,
07:41:16 14 different accounts of how they measure
07:41:17 15 fairness. But what they purport to
07:41:17 16 do, and I've chosen four that I think
07:41:21 17 are interesting and applicable for
07:41:23 18 this particular case at hand. What
07:41:24 19 they purport to do is measure kind of
07:41:26 20 evenhandedness. And so zero should
07:41:32 21 not be thought as like a Democratic,
07:41:36 22 you know, nirvana. On the contrary.
07:41:39 23 Zero is a point of balance and
07:41:41 24 fairness.
07:41:41 25 Q. And you described how you can

07:41:43 1 get to zero or close to zero with a
07:41:46 2 map in Pennsylvania without
07:41:47 3 sacrificing the traditional
07:41:48 4 redistricting criteria.

07:41:49 5 Correct?

07:41:50 6 A. That's correct. And it's
07:41:51 7 something in my published work I've
07:41:53 8 sometimes called elasticity. Some
07:41:56 9 states have vote patterns like in
07:41:59 10 Massachusetts. They're just more
07:42:01 11 rigid, and by following the rules,
07:42:06 12 it's just hard to make certain
07:42:07 13 outcomes appear. In Pennsylvania, by
07:42:08 14 contrast, shows enough elasticity that
07:42:10 15 you can get to partisan fairness while
07:42:13 16 still upholding the traditional
07:42:16 17 principles to an excellent degree.

07:42:21 18 Q. Now, would it be possible to go
07:42:24 19 further and, you know, still upholding
07:42:26 20 the traditional principles among the
07:42:31 21 100,000 maps, find ones that start to
07:42:34 22 tilt away from level and towards a
07:42:39 23 structural advantage for Democrats?

07:42:43 24 A. Absolutely. I think it's clear
07:42:43 25 from the information here that the

07:42:43 1 Governor's plan, and frankly all of
07:42:45 2 these plans, leave Democratic
07:42:46 3 opportunity on the table. These are
07:42:48 4 not Democratic maximization plans.
07:42:49 5 And in particular, I think that's
07:42:50 6 clear when you look part at the
07:42:55 7 partisan metrics where the shading is
07:42:57 8 meant to illustrate the intensity of
07:42:59 9 the lean. You're not seeing blues
07:43:00 10 across the board. And in the
07:43:01 11 Governor's plan, you're really seeing
07:43:04 12 numbers close to zero.

07:43:05 13 Q. And so do I understand
07:43:06 14 correctly from your earlier testimony
07:43:08 15 that when we get away from zero, as
07:43:11 16 we get away from zero in either
07:43:12 17 direction, we get into a situation
07:43:13 18 where we're not adhering to your close
07:43:17 19 votes, close seats principle?

07:43:19 20 A. Yes. And, you know, that
07:43:21 21 brings another point to mind that I
07:43:24 22 think is worth briefly --- since we're
07:43:26 23 all tired, briefly clarifying. So in
07:43:27 24 some cases, people have talked about
07:43:28 25 the range of results and there's even

07:43:31 1 been some implicit criticism implying
07:43:33 2 that a larger range is worse. And I'd
07:43:36 3 just like to point out that in some
07:43:38 4 cases, that's really backwards.
07:43:41 5 Namely that you may call a map more
07:43:44 6 responsive exactly when it does
07:43:47 7 exhibit a larger range of outcomes.
07:43:49 8 And responsiveness is a word that I
07:43:50 9 think we all agree we're seeking.

07:43:52 10 So if you are always getting
07:43:53 11 the same seats outcome no matter how
07:43:58 12 people vote, you're not responsive to
07:43:58 13 the electorate. And so seeing
07:44:00 14 sumability for the outcome to vary
07:44:00 15 many would say is quite a positive
07:44:05 16 attribute of a plan.

07:44:05 17 Q. And when we're talking about
07:44:07 18 responsiveness is term you used, could
07:44:10 19 you sort of flush that out a little
07:44:12 20 bit? What does that mean in the
07:44:13 21 context of, you know, someone else, I
07:44:15 22 think Doctor Barber's report referred
07:44:16 23 to dynamism in elections over time.
07:44:16 24 What does that mean with respect to
07:44:23 25 changing preferences among the

07:44:24 1 majority of the electorate overtime?

07:44:27 2 A. As the sea level of voter
07:44:29 3 preferences rises and falls, you'd
07:44:30 4 like the representation to reflect
07:44:32 5 that. So you'd like the outcome to be
07:44:34 6 able to change along, to be literally
07:44:38 7 responsive in the sense of being
07:44:40 8 sensitive to the change in voter
07:44:44 9 preferences.

07:44:44 10 Q. And the maps that get away from
07:44:47 11 the zero mark, they don't, they are
07:44:50 12 not as responsive.

07:44:50 13 Is that correct?

07:44:51 14 A. It depends on the metric. And
07:44:53 15 so that's not a, kind of capital
07:44:56 16 letters all the time statement. But
07:44:58 17 when it comes to the plots that show
07:45:00 18 seats versus votes, it's generally
07:45:02 19 considered a healthy sign for a map if
07:45:06 20 you see some variation in the sea
07:45:10 21 level outcome.

07:45:10 22 Q. Is that one of the reasons why
07:45:12 23 you think it's important to look at
07:45:14 24 individual elections over time?

07:45:14 25 A. Oh, absolutely. That's another

07:45:19 1 reason why averaging really hides
07:45:20 2 something important. If you only look
07:45:22 3 at the aggregate, you're not seeing
07:45:23 4 the level of variability. Now, I
07:45:27 5 think reasonable people can disagree
07:45:30 6 on exactly how much, we've called this
07:45:31 7 a winners bonus. It's the exact same
07:45:33 8 thing that's been referred to as a
07:45:33 9 winners bonus. Exactly how much of a
07:45:36 10 swing you'd like in your map,
07:45:39 11 reasonable people can disagree. But I
07:45:41 12 would strongly dispute that simply
07:45:43 13 seeing a bigger range is a negative.
07:45:45 14 Q. So since you had I think five
07:45:50 15 or six other attorneys asking you
07:45:50 16 questions, I just want to give you an
07:45:51 17 opportunity was there anything that
07:45:56 18 was posed to you where you didn't have
07:45:56 19 a chance to give the answer that you'd
07:45:56 20 like to and you'd like to elaborate
07:45:56 21 here?
07:45:59 22 A. I think we've thoroughly
07:46:00 23 covered the terrain.
07:46:01 24 Q. I'm glad you agree. Thank you
07:46:01 25 very much.

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ATTORNEY WIYGUL:

Thank you, Your Honor.

JUDGE MCCULLOUGH:

Thank you. All right.

We're going to take a recess again and reconvene at 5:50. And we will do one --- we will have examination of one more expert witness this evening. That would be Republican Legislature's Representative Cutler's group, I think is next. But we will take a recess now and reconvene at 5:50.

COURT CRIER HOLLAND:

Commonwealth Court is now in recess.

(WHEREUPON, A BRIEF RECESS WAS TAKEN.)

COURT CRIER HOLLAND:

All rise. Commonwealth Court will now resume. Please be seated.

JUDGE MCCULLOUGH:

Okay. Thank you.

I hope you at least got

1 a comfort break. And we'll get you
2 out of here tonight. I promise you
3 don't have to sleep here unless
4 something I don't know about.

5 Okay.

6 So we're going to do
7 this next witness. We're going to
08:15:17 8 have Direct and Cross on the
08:15:18 9 Republican Legislature Representative
08:15:24 10 Cutler, et. al group. So Counsel,
08:15:24 11 who's --- okay, you're handling this
08:15:28 12 and then ---.

13 ATTORNEY MORGAN:

14 Thank you, Your Honor.
15 House Republican Intervenors call
08:15:35 16 Doctor Michael Barber. And I have
08:15:46 17 hard copies of both of his reports if
08:15:46 18 Your Honor would like them.

19 JUDGE MCCULLOUGH:

20 That's okay. I have ---

21 ATTORNEY MORGAN:

22 Okay.

23 JUDGE MCCULLOUGH:

24 --- they're all over
08:15:47
25 here.

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COURT CRIER TURNER:

Please raise your right hand.

DOCTOR MICHAEL BARBER,
CALLED AS A WITNESS IN THE FOLLOWING
PROCEEDINGS, HAVING FIRST BEEN DULY
SWORN, TESTIFIED AND SAID AS FOLLOWS:

DIRECT EXAMINATION

BY ATTORNEY MORGAN:

Q. Good evening, Doctor Barber.

A. Hello.

Q. I want to start talking a little bit about the concept of political geography. What does it mean when we talk about the political geography of a state?

A. Typically when we talk about political geography, we're making reference to the spatial distribution of voters. So where do voters live throughout a state or some, you know, geographic location that we're

08:16:31 1 interested in studying, and how that
08:16:32 2 distribution might refer or be related
08:16:39 3 to the partisan tendencies and
08:16:43 4 preferences of those voters.

08:16:43 5 Q. And can the political geography
08:16:44 6 of a state have an impact on the
08:16:46 7 partisan outcomes of elections?

08:16:46 8 A. Yes, they can.

08:16:48 9 Q. How so?

08:16:49 10 A. Well, it's especially the case
08:16:51 11 when we divide whatever location or
08:16:57 12 place we're talking about into
08:16:59 13 geographic districts. In this case,
08:17:01 14 we're talking about single member
08:17:03 15 districts. And so as you draw these
08:17:05 16 boundaries, it can really matter where
08:17:10 17 people live and how those partisan
08:17:11 18 preferences are related to where they
08:17:13 19 live when those boundaries are imposed
08:17:15 20 onto the map that you're looking at.

08:17:17 21 Q. And have you examined
08:17:18 22 specifically the political geography
08:17:19 23 of Pennsylvania?

08:17:20 24 A. Yes.

08:17:21 25 Q. Doctor Barber, I want to refer

08:17:24 1 you to page eight of your report and
08:17:26 2 specifically figure one.

08:17:36 3 A. Okay.

08:17:37 4 Q. And what does this figure
08:17:38 5 reflect?

08:17:39 6 A. So this figure is simply a map
08:17:43 7 of the Commonwealth. And the colors
08:17:47 8 on the map represent the general
08:17:48 9 tendency of voters to support either
08:17:48 10 Democratic candidates or Republican
08:17:48 11 candidates.

08:17:55 12 And so you can see that the
08:17:56 13 partisan practices of voters in
08:17:58 14 Pennsylvania are not evenly
08:18:00 15 distributed --- distributed, excuse
08:18:02 16 me. You have really two areas in
08:18:06 17 which there's intense Democratic
08:18:09 18 support, and that's in the
08:18:10 19 Philadelphia area and in the
08:18:11 20 Pittsburgh area. You have other parts
08:18:13 21 of the state in which there are also
08:18:16 22 pockets of strong Democrat support in
08:18:20 23 the smaller and medium sized cities of
08:18:23 24 the state. But once you get into the
08:18:25 25 suburban area and the rural areas of

08:18:30 1 the state, you tend to see strong
08:18:31 2 support for Republican candidates and
08:18:31 3 that's reflected by the large spots of
08:18:33 4 red throughout the state.

08:18:41 5 Q. And does this impact the
08:18:42 6 Democratic party from being able to
08:18:42 7 translate their votes into seats?

08:18:44 8 A. It certainly has an impact,
08:18:46 9 yes.

08:18:46 10 Q. And how does it have an impact?

08:18:49 11 A. Well, it the way that it has an
08:18:51 12 impact, and we've heard others testify
08:18:52 13 to this as well, is that because we
08:18:55 14 use single member districts in drawing
08:19:00 15 in Congressional elections, and we
08:19:02 16 have these non-partisan registering
08:19:05 17 criteria as to how those districts
08:19:08 18 should be drawn, when those rules are
08:19:11 19 followed or when those boundaries are
08:19:13 20 drawn using those criteria, what you
08:19:16 21 end up with is you end up with some
08:19:18 22 districts, especially in as I said the
08:19:20 23 Philadelphia and Pittsburgh area that
08:19:21 24 are going to have extremely high
08:19:24 25 support for Democratic candidates. So

08:19:27 1 if you draw boundaries that have equal
08:19:28 2 population, that are contiguous and
08:19:31 3 compact, that don't extend out beyond
08:19:34 4 county boundaries, you're going to get
08:19:36 5 districts that have really, really
08:19:38 6 large majorities, in some cases
08:19:40 7 approaching, you know, 80, 90 percent
08:19:44 8 support for Democratic candidates.

08:19:46 9 Q. And can this disadvantage we'll
08:19:49 10 call it, can it be overcome?

08:19:49 11 A. Well, yes. You could certainly
08:19:49 12 overcome it if you ignored some of
08:19:54 13 those criteria and drew districts that
08:19:55 14 kind of started in the center of the
08:20:02 15 city and then moved outwards into the
08:20:04 16 suburban and rural parts of the state.
08:20:07 17 It can be overcome by electing members
08:20:08 18 of Congress using an alternative
08:20:11 19 system, not using single member
08:20:11 20 districts as well. But yes, there are
08:20:13 21 obviously ways that you could account
08:20:16 22 for this or adjust for this.

08:20:17 23 Q. And is one of those ways that
08:20:19 24 you have to specifically account for
08:20:21 25 this and consider that affect when

08:20:24 1 you're drawing District lines?

08:20:26 2 A. Well, you --- I mean, anyone
08:20:28 3 who draws District boundaries is going
08:20:30 4 to have to confront this, you know,
08:20:33 5 confront the geography of the state.
08:20:36 6 That's certainly the case no matter,
08:20:37 7 you know, who's drawing boundaries.

08:20:39 8 Q. In your opinion, is it
08:20:40 9 appropriate to draw lines to correct
08:20:42 10 for the spatial position of voters in
08:20:46 11 the State that may result in them
08:20:50 12 obtaining less seats than their
08:20:53 13 statewide vote chair?

08:20:55 14 A. Well, I think that that's
08:20:55 15 misguided --- a misguided approach for
08:20:56 16 two reasons. One is we don't have any
08:20:58 17 assurances or guarantees that that
08:21:00 18 distribution will maintain over the
08:21:03 19 next decade. And so, you know, we
08:21:05 20 might be addressing kind of fighting
08:21:06 21 the last war. We might be addressing
08:21:06 22 a problem today that the problem might
08:21:09 23 look very different a few years from
08:21:11 24 now or, you know, may not look the
08:21:14 25 same as it was a few years ago.

08:21:16 1 Beyond that it, you know, will
08:21:18 2 often require the trading off some of
08:21:21 3 these other criteria that we've
08:21:24 4 discussed as the kind of typical or
08:21:26 5 traditional criteria of redistricting.

08:21:30 6 Q. Okay.

08:21:30 7 Doctor Barber shifting gears a
08:21:32 8 little bit. Did you conduct a
08:21:34 9 simulated districting analysis for
08:21:36 10 Pennsylvania's Congressional map?

08:21:37 11 A. I did, yes.

08:21:38 12 Q. And do you describe that
08:21:40 13 methodology in your report?

08:21:41 14 A. I do, yes.

08:21:42 15 Q. And as I understand, you did
08:21:45 16 not develop the algorithm that you
08:21:47 17 used for this methodology.

08:21:48 18 Is that correct?

08:21:49 19 A. That's correct. The algorithm
08:21:51 20 was developed by a professor of
08:21:53 21 political science at Harvard
08:21:54 22 University.

08:21:55 23 Q. And do you have to have
08:21:56 24 developed the algorithm to understand
08:21:59 25 how to use it?

08:21:59 1 A. No.

08:22:04 2 Q. Do you explain your methodology
08:22:05 3 in your report?

08:22:05 4 A. Yes.

08:22:07 5 Q. Now, Doctor Duchin likewise
08:22:10 6 created a, what she calls an ensemble
08:22:12 7 of maps.

08:22:13 8 Is that right?

08:22:14 9 A. That's correct.

08:22:14 10 Q. Okay.
08:22:15 11 And does she provide any detail
08:22:18 12 in her report about how she went about
08:22:20 13 creating that ensemble of maps?

08:22:23 14 A. No.

08:22:23 15 Q. And how does that impact your
08:22:25 16 ability to verify the veracity of the
08:22:28 17 ensemble of maps that she draws?

08:22:31 18 A. I really can't assess it one
08:22:34 19 way or the other.

08:22:34 20 Q. Well, back to your simulated
08:22:37 21 maps, Doctor Barber. Can you briefly
08:22:40 22 describe how you created your computer
08:22:42 23 simulated plans?

08:22:43 24 A. Sure. So there's a number of
08:22:48 25 parameters that are given to the

08:22:50 1 computer before you ask it to draw
08:22:52 2 these districts. They are the typical
08:22:55 3 redistricting criteria. So equal
08:23:00 4 population, continuity, compactness,
08:23:04 5 minimal division of political sub
08:23:05 6 units. Those are the criteria that go
08:23:07 7 into the algorithm. And then the
08:23:09 8 algorithm uses those criteria as well
08:23:12 9 as the distribution of voters
08:23:14 10 throughout the state to draw a number
08:23:15 11 of different maps that meet those
08:23:19 12 criteria. And then at the end of
08:23:21 13 that, you're left with a large sample
08:23:24 14 of maps for the state.

08:23:26 15 Q. So you use just traditional
08:23:28 16 redistricting criteria?

08:23:32 17 A. That's correct, yes.

08:23:33 18 Q. Did you use any partisan data
08:23:36 19 in creating the simulated maps?

08:23:38 20 A. No. The simulations are
08:23:39 21 entirely unaware of partisan, anything
08:23:40 22 about partisanship.

08:23:41 23 Q. So is it fair to say they are
08:23:43 24 partisan blind?

08:23:44 25 A. Yes.

08:23:44 1 Q. Did you use any racial data in
08:23:46 2 creating your simulated maps?

08:23:48 3 A. So in the main stimulation that
08:23:50 4 I present, the model is also unaware
08:23:53 5 of any race, racial data. Later in
08:23:59 6 the report, I present a second set of
08:24:00 7 simulations that do contain
08:24:03 8 information on the race of voters.
08:24:05 9 And that's so that I can instruct the
08:24:07 10 model to generate plans that meet a
08:24:09 11 certain number of districts that have
08:24:10 12 a certain threshold of minority
08:24:12 13 population.

08:24:12 14 Q. And why did you do that second
08:24:14 15 simulation, Doctor Barber?

08:24:16 16 A. The reason for that is that
08:24:18 17 lots of the proposals or the plans
08:24:21 18 that we've been seeing discussed the
08:24:24 19 number of districts that meet certain
08:24:26 20 thresholds of minority population.
08:24:29 21 And so one reasonable question is to
08:24:33 22 wonder well, if you impose that
08:24:35 23 criteria, if you instruct or if you
08:24:36 24 have that constraint, would that cause
08:24:39 25 there to be possibly a shift in the

08:24:41 1 way a neutrally drawn map would look.
08:24:49 2 And so, that second set of simulations
08:24:50 3 allows us to evaluate that.

08:24:50 4 Q. What is the advantages of a
08:24:50 5 simulation analysis as compared to
08:24:52 6 some of the other partisan metrics
08:24:54 7 we've heard about today?

08:24:58 8 A. So the main benefit of using
08:24:59 9 this approach, and I should say this
08:25:01 10 approach has been used widely in the
08:25:05 11 redistricting litigation, is that it
08:25:08 12 allows for a comparison of a proposed
08:25:10 13 map to a set of alternatives maps that
08:25:13 14 we know with certainty the criteria
08:25:16 15 that are used to draw those
08:25:17 16 alternative maps. So that's one
08:25:19 17 really big advantage. It allows for a
08:25:21 18 comparison to what I would call like a
08:25:24 19 control group.

08:25:25 20 So when you run an experiment,
08:25:27 21 you want to compare to some sort of
08:25:29 22 control that you kind of know the
08:25:33 23 criteria used in generating that
08:25:34 24 control. The other advantage is that
08:25:36 25 it allows for an apples to apples

08:25:41 1 comparison because both the proposed
08:25:44 2 map and the set of simulated maps,
08:25:46 3 they all have to account for the
08:25:48 4 geography of the state. And so,
08:25:50 5 you'll often see arguments about well,
08:25:52 6 this, you know, the geographic
08:25:53 7 distribution of voters might have the
08:25:55 8 following impact. The simulations
08:26:01 9 allow you to take compare to a set of
08:26:03 10 maps that also take into account or to
08:26:04 11 have to deal with the geography of the
08:26:06 12 state.

08:26:06 13 Q. Do the other are metrics we've
08:26:06 14 heard about today, efficiency gap,
08:26:06 15 mean median, do those take into
08:26:11 16 account the political geography of the
08:26:13 17 state?

08:26:14 18 A. The way I would say it is that
08:26:16 19 they are subject to the political
08:26:22 20 geography of the state. But they
08:26:23 21 don't allow you any --- the value that
08:26:25 22 you observe of say, you know, the
08:26:27 23 efficiency gap, or the median mean, or
08:26:31 24 any of those metrics, the value that
08:26:31 25 you observe, you can't really say

08:26:32 1 well, how does that value compare or
08:26:34 2 how much of that value is due to
08:26:37 3 geography as opposed to other factors
08:26:39 4 that may have contributed to how a map
08:26:41 5 was drawn.

08:26:42 6 Q. Doctor Barber, to your
08:26:44 7 knowledge, did the Court and the
08:26:46 8 League of Women Voters case rely upon
08:26:51 9 similar simulation methodologies that
08:26:52 10 you are employing in this case?

08:26:55 11 A. Yes, that's correct.

08:26:56 12 Q. How many simulated maps or
08:26:59 13 plans did you generate?

08:27:00 14 A. So I instructed the computer to
08:27:02 15 generate 50,000 maps and each map
08:27:05 16 contains 17 districts.

08:27:06 17 Q. And are those 50,000 maps a
08:27:09 18 representative sample of all possible
08:27:11 19 redistricting in Pennsylvania?

08:27:13 20 A. Yes.

08:27:13 21 Q. Now, Doctor Barber, after you
08:27:16 22 completed your simulation analysis,
08:27:18 23 did you then analyze that the partisan
08:27:20 24 lien of the districts in the
08:27:22 25 simulations?

08:27:25 1 A. I did, yes.

08:27:25 2 Q. And how did you go about doing
08:27:27 3 that?

08:27:28 4 A. So I take the --- each district
08:27:31 5 in each of the simulated maps, in each
08:27:34 6 of the 50,000 maps, and I look at the
08:27:38 7 statewide votes, statewide elections
08:27:40 8 over the previous decade, so from 2012
08:27:43 9 through 2020. And I look at the
08:27:45 10 number of votes cast in those
08:27:48 11 districts in those elections for
08:27:50 12 Democrats and for Republicans, and
08:27:52 13 then simply look at the proportion of
08:27:55 14 those votes that were cast for
08:27:59 15 Democratic candidates.

08:27:59 16 Q. And what elections did you use?

08:28:00 17 A. So it's state-wide races from
08:28:05 18 2012 through 2020. So this would be
08:28:08 19 President, U.S. Senate, Governor, and
08:28:10 20 then those four I can't remember term
08:28:13 21 that Counsel used earlier, but I
08:28:17 22 believe it's auditor, Attorney
08:28:22 23 General, now they're escaping me.
08:28:25 24 Treasurer, and there's one I'm
08:28:27 25 forgetting, but it's in there.

08:28:27 1 Q. And did you do an average of
08:28:29 2 these elections?

08:28:30 3 A. So I calculate the average of
08:28:35 4 the or the proportion I would say of
08:28:37 5 the votes cast for Democratic
08:28:39 6 candidates in those races and the
08:28:44 7 proportion of votes cast for
08:28:45 8 Republicans in those races, yes.

08:28:45 9 Q. And is that a common
08:28:46 10 methodology used in your field?

08:28:48 11 A. It's very common. The reason
08:28:50 12 for that is so this is a subject of
08:28:53 13 criticism that was offered at my ---
08:28:56 14 of my approach. But the criticism is
08:28:58 15 actually one of the advantages because
08:28:59 16 these races are, we're working of
08:29:03 17 these races as a proxy of how these
08:29:07 18 districts are going to perform. We're
08:29:08 19 not --- none of these districts, we're
08:29:10 20 not going to elect an attorney general
08:29:12 21 in these districts or, you know, an
08:29:14 22 auditor, or something like that. And
08:29:15 23 so these elections are subject to the
08:29:17 24 idiosyncrasies of the particular
08:29:23 25 offices, the particular, you know,

08:29:24 1 elections that are being conducted,
08:29:25 2 the candidates, their characteristics,
08:29:26 3 those sorts of things.

08:29:27 4 And we don't want that. We
08:29:28 5 want a picture of how the race is
08:29:30 6 going to perform on average. And so
08:29:33 7 by taking more elections and putting
08:29:37 8 them together, we wash out the impact
08:29:38 9 of any one particular election, the
08:29:49 10 kind of idiosyncrasies of that
08:29:50 11 particular race.

08:29:50 12 Q. Doctor Barber, before we get to
08:29:50 13 the partisan results of your
08:29:50 14 simulations, did you first examine how
08:29:52 15 HB-2146 complies with traditional
08:30:11 16 redistricting criteria?

08:30:12 17 A. Yes.

08:30:12 18 Q. Okay.

08:30:12 19 Can you please turn to page 16
08:30:12 20 of your report and specifically Table
08:30:12 21 1?

08:30:12 22 A. Yes.

08:30:12 23 Q. And can you explain what Table
08:30:13 24 1 shows?

08:30:13 25 A. So Table 1 is simply a

08:30:15 1 comparison of HB-2146 and the results
08:30:18 2 of the simulations on boundary splits
08:30:22 3 and compactness. And so each column
08:30:26 4 shows for each of those plans.

08:30:27 5 Q. And how does HB-2146 compare to
08:30:34 6 the simulated plans on these criteria?

08:30:37 7 A. So it's a little above the
08:30:40 8 median in terms of county split, but
08:30:41 9 within the range of the simulations.
08:30:45 10 In terms of the municipal splits, the
08:30:47 11 simulations are instructed not to
08:30:49 12 divide municipalities and the reason
08:30:52 13 for that is the simulations also allow
08:30:54 14 for one half of one percent population
08:30:57 15 bound, I suppose. And so you can do
08:31:01 16 that without splitting any
08:31:03 17 municipalities. And others have
08:31:06 18 offered a similar explanation that
08:31:08 19 what you see then is you have to, you
08:31:10 20 know, equal --- if you were to pick
08:31:12 21 any of those plans and say well, let's
08:31:14 22 run with this plan, you would have to
08:31:16 23 equalize population, and that would
08:31:18 24 then require the splitting of a few
08:31:23 25 municipalities. And so the fact that

08:31:24 1 you see 16 divisions in the plan and
08:31:26 2 you've got 17 districts, that suggests
08:31:28 3 that we're not splitting
08:31:32 4 municipalities because we're, you
08:31:34 5 know, in reality really kind of just
08:31:41 6 equalling out population through those
08:31:41 7 divisions.

08:31:41 8 Q. And did you look at how HB-2146
08:31:44 9 compared on these metrics to the other
08:31:45 10 maps that were submitted to the Court?

08:31:47 11 A. Yes.

08:31:47 12 Q. Can you please turn to page
08:31:49 13 eight of your rebuttal report and
08:31:49 14 specifically Table 1 on that page?

08:32:02 15 A. Yes.

08:32:02 16 Q. And can you describe just
08:32:04 17 generally what this shows?

08:32:04 18 A. Sure. So this is a table that
08:32:05 19 looks like a lot of the tables that
08:32:06 20 we've been looking at today. So
08:32:10 21 there's been a lot of discussion of
08:32:12 22 boundary splits, of measures of
08:32:15 23 compactness. I'll just note that
08:32:18 24 there's two columns here that we
08:32:20 25 haven't seen as much of, and one is a

08:32:21 1 comparison of how the different plans
08:32:23 2 treat the City of Pittsburgh. And
08:32:25 3 then the final column looks at the
08:32:27 4 number of competitive districts that
08:32:29 5 are generated by each of the plans.

08:32:31 6 Q. And why did you look at how the
08:32:33 7 plans treat the City of Pittsburgh?

08:32:35 8 A. Well, I think Pittsburgh is an
08:32:38 9 interesting example because it's a
08:32:39 10 city that --- well, one, you know,
08:32:40 11 it's a very large city. It's the
08:32:42 12 second largest city in the state, but
08:32:44 13 it's not large enough that it needs to
08:32:46 14 be divided because of its population,
08:32:49 15 unlike Philadelphia. And so I think
08:32:51 16 that it's an area in which if a plan
08:32:54 17 does split the City, it calls for
08:32:56 18 additional inquiry as to why that
08:32:59 19 might be the case. And so I think
08:33:01 20 it's a value for us to look at that.

08:33:05 21 Q. And why do you think it calls
08:33:07 22 for additional inquiry?

08:33:12 23 A. Well, it stands out as an
08:33:13 24 example of a plan possibly violating
08:33:17 25 the neutral redistricting criteria.

08:33:20 1 So it's, you know, it kind of, it
08:33:25 2 rises --- it raises your kind of
08:33:29 3 attention as to oh, well, what's going
08:33:30 4 on here. And so we can then look at
08:33:32 5 the plans and see well, what is going
08:33:33 6 on? Why is the City being divided?
08:33:36 7 Q. Doctor Barber, can you turn to
08:33:38 8 page ten of your rebuttal report and
08:33:40 9 look at both figure two and table two
08:33:42 10 on that page please?
08:33:44 11 A. Yes.
08:33:44 12 Q. And can you explain what you
08:33:48 13 were showing here on page ten of your
08:33:50 14 rebuttal report?
08:33:51 15 A. Sure. So the top figure is
08:33:55 16 simply a map that's illustrative of
08:34:00 17 how many of the plans divides the
08:34:00 18 City. So we could look at maps of all
08:34:03 19 the different plans, but this was
08:34:06 20 simply to illustrate what I mean by
08:34:07 21 how the City is divided. The table
08:34:10 22 below then shows how the population of
08:34:11 23 the City is allocated across the two
08:34:15 24 districts that are inside of the City
08:34:17 25 of Pittsburgh, because it could be

08:34:18 1 possible that a plan splits the City,
08:34:20 2 but it only splits, you know, it moves
08:34:22 3 like 10 or 15 voters out the City.

08:34:26 4 But that's generally not the
08:34:28 5 case. As you look down, as plans
08:34:30 6 divide the City, it tends to be kind
08:34:32 7 of equal or, you know, pretty close to
08:34:36 8 equal.

08:34:38 9 Q. And did you analyze what might
08:34:40 10 be the partisan impact of splitting
08:34:44 11 the City of Pittsburgh as opposed to
08:34:49 12 keeping it all in one congressional
08:34:51 13 district?

08:34:51 14 A. Yes. So if you recall the map
08:34:53 15 of the state that we looked at
08:34:54 16 earlier, you can see very easily that
08:34:56 17 Pittsburgh is extremely Democratic and
08:34:58 18 the areas around Pittsburgh, both
08:35:00 19 within Allegheny County, but also the
08:35:02 20 counties around Allegheny County, are
08:35:04 21 more Republican leaning. And so one
08:35:07 22 thing that a redistricting --- one
08:35:11 23 thing that a person might do is to
08:35:12 24 say, well, if we made a District
08:35:14 25 that's all Pittsburgh and some of

08:35:17 1 suburbs around it, that District is
08:35:20 2 going to be extremely Democratic. But
08:35:22 3 if we were to divide the City in half,
08:35:25 4 we could make two Democratic districts
08:35:27 5 that would be lean Democratic pretty
08:35:32 6 safe still, but not overwhelmingly
08:35:34 7 Democratic.

08:35:36 8 Q. Okay.

08:35:37 9 Doctor Barber, now turning to
08:35:39 10 the partisan lean of HB-2146. And
08:35:42 11 before we get there, first off, what
08:35:45 12 is meant by partisan lean?

08:35:46 13 A. So when I say partisan lean, I
08:35:48 14 simply mean the results of that index
08:35:52 15 of statewide elections.

08:35:55 16 Q. And did you examine the
08:35:55 17 partisan lean of specific districts in
08:36:00 18 HB ---- 2146?

08:36:00 19 A. I produced the partisan lean of
08:36:02 20 all of the districts of HB-2146.

08:36:05 21 Q. Can you actually turn back to
08:36:06 22 your original report now and
08:36:07 23 specifically on page 21 and look at
08:36:10 24 Figure 2?

08:36:11 25 A. Yes.

08:36:11 1 Q. And what were you showing here
08:36:11 2 in figure two, Doctor Barber?
08:36:11 3 A. So figure two simply shows the
08:36:11 4 results of that calculation of the
08:36:11 5 partisan index. And so the districts
08:36:29 6 are ordered from the most Republican
08:36:30 7 leaning at the bottom, all the way up
08:36:32 8 to the most Democratic leaning at the
08:36:34 9 top. So the districts that ---
08:36:34 10 there's a vertical line placed at .5
08:36:36 11 for reference. The districts that are
08:36:40 12 to the left of that line would be
08:36:42 13 Republican leaning and the districts
08:36:43 14 that are to the right of that line
08:36:45 15 would be Democratic leaning. The
08:36:48 16 other thing that I'll note is there's
08:36:51 17 little bars, horizontal bars that
08:36:55 18 aren't coming across quite as well on
08:36:57 19 the projector, but around each of the
08:36:59 20 districts.

08:37:00 21 And those horizontal bars show
08:37:00 22 the full range of all of the elections
08:37:02 23 used in creating that index. And so
08:37:05 24 it's incorrect to claim that I don't
08:37:08 25 show the full range of elections

08:37:10 1 because that's exactly what those bars
08:37:12 2 do.

08:37:12 3 Q. And based upon those bars, is
08:37:14 4 any individual district in HB-2146 an
08:37:18 5 outlier when compared to the
08:37:20 6 simulations?

08:37:23 7 A. When compared to the --- oh,
08:37:24 8 I'm sorry. The bars are in reference
08:37:26 9 to the elections, not the simulations.

08:37:30 10 Q. Well, in comparison of them,
08:37:32 11 are any of them an outlier or are they
08:37:34 12 all within the same range?

08:37:36 13 A. Oh. They're all within the
08:37:38 14 range of the simulations, yes.

08:37:39 15 Q. Now, does figure two reflect
08:37:42 16 whether or not HB-2146 creates any
08:37:46 17 competitive districts?

08:37:47 18 A. It does, yes. So you can look
08:37:48 19 at the districts that are very close
08:37:50 20 to that .5 vertical line. And so
08:37:54 21 those are districts that have, you
08:37:56 22 know, an index very close to
08:37:58 23 50 percent. Beyond that, you can see
08:38:00 24 that there are many districts where
08:38:01 25 that horizontal line crosses the

08:38:06 1 dashed vertical line. And so those
08:38:08 2 are districts in which both parties
08:38:11 3 have won majority of two party vote in
08:38:14 4 some of those races that are
08:38:18 5 considered.

08:38:18 6 Q. And how do you define a
08:38:22 7 competitive district?

08:38:23 8 A. So the first definition I use
08:38:24 9 in my report is if that horizontal
08:38:24 10 line crosses .5. So have at least,
08:38:27 11 have both parties won a majority of
08:38:29 12 the vote in at least one of the
08:38:30 13 elections that I consider over that
08:38:33 14 2012 to 2020 period. The second way
08:38:37 15 that I look at it is how close is
08:38:39 16 each of that points to that .5 line.
08:38:42 17 And I define competitive as if it's
08:38:47 18 within two percentage points of
08:38:49 19 50 percent.

08:38:49 20 Q. And Doctor Barber, did you
08:38:51 21 examine the other plans that were
08:38:52 22 submitted to the Court to determine if
08:38:54 23 they likewise created any competitive
08:38:56 24 districts under your definition?

08:38:57 25 A. Yes, I did.

08:38:58 1 Q. Can you please turn back to
08:39:02 2 page eight of your rebuttal report and
08:39:06 3 look back at Table 1?

08:39:08 4 A. Yes.

08:39:08 5 Q. And what does this reflect
08:39:09 6 about how the other plans do on
08:39:11 7 competitive districts?

08:39:12 8 A. So that final column in the
08:39:14 9 table simply shows the number of
08:39:16 10 competitive districts in each of the
08:39:18 11 plans using that measure of whether
08:39:20 12 the index is within two points of
08:39:24 13 50 percent.

08:39:25 14 Q. Okay.

08:39:29 15 So we just sort of talked about
08:39:30 16 the partisan lean of HB, the districts
08:39:33 17 in HB-2146. Did you also look at the
08:39:35 18 partisan lean of the 50,000 simulated
08:39:38 19 maps that you generated?

08:39:40 20 A. Yes. So in the exact same way
08:39:41 21 that I calculated the lean for these
08:39:45 22 districts in the proposed plans, I do
08:39:47 23 the same thing for the districts in
08:39:49 24 the simulations.

08:39:50 25 Q. So it's an apples to apples

08:39:54 1 simulation?

08:39:54 2 A. That's correct.

08:39:55 3 Q. Can you turn to page 23 of your

08:39:57 4 report and look at Figure 3?

08:39:59 5 A. Yes.

08:39:59 6 Q. And what does this figure show?

08:40:02 7 A. So this figure reports the

08:40:05 8 results of that calculation. So each

08:40:08 9 plan is going to have a different

08:40:10 10 number or could have a different

08:40:12 11 number of Democratic leaning

08:40:14 12 districts. And so this simply reports

08:40:15 13 the distribution of those 50,000 plans

08:40:18 14 in terms of the number of Democratic

08:40:20 15 leaning districts that are generated

08:40:22 16 by the simulations.

08:40:26 17 Q. And so based upon this, what

08:40:27 18 does figure three tell us about the

08:40:29 19 partisan fairness of HB-2146?

08:40:32 20 A. Well, what it shows is that

08:40:34 21 it's well within the range of

08:40:35 22 districts that are drawn using only

08:40:38 23 the redistricting criteria that we

08:40:40 24 talked about earlier. It's not the

08:40:42 25 most common outcome. The most common

08:40:44 1 outcome is actually eight Democratic
08:40:45 2 leaning districts. But there's, you
08:40:51 3 know, nearly a third of the results
08:40:53 4 generate nine Democratic leaning
08:40:56 5 districts, which is HB-2146 does as
08:40:59 6 well.

08:40:59 7 Q. So if I understand this Doctor
08:41:03 8 Barber, then the HB-2146 has predicted
08:41:04 9 the result in nine Democratic leaning
08:41:05 10 seats, but the most common outcome in
08:41:07 11 your 50,000 unbiased maps is only
08:41:10 12 eight Democratic leaning seats?

08:41:15 13 A. That's correct.

08:41:15 14 Q. Now, did you also calculate
08:41:18 15 partisan leaning scores for the other
08:41:20 16 maps submitted to the Court?

08:41:21 17 A. I did, yes.

08:41:22 18 Q. Could you turn now back to your
08:41:32 19 rebuttal report again to page 15 and
08:41:36 20 please look at Table 3?

08:41:37 21 A. Yes.

08:41:37 22 Q. And could you describe what
08:41:38 23 you're reporting in Table 3?

08:41:39 24 A. So Table 3 is simply reporting
08:41:41 25 on the same calculation for each of

08:41:45 1 the proposed plans. And we see that,
08:41:48 2 you know, there's a narrow range.
08:41:50 3 Some plans generating nine, some plans
08:41:53 4 generating ten, and one plan
08:41:55 5 generating 11 Democratic leaning
08:41:59 6 districts.
08:41:59 7 Q. And I see that there, that the
08:42:01 8 House Democrats plan is predicted to
08:42:03 9 create 11 Democratic leaning
08:42:06 10 districts. Is that an outlier?
08:42:09 11 A. So there were no simulations
08:42:09 12 that yielded that result. So yes,
08:42:09 13 that would be an outlier.
08:42:16 14 Q. And which of the submitted
08:42:19 15 plans result in ten Democratic leaning
08:42:20 16 seats?
08:42:20 17 A. Well, we you look down at the
08:42:22 18 table and we can see that, you know,
08:42:23 19 there's one, two, three, four, five,
08:42:31 20 six, seven, eight of them in that
08:42:34 21 table that general ten Democratic
08:42:34 22 leaning districts. I think it's eight.
08:42:35 23 Q. Now, we've sort of been looking
08:42:38 24 at the plan as a whole and how many
08:42:39 25 total Democratic leaning and

08:42:39 1 Republican leaning seats are
08:42:44 2 generated. But did you also look how
08:42:47 3 each District in HB-2146 compares to
08:42:49 4 the specific districts in the
08:42:51 5 simulations?

08:42:52 6 A. Yes. So one of the advantages
08:42:54 7 of the simulations is you can get this
08:42:56 8 very high level aggregate picture that
08:43:01 9 we've been discussing here. But you
08:43:01 10 could also go and look district by
08:43:03 11 district to see well, how does the
08:43:05 12 plan perform at a District level. And
08:43:07 13 that can often shed light on kind of
08:43:10 14 what's going on under the hood so to
08:43:12 15 speak.

08:43:13 16 Q. Can you look at figure 4 on
08:43:15 17 page 26 of your report?

08:43:17 18 A. Yes.

08:43:26 19 Q. And can you describe what's
08:43:28 20 going on in this figure?

08:43:30 21 A. Yes. So the figure is ordered
08:43:33 22 kind of moving from top to bottom by
08:43:37 23 the most Republican leaning district
08:43:37 24 in the simulations going down to the
08:43:44 25 most Democratic leaning district in

08:43:46 1 the simulations. And so what I do for
08:43:50 2 each of the 50,000 plans, I plot the
08:43:53 3 partisan index of each of the
08:43:55 4 districts from most Republican to most
08:43:57 5 Democratic. What that does is it
08:43:59 6 creates these kind of clouds you might
08:44:02 7 say of kind of a range of partisan
08:44:09 8 indices for each of the districts.
08:44:10 9 And so you can see that the plan, you
08:44:11 10 know, moving down the figure, each
08:44:15 11 district gets a little more Democratic
08:44:17 12 because that's, you know, that's the
08:44:18 13 way they've been ordered.

08:44:25 14 On top of that cloud of gray,
08:44:26 15 which is showing the simulations, the
08:44:26 16 black dots then plot the proposed
08:44:28 17 plan, the HB-2146 plan in terms of how
08:44:32 18 the most Republican to the most
08:44:34 19 Democratic district fits inside of
08:44:38 20 simulation results. And so what you
08:44:42 21 can see is if you look at that top
08:44:45 22 row, the most Republican leaning
08:44:50 23 district in the plan is more
08:44:51 24 Democratic than 64 percent of the most
08:44:55 25 Republican districts in the

08:44:57 1 simulations. And so --- and that
08:45:02 2 makes sense because that black dot is
08:45:08 3 kind of in the middle of that cloud of
08:45:08 4 gray. And you can go district by
08:45:12 5 district down and look at well, how
08:45:12 6 does each district align with the
08:45:14 7 district---specific results in the
08:45:16 8 simulations.

08:45:19 9 Q. So now looking at this at a
08:45:22 10 district specific level, what does
08:45:24 11 this tell us about the partisan
08:45:24 12 fairness of HB-2146?

08:45:28 13 A. So I think that it shows that
08:45:32 14 in terms of comparing to the
08:45:32 15 simulations, it, even at a district
08:45:37 16 level, fits squarely inside of the
08:45:38 17 range of simulations generated only
08:45:42 18 using the traditional redistricting
08:45:44 19 criteria.

08:45:45 20 Q. Now, did you do a similar
08:45:47 21 district---specific analysis for each
08:45:48 22 one of the plans submitted to the
08:45:50 23 Court?

08:45:50 24 A. I did, yes.

08:45:53 25 Q. Can you please jump back now to

08:45:55 1 your rebuttal report to page 18 and
08:45:58 2 look at Figure 5? And I think we see
08:46:05 3 sort of a similar graph to what we
08:46:08 4 were just looking at. But can you
08:46:09 5 please describe again what we're
08:46:11 6 looking at here in figure five?
08:46:12 7 A. Yes. So this presents two of
08:46:16 8 those plans. The remaining plan, the
08:46:20 9 remaining figures are in the appendix.
08:46:22 10 And so on the left, we have the
08:46:24 11 Governor's proposal and on the right
08:46:26 12 we have the Gressman proposal. And as
08:46:29 13 I said, you can find the other ones at
08:46:29 14 the end of the report. And so what
08:46:30 15 you can then, you can see again is a
08:46:33 16 comparison of how does the proposed,
08:46:34 17 these proposed plans perform in
08:46:37 18 relation to the simulations at a
08:46:43 19 district by district level. I've
08:46:45 20 added these boxes to highlight the
08:46:47 21 four districts that are most
08:46:49 22 competitive because these are the
08:46:51 23 districts where a shift in the
08:46:54 24 partisanship of a District could
08:46:56 25 really make a difference in terms of

08:46:58 1 who wins or by, you know, by what type
08:47:00 2 of margin. And so that box is simply
08:47:05 3 to highlight the middle part of the
08:47:07 4 results.

08:47:07 5 Q. And what do you conclude by
08:47:10 6 looking at those four competitive
08:47:11 7 districts for both of these two maps?

08:47:14 8 A. So what we see is that in both
08:47:17 9 cases, the proposed plans are at the
08:47:19 10 most Democratic leaning edge of the
08:47:23 11 simulations. So looking at the left
08:47:28 12 at the Governor's proposal, we can
08:47:29 13 start with district one. We can see
08:47:30 14 that that, in that district it is more
08:47:33 15 Democratic than 98 percent of the
08:47:36 16 simulated districts. In District
08:47:38 17 eight, we see that it's more
08:47:40 18 Democratic than 99 percent of the
08:47:44 19 simulations. In district seven, we
08:47:46 20 see that it's more Democratic than all
08:47:48 21 of or nearly all of the simulated
08:47:55 22 districts. And then the same is true
08:47:56 23 for district six.

08:47:58 24 We can --- you know, and the
08:47:59 25 story is much the same looking at the

08:48:02 1 Gressman proposal. It's even more of
08:48:04 2 an outlier. It's more Democratic in
08:48:07 3 those competitive districts than all
08:48:11 4 but I think 17 of the 50,000 plans
08:48:13 5 generated.

08:48:16 6 Q. And I think you just answered
08:48:17 7 this already, but does that mean these
08:48:19 8 particular districts are outliers?

08:48:22 9 A. Yes.

08:48:23 10 Q. And I think you said earlier
08:48:27 11 you did conduct this analysis for the
08:48:29 12 rest of the plans submitted to the
08:48:31 13 Court as well.

08:48:32 14 Correct?

08:48:33 15 A. That's correct, yes.

08:48:34 16 Q. Can you flip to the next page
08:48:35 17 and look at Table 4?

08:48:37 18 A. Yes.

08:48:37 19 Q. And can you describe for the
08:48:38 20 Court what is represented in Table 4?

08:48:42 21 A. So Table 4 is simply a summary
08:48:47 22 of those four districts that we just
08:48:49 23 looked at for each of the plans. And
08:48:51 24 so I simply report the percentile. So
08:48:56 25 the relative position of each of the

08:48:57 1 districts across those plans. So the
08:48:59 2 first line is HB-2146 and so you can
08:49:04 3 see in the seventh most Democratic
08:49:07 4 district, it's more Democratic than 17
08:49:07 5 percent of the plans. In the eighth
08:49:07 6 most Democratic district, it's more
08:49:07 7 Democratic than 17 percent of the
08:49:13 8 plans. In the ninth most Democratic
08:49:16 9 district, it's more Democratic than
08:49:18 10 49 percent. And then finally, it's
08:49:20 11 more Democratic than 81 percent of the
08:49:24 12 simulated districts. And so this
08:49:26 13 table simply summarizes the results of
08:49:28 14 that comparison for each of the plans
08:49:30 15 in that are being considered.

08:49:33 16 Q. And looking at Table 4 on page
08:49:35 17 19, can you draw any conclusions about
08:49:39 18 at least in these four competitive
08:49:41 19 districts which plan appears to be the
08:49:44 20 least bias?

08:49:47 21 A. Well, I think HB-2146 is that
08:49:49 22 plan. Looking down the rows, you can
08:49:52 23 see that in many of the proposals,
08:49:54 24 they sit at the very edge of the
08:49:58 25 simulated results in terms of their

08:50:02 1 Democratic lean of those districts.

08:50:06 2 Q. And for the other plans that
08:50:07 3 result in these competitive districts
08:50:09 4 with percentiles along the mid to
08:50:11 5 upper '90s, what are the odds that
08:50:14 6 that would occur simply from just
08:50:18 7 following traditional redistricting
08:50:20 8 principles?

08:50:20 9 A. It's incredibly unlikely.

08:50:22 10 Q. When you say incredibly
08:50:24 11 unlikely, can you quantify what you
08:50:26 12 think that might mean?

08:50:27 13 A. I mean, you could do a very
08:50:28 14 formal mathematical approach, but you
08:50:30 15 know, it's one in a, less than one in
08:50:35 16 a million probability of that
08:50:37 17 occurring.

08:50:37 18 Q. And given the political
08:50:39 19 geography of the state we talked
08:50:41 20 about, what is this telling you,
08:50:43 21 Doctor Barber?

08:50:44 22 A. Well, that's the virtue of the
08:50:46 23 simulation methods is that they
08:50:50 24 account, they also account for the
08:50:50 25 political geography of the state. And

08:50:52 1 so what we see here is that we have a
08:50:54 2 lot of plans that are working to in
08:50:57 3 some way adjust or differ from what
08:51:02 4 would result from a neutral drawing
08:51:04 5 given the political geography of the
08:51:10 6 state.

08:51:10 7 Q. Thank you, Doctor Barber. So
08:51:13 8 shifting gears a little bit, did you
08:51:15 9 also analyze the partisan fairness of
08:51:20 10 HB-2146 under any other metrics?

08:51:21 11 A. Yes. I use a variety of
08:51:23 12 different matrix?

08:51:23 13 Q. Which ones?

08:51:26 14 A. So the median mean, the
08:51:27 15 efficiency gap, and then what's
08:51:29 16 referred to as the expected seat share
08:51:31 17 from a uniform swing analysis.

08:51:35 18 Q. And let's start with the
08:51:37 19 mean-median. And look, I'm sure we've
08:51:37 20 all heard enough about that metric
08:51:39 21 today. But just for a quick
08:51:40 22 refresher, can you briefly again
08:51:42 23 remind the Court of what that metric
08:51:44 24 is and how it's calculated?

08:51:46 25 A. Yes. So again, it's simply a

08:51:47 1 measure of how does the median
08:51:49 2 district compare to the average
08:51:53 3 district.
08:51:53 4 Q. And did you calculate the mean
08:51:56 5 median for HB-2146?
08:51:57 6 A. Yes.
08:51:58 7 Q. Can you turn now to page 21 of
08:52:04 8 your rebuttal report?
08:52:05 9 A. Yes.
08:52:06 10 Q. Okay.
08:52:07 11 And what does Table 5 on page 21
08:52:10 12 reflect?
08:52:12 13 A. So it reflects the calculation
08:52:14 14 of these values for each of the plans,
08:52:18 15 as well as reporting how those plans
08:52:20 16 sit in relation to the same metric
08:52:21 17 calculated for each of the 50,000
08:52:24 18 simulated plans.
08:52:25 19 Q. And what did you calculate as
08:52:27 20 the mean median value for HB-2146?
08:52:33 21 A. Negative 0.015.
08:52:36 22 Q. And what does that number mean,
08:52:38 23 Doctor Barber?
08:52:39 24 A. It simply means that the
08:52:41 25 average district was about one and a

08:52:43 1 half percent more Democratic than the
08:52:48 2 median district.

08:52:49 3 Q. And how does that compare to
08:52:50 4 the other plans submitted to the
08:52:52 5 Court?

08:52:52 6 A. It's within the range. You
08:52:55 7 have plans that have higher scores or,
08:52:58 8 I'm sorry, lower scores, more negative
08:53:00 9 scores. You have plans that have less
08:53:02 10 negative scores. There are some plans
08:53:05 11 with positive scores, some with
08:53:07 12 negative scores. It fits what we've
08:53:09 13 been seeing a lot of today, which is a
08:53:12 14 lot of kind of oh, these plans are
08:53:13 15 kind of similar.

08:53:14 16 Q. And Doctor Barber, are you
08:53:16 17 aware that other experts in this case
08:53:18 18 have likewise calculated mean median
08:53:24 19 values for HB-2146 in other plans
08:53:24 20 submitted to the Court?

08:53:25 21 A. Yes.

08:53:25 22 Q. And are you aware that other
08:53:25 23 experts have calculated a different
08:53:29 24 mean median value for HB-2146?

08:53:31 25 A. Yes.

08:53:31 1 Q. Can you explain what might
08:53:32 2 account for that difference?

08:53:33 3 A. So it's simply a function of
08:53:35 4 each expert is using a slightly
08:53:37 5 different election or set of elections
08:53:40 6 to draw their comparisons.

08:53:41 7 Q. And if you use a different set
08:53:43 8 of elections, you're going to get a
08:53:45 9 different outcome?

08:53:46 10 A. Yes.

08:53:46 11 Q. And to your knowledge, did you
08:53:49 12 use the broadest spectrum of
08:53:52 13 elections?

08:53:54 14 A. I don't recall off the top of
08:53:56 15 my head what other experts used. But
08:53:58 16 I used the basically a decade's worth
08:54:02 17 of elections in my --- in all of my
08:54:05 18 results.

08:54:06 19 Q. Now, aside from comparing the
08:54:09 20 mean-median number for HB-2146 to the
08:54:12 21 rest of the submitted plans, did you
08:54:14 22 also compare how it, that metric looks
08:54:17 23 when you compare it to the simulated
08:54:19 24 plans?

08:54:20 25 A. Yes. So that's what that next

08:54:22 1 column reports where it's labeled
08:54:26 2 percentile. So that 85 says HB-2146
08:54:29 3 had a median mean value that was more,
08:54:34 4 that was higher, larger than
08:54:37 5 85 percent of the simulated plans. I
08:54:45 6 should clarify. When I say larger, I
08:54:47 7 mean less negative, closer to zero
08:54:51 8 than the results of the simulations.
08:54:52 9 Q. Would it be fair to say less
08:54:54 10 biased?
08:54:56 11 A. Yes. That's a better way of
08:54:57 12 saying it.
08:54:57 13 Q. And can you turn to Figure 5 on
08:55:00 14 page 29?
08:55:09 15 A. Of my original report?
08:55:13 16 Q. Yes. Sorry. Of your original
08:55:14 17 report.
08:55:15 18 A. I'm sorry. I had the wrong
08:55:16 19 report up.
08:55:17 20 Q. And what is reflected in Figure
08:55:19 21 5?
08:55:20 22 A. So Figure 5 simply shows the
08:55:22 23 results of what we were just talking
08:55:23 24 about. That histogram of gray is the
08:55:26 25 distribution of median mean results

08:55:32 1 for the simulations. And the black
08:55:34 2 line shows where the HB-2146 plans
08:55:35 3 falls. And so it's reported there
08:55:41 4 that it's in the 85th percentile.

08:55:43 5 Q. Okay.

08:55:43 6 Doctor Barber, you can go back
08:55:46 7 to page 21 of your rebuttal report,
08:55:46 8 please. And I think you mentioned
08:55:51 9 that you also looked and calculated an
08:55:51 10 efficiency gap for HB-2146?

08:55:54 11 Correct?

08:55:56 12 A. That's correct.

08:55:57 13 Q. And, again, just for brief
08:56:00 14 refresher, what is an efficiency gap
08:56:02 15 metric?

08:56:02 16 A. So at a very high level, the
08:56:03 17 efficiency gap is simply a measure how
08:56:04 18 do the votes cast translate into seats
08:56:08 19 earned by a particular party.

08:56:13 20 Q. And what do you report as the
08:56:14 21 efficiency gap for the house plan in
08:56:17 22 table five?

08:56:19 23 A. HB-2146?

08:56:20 24 Q. Yes.

08:56:22 25 A. Okay.

08:56:22 1 It has a value of negative
08:56:24 2 0.025.
08:56:29 3 Q. And again, what does that value
08:56:30 4 mean?
08:56:30 5 A. So it's basically again like a
08:56:33 6 negative --- a negative number is
08:56:34 7 indicating a bias in the direction of
08:56:37 8 Republicans. A positive is indicating
08:56:40 9 a bias in the direction of Democrats.
08:56:44 10 And you know, negative 0.025 is simply
08:56:49 11 saying that Republican, I'm sorry,
08:56:50 12 Democratic votes are slightly less
08:56:52 13 efficient at being translated into
08:56:55 14 seats than are Republican votes.
08:57:01 15 Q. And again, did you also compare
08:57:03 16 the efficiency gap scores to the other
08:57:05 17 maps that were submitted to HB-2146?
08:57:07 18 A. Yes.
08:57:07 19 Q. And how does it compare?
08:57:14 20 A. Again, it's within the range.
08:57:15 21 And so there are other plans that have
08:57:17 22 the same score. There are other plans
08:57:18 23 that have a positive score. So you
08:57:20 24 can see those there. And then the
08:57:23 25 House Democratic plan stands out as

08:57:27 1 having the largest score of the set.

08:57:33 2 Q. And again, are you aware that

08:57:34 3 other experts in this case have

08:57:36 4 calculated efficiency gap numbers for

08:57:38 5 HB-2146 that are different than what

08:57:41 6 you calculated?

08:57:42 7 A. Yes.

08:57:42 8 Q. And again, what accounts for

08:57:43 9 that difference?

08:57:44 10 A. So again, it's simply a

08:57:45 11 function of the particular elections

08:57:47 12 that are used to make that

08:57:52 13 calculation.

08:57:52 14 Q. Doctor Barber, what is a

08:57:57 15 uniform swing analysis?

08:57:59 16 A. A uniform swing analysis simply

08:58:02 17 says well, what would happen if we

08:58:03 18 shifted the results of a plan

08:58:06 19 uniformly by a particular amount. So

08:58:10 20 what if we made the plan more

08:58:12 21 Democratic by one percent, or what if

08:58:15 22 we made it less Democratic by one

08:58:17 23 percent. That's why it's called

08:58:21 24 uniform swing. What if we shifted it

08:58:23 25 up or down by a particular amount,

08:58:25 1 what would happen? You know, would
08:58:26 2 the number of seats change, so on and
08:58:28 3 so forth.

08:58:29 4 Q. And did you perform such a
08:58:32 5 uniform swing analysis on HB-2146?

08:58:35 6 A. Yes. So I should offer a
08:58:38 7 little more clarification on what's
08:58:39 8 going on. So you don't simply pick a
08:58:41 9 random number and shift a plan by
08:58:44 10 that. Well, you kind of do, but you
08:58:46 11 let the computer choose the random
08:58:48 12 number and you do it a bunch of times.
08:58:53 13 So I do this about 5,000 times and you
08:58:58 14 basically say pick a random number to
08:59:00 15 shift the plan up or down based on a
08:59:03 16 normal distribution that has a spread
08:59:06 17 that is roughly equal to the kind of
08:59:08 18 variation we see in elections in
08:59:10 19 Pennsylvania.

08:59:10 20 So the typical spread in these
08:59:13 21 elections we're looking at is about
08:59:15 22 three percentage points. And so I say
08:59:18 23 computer, pick a number from a normal
08:59:21 24 distribution and then add that or
08:59:27 25 subtract that to the plan, and

08:59:32 1 calculate the number of Democratic
08:59:34 2 leaning seats after you add that
08:59:35 3 number. Do that 5,000 times and then
08:59:37 4 take the average. And so this shows
08:59:39 5 the expected seats that are generated
08:59:41 6 from that, from that process.

08:59:43 7 Q. So if I could try to recap.
08:59:45 8 You're starting with actual elections.
08:59:47 9 Correct?

08:59:48 10 A. That's correct, yes.

08:59:48 11 Q. And you're essentially
08:59:50 12 simulating what might happen if the
08:59:50 13 election was a little bit different.

08:59:55 14 A. That's right, because we know
08:59:57 15 that over the next ten years, we know
08:59:58 16 that, you know, there are going to be
08:59:59 17 some years that are good for
09:00:01 18 Democrats. There are going to be some
09:00:02 19 years that are good for Republicans.
09:00:02 20 We know that, you know, it's going to
09:00:04 21 be more likely that it's going to be a
09:00:06 22 small shift than a large shift. There
09:00:07 23 might be a big, you know, six point
09:00:10 24 swing at some point in the next ten
09:00:11 25 years. But that's going to be less

09:00:13 1 likely than a one point swing or
09:00:16 2 something like that. And so that's
09:00:17 3 what this is doing is saying kind of
09:00:18 4 what do we expect the plan to do over
09:00:20 5 in the future as we see kind of shifts
09:00:24 6 in electoral tides going forward.

09:00:27 7 Q. And does table five also
09:00:29 8 reflect the results of your uniform
09:00:30 9 swing analysis for both HB-2146 and
09:00:34 10 the other plans submitted to the
09:00:35 11 Court?

09:00:36 12 A. Yes, that's a correct.

09:00:37 13 Q. And one clarifying question.
09:00:39 14 For all three of these metrics, you're
09:00:41 15 performing the same exact methodology,
09:00:43 16 the same analysis, using the same sets
09:00:45 17 of election data.

09:00:50 18 Correct?

09:00:50 19 A. Right. It's consistent across
09:00:52 20 all the plans and across the
09:00:52 21 simulations as well.

09:00:58 22 Q. So what do the results of your
09:00:58 23 uniform swing analysis show about the
09:00:59 24 partisan fairness of HB-2146 when
09:00:59 25 compared to the other plans submitted

09:01:01 1 to the Court?

09:01:01 2 A. So again, looking down that
09:01:02 3 column, you can see that there there's
09:01:04 4 a variety of results. Some of the
09:01:08 5 plans on average perform more
09:01:13 6 favorably for Democrats. Some of the
09:01:16 7 plans on average are going to perform
09:01:16 8 more favorably for Republicans.

09:01:18 9 That next column again says
09:01:19 10 well, where does that sit in relation
09:01:20 11 to this distribution of the simulated
09:01:25 12 maps. And so where does that expected
09:01:27 13 value sit in terms of the
09:01:30 14 distribution. And so that's what that
09:01:32 15 percentile column shows as well.

09:01:38 16 Q. Now, Doctor Barber, we've
09:01:43 17 talked about a lot of comparisons of
09:01:45 18 HB-2146 to all the other plans
09:01:45 19 submitted to the Court. You didn't
09:01:46 20 analyze any of the plans that were
09:01:48 21 proposed by the Democratic Caucus
09:01:52 22 during the legislative process, did
09:01:54 23 you?

09:01:54 24 A. No, I did not.

09:01:55 25 Q. And why not?

09:01:57 1 A. I'm not aware that there were
09:02:00 2 any.

09:02:02 3 Q. And Doctor Barber, I think we
09:02:04 4 talked at the beginning of your
09:02:06 5 testimony about the simulations, that
09:02:09 6 you did not factor race into the
09:02:12 7 simulations at all.

09:02:15 8 Correct?

09:02:15 9 A. That's correct. So all of the
09:02:16 10 results that we've been looking at,
09:02:17 11 the simulations are drawn without any
09:02:22 12 information about the distribution of
09:02:24 13 race.

09:02:25 14 Q. Now, did your failure to
09:02:27 15 consider race skew the partisan
09:02:27 16 outcomes of your simulations?

09:02:27 17 A. No, it did not. And that's the
09:02:29 18 reason that we have this additional
09:02:30 19 set of simulations to look at.

09:02:33 20 Q. Well, can you turn back to your
09:02:34 21 original report and look at Figure 8
09:02:39 22 on page 35, please?

09:02:41 23 A. Yes. I think it's page ---.

09:02:51 24 Q. And I think I misspoke. I
09:02:57 25 think it's Figure 8 on page 37.

09:02:57 1 A. Yes, I have it.

09:02:58 2 Q. And can you describe what is
09:02:59 3 being depicted in Figure 8?

09:03:01 4 A. Sure. So there's three
09:03:02 5 distributions here. The left
09:03:03 6 distribution is the one we've already
09:03:05 7 seen. So this is the 50,000
09:03:06 8 simulations that are drawn without any
09:03:10 9 information about partisanship or
09:03:14 10 race. The middle figure says well,
09:03:16 11 simply by virtue of the political
09:03:18 12 geography of the state, some of the
09:03:20 13 plans that are drawn even without
09:03:23 14 information about race are going to
09:03:25 15 generate a certain number of districts
09:03:27 16 that have these thresholds that we've
09:03:31 17 been --- some of the plans have been
09:03:32 18 discussing.

09:03:33 19 So that middle figure says
09:03:35 20 well, let's only consider the
09:03:36 21 simulations that contain at least one
09:03:39 22 majority black district and two
09:03:42 23 majority minority districts.

09:03:44 24 The third figure is the result
09:03:47 25 of a separate set of 5,000 simulated

09:03:52 1 maps that do have information about
09:03:54 2 race and explicitly tell the model
09:03:57 3 generate plans that contain three
09:03:59 4 minority opportunity districts. And
09:04:02 5 so, you can see that this allows us to
09:04:05 6 kind of look at well, what happens
09:04:07 7 when you do consider race in terms of
09:04:11 8 the simulations. Focusing on the
09:04:12 9 figure at the far right, we basically,
09:04:16 10 we generally see what I would say a
09:04:17 11 reduction in the variation. What you
09:04:21 12 see is that nine Democratic leaning
09:04:23 13 districts becomes the overwhelmingly
09:04:26 14 most common outcome in the simulated
09:04:28 15 plans. About 70 percent of the
09:04:34 16 simulations generate nine Democratic
09:04:37 17 leaning districts when you instruct
09:04:38 18 the model to take race into account.
09:04:38 19 Q. And again, using your part
09:04:38 20 index, how many Democratic leaning
09:04:38 21 seats do you predict HB-2146 to yield?
09:04:48 22 A. So that black line indicates
09:04:49 23 the HB-2146 proposal at nine
09:04:53 24 districts.
09:04:54 25 Q. So it would be consistent with

09:04:55 1 the most outcome in the simulation?

09:04:58 2 A. That's correct.

09:05:01 3 Q. Doctor Barber, just a few final
09:05:03 4 questions. In your opinion, does
09:05:05 5 HB-2146 adhere to traditional
09:05:07 6 redistricting criteria of equal
09:05:10 7 population, contiguity, compactness,
09:05:10 8 and minimizing political subdivision
09:05:10 9 splits?

09:05:18 10 A. Yes.

09:05:18 11 Q. And from your overall analysis,
09:05:20 12 can you draw some conclusions about
09:05:25 13 the partisan fairness of HB-2146?

09:05:26 14 A. Well, I think as we've looked
09:05:26 15 across a variety of these metrics,
09:05:30 16 that when we draw comparisons to a set
09:05:32 17 of districts that are drawn only using
09:05:34 18 the non-partisan criteria, we know
09:05:37 19 have not considered partisanship, the
09:05:42 20 HB-2146 sits squarely in that
09:05:46 21 distribution.

09:05:48 22 Q. In your opinion, is HB-2146 in
09:05:51 23 any way a gerrymander that favors
09:05:54 24 Republican voters over Democratic
09:05:55 25 voters?

09:05:57 1 A. No.

09:05:57 2 Q. Are you opining that HB-2146 is
09:05:58 3 the best plan?

09:05:59 4 A. I think that that is not for me
09:06:01 5 to decide. I think that is the
09:06:05 6 unenviable task of this Court.

09:06:05 7 ATTORNEY MORGAN:

09:06:07 8 I understand. Thank
09:06:08 9 you, Doctor Barber. No further
09:06:11 10 questions, Your Honor.

09:06:11 11 JUDGE MCCULLOUGH:

09:06:11 12 Okay. Thank you.

09:06:12 13 So we will proceed with
09:06:13 14 Cross Examination from Petitioners
09:06:13 15 Carter.

09:06:13 16 ---

09:06:13 17 CROSS EXAMINATION

09:07:01 18 ---

09:07:01 19 BY ATTORNEY GORDON:

09:07:01 20 Q. Good evening, Doctor Barber.

09:07:01 21 A. Hello.

09:07:05 22 Q. My name is Matthew Gordon. I
09:07:05 23 represent the Carter Petitioners in
09:07:06 24 this case. A few initial questions
09:07:08 25 for you. Are all the analyses that

09:07:10 1 you performed in connection with your
09:07:12 2 work on this case identified and
09:07:15 3 described in your two reports that you
09:07:17 4 submitted?

09:07:17 5 A. Yes.

09:07:19 6 Q. And those reports accurately
09:07:20 7 describe the methodology that you
09:07:25 8 deployed here?

09:07:25 9 A. Yes.

09:07:25 10 Q. And if I understand correctly,
09:07:27 11 the methodology is a simulated
09:07:28 12 redistricting analysis?

09:07:31 13 A. Yes, that's correct.

09:07:32 14 Q. And this is a different --- I'm
09:07:36 15 sorry. You testified that this was an
09:07:39 16 analysis that was performed by experts
09:07:42 17 in the LWV case, a similar type of
09:07:46 18 analysis?

09:07:46 19 A. It's similar. The particular
09:07:48 20 algorithms are different. Every
09:07:50 21 expert kind of has their own
09:07:53 22 particular method, but the overall
09:07:54 23 process is very similar.

09:07:56 24 Q. Sure. So you use a different
09:07:59 25 algorithm than the experts in the LWV

09:08:05 1 case.

09:08:05 2 Correct?

09:08:05 3 A. That's correct, yes.

09:08:06 4 Q. Have you used that algorithm
09:08:08 5 before?

09:08:09 6 A. I have, yes.

09:08:10 7 Q. How many times?

09:08:11 8 A. I have used it in analyzing the
09:08:13 9 Pennsylvania state legislative plan
09:08:16 10 for the House of Representatives, as
09:08:17 11 well as in the North Carolina State
09:08:22 12 House and State Senate.

09:08:22 13 Q. And is the North Carolina case
09:08:24 14 the one that you testified at trial in
09:08:26 15 on January 5th?

09:08:30 16 A. Yes, that's correct.

09:08:30 17 Q. And you testified at trial
09:08:31 18 there, I assume accurately, that your
09:08:34 19 academic work has not focused on
09:08:36 20 redistricting.

09:08:38 21 Correct?

09:08:38 22 A. So I think I --- yes. I think
09:08:39 23 I said in the testimony that I have
09:08:45 24 not published on these particular
09:08:46 25 topics, but that I teach about them in

09:08:51 1 my courses, and that I have extensive
09:08:53 2 amount of work in litigation on these
09:08:57 3 issues.

09:08:57 4 Q. But in terms of published
09:08:59 5 academic work, you haven't published
09:09:01 6 in the area of redistricting.

09:09:03 7 Correct?

09:09:03 8 A. That's correct.

09:09:04 9 Q. And you haven't published in
09:09:05 10 the area of partisan influence in the
09:09:05 11 redistricting process, have you?

09:09:13 12 A. That's correct.

09:09:13 13 Q. None of it involves simulated
09:09:17 14 redistricting analyses.

09:09:18 15 Correct?

09:09:19 16 A. That's correct. As I think I
09:09:20 17 said in North Carolina, I have
09:09:22 18 published work that uses algorithms
09:09:24 19 that are very similar in the, you
09:09:27 20 know, kind of the underlying method
09:09:29 21 that's being used. But with respect
09:09:30 22 to the particulars of the
09:09:34 23 redistricting algorithm, that's
09:09:35 24 correct.

09:09:35 25 Q. And you testified in North

09:09:37 1 Carolina just about three weeks ago
09:09:38 2 that before that case you had never
09:09:40 3 used that algorithm before.

09:09:42 4 Correct?

09:09:43 5 A. Before that?

09:09:45 6 Q. Before the North Carolina case?

09:09:48 7 A. Before North Carolina. That's
09:09:49 8 --- that's correct. It --- the
09:09:51 9 Pennsylvania and North Carolina kind
09:09:57 10 of overlap so I don't want to --- I
09:09:59 11 don't have my --- you know, the exact
09:09:59 12 dates but.

09:10:00 13 Q. Sure. I'm just asking about
09:10:02 14 your testimony in North Carolina?

09:10:06 15 A. Broadly? Yes, that's what I
09:10:06 16 said in North Carolina. Yes.

09:10:06 17 Q. And that was accurate?

09:10:08 18 A. Yes.

09:10:08 19 Q. And you also testified that
09:10:08 20 before the North Carolina case, you
09:10:09 21 had never used any algorithm to
09:10:12 22 generate simulated district maps.

09:10:17 23 Correct?

09:10:17 24 A. That's correct.

09:10:18 25 Q. You have testified in court

09:10:18 1 before though?

09:10:18 2 A. I have, yes.

09:10:18 3 Q. And on multiple occasions, the
09:10:21 4 Court has concluded or found that your
09:10:23 5 testimony should be given little
09:10:24 6 weight or no credit.

09:10:26 7 Correct?

09:10:29 8 A. I believe those are the words
09:10:29 9 of the Judge. I disagree with the
09:10:31 10 assessment, but those are the judge's
09:10:34 11 words.

09:10:34 12 Q. I'm sure you do. I'm just
09:10:36 13 asking if that's --- if that, if I
09:10:37 14 accurately described what the courts
09:10:39 15 have said about your testimony on
09:10:40 16 multiple occasions?

09:10:41 17 A. That's correct.

09:10:42 18 Q. In the Common Cause versus
09:10:48 19 Lewis case in North Carolina, do you
09:10:49 20 recall that case?

09:10:50 21 A. I do, yes.

09:10:51 22 Q. And for the Court's benefit,
09:10:52 23 this is 2019 Westlaw 4569584. In that
09:11:01 24 case, the Court went through a number
09:11:04 25 of what are called shortcomings in

09:11:09 1 your analysis and said in light of the
09:11:11 2 above shortcomings in Doctor Barber's
09:11:11 3 analysis, the Court gives little
09:11:13 4 weight to his testimony.

09:11:17 5 Do you recall that?

09:11:18 6 A. I do. It's --- it's I think
09:11:18 7 noteworthy that one of the ---.

09:11:18 8 Q. I just asked if you recalled
09:11:20 9 that.

09:11:20 10 A. I do recall that, yes.

09:11:21 11 Q. You answered the question,
09:11:22 12 thank you. In Jones v. DeSantis, do
09:11:26 13 you recall testifying in that case?

09:11:28 14 A. I do, yes.

09:11:29 15 Q. And for the Court's benefit,
09:11:31 16 that was reported at 462 F. Supp. 3d
09:11:36 17 1196. Do you recall that the Court
09:11:40 18 there in discussing your testimony
09:11:42 19 said I do not credit the testimony?
09:11:44 20 Do you recall that?

09:11:45 21 A. I believe that, yes, those are
09:11:48 22 the judge's words.

09:11:48 23 Q. And do you recall that the
09:11:51 24 Court said one in search of a textbook
09:11:53 25 dismantling of unfounded expert

09:11:55 1 testimony, would look long and hard to
09:12:00 2 find a better example than the cross
09:12:01 3 examination of you.

09:12:01 4 Do you recall that?

09:12:02 5 A. I, yes. I do.

09:12:02 6 Q. Let's talk a little bit about
09:12:04 7 the methodology that you deployed
09:12:07 8 here. On page 11 of your initial
09:12:19 9 report, you said that you conducted a
09:12:27 10 simulated districting analyses to,
09:12:29 11 quote, gauge the degree to which the
09:12:32 12 HB-2146 plan is a partisan
09:12:36 13 gerrymandered.

09:12:37 14 Do you agree that that's the
09:12:39 15 question you set out to answer? See
09:12:40 16 at the top of page 11 of your report,
09:12:43 17 first sentence?

09:12:44 18 A. I see that, yes.

09:12:46 19 Q. And that's the question that
09:12:47 20 you set out to answer.

09:12:49 21 Correct?

09:12:49 22 A. It's certainly not the only
09:12:51 23 question that I set out to answer, but
09:12:53 24 it's one of the objectives of the
09:12:55 25 report.

09:13:04 1 Q. Now in comparing --- in
09:13:05 2 conducting a simulated analysis as you
09:13:07 3 did here, as you said you have to have
09:13:09 4 a control set.

09:13:10 5 Correct?

09:13:12 6 A. That's correct.

09:13:12 7 Q. And your control set here are
09:13:16 8 the 50,000 simulated maps you
09:13:18 9 generated.

09:13:18 10 Correct?

09:13:19 11 A. That's correct, yes.

09:13:20 12 Q. And for, to have a valid
09:13:22 13 comparison against the control set you
09:13:25 14 need to be able to do an apples to
09:13:27 15 apples comparison.

09:13:28 16 Correct?

09:13:29 17 A. Correct.

09:13:29 18 Q. So the control set needs to be
09:13:33 19 --- can creating the same types of
09:13:37 20 maps or created under the same
09:13:38 21 conditions as the set, the plan that
09:13:39 22 you want to compare against the
09:13:41 23 control set.

09:13:42 24 Correct?

09:13:42 25 A. Yes, that's correct.

09:13:43 1 Q. But that's not what you did
09:13:48 2 here. They were not the same
09:13:49 3 conditions, were they?
09:13:51 4 A. I'm not sure exactly what you
09:13:52 5 mean.
09:13:52 6 Q. Okay.
09:13:53 7 Let's talk about that. You --- the
09:13:56 8 simulated maps you created were
09:13:59 9 allowed to vary from equal population?
09:14:00 10 Correct?
09:14:02 11 A. Yes, that's correct. I ---.
09:14:03 12 Q. By up to 3,800 people per map.
09:14:05 13 Correct?
09:14:07 14 A. Yes. I noted that it's a one
09:14:09 15 half of one percent variation.
09:14:11 16 Q. Okay.
09:14:11 17 But you would agree with me that a
09:14:13 18 deviation of 3,800 people is not equal
09:14:21 19 population?
09:14:21 20 A. Well yes, of course. That's
09:14:22 21 ---.
09:14:22 22 Q. So the maps that you created,
09:14:25 23 some of them, many of them would have
09:14:27 24 had deviations that rendered them not
09:14:31 25 of equal population.

09:14:32 1 Correct?

09:14:33 2 A. I note that in my report that
09:14:35 3 ---.

09:14:35 4 Q. It's a yes or no.

09:14:38 5 Is that correct?

09:14:41 6 A. That is correct, yes.

09:14:42 7 Q. That is correct. And so those
09:14:42 8 maps, many of those maps would have
09:14:45 9 been unconstitutional under your
09:14:50 10 understanding of --- of the
09:14:50 11 requirement for equal --- equal
09:14:52 12 population.

09:14:52 13 Would you agree with that?

09:14:53 14 A. I --- I think I explained that,
09:14:54 15 how that is the case in my report and
09:14:56 16 the reasons for doing that and.

09:14:57 17 Q. Sure. So just, I'm sorry. I'm
09:14:59 18 just limited on time. You would agree
09:15:01 19 with me that many of the maps that
09:15:04 20 were created in your simulation would
09:15:06 21 be unconstitutional because they would
09:15:08 22 violate equal population?

09:15:10 23 A. Yes. They're not intended to,
09:15:12 24 there's --- no particular map that's
09:15:14 25 intended to be a proposed map that the

09:15:18 1 Court should enact.

09:15:20 2 Q. Sure. And none of those

09:15:24 3 simulated maps have had that variation

09:15:25 4 would not have been similar to HB-2146

09:15:27 5 that did not have such a --- such a

09:15:28 6 variation.

09:15:28 7 Correct?

09:15:29 8 A. Similar in population?

09:15:31 9 Q. Correct. They're different.

09:15:33 10 A. That's correct.

09:15:33 11 Q. Now you also said that the

09:15:35 12 simulation maps did not split any

09:15:37 13 precincts or municipalities except

09:15:37 14 Philadelphia.

09:15:37 15 Correct?

09:15:46 16 A. That's correct.

09:15:47 17 Q. And you made a conscious

09:15:49 18 decision to choose to not split any

09:15:50 19 municipalities except Philadelphia and

09:15:52 20 give up equal population?

09:15:52 21 Correct?

09:15:54 22 A. That's correct. The algorithm

09:15:56 23 works much better when that decision

09:15:58 24 is --- is made.

09:16:01 25 Q. So --- and in fact HB-2146 did

09:16:04 1 split municipalities.
09:16:06 2 Correct?
09:16:07 3 A. Yes.
09:16:07 4 Q. As did every other map that's
09:16:11 5 up for consideration here?
09:16:12 6 A. Yes, that's --- that's correct.
09:16:12 7 Q. So fair to say none of your
09:16:14 8 50,000 maps are going to be comparable
09:16:17 9 to any of the maps up for
09:16:19 10 consideration here including HB-2146
09:16:22 11 on the municipalities split metric?
09:16:25 12 A. So I note that in the report
09:16:28 13 that ---.
09:16:28 14 Q. So the answer's yes?
09:16:32 15 A. As you need to adjust
09:16:34 16 population, you would then have to
09:16:34 17 split a certain number of
09:16:37 18 municipalities.
09:16:37 19 Q. You talked on Direct
09:16:39 20 Examination about outliers.
09:16:40 21 Do you recall that?
09:16:41 22 A. Yes.
09:16:41 23 Q. But in your report, and this is
09:16:42 24 at page 16 of your rebuttal report,
09:16:45 25 you said didn't you that there is no

09:16:48 1 universally agreed definition of
09:16:51 2 statistical outliers in this context.

09:16:54 3 Correct?

09:16:56 4 A. That's correct. There's no
09:16:57 5 bright.

09:16:57 6 Q. So when you say outliers,
09:16:59 7 you're not talking about outliers from
09:16:59 8 a statistical prospective.

09:17:03 9 Correct?

09:17:03 10 A. One could apply a statistics
09:17:06 11 approach and --- and look at a quote
09:17:09 12 unquote a statistically significant
09:17:10 13 outlier. And the ---.

09:17:11 14 Q. And I'm not --- I'm sorry. I'm
09:17:18 15 not asking if anybody else could do
09:17:19 16 that. I'm asking if you ---.

09:17:19 17 ATTORNEY MORGAN:

09:17:19 18 Your Honor, he needs to
09:17:20 19 let the witness speak.

09:17:20 20 JUDGE MCCULLOUGH:

21 Yeah. Excuse me,
22 counsel.

23 ATTORNEY GORDON:

24 Sure.

25 JUDGE MCCULLOUGH:

1 There was an objection.
09:17:20 2 He --- he was trying to answer the
09:17:21 3 question that you asked. So I think
09:17:22 4 you can, just let him answer that
09:17:23 5 question.

09:17:25 6 ATTORNEY GORDON:

09:17:25 7 Sure.

09:17:26 8 JUDGE MCCULLOUGH:

09:17:27 9 If you think he's going
09:17:28 10 onto another topic, go ahead and move
09:17:30 11 to your next question.

09:17:32 12 ATTORNEY GORDON:

09:17:33 13 Sure.

09:17:33 14 JUDGE MCCULLOUGH:

09:17:33 15 Just I --- I think he
09:17:33 16 was ---.

09:17:33 17 BY ATTORNEY GORDON:

09:17:34 18 Q. Go ahead.

09:17:34 19 A. So you could've --- you could
09:17:36 20 use a statistically significant, a
09:17:37 21 measure of statistical significance.
09:17:40 22 If you were to use that, then by that
09:17:45 23 same definitions those would be
09:17:47 24 outliers. But it's not universally
09:17:49 25 agreed upon that that particular

09:17:51 1 method is appropriate in analyzing
09:17:53 2 these plans.
09:17:54 3 Q. And so, I wasn't asking if you
09:17:56 4 could do that. I was asking if --- if
09:17:57 5 you were, when you use the word
09:17:59 6 outlier, you're not using that in a
09:18:06 7 statistically significant context.

09:18:06 8 Correct?

09:18:07 9 A. I am not using it in the
09:18:07 10 context of what scientists would refer
09:18:09 11 to as statistically significant.
09:18:10 12 That's a separate topic that applies
09:18:16 13 in a different area. It does not
09:18:19 14 apply to this particular analysis.

09:18:20 15 Q. So your use of the term outlier
09:18:23 16 is your subjective determination that
09:18:24 17 something is an outlier rather than an
09:18:25 18 objective determination based on a
09:18:27 19 statistical analysis.

09:18:29 20 Correct?

09:18:29 21 A. It's subjective. However, I
09:18:34 22 pointed out that it's you know, 98,
09:18:37 23 99, 100 percent of plans being less
09:18:38 24 Democratic. I don't imagine that by
09:18:42 25 any measure that someone would say

09:18:45 1 that that was not an outlier.

09:18:46 2 Q. If we go to the mean-median

09:18:49 3 analysis that you discussed at page 21

09:18:51 4 of your rebuttal. This is Table 5.

09:19:02 5 Do you recall testifying about this on

09:19:04 6 Direct Examination, Doctor barber?

09:19:06 7 A. Yes.

09:19:06 8 Q. And do you recall that, if I

09:19:07 9 understand we're just going to look at

09:19:09 10 the mean-median value in the first

09:19:11 11 column. And I believe you testified

09:19:13 12 that closer to zero indicates less

09:19:16 13 bias.

09:19:16 14 Correct?

09:19:17 15 A. Yes, that's correct.

09:19:18 16 Q. Further from zero indicates

09:19:20 17 more bias then.

09:19:21 18 Correct?

09:19:22 19 A. Yes, that's correct.

09:19:23 20 Q. And here negative numbers

09:19:24 21 further from zero would be more biased

09:19:26 22 in favor of Republicans and positive

09:19:29 23 numbers would be more bias in favor of

09:19:31 24 Democrats.

09:19:32 25 Correct?

09:19:33 1 A. That's correct.

09:19:33 2 Q. And counsel asked you how did
09:19:35 3 HB-2146 perform on this mean-median
09:19:38 4 analysis.

09:19:39 5 Do you recall that?

09:19:40 6 A. I do, yes.

09:19:42 7 Q. And I believe you said well, it
09:19:43 8 was in the mix. There were, and I'm
09:19:45 9 paraphrasing, but you said that there
09:19:47 10 were some that were higher and some
09:19:49 11 that were lower than HB-2146.

09:19:51 12 Correct?

09:19:51 13 A. Yes.

09:19:52 14 Q. In fact, there are only two
09:19:53 15 that are lower than HB-2146.

09:19:57 16 Correct?

09:19:59 17 A. That is correct.

09:20:00 18 Q. And those are the two
09:20:01 19 Reschenthaler plans.

09:20:03 20 Do you agree with me?

09:20:04 21 A. Yes.

09:20:04 22 Q. Those are the only ones that
09:20:07 23 are further from zero than HB-2146?

09:20:12 24 A. Yes. I think I said some, and
09:20:14 25 two is some.

09:20:15 1 Q. Sure. And we're just
09:20:16 2 identifying which ones they were?

09:20:19 3 A. Okay.

09:20:20 4 Q. So every other plan other than
09:20:21 5 the Reschenthaler maps is closer to
09:20:23 6 zero than HB-2146.

09:20:26 7 Correct?

09:20:27 8 A. That's correct.

09:20:27 9 Q. Under that metric, every other
09:20:29 10 plan, other than the Reschenthaler
09:20:32 11 maps, is less biased than HB-2146.
09:20:35 12 Under your definition of --- of how
09:20:38 13 this works.

09:20:41 14 Correct?

09:20:41 15 A. Of the four --- I think there's
09:20:44 16 14 up there. But with that second
09:20:46 17 column also then says ---.

09:20:47 18 Q. I'm not asking about the second
09:20:49 19 column. I'm just asking about the
09:20:50 20 first column. On the mean-median
09:20:55 21 value that you did here, correct me if
09:20:57 22 I'm wrong, but every map other than
09:20:59 23 the two Reschenthaler maps is closer
09:21:02 24 to zero and less biased than HB-2146.

09:21:07 25 Correct?

09:21:07 1 A. I'm sorry, I think the
09:21:08 2 confusion is when you say every other
09:21:10 3 map. Because that next column says
09:21:12 4 well we also need to consider the
09:21:13 5 simulated maps, so ---.

09:21:14 6 Q. Sorry. Let me --- let me
09:21:16 7 correct my, that's --- that's fair.
09:21:17 8 Every other map that is presented in
09:21:19 9 this litigation, not considering the
09:21:21 10 simulated maps that were created with
09:21:27 11 unequal population and no municipality
09:21:29 12 splits.

09:21:30 13 Are we on the same page?

09:21:31 14 A. Yes.

09:21:31 15 Q. Okay.

09:21:32 16 Every other map that was
09:21:32 17 submitted in this litigation, other
09:21:35 18 than the two Reschenthaler maps under
09:21:37 19 your metric is less biased than
09:21:39 20 HB-2146.

09:21:41 21 Correct?

09:21:42 22 A. That's correct.

09:21:44 23 ATTORNEY GORDON:
09:21:44 24 No further questions.

09:21:45 25 Thank you.

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JUDGE MCCULLOUGH:
Okay. Thank you,
Counsel.
And now counsel for Mr.
Gressman. So much to do.
ATTORNEY HIRSCH:
Sorry to bring so much
stuff up here with me.

CROSS EXAMINATION

BY ATTORNEY HIRSCH:
Q. Good evening, Doctor Barber.
A. Hello.
ATTORNEY HIRSCH:
And thank you, Your
Honor for staying so late and being so
diligent. It's much appreciated.
JUDGE MCCULLOUGH:
Thank you. Thank you.
BY ATTORNEY HIRSCH:
Q. Doctor Barber, there's a lot of
tables in your reports.
Right?
A. Yes.

09:22:41 1 Q. And this is a table. Sometimes
09:22:44 2 words have two meanings, and I feel
09:22:48 3 like we're using today in this
09:22:48 4 courtroom the word bias to mean two
09:22:51 5 wildly different things.

09:22:52 6 What is your definition of
09:22:54 7 bias? You use that word a lot in your
09:22:56 8 reports. Tell us what you mean.

09:22:59 9 A. I --- I think we need to know
09:23:01 10 the context because I think that
09:23:03 11 you're absolutely right. That bias
09:23:05 12 can mean different things in different
09:23:07 13 contexts. And so, I --- I think
09:23:09 14 you're exactly correct, but it's very
09:23:12 15 context dependant.

09:23:14 16 Q. When you're comparing maps to
09:23:15 17 your set of simulated maps and saying
09:23:17 18 that some are biased, in that context,
09:23:20 19 what do you mean?

09:23:21 20 A. So in that context what I mean
09:23:23 21 is that the plan that we're --- and
09:23:28 22 analyzing, the particular proposal is
09:23:31 23 not in line with the middle range of
09:23:36 24 --- of the simulations. It sits at
09:23:39 25 the edge. It's an outlier, and ---

09:23:40 1 and that's what I mean when I'm
09:23:42 2 talking about bias with regards to
09:23:44 3 comparisons to the set of simulations
09:23:50 4 that have been drawn.

09:23:50 5 Q. And you'd agree with me that at
09:23:51 6 times, that definition of bias can be
09:23:54 7 useful in routing out an intentional
09:23:57 8 partisan gerrymander?

09:23:59 9 A. Yes, it can certainly be
09:24:03 10 helpful. It's --- and that's in fact
09:24:05 11 why it's been used in a variety of
09:24:06 12 litigation cases.

09:24:07 13 Q. And --- and I'd imagine you'd
09:24:08 14 also agree with me that voters can be
09:24:10 15 harmed by an unintentional partisan
09:24:15 16 gerrymander.

09:24:15 17 Right?

09:24:16 18 A. I think that's true, yes.

09:24:17 19 Q. And would you also agree with
09:24:19 20 me that the way they're harmed is that
09:24:21 21 depending on their political
09:24:23 22 viewpoints or their partisan
09:24:24 23 affiliation, when they cast that
09:24:27 24 ballot, some people's vote is more
09:24:30 25 powerful than others. That's the

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harm.

Right?

A. I --- I would only amend that statement slightly and say it's perhaps less efficient in how their vote is translated to representation.

Q. Fair enough. So perhaps 3,000,000 people vote Democratic and 3,000,000 vote Republican, and for some reason that doesn't result in an even split of seats. It results in an uneven split. That would be the harm to the voters whose 3,000,000 votes got them less than half the seats.

Right?

A. Yes, I think that's correct.

Q. So now --- now I want to ask you, I think about the old saw about, I can't remember the exact number. But if you put a million monkeys in front of typewriters, sooner or later someone's going to --- someone's going to bang out the Lord's prayer. Let's forget about intentional partisan gerrymandering and just think about

09:25:30 1 the harm to the voters.

09:25:30 2 And let's say those monkeys

09:25:30 3 banged out two redistricting plans.

09:25:35 4 And let's say they're identical for

09:25:37 5 all practical purposes on every metric

09:25:39 6 of traditional redistricting criteria.

09:25:40 7 But one of them looks a whole lot like

09:25:44 8 the median plan, the middle plan, the

09:25:48 9 average plan in your simulation. So

09:25:51 10 it's completely unbiased in that first

09:25:54 11 sense, but it's very biased in the

09:25:56 12 second sense in that it'll result in

09:26:00 13 one party's voters getting a lot fewer

09:26:03 14 seats out of their votes than the

09:26:05 15 other because they're not getting that

09:26:07 16 efficient translation you spoke of.

09:26:09 17 And the other monkey does the

09:26:11 18 opposite. They get rid of the bias

09:26:15 19 that harms the voter, so the voters

09:26:17 20 are treated equally but they've

09:26:19 21 created an outlier compared to your

09:26:21 22 simulated maps.

09:26:25 23 What is your instruction to the

09:26:28 24 Court about which of those two maps

09:26:30 25 should be chosen if those are the only

09:26:32 1 two options?

09:26:33 2 A. So I actually think I addressed
09:26:34 3 this at the beginning of my report
09:26:36 4 when I talk about what does it mean
09:26:39 5 when we see a plan that's not in line
09:26:42 6 with the simulations? And my intent
09:26:45 7 is not to say that that immediately
09:26:51 8 impugns the intentions or the dignity
09:26:54 9 of the map drawer. It simply says,
09:26:59 10 well we have this set. We --- we have
09:27:00 11 this set of simulated plans, and we
09:27:01 12 know the criteria with absolute
09:27:03 13 certainty as to how they were drawn.
09:27:05 14 We have this other plan that we don't
09:27:08 15 know with absolute certainty the
09:27:09 16 criteria that were used to draw the
09:27:11 17 plan.

09:27:12 18 If that plan is not in
09:27:15 19 agreement with the simulations, it
09:27:19 20 strongly suggests that some other
09:27:21 21 criteria were used to draw that plan.
09:27:23 22 What that other criteria are requires
09:27:26 23 additional analysis, but that's what
09:27:32 24 I'm --- that's what I'm saying.

09:27:33 25 Q. But --- but I think you're

09:27:34 1 fighting with a hypothetical. I'm
09:27:36 2 asking you if there's no difference in
09:27:38 3 the intent of the line drawer and
09:27:39 4 there's no difference in the respect
09:27:41 5 for traditional districting
09:27:41 6 principles. And the only difference
09:27:45 7 is one map looks like a random,
09:27:46 8 average map but really hurts half of
09:27:49 9 the voters in the state. And the
09:27:50 10 other treats all voters equally, but
09:27:53 11 is not at all random. It's an
09:27:55 12 outlier.

09:27:56 13 It's a simple question. What
09:27:58 14 is your understanding of what the
09:28:00 15 Judge should do in that situation?
09:28:01 16 Because that may be exactly the
09:28:04 17 situation the Judge is confronted with
09:28:07 18 in this case. Do you have an opinion
09:28:08 19 on that?

09:28:09 20 A. So you're saying holding all
09:28:11 21 other factors equal, and you have the
09:28:14 22 choice between these two plans, then I
09:28:17 23 think you could pick the one that was
09:28:19 24 less biased. But I think we're making
09:28:23 25 ---.

09:28:23 1 Q. Less bias in the sense of being
09:28:25 2 fair and equal to all voters?

09:28:28 3 A. Sure.

09:28:31 4 Q. I think when you were applying
09:28:33 5 to Princeton University for graduate
09:28:35 6 school I imagine you took the GRE.

09:28:38 7 Right?

09:28:39 8 A. I did, yes.

09:28:40 9 Q. And I imagine you didn't sit
09:28:42 10 there between the test date and the
09:28:45 11 date when you got your results just
09:28:46 12 saying I wish I got a median score.
09:28:49 13 You wanted a good score.

09:28:49 14 Right?

09:28:52 15 A. Well.

09:28:52 16 Q. You got into Princeton?

09:28:53 17 A. I --- I took the GRE twice
09:28:57 18 partly for that reason.

09:28:58 19 Q. There you go. Let me ask you
09:29:05 20 about your index that you use to
09:29:05 21 measure partisanship of districts. If
09:29:10 22 I understand correctly, you're taking
09:29:10 23 all the votes cast in these 17
09:29:14 24 statewide elections and putting them
09:29:15 25 in a big pool, and then looking at the

09:29:16 1 Democratic fraction and the Republican
09:29:19 2 fraction.

09:29:20 3 Is that right?

09:29:23 4 A. Yes, that's correct.

09:29:23 5 Q. You're not taking each of the
09:29:23 6 17 elections, figuring out the
09:29:24 7 Democratic and Republican results and
09:29:24 8 then averaging them, because that
09:29:26 9 would weight each election equally,
09:29:30 10 but it wouldn't weigh each vote
09:29:35 11 differently?

09:29:36 12 A. That --- that's exactly the
09:29:37 13 difference.

09:29:37 14 Q. And you mentioned earlier that
09:29:40 15 we should be reluctant to think that
09:29:48 16 older elections will predict future
09:29:48 17 elections. You also mention that you
09:29:50 18 only use elections from the last
09:29:51 19 decade. So there's a principle there
09:29:53 20 that in terms of thinking about how
09:29:56 21 this map would perform in the future,
09:29:57 22 all things being equal newer elections
09:30:05 23 are more probative than older
09:30:05 24 elections.

09:30:05 25 Correct?

09:30:05 1 A. All things being equal that I
09:30:06 2 think is correct. But I think that
09:30:09 3 all things equal is often not the
09:30:12 4 case.

09:30:12 5 Q. And it --- sure, of course. Is
09:30:14 6 it correct that of your 17 elections,
09:30:18 7 five of them are from 2012?

09:30:21 8 A. Yes, I believe that's the case.

09:30:23 9 Q. And is it correct that the
09:30:25 10 redistricting plan the Court will
09:30:26 11 adopt will be in place for three
09:30:29 12 midterm elections, 2022, 2026 and
09:30:34 13 2030?

09:30:35 14 A. The midterm races would occur
09:30:40 15 in those years, yes. That's correct.

09:30:42 16 Q. And it'll be in effect for only
09:30:44 17 two Presidential Elections, 2024 and
09:30:46 18 2028?

09:30:48 19 A. I, yes. That is correct.

09:30:49 20 Q. And I assume you know that
09:30:50 21 turnout is dramatically higher in
09:30:55 22 Presidential Elections than in midterm
09:30:58 23 elections?

09:30:59 24 A. Yes, that's the case.

09:31:01 25 Q. And is it correct that you have

09:31:01 1 14 Presidential Election year results
09:31:02 2 and three midterm elections in your
09:31:05 3 mix?

09:31:05 4 A. That's correct. They're not
09:31:06 5 --- sorry.

09:31:06 6 Q. And by count --- and by
09:31:07 7 counting each of the elections, not
09:31:10 8 each of the elections equally but each
09:31:13 9 vote equally, you are actually
09:31:15 10 weighting the Presidential Elections
09:31:18 11 more heavily even than that 14 to 3
09:31:21 12 split would suggest because there are
09:31:23 13 so many more votes cast in 2012, 2016
09:31:26 14 and 2020 than in 2014 and 2018 which
09:31:29 15 were midterm elections.

09:31:29 16 Right?

09:31:31 17 A. There are more votes cast.
09:31:33 18 There are other races that occur at
09:31:40 19 the same time. And so, it's not the
09:31:40 20 case that the Presidential Election is
09:31:41 21 being overrepresented because at the
09:31:43 22 same time ---.

09:31:43 23 Q. Not the --- not the
09:31:44 24 Presidential Election. I said the
09:31:47 25 presidential year.

09:31:47 1 ATTORNEY MORGAN:

09:31:47 2 Objection, Your Honor.

09:31:48 3 I would appreciate counsel letting the

09:31:49 4 witness finish his answer.

09:31:49 5 ATTORNEY HIRSCH:

09:31:53 6 Please, I apologize.

09:31:54 7 JUDGE MCCULLOUGH:

09:31:54 8

09:31:54 9 I think he was trying to

09:31:55 10 finish the end of his sentence, if you

09:31:55 11 could.

09:31:55 12 ATTORNEY HIRSCH:

09:31:58 13 I apologize.

09:31:58 14 THE WITNESS:

09:31:58 15 So because there are

09:31:59 16 other races that occur in the

09:32:01 17 Presidential Election years, those

09:32:01 18 races are contributing to the index as

09:32:05 19 well. It's not the case that the,

09:32:05 20 only the Presidential Election is used

09:32:07 21 in those years.

09:32:10 22 BY ATTORNEY HIRSCH:

09:32:10 23 Q. I may have misspoken, but I

09:32:12 24 thought I said Presidential Election

09:32:14 25 year elections. So are you aware of

09:32:16 1 the fact that the row offices in
09:32:17 2 Presidential years have higher turn
09:32:20 3 out than the gubernatorial election in
09:32:28 4 midterm years?

09:32:28 5 A. Yes, I am aware of that.

09:32:29 6 Q. I want to ask you a little
09:32:31 7 about your 50,000 simulations. I'll
09:32:34 8 try not to be repetitive with the
09:32:36 9 prior counsel.

09:32:40 10 Did you consider doing a
09:32:41 11 simulation where you did not require
09:32:43 12 the districts to be contiguous?

09:32:46 13 A. No.

09:32:47 14 Q. Why not?

09:32:51 15 A. My initial response would be I
09:32:53 16 --- I don't even think that the model
09:32:56 17 would be capable of doing that.

09:32:58 18 Q. Well, sure. It could just draw
09:33:00 19 random BTDs from around the state and
09:33:05 20 combine them into 17 districts.

09:33:11 21 Why not?

09:33:12 22 A. You would have to write a
09:33:12 23 different algorithm to do that.

09:33:12 24 Q. It'd be easier. You wouldn't
09:33:12 25 even have to keep track of contiguity.

09:33:13 1 Would it result in the same
09:33:14 2 distribution of partisan outcomes if
09:33:16 3 you did it that way?
09:33:17 4 A. Of course not.
09:33:18 5 Q. What if you said we don't care
09:33:20 6 at all about population equality? We
09:33:23 7 could have 10,000,000 in one districts
09:33:25 8 and 100 in another, that's fine.
09:33:27 9 Would that result in a different
09:33:29 10 distribution of partisan outcomes?
09:33:31 11 A. That's exactly the reason why I
09:33:33 12 don't allow the model to do that.
09:33:35 13 Q. Exactly.
09:33:35 14 A. And I set that half of percent
09:33:40 15 criteria.
09:33:40 16 Q. Did you control in your
09:33:47 17 algorithm for the constitutional
09:33:50 18 requirement of keeping wards whole?
09:33:52 19 A. I did not have --- that is not
09:33:55 20 an input in the model.
09:33:55 21 Q. And I assume that too could
09:33:57 22 affect the distribution of partisan
09:33:58 23 outcomes?
09:33:58 24 A. It's certainly possible that it
09:34:00 25 could.

09:34:00 1 Q. Did you control for the number
09:34:02 2 of incumbent pairings that happen in
09:34:10 3 each plan in your simulated 50,000
09:34:10 4 maps?

09:34:11 5 A. I did not. Because as I said,
09:34:12 6 I was sticking to those initial
09:34:14 7 redistricting criteria.

09:34:17 8 Q. Well some of them, but you
09:34:17 9 already said you weren't sticking to
09:34:19 10 wards even though they're in the
09:34:20 11 constitution.

09:34:21 12 Correct?

09:34:21 13 A. With regard to wards, yes.
09:34:25 14 That's correct.

09:34:26 15 Q. As to incumbent pairings, after
09:34:28 16 the fact did you check just as you did
09:34:30 17 for partisanship? Did you check to
09:34:31 18 see how many pairings there were in
09:34:32 19 each plan?

09:34:33 20 A. No, I did not.

09:34:34 21 Q. So you can't say sitting here
09:34:36 22 today that a majority of those plans
09:34:38 23 don't have five, six, seven pairings?
09:34:41 24 You have no idea?

09:34:42 25 A. That's correct.

09:34:44 1 Q. And did you check after the
09:34:45 2 fact to see if every plan had two or
09:34:51 3 three majority/minority voting age
09:34:52 4 population districts as does every
09:34:54 5 plan submitted to this Court?

09:34:58 6 A. So I have the analysis that we
09:35:00 7 looked at that says let's consider the
09:35:04 8 districts that meet that criteria, and
09:35:07 9 then the second set of simulations
09:35:09 10 that enforce that criteria of having a
09:35:14 11 particular threshold of majority
09:35:17 12 opportunity districts.

09:35:18 13 Q. I --- I asked specifically
09:35:19 14 about majority/minority voting age
09:35:21 15 population districts. Whether there
09:35:23 16 were two or three of them in all of
09:35:25 17 your 50,000 maps. The answer to that
09:35:29 18 is you don't know or no?

09:35:34 19 A. On --- on the 50,000 maps?

09:35:36 20 Q. Yes.

09:35:37 21 A. It's, I don't know off the top
09:35:38 22 of my head.

09:35:43 23 Q. You reported the median for
09:35:46 24 your maps and you said the median
25 compactness figure for the mean

1 Polsby-Popper score was .28.

2 Correct?

3 A. The ---?

4 Q. In your simulated 50,000 maps.

09:35:59

5 A. In the --- I'm sorry, yes. In

09:36:00

6 the --- in the simulations, yes.

09:36:00

7 That's correct.

09:36:01

8 Q. And are you aware that every

09:36:03

9 single map submitted to this Court

09:36:04

10 does better than that?

09:36:08

11 A. Yes.

09:36:08

12 ATTORNEY HIRSCH:

09:36:10

13 No further questions.

09:36:11

14 JUDGE MCCULLOUGH:

09:36:11

15 Thank you, Counsel. Mr.

09:36:34

16 Wiygul, you can come over.

09:36:34

17 ATTORNEY WIYGUL:

09:36:35

18 Thank you, Your Honor.

09:36:35

19 ---

09:36:35

20 CROSS EXAMINATION

09:36:36

21 ---

09:36:36

22 BY ATTORNEY WIYGUL:

09:36:36

23 Q. Good evening, Doctor Barber.

09:36:36

24 A. Hello.

09:36:37

25 Q. I'm --- my name is Robert

09:36:37 1 Wiygul. I am counsel for the Governor
09:36:38 2 in this action. I want to ask you
09:36:39 3 first about your ensemble analysis
09:36:42 4 here. I believe you call it
09:36:44 5 simulations. First in your
09:36:46 6 professional opinion, are Markov Chain
09:36:53 7 techniques the leading methods for
09:36:53 8 generating map samples?

09:36:56 9 A. I would say --- I would say
09:36:56 10 that's the case. There's a number of
09:36:58 11 different algorithms that people use.
09:37:07 12 Many of them use the --- the MCMC
09:37:08 13 method.

09:37:08 14 Q. Did you use an MCMC method?

09:37:12 15 A. So the model is based on MCMC
09:37:15 16 algorithm.

09:37:15 17 Q. Okay.

09:37:16 18 What --- what actually did you use?

09:37:17 19 A. So I --- I explained that the
09:37:18 20 model is from --- the model is written
09:37:23 21 by a researcher at --- a political
09:37:25 22 scientist at Harvard University.

09:37:30 23 Q. And I mean, what's the main
09:37:32 24 idea behind this approach?

09:37:33 25 A. So the main idea is that the

09:37:35 1 model takes these --- the geography of
09:37:40 2 the state and it calculates what's
09:37:45 3 called an adjacency graph. And so, it
09:37:45 4 looks at all the different precincts
09:37:45 5 that are connected to one another.
09:37:51 6 And then it divides the State into
09:37:53 7 these various districts, and then you
09:37:56 8 know, at that point you have the
09:37:58 9 simulated plan.

09:37:59 10 Q. Is that not more accurately
09:38:01 11 described as a sequential Monte Carlo
09:38:05 12 analysis?

09:38:05 13 A. Yes, that's correct.

09:38:06 14 Q. That --- that's different than
09:38:07 15 a Markov Chain Monte Carlo analysis.
09:38:07 16 Correct?

09:38:11 17 A. Yes, that's correct.

09:38:12 18 Q. Okay.
09:38:12 19 And Markov chain, just so we're
09:38:14 20 clear, the Markov Chain Monte Carlo
09:38:16 21 analysis is the leading method for
09:38:18 22 generating map samples?

09:38:20 23 A. Again, I would say there's a
09:38:22 24 variety of --- a variety of algorithms
09:38:22 25 out there. Many of them use that

09:38:22 1 approach. There are others that use
09:38:31 2 different approaches. It's a very
09:38:31 3 active field of research.

09:38:32 4 Q. And in fact, if you're using a
09:38:35 5 Markov Chain Monte Carlo analysis, the
09:38:38 6 sequential Monte Carlo analysis that
09:38:40 7 you used here, that's just step one of
09:38:40 8 the Markov Chain Monte Carlo analysis.

09:38:40 9 Correct?

09:38:48 10 A. I'm not sure exactly what you
09:38:49 11 mean.

09:38:49 12 Q. Well you need to use the
09:38:50 13 sequential Monte Carlo analysis to
09:38:52 14 generate your example.

09:38:55 15 Right? Which you then take
09:38:59 16 through with the Markov Chain Monte
09:39:00 17 Carlo analysis?

09:39:01 18 Correct?

09:39:01 19 A. Again, I'm not entirely certain
09:39:04 20 of what you're referring to.

09:39:06 21 Q. Are you aware that the method
09:39:08 22 that you used here, the sequential
09:39:09 23 Monte Carlo analysis, is not
09:39:11 24 peer-reviewed and that the papers that
09:39:12 25 you cite in your report are actually

09:39:16 1 describing a different method which is
09:39:19 2 the Markov Chain Monte Carlo analysis?
09:39:21 3 A. So the algorithm, the initial
09:39:21 4 algorithm is --- has been published.
09:39:27 5 The authors have developed a number of
09:39:28 6 extensions and a number of kind of
09:39:31 7 additional things that can be done.
09:39:32 8 And so you know, like I said it's a
09:39:34 9 very new active area of research.
09:39:39 10 Q. Let me rephrase the question
09:39:39 11 because I thought I was being pretty
09:39:40 12 discrete. Are you aware that that
09:39:41 13 particular method you used, the
09:39:43 14 sequential Monte Carlo analysis to
09:39:45 15 generate your map samples, that is not
09:39:47 16 peer-reviewed and that the papers that
09:39:48 17 you cite in support of what you're
09:39:50 18 doing in your report are describing a
09:39:52 19 different method?
09:39:56 20 A. As I said, it's a very new
09:40:00 21 algorithm. And so, they method is,
09:40:01 22 like the method --- they have written
09:40:01 23 papers describing the algorithm.
09:40:03 24 Those papers are publicly available.
09:40:06 25 Q. Have they been peer-reviewed

09:40:09 1 yet?

09:40:09 2 A. They are being peer-reviewed.

09:40:10 3 Q. Have they been peer-reviewed?

09:40:13 4 A. They are in the process of peer
09:40:15 5 review.

09:40:15 6 Q. Have they received a peer
09:40:15 7 review commenting on the validity of
09:40:15 8 that technique or method?

09:40:20 9 A. I'm --- I can't speak to that.
09:40:21 10 I'm not the author of the papers.

09:40:29 11 Q. All right.

09:40:30 12 You refer to the concept of a
09:40:33 13 representative sample, and I believe
09:40:34 14 you mentioned that in your testimony.
09:40:36 15 What is the representative sample?

09:40:39 16 A. So the easiest way to think
09:40:39 17 about this would be in the context of
09:40:45 18 survey research. So when a survey
09:40:45 19 researcher wants to understand
09:40:45 20 something about the opinions of, let's
09:40:48 21 say the United States, the population
09:40:49 22 of the United States, they obviously
09:40:51 23 don't go speak to every person in the
09:40:54 24 United States. They take a sample of
09:40:56 25 the population and they draw

09:40:57 1 inferences from that sample. It's
09:41:01 2 important that that sample be
09:41:03 3 representative of the broader
09:41:04 4 population so that the inferences that
09:41:06 5 are drawn are accurate.

09:41:09 6 Q. And how do you determine
09:41:11 7 whether the sample that you used in
09:41:12 8 your report was in fact
09:41:13 9 representative?

09:41:15 10 A. The --- I'm sorry the
09:41:16 11 algorithm?

09:41:17 12 Q. I'm sorry. How did you --- how
09:41:19 13 did you determine whether the ---
09:41:23 14 whether that the simulations that you
09:41:23 15 are using in your report are in fact a
09:41:26 16 representative sample of the broader
09:41:28 17 elections scheme?

09:41:29 18 A. So the researchers who have
09:41:31 19 developed this algorithm have shown in
09:41:34 20 a variety of ways that the sample is
09:41:36 21 drawn --- that is drawn is
09:41:37 22 representative.

09:41:40 23 Q. I'm talking about the sample in
09:41:42 24 your particular report. How did you
09:41:43 25 determine that that was

09:41:46 1 representative?

09:41:47 2 A. I'm sorry, I misunderstood you.

09:41:48 3 The particular sample that I have

09:41:48 4 drawn, well there's no way to compare

09:41:48 5 a sample to the population. That you

09:41:53 6 know, even in the context of the

09:41:55 7 survey research that I was just

09:41:56 8 describing, no survey company takes

09:41:59 9 the survey they have conducted and

09:42:01 10 goes and compares it to the

09:42:02 11 population. Because again you run

09:42:04 12 into the exact same problem. That you

09:42:06 13 --- you would end up having to speak

09:42:08 14 to every person in the United States.

09:42:10 15 In much the same way, the

09:42:12 16 sample of maps, there's no way to

09:42:14 17 verify that that particular sample of

09:42:20 18 maps matches the universe of maps

09:42:21 19 because lots of researchers here and

09:42:22 20 in other places have noted that there

09:42:23 21 are more maps than there are atoms in

09:42:26 22 the known universe. And so what we

09:42:28 23 have to rely on is rigorous

09:42:33 24 mathematical proofs, small scale

09:42:35 25 applications where we can verify that

09:42:36 1 the sample is producing a
09:42:38 2 representative sample of the
09:42:39 3 population.
09:42:40 4 Q. Did you discuss the target
09:42:42 5 distribution in your report?
09:42:46 6 A. I think what you mean by the
09:42:48 7 ---- well I think what you mean by the
09:42:50 8 target distribution is the universe of
09:42:53 9 possible maps. Is that what you're
09:42:56 10 talking about?
09:42:57 11 Q. I'm just trying to figure out,
09:43:01 12 how are you judging success at whether
09:43:01 13 you are converging to whatever your
09:43:01 14 target distribution is? Even --- even
09:43:05 15 approximately. How can you, and if
09:43:05 16 --- and if you can't do that, then how
09:43:07 17 can you be confident that you have in
09:43:09 18 fact a representative sample?
09:43:10 19 A. Yes, so this is a really
09:43:12 20 important question in --- in not only
09:43:15 21 this context, but in the study of
09:43:17 22 statistics more generally. And ---
09:43:19 23 and what we do is we rely on these
09:43:21 24 mathematical proofs and these small
09:43:26 25 scale replications to assure us ---

09:43:27 1 and other principles in statistics
09:43:29 2 that assure us that the sample we've
09:43:31 3 drawn is --- is representative of the
09:43:33 4 broader population.

09:43:34 5 Q. So what convergent statistics
09:43:41 6 were you using here?

09:43:43 7 A. I'm sorry, I --- I'm sorry.
09:43:43 8 I'm not sure what you're getting at.

09:43:45 9 Q. Now you had to rely on certain
09:43:47 10 electoral data in your reporting
09:43:51 11 analysis.

09:43:52 12 Correct?

09:43:53 13 A. That's correct.

09:43:53 14 Q. Okay.
09:43:54 15 How confident are you in the electoral
09:43:57 16 data you used?

09:43:59 17 A. I'm quite confident.

09:44:00 18 Q. In your report, you say that
09:44:01 19 Congressional District 16 sometimes
09:44:03 20 had a Democratic advantage in the 11
09:44:08 21 elections in your data set.

09:44:09 22 Do you recall that?

09:44:10 23 A. So I think that the question
09:44:11 24 you're asking arises from a
09:44:14 25 misunderstanding between what I write

09:44:14 1 in my report and what Professor Duchin
09:44:19 2 thinks I put in my report, so ---.
09:44:19 3 Q. Can you just answer my question
09:44:21 4 first? Because I think my question
09:44:22 5 was a yes or no question?
09:44:24 6 A. I'm --- can you repeat the
09:44:25 7 question?
09:44:25 8 Q. Sure. You say in your report
09:44:27 9 that Congressional District 16
09:44:29 10 sometimes had a Democratic advantage
09:44:33 11 in the 11 elections in your dataset.
09:44:35 12 Correct?
09:44:35 13 A. So the reason that I needed to
09:44:38 14 elaborate was there are 17 elections,
09:44:40 15 not 11 in the dataset.
09:44:41 16 Q. Okay.
09:44:42 17 Nonetheless, with that
09:44:43 18 correction it sometimes had a
09:44:48 19 Democratic advantage?
09:44:48 20 Right?
09:44:51 21 A. That's correct.
09:44:51 22 Q. Okay.
09:44:52 23 And Doctor Duchin examined this
09:44:54 24 in her report with a QC election
09:45:00 25 dataset and she disputes this finding?

09:45:01 1 Correct?

09:45:02 2 A. Yes, and I was saying I think
09:45:06 3 the error is that I think Doctor
09:45:12 4 Duchin didn't realize that there were
09:45:15 5 17 elections in the index and not 11.

09:45:17 6 Q. Okay.

09:45:17 7 How do you calculate
09:45:19 8 compactness?

09:45:19 9 A. I use the Polsby-Popper
09:45:23 10 measure.

09:45:23 11 Q. Did you use a particular
09:45:24 12 software?

09:45:25 13 A. I used the computing program,
09:45:27 14 the computing language that's known as
09:45:29 15 R. It's just the letter R.

09:45:32 16 Q. Is that a particular --- so
09:45:34 17 that's a particular software package?

09:45:36 18 A. It's a computer --- it's a
09:45:37 19 programming language is I think the
09:45:42 20 better way to describe it.

09:45:43 21 Q. How did you choose a map
09:45:45 22 projection?

09:45:45 23 A. I used the projection that is
09:45:49 24 most common in --- it's the same
09:45:53 25 projection that's used in like Google

09:45:56 1 Maps, on our phones or Apple Maps on
09:46:03 2 our phones. It's the --- it's the ---
09:46:04 3 it's that particular projection. The
09:46:04 4 name of which is escaping me at the
09:46:06 5 moment. Sorry.

09:46:06 6 Q. Okay.

09:46:08 7 Let's talk about partisan
09:46:10 8 metrics. You were asked what might
09:46:14 9 account for the difference between
09:46:15 10 your mean-median scores and other
09:46:17 11 scores. And I believe you said it was
09:46:19 12 simply your choice of elections? Do
09:46:22 13 you recall that?

09:46:24 14 A. Yes.

09:46:24 15 Q. Isn't it true that you used an
09:46:26 16 average vote index?

09:46:28 17 A. Yes, that's correct. I believe
09:46:29 18 I said that in my --- in my Direct
09:46:33 19 Testimony.

09:46:33 20 Q. I believe you did. Are you
09:46:33 21 representing that computing the
09:46:36 22 metrics on this average vote index
09:46:37 23 will give the same answer as computing
09:46:40 24 it separately and then averaging it?

09:46:41 25 A. No, I was not intending to

09:46:44 1 represent that at all. You might get
09:46:45 2 a slightly different --- a slightly
09:46:47 3 different outcome.

09:46:48 4 Q. You talk a little bit in your
09:46:54 5 report, I mean after you deal with the
09:46:54 6 first set of simulations, you then
09:46:58 7 look at some racial data. Do you
09:47:00 8 recall that?

09:47:00 9 A. Yes.

09:47:00 10 Q. Okay.

09:47:01 11 And you rely on a 35 percent
09:47:07 12 demographic minority voting age
09:47:07 13 threshold in that analysis. Do you
09:47:14 14 remember that?

09:47:14 15 A. Yes.

09:47:14 16 Q. Okay.

09:47:14 17 Are you aware of any literature
09:47:15 18 or any analysis of anyone other than
09:47:18 19 your own that a 35 percent minority
09:47:20 20 voting age population constitutes a
09:47:23 21 minority opportunity --- excuse me,
09:47:26 22 minority opportunity district?

09:47:26 23 A. Well, I think that there is ---
09:47:30 24 there's not agreement in terms of what
09:47:33 25 threshold would be necessary. Because

09:47:35 1 it would require a specific analysis
09:47:37 2 of the area in question. We would
09:47:41 3 need additional information about the
09:47:41 4 presence of racially polarized voting,
09:47:48 5 of crossover voting, all of these
09:47:50 6 factors that we've discussed. And my
09:47:52 7 understanding in reading these reports
09:47:54 8 is there's no such analysis or
09:47:56 9 agreement, and so my choice of 35
09:47:59 10 percent was simply well, this seems to
09:48:01 11 be the case across these plans that
09:48:04 12 they're all kind of agreeing around 35
09:48:07 13 percent. And so we have to pick some
09:48:10 14 number, and that seems to be a kind of
09:48:13 15 --- the plans all seem to move around
09:48:16 16 that particular value.

09:48:18 17 Q. You're not representing that
09:48:20 18 the other plans just picked the
09:48:21 19 demographic threshold and that's what
09:48:23 20 they used? As opposed to concluding
09:48:25 21 that after conducting a minority
09:48:27 22 opportunity analysis that in those
09:48:29 23 particular districts that was the
09:48:30 24 right --- or that was an appropriate
09:48:32 25 number?

09:48:33 1 A. No, what I'm saying is that
09:48:37 2 many of the proposal contain no
09:48:39 3 analysis of the presence or absence of
09:48:46 4 racially polarized voting. Some of
09:48:47 5 them, nevertheless, make statements
09:48:47 6 about the presence or absence of
09:48:49 7 minority opportunity districts. And
09:48:51 8 so, some value needs to be chosen and
09:48:54 9 35 percent kind of looks like what
09:48:57 10 most of these plans have --- have
09:48:59 11 settled around.

09:49:00 12 Q. And just to be clear, you're
09:49:01 13 not representing that a 35 percent
09:49:04 14 threshold demographically stands in
09:49:07 15 for an actual analysis of electoral
09:49:09 16 effectiveness.

09:49:10 17 Correct?

09:49:11 18 A. That's correct. I --- I don't
09:49:12 19 think that we've seen such an
09:49:15 20 analysis.

09:49:15 21 Q. Okay, thank you very much.

09:49:19 22 A. Thank you.

09:49:19 23 JUDGE MCCULLOUGH:

09:49:19 24 Thank you, Counsel.

09:49:20 25 We'll move to Congressman

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Reschenthaler's group. Thank you.

ATTORNEY HOLCUM:

Your Honor, good evening. I will try to keep this brief.

CROSS EXAMINATION

BY ATTORNEY HOLCUM:

Q. So there was quite a bit of discussion about the manner in which you assessed the efficiency gap and --- and the mean-median. And as I understand it, you can correct me if I'm wrong, but your assessment was intended to give that raw figure some context.

Is that correct?

A. Yes.

Q. Okay.

And why does that even need context? Why do those measurements need context?

A. Well I think that we've seen a lot of numbers being presented today.

09:50:10 1 And I think that where, you know, this
09:50:15 2 Court is in the business of evaluating
09:50:18 3 what those numbers mean. And I think
09:50:20 4 that as a person who studies
09:50:24 5 quantitative data, it's really
09:50:29 6 important to be able to convey what
09:50:29 7 those numbers mean to a person who may
09:50:32 8 not be as familiar with those
09:50:33 9 calculations.

09:50:35 10 Q. And --- and you also study
09:50:36 11 politics? In fact that's your main
09:50:39 12 area of studies.

09:50:40 13 Is that correct?

09:50:41 14 A. Yes, that's correct.

09:50:42 15 Q. Political Science or politics
09:50:43 16 more generally. And so, you would
09:50:45 17 agree with me then that the
09:50:52 18 mean-median and --- and efficiency gap
09:50:55 19 based on your experience is, doesn't
09:50:57 20 account for a variety of factors that
09:50:59 21 in politics affect voter choice and
09:51:06 22 electoral outcomes?

09:51:06 23 A. Yes, I think that's absolutely
09:51:08 24 the case. Politics is a very messy
09:51:14 25 business.

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Q. Right. And so, I would just want to run through a couple of things and you can tell me a few things. Whether you agree that they affect voter choice and candidates, excuse me, the manner in which elections go, and then whether the efficiency gap and the mean-median which you've heard about all day whether they account for it at all. Whether they're weighted in in any fashion.

So incumbency, is that part of the analysis?

A. So it's not directly a part of the computation. It's like, I suppose you could say a kind of second orderly impacts it and that all these measures are using the votes that people cast. And you know, people use a variety of factors in determining how they vote.

Q. Right. But there's, it's not a weighted, you know, factor? It's not part of the equation? It's not a separat input so to speak.

Is that correct?

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A. That's correct.

Q. Okay.

A. It's not a parameter in the calculation.

Q. Right. And based on your scholarship, your extensive publications and if you'll --- I saw that you've written a little bit about campaign finance and --- and donor behavior.

Is that correct?

A. That's correct, yes.

Q. Would you agree with me that the ability to raise funds can affect election results?

A. Yes.

Q. And you'd agree with me that it can affect it on a congressional level?

A. Yes, absolutely.

Q. And it could cause differences between statewide performance and congressional performance?

A. Yes.

Q. And is that part of the

09:52:45 1 analysis in mean-median and, excuse
09:52:47 2 me, the efficiency gap?
09:52:49 3 A. Again, no. It's not a
09:52:51 4 parameter that's used in the
09:52:53 5 calculation of those metrics.
09:52:59 6 Q. Okay.
09:53:00 7 So how about just the degree to which
09:53:04 8 voters in that state split their vote?
09:53:07 9 Vote splitting, I'm sure you're
09:53:08 10 familiar with that content ---
09:53:08 11 concept, excuse me?
09:53:11 12 Right?
09:53:11 13 A. I am familiar, yes. I'm
09:53:18 14 familiar with that.
09:53:18 15 Q. And that can, and is that part
09:53:18 16 of the analysis? A lot of times then
09:53:20 17 I suppose that given the statewide
09:53:24 18 role offices that's somewhat part of
09:53:24 19 the analysis. But on a localized
09:53:26 20 level, is that part of the analysis?
09:53:29 21 A. No. So again, it's going to
09:53:31 22 factor in the probability or the
09:53:32 23 likelihood of a voter splitting their
09:53:35 24 --- splitting their ticket.
09:53:35 25 Q. Okay.

09:53:44 1 So how about --- and would you
09:53:44 2 agree with me that whether or not a
09:53:47 3 state has state --- straight ticket
09:53:50 4 voting affects down ballot
09:53:57 5 performance?

09:53:58 6 A. Yes. I think there's a good
09:53:59 7 bit of research that shows that.

09:54:01 8 Q. And just to clarify by down
09:54:03 9 ballot, I mean anything below what is,
09:54:03 10 you know, for that year the top
09:54:03 11 office.

09:54:08 12 Correct? So essentially every
09:54:10 13 year Congress in Pennsylvania at least
09:54:11 14 would be down ballot.

09:54:12 15 Is that correct?

09:54:12 16 A. Yes. I mean you can draw
09:54:12 17 particular thresholds about what is or
09:54:13 18 is not down ballot. But I understand
09:54:13 19 what you're getting at.

09:54:18 20 Q. Okay.

09:54:18 21 And so, are you aware that in
09:54:20 22 Pennsylvania the 2020 election was the
09:54:24 23 first one that was conducted with no
09:54:27 24 straight party ticket? No straight
09:54:29 25 party voting at all?

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A. I was not aware of that, but I trust that that is the case.

Q. And would you think that that --- that might and would you think, again based on your experience and having studied this field, that that is likely to affect the outcome, likely to have affected it in 2020 and is likely to affect it moving forward?

A. It certainly could, yes.

Q. Okay.

So I mean, I lost count frankly but we went through a host of factors that aren't factors in either of those equations.

Right? Whether mean-median or efficiency gap?

A. Yes.

Q. And so the whole point of both of these is to do what exactly? Both of these measurements? To predict the future?

A. If I could do that, I wouldn't be here and I'd be much more wealthy. The purpose of --- the purpose of

09:55:32 1 these calculations is to --- to say,
09:55:34 2 well take all of the information, all
09:55:35 3 of the factors that you've described,
09:55:35 4 incumbency, campaign finance, the
09:55:39 5 particular campaigning that goes on
09:55:41 6 around these races. Take them as
09:55:44 7 given. Whatever they happen to be,
09:55:47 8 people cast their votes the, you know,
09:55:51 9 the way that they do. And given that
09:55:52 10 those --- given the way that those
09:55:53 11 votes have been cast, how to have
09:55:55 12 those votes translated into seats?
09:55:58 13 Now of course in these cases, we're
09:55:59 14 not looking at the actual
09:56:01 15 congressional races. We're looking at
09:56:01 16 proxies for those races by looking at
09:56:07 17 the state wide elections. And so,
09:56:08 18 that's one of the reasons why I
09:56:09 19 described that I think averages are
09:56:11 20 better because each of these elections
09:56:11 21 is really different from a
09:56:14 22 congressional race. And nevertheless,
09:56:15 23 these --- these measures are trying to
09:56:17 24 capture on average how our votes
09:56:20 25 translating into seats, or might

09:56:24 1 translate into seats.

09:56:25 2 Q. Right. Actually a couple of
09:56:27 3 other things I missed. Does it
09:56:29 4 account for under vote efficiency gap
09:56:31 5 or mean-median? Which to clarify
09:56:34 6 again, and you can correct me if I'm
09:56:36 7 wrong, under vote is the concept that
09:56:38 8 people vote or tend to skip certain
09:56:41 9 offices as they move down the ballot.

09:56:43 10 Correct? Right?

09:56:45 11 A. It --- it can account for it in
09:56:48 12 that it accounts for turnout. So it
09:56:51 13 could --- it can account for the fact
09:56:53 14 that some races are less, you know,
09:56:55 15 have lower votes than other races.
09:56:59 16 But ---.

09:57:00 17 Q. But it doesn't account for the
09:57:02 18 under vote of offices at which aren't
09:57:04 19 part of the county.

09:57:04 20 Correct?

09:57:04 21 A. That ---.

09:57:06 22 Q. So like it doesn't count for
09:57:09 23 the under vote for congress and ---
09:57:13 24 correct?

09:57:13 25 A. That's correct. It only is ---

09:57:13 1 it's only accounting for the elections
09:57:14 2 that are being used.

09:57:14 3 Q. And we're attempting to
09:57:16 4 ascertain the partisan breakdown of
09:57:17 5 congressional seats.

09:57:17 6 Correct?

09:57:20 7 A. Yes, that's correct.

09:57:22 8 Q. Okay.

09:57:22 9 And a couple of other questions
09:57:23 10 and I'll be done. And so, the whole
09:57:25 11 concept of mean-median and --- and
09:57:27 12 efficiency gap, it's premised on the
09:57:30 13 notion that majority of votes having
09:57:34 14 been cast in a statewide race for a
09:57:38 15 party necessarily must translate to a
09:57:42 16 majority of seats, congressional seats
09:57:46 17 that have been apportioned to that
09:57:46 18 party?

09:57:49 19 Correct? Or to that state,
09:57:50 20 excuse me.

09:57:54 21 A. Yeah, I think --- that, I think
09:57:54 22 more or less that's --- that's
09:57:55 23 accurate. There are, I mean there are
09:57:56 24 subtle differences in how they are,
09:57:59 25 you know, that --- that each of these

09:58:00 1 are calculated and they have slightly
09:58:03 2 different interpretations. But I
09:58:06 3 think you're capturing the kind of
09:58:06 4 broader idea of --- of what these
09:58:07 5 measures are doing.

09:58:08 6 Q. Okay.

09:58:09 7 And so you've studied, and I
09:58:10 8 noticed one of your publications has
09:58:12 9 to do with the country's founding, our
09:58:17 10 country's founding?

09:58:17 11 A. Yes.

09:58:17 12 Q. Correct?

09:58:18 13 A. Yes.

09:58:18 14 Q. Okay.

09:58:18 15 So you're familiar with the
09:58:18 16 parliamentary system?

09:58:18 17 Right?

09:58:27 18 A. I --- I am, yes.

09:58:27 19 Q. And can you tell us a little
09:58:27 20 bit about that?

09:58:29 21 A. Well so, I --- I mean, we could
09:58:29 22 sit here for hours.

09:58:34 23 Q. So --- so basically, for most
09:58:35 24 --- most of the way it works is you
09:58:36 25 vote for the party and the --- the

09:58:37 1 number of seats in parliament are
2 assigned based on how, what percentage
3 of the vote that party got in an
4 election.

5 Correct? Basically.

6 Right?

7 A. With some ---.

8 Q. With variations between
9 countries?

09:58:45 10 A. There's lots of variations, but
09:58:46 11 what you're getting at is what's
09:58:47 12 called a PR system.

09:58:50 13 Q. Right. So what it really
09:58:51 14 sounds like is an attempt to replicate
09:58:54 15 the parliamentary system.

09:58:54 16 Right?

09:58:59 17 A. I --- I wouldn't go that far in
09:59:00 18 saying that.

09:59:00 19 Q. Broadly. I mean, it's not like
09:59:03 20 a parliamentary sort of type approach,
09:59:03 21 people voting for parties as opposed
09:59:05 22 to people?

09:59:06 23 A. It is not accounting for the
09:59:08 24 particular candidates if that's what
09:59:10 25 you're getting at.

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Q. Right.

A. It's looking at votes for the Democratic party or the Republican party.

Q. Right. And do people vote for parties or for people for Congress?

A. It depends on who you ask I suppose.

Q. What's on the ballot?

A. It also depends on the state, but sometimes the candidate's name and their party affiliation.

Q. Right. But their name's always on there though.

Right?

A. That is correct.

Q. That --- that is universally true?

A. That is --- that is correct, yes.

Q. Okay.

ATTORNEY HOLCUM:
No further questions.

JUDGE MCCULLOUGH:
Okay, thank you,

09:59:46 1 Counsel. I think Mr. Senoff for
09:59:47 2 Representative Clinton and the
09:59:47 3 Democratic caucus.

10:00:12 4 ATTORNEY BARR:

10:00:14 5 I apologize in advance.
10:00:15 6 I have my computer.

10:00:15 7 JUDGE MCCULLOUGH:

10:00:15 8 You still get the same
10:00:17 9 amount of time.

10:00:18 10 ATTORNEY SENOFF:

10:00:18 11 Thank you.

10:00:18 12 JUDGE MCCULLOUGH:

10:00:18 13 Okay?

10:00:18 14 ---

10:00:18 15 CROSS EXAMINATION

10:00:20 16 ---

10:00:20 17 BY ATTORNEY SENOFF:

10:00:20 18 Q. Doctor Barber, good evening.
10:00:22 19 Are you familiar with the phrases
10:00:23 20 cracking and packing?

10:00:27 21 A. I am, yes.

10:00:27 22 Q. And are you familiar with their
10:00:29 23 use in the gerrymander redistricting
10:00:33 24 sense?

10:00:35 25 A. Yes.

10:00:35 1 Q. Can you explain for us how you
10:00:38 2 understand them?

10:00:39 3 A. So in general, when people
10:00:41 4 refer to cracking what they are
10:00:45 5 talking about is taking a group of
10:00:49 6 voters who are geographically
10:00:52 7 concentrated in some way or another
10:00:54 8 and splitting them across a variety of
10:00:58 9 districts so as to minimize the
10:01:03 10 possibility or probability of a
10:01:08 11 district electing the candidate that
10:01:11 12 favors --- or that would align with
10:01:11 13 that, with their party. So that would
10:01:11 14 be the cracking.

10:01:21 15 Packing would be kind of the
10:01:22 16 opposite of that. The idea that you
10:01:23 17 take voters that are all very
10:01:25 18 concentrated and place them together
10:01:27 19 in a district so as to concentrate
10:01:30 20 them in as few districts as possible.

10:01:33 21 Q. Okay.

10:01:34 22 And so how does --- how do
10:01:36 23 those concepts, cracking and packing
10:01:38 24 when it comes to redistricting and
10:01:40 25 gerrymandering, affect what you've

10:01:44 1 described here today as political
10:01:47 2 geography? Or vice versa? How does
10:01:50 3 political geography affect cracking
10:01:55 4 and packing?
10:01:55 5 A. So it really depends on how
10:01:57 6 voters are disbursed across the state.
10:02:00 7 And so, if you have a pretty even
10:02:02 8 distribution of voters in terms of the
10:02:04 9 distribution of Republicans and the
10:02:05 10 distribution of Democrats, then it
10:02:07 11 become quite difficult to do either of
10:02:10 12 those things. As opposed to if you
10:02:13 13 have a state in which voters are
10:02:17 14 geographically concentrated, that
10:02:21 15 would make it obviously then easier.
10:02:24 16 The other thing I would add is that
10:02:29 17 one party's cracking is often the
10:02:32 18 other party's packing. And so you
10:02:35 19 know, it often depends on the
10:02:36 20 prospective of the person you're
10:02:38 21 talking to as to whether something is
10:02:40 22 or is not cracking or packing.
10:02:42 23 Q. And when you say one party's
10:02:45 24 cracking is another party's packing,
10:02:47 25 you just mean that if one party would

10:02:49 1 prefer to pack a particular area that
10:02:52 2 might result in the cracking of that
10:02:55 3 area when compared to the voting
10:02:57 4 registration of the opposite party in
10:03:02 5 the same area?

10:03:06 6 A. Yes. I think that's right. I
10:03:07 7 --- the only thing I would add is that
10:03:09 8 it, you know, it's not --- there's no
10:03:12 9 kind of bright line on what would or
10:03:17 10 would not constitute cracking or
10:03:19 11 packing.

10:03:20 12 Q. Okay.

10:03:20 13 If we drew a circle around the
10:03:23 14 City of Pittsburgh within Allegheny
10:03:25 15 County and assigned it one
10:03:27 16 Congressional district, would you
10:03:33 17 consider that to be packing?

10:03:34 18 A. So I think this is an excellent
10:03:36 19 example because sometimes what might
10:03:38 20 be called intentional partisan
10:03:40 21 gerrymander might actually be the
10:03:42 22 result of the combination of the
10:03:44 23 geography of the state and neutral
10:03:44 24 redistricting criteria.

10:03:47 25 So the example you're giving is really

10:03:47 1 excellent because the redistricting
10:03:54 2 criteria might say don't split
10:03:56 3 Pittsburgh. What that's --- the
10:03:56 4 impact of that, as I had said earlier,
10:03:59 5 is that you're going to have a
10:04:00 6 district that's going to be intensely
10:04:03 7 Democratic. And so one prospective
10:04:06 8 would look at that and say that's
10:04:07 9 packing, that's clearly
10:04:08 10 gerrymandering. And the other person
10:04:12 11 might say oh no, that's not packing at
10:04:15 12 all. That's just following the
10:04:16 13 neutral redistricting criteria.
10:04:17 14 Q. And so, you would agree with me
10:04:19 15 then that these concepts, these
10:04:21 16 cracking and packing concepts can
10:04:23 17 occur intentionally or by accident?
10:04:32 18 A. Yes. I agree. I think that's
10:04:34 19 definitely the case.
10:04:35 20 Q. And they can be with ill-will
10:04:37 21 or not ill-will?
10:04:43 22 A. Yes, I think that's the case.
10:04:44 23 Q. And so --- I know I'm, you've
10:04:44 24 been here for quite a few hours. So
10:04:44 25 you know that I sound like a broken

10:04:46 1 record when I ask you this question,
10:04:48 2 but up didn't consider voter
10:04:51 3 registration when you performed your
10:04:52 4 analysis.

10:04:52 5 Correct?

10:04:56 6 A. So when --- when you say voter
10:04:58 7 registration, you mean the like
10:04:59 8 declared party of the --- of the
10:05:01 9 individual voters?

10:05:03 10 Q. Correct.

10:05:04 11 A. That's correct. I did not
10:05:06 12 include --- incorporate that.

10:05:10 13 Q. And when your analysis, your
10:05:11 14 computer analysis was run, there was
10:05:13 15 no other partisan data, including
10:05:15 16 voter registration, included in the
10:05:20 17 analysis that you used to draw the
10:05:23 18 map? Create the plan?

10:05:28 19 A. The --- I'm sorry, the ---?

10:05:28 20 Q. The simulations, yeah.

10:05:30 21 A. The --- that's correct. The
10:05:30 22 simulations had no information about
10:05:33 23 the votes cast or the partisan
10:05:37 24 registration of individual voters.

10:05:40 25 Q. Okay.

10:05:41 1 And so, let me ask you a
10:05:43 2 question. Would you agree with me
10:05:44 3 that the partisan identification of a
10:05:50 4 particular voter is likely the best
10:05:53 5 predictor of that person's voting
10:06:02 6 behavior?

10:06:03 7 A. I think that that is an
10:06:04 8 accurate assessment of the research on
10:06:17 9 party identification.

10:06:17 10 Q. And let me ask you, in --- in
10:06:17 11 light of that and in light of the fact
10:06:17 12 that you didn't use the voter
10:06:19 13 registration data in your simulation,
10:06:19 14 what was or the --- was the goal of
10:06:22 15 your simulations to try and generate
10:06:24 16 random plans that would create
10:06:30 17 Congressional districts that meet what
10:06:32 18 we've referred to as the big six
10:06:36 19 criteria, but not to favor any party?

10:06:42 20 A. I think that's a good
10:06:43 21 description of what's going on. It's
10:06:45 22 --- we're saying let's --- we --- we
10:06:48 23 want a set of maps that we know with
10:06:50 24 certainty the criteria that were used,
10:06:51 25 and we agree that those criteria

10:06:53 1 should be used in the drawing of maps.
10:06:56 2 And then given that that's the case,
10:06:59 3 we want to see what the simulated maps
10:07:02 4 produce.

10:07:02 5 Q. And is it fair to say that the
10:07:04 6 goal of the simulated maps then would
10:07:07 7 be to try and produce as many, I know
10:07:10 8 there's different words for this, but
10:07:12 9 competitive districts or balance
10:07:14 10 districts? Districts where, you know,
10:07:18 11 it's not 90 percent one party and 10
10:07:21 12 percent the other party?

10:07:24 13 A. It's not --- sorry. So I --- I
10:07:27 14 want to make sure I understand your
10:07:29 15 question. You're saying it's the
10:07:30 16 intention of the simulations to
10:07:32 17 produce those?

10:07:34 18 Q. Yes. So in other words, is it
10:07:34 19 simply the intention of the simulation
10:07:37 20 to, and I don't mean crack but to
10:07:42 21 divide the state into 17 Congressional
10:07:46 22 districts that meet the big six
10:07:48 23 criteria and stop there regardless of
10:07:49 24 what the competitive nature of those
10:07:52 25 districts might be in any given

10:07:54 1 Congressional election?

10:07:56 2 A. I --- I see what you're saying.

10:07:57 3 I think that's --- I think that's

10:07:58 4 accurate. The intention is to draw

10:08:01 5 districts using only the criteria that

10:08:06 6 we have discussed, and then after the

10:08:07 7 fact we can evaluate those plans on

10:08:10 8 all these other criteria that you're

10:08:12 9 describing. The competitiveness or

10:08:15 10 the partisan lean or, you know, you

10:08:17 11 could, whatever criteria you wanted,

10:08:18 12 you could apply that to the

10:08:20 13 simulations post hoc and see how they

10:08:27 14 measure.

10:08:27 15 Q. And so, in thinking about your

10:08:30 16 simulations and the --- what the

10:08:35 17 simulation produced, is it fair to say

10:08:39 18 that the simulation produced 17 random

10:08:42 19 Congressional districts that met these

10:08:47 20 six criteria?

10:08:48 21 A. Well, it produces 50,000 of

10:08:50 22 them, but yes. I think that's ---.

10:08:50 23 Q. Well yes. In other words, it

10:08:52 24 produced 50,000 versions of a 17

10:08:56 25 district map that meets the big six

10:09:00 1 criteria?

10:09:02 2 A. Yes, that's correct.

10:09:04 3 Q. And would you --- did --- did I
10:09:06 4 hear you correctly earlier when you
10:09:09 5 said you had not published any
10:09:19 6 scholarly works on gerrymandering?

10:09:20 7 A. So I do not have any published
10:09:22 8 research in --- in this area. I have,
10:09:23 9 as I said I --- I'm very familiar with
10:09:25 10 the literature. I teach about this in
10:09:28 11 my congressional representation class.
10:09:31 12 And then as I said, a lot of
10:09:32 13 experience in doing this in --- on the
10:09:34 14 litigation side of things.

10:09:36 15 Q. And in 2015, isn't it accurate
10:09:39 16 that there was a book published by the
10:09:41 17 Cambridge University press in which
10:09:43 18 you contributed a chapter?

10:09:48 19 A. Yes.

10:09:49 20 Q. What was that book called if
10:09:51 21 you recall?

10:09:51 22 A. That is stretching my memory.
10:09:54 23 I --- I don't recall the exact, the
10:09:57 24 title of it.

10:09:57 25 Q. Okay.

10:09:58 1 And if I suggested to you that
10:10:01 2 the book was called Solutions to
10:10:03 3 Political Polarization in America,
10:10:03 4 would that refresh your recollection?

10:10:11 5 A. That sounds correct, yes.

10:10:13 6 Q. And if I suggested to you that
10:10:13 7 you wrote the second chapter, you
10:10:16 8 co-wrote it with another gentleman
10:10:18 9 Nolan McCarty, is that accurate?

10:10:18 10 A. Yes, that's correct.

10:10:19 11 Q. And the title of that chapter
10:10:22 12 was Causes and Consequences of
10:10:28 13 Polarization.

10:10:28 14 Correct?

10:10:28 15 A. Yes, that's correct.

10:10:29 16 Q. So in --- in that chapter, is
10:10:31 17 it accurate that you had an entire
10:10:34 18 section devoted to gerrymandering?

10:10:38 19 A. Yes, there is a section there
10:10:41 20 that discusses gerrymandering.

10:10:42 21 Q. And in that section, am I
10:10:47 22 correct that you concluded that the
10:10:53 23 data that you had collected did not
10:10:54 24 support the argument that
10:11:03 25 gerrymandering is producing districts

10:11:05 1 that contain heavy partisan
10:11:08 2 majorities, thereby leading to extreme
10:11:10 3 representatives. Rather more of the
10:11:13 4 observed polarization can be explained
10:11:16 5 by the difference between the parties
10:11:17 6 in relatively moderate and competitive
10:11:20 7 districts.

10:11:21 8 Is that accurate?

10:11:22 9 A. Yes, I think that's --- I think
10:11:24 10 that's a very accurate depiction of
10:11:27 11 the contemporary political landscape.

10:11:29 12 Q. And so, is it your testimony
10:11:31 13 then that the creation of 17 districts
10:11:35 14 randomly that met the big six criteria
10:11:39 15 and also happen to be all competitive
10:11:43 16 or majority competitive might result
10:11:46 17 in a more polarized Congressional
10:11:53 18 delegation from Pennsylvania to
10:11:55 19 Washington than a 50/50 split?

10:11:59 20 A. So I --- I think what we're
10:12:01 21 trying to communicate in that article
10:12:03 22 is that one of the contentions that's
10:12:12 23 often used or one of the things that
10:12:12 24 people often contend is that one of
10:12:13 25 the reasons for why politics is so

10:12:17 1 polarized today is because of
10:12:18 2 gerrymandering. And our argument in
10:12:20 3 that article is that that is, that's
10:12:21 4 not the case. The data do not support
10:12:23 5 that conclusion.

10:12:24 6 And one of the reasons for that
10:12:26 7 is what we do is we say well let's
10:12:27 8 look at how --- how do Democrats
10:12:29 9 elected from overwhelmingly Democratic
10:12:33 10 districts, how do they vote compared
10:12:35 11 to Democrats who are elected from very
10:12:38 12 competitive districts? And there are
10:12:39 13 differences, but they're not nearly as
10:12:45 14 large as Democrats and Republicans who
10:12:45 15 are elected from districts that
10:12:49 16 actually look quite similar. And so
10:12:50 17 our conclusion there is that the
10:12:53 18 partisan composition of the district
10:12:53 19 has less of an impact on the behavior
10:12:56 20 of a legislator than the partisan
10:13:00 21 affiliation of the legislator has on
10:13:03 22 their behavior.

10:13:04 23 Q. And, but you know, you agreed
10:13:06 24 with me earlier that the partisan
10:13:08 25 identification of a voter is more

10:13:11 1 predictive of the voter's voting
10:13:14 2 habits.

10:13:14 3 Correct?

10:13:16 4 A. Yes, that is a correct.

10:13:16 5 Q. And in fact, that conclusion is
10:13:18 6 in the article before the
10:13:23 7 gerrymandering, in that chapter before
10:13:23 8 gerrymandering section.

10:13:23 9 Correct?

10:13:26 10 A. Yes, that's correct.

10:13:27 11 Q. And yet, given that and given
10:13:29 12 the fact that there are, you would
10:13:31 13 agree with me there, you testified
10:13:32 14 there's 50,000 different ways to ---
10:13:35 15 to cut this map and still meet the
10:13:38 16 requirements, don't you think it ---
10:13:40 17 well. Isn't it worth while to
10:13:42 18 consider that not post hoc, but while
10:13:47 19 you are actually creating the map? Or
10:13:50 20 at least --- let me rephrase that
10:13:52 21 question, I apologize.

10:13:53 22 At least prior to enacting the
10:13:57 23 map, don't you think it would be
10:13:58 24 better to generate perhaps your ---
10:14:02 25 one of your 50,000 maps and then super

10:14:06 1 impose upon it the party affiliation
10:14:14 2 of the various voters in those
10:14:14 3 districts?
10:14:17 4 A. So I ---.
10:14:19 5 Q. What you described as post hoc?
10:14:19 6 A. So are you --- are you saying
10:14:19 7 to then look, so look at how a map
10:14:24 8 performs in terms of the partisanship
10:14:29 9 of the districts that are ---.
10:14:30 10 Q. After you generated it using
10:14:31 11 your simulation?
10:14:32 12 A. Yes, I --- I think that's an
10:14:34 13 important step. I --- I think I do
10:14:35 14 that in the --- in the report.
10:14:36 15 Q. And so, once you do that, is it
10:14:40 16 your opinion that given what we've
10:14:43 17 discussed about polarization and party
10:14:48 18 performance by voters, is it in your
10:14:52 19 opinion better or worse to have
10:14:55 20 moderate or competitive districts
10:14:57 21 versus some districts that are
10:15:00 22 completely one way or the other?
10:15:04 23 A. I --- I think in my report I
10:15:08 24 say that highly competitive districts
10:15:11 25 are --- are a good thing. For, you

10:15:12 1 know, for the Democratic process.
10:15:14 2 That having a number of competitive
10:15:16 3 districts is good because legislators
10:15:20 4 are more responsive when they're, you
10:15:23 5 know, they're in danger of losing
10:15:25 6 their seat.

10:15:30 7 ATTORNEY BARR:

10:15:30 8 Thank you, Doctor. I
10:15:31 9 don't have any further questions.

10:15:32 10 JUDGE MCCULLOUGH:

10:15:32 11 Thank you, Counsel. We
10:15:33 12 have the Senate Democratic
10:15:36 13 Intervenors, Attorney Attisano.

10:15:36 14 ---

10:15:36 15 CROSS EXAMINATION

10:15:55 16 ---

10:15:55 17 BY ATTORNEY ATTISANO:

10:15:59 18 Q. You're familiar with the 2011
10:16:02 19 map, congressional districting map
10:16:03 20 from Pennsylvania.

10:16:03 21 Correct?

10:16:04 22 A. Yes.

10:16:04 23 Q. How are you familiar with it?

10:16:07 24 A. It's --- it was, you know, it
10:16:09 25 was a very big case which garnered

10:16:13 1 National attention. And so, I'm aware
10:16:15 2 of it in that way. I'm aware that
10:16:17 3 it's been made, you know, it's been
10:16:20 4 referenced in a number of occasions in
10:16:23 5 the various reports that have been
10:16:27 6 submitted in this case. And I think
10:16:28 7 more broadly and among political
10:16:31 8 scientists who study these sorts of
10:16:35 9 things, it's a pretty noteworthy ---
10:16:38 10 it's a pretty noteworthy example of
10:16:38 11 redistricting litigation. Or it was
10:16:45 12 subject to redistricting litigation.
10:16:45 13 Q. Did you run it through your
10:16:46 14 analysis to get a baseline of the
10:16:48 15 accuracy of your analysis?
10:16:52 16 A. I did not. I did not
10:16:54 17 incorporate that plan into my
10:16:58 18 analysis.
10:16:58 19 Q. But, let me rephrase the
10:16:59 20 question. Did you --- did you run it
10:17:00 21 at all through your analysis? Not
10:17:02 22 whether you put it in your report or
10:17:05 23 not, did you run it at all through
10:17:09 24 your analysis?
10:17:10 25 A. The 2011 map, no I did not.

10:17:13 1 Q. Why didn't you run it through
10:17:14 2 your analysis?

10:17:16 3 A. It --- my objective was to
10:17:18 4 evaluate the HB-2146 map as well as
10:17:21 5 the maps that have been presented in
10:17:24 6 this particular case. And so, I did
10:17:26 7 not see it as being particularly
10:17:29 8 beneficial to look at that map.

10:17:33 9 Q. You gave certain opinions about
10:17:35 10 how many Democratic leaning districts
10:17:39 11 each map would yield.

10:17:40 12 Correct?

10:17:41 13 A. Yes.

10:17:42 14 Q. Okay.

10:17:43 15 So you agree if you ran the
10:17:45 16 2011 map through your analysis, you
10:17:48 17 could have seen how close your
10:17:50 18 analysis gets to actual reality of how
10:17:55 19 many districts a map yields?

10:17:57 20 You agree with that.

10:17:57 21 Right?

10:17:59 22 A. I see --- I understand now what
10:18:06 23 you're asking, and yes that certainly
10:18:07 24 is a possibility. You --- you could
10:18:08 25 have done that, yes.

10:18:09 1 Q. It's the only way you could
10:18:11 2 determine how accurate your analysis
10:18:17 3 is.

10:18:18 4 Correct?

10:18:18 5 A. I don't think that's a correct
10:18:20 6 assessment. I --- I don't want to
10:18:23 7 convey that these --- these indices
10:18:28 8 that are being used by a variety of
10:18:33 9 experts to predict the partisan lean
10:18:33 10 of these maps are perfect. I think in
10:18:40 11 my report, I specifically include a
10:18:42 12 paragraph that says that that's not
10:18:43 13 the case. These indices are --- are
10:18:45 14 estimates, and they're, you know,
10:18:46 15 estimates always contain uncertainty.
10:18:50 16 And so, you know, we're --- we're
10:18:52 17 estimating but we're obviously not
10:18:54 18 going to perfectly predict because
10:18:56 19 these are not Congressional elections
10:18:58 20 that are being used in these indices
10:19:06 21 by me or by others. These are auditor
10:19:06 22 races or treasurer races, those ---
10:19:06 23 those sorts of things.

10:19:06 24 Q. So we agree you can't predict
10:19:08 25 the future obviously.

10:19:10 1 Correct?

10:19:10 2 A. Correct.

10:19:10 3 Q. But you can test your
10:19:12 4 methodology and your analysis against
10:19:17 5 what has already happened in the past.
10:19:19 6 You can do that.

10:19:20 7 Correct?

10:19:20 8 A. Yes, you could.

10:19:21 9 Q. And you decided not to do that
10:19:24 10 with the 2011 map when you could have.

10:19:24 11 Correct?

10:19:25 12 A. That's correct.

10:19:27 13 Q. Did you consider responsiveness
10:19:29 14 in your analysis?

10:19:34 15 A. I have --- well I'm not sure
10:19:36 16 exactly what you mean by that.

10:19:38 17 Q. So, are you familiar with the
10:19:41 18 concept of a winner bonus?

10:19:43 19 A. Yes, I am.

10:19:44 20 Q. Could you tell us what your
10:19:47 21 understanding of that is?

10:19:47 22 A. So the idea is that in the
10:19:50 23 empirical --- in the empirical
10:19:55 24 literature, if we look at elections
10:19:57 25 over time it tends to be the case that

10:19:58 1 the party that wins a majority of the
10:20:01 2 votes tends to win more seats than
10:20:05 3 their vote share would, if you took a
10:20:07 4 one to one comparison, it tends to be
10:20:11 5 a little higher than that.

10:20:14 6 Q. Okay.

10:20:14 7 And are you aware that
10:20:16 8 responsiveness is how much a seat
10:20:19 9 chair changes as a function of a
10:20:22 10 change in vote share? For example,
10:20:24 11 the steepness of the seat's votes
10:20:27 12 function is called its responsiveness.
10:20:30 13 Are you generally familiar with that
10:20:32 14 concept?

10:20:33 15 A. Yes.

10:20:33 16 Q. Okay.

10:20:33 17 And --- and so you --- you
10:20:34 18 didn't do any responsiveness analysis
10:20:37 19 in your overall analysis?

10:20:38 20 Is that correct?

10:20:41 21 A. I don't think that that is an
10:20:43 22 accurate description. I think the
10:20:45 23 analysis where I look at the
10:20:50 24 competitiveness of the districts, I
10:20:52 25 think that gets to this idea because

10:20:55 1 if a --- if a plan is going to
10:20:59 2 responsive to voters, there needs to
10:21:01 3 be districts that can --- that can
10:21:03 4 change, that can switch parties. The
10:21:04 5 districts that are out at the edges
10:21:06 6 aren't, you know, there's just no way
10:21:07 7 that those districts are ever going to
10:21:07 8 flip. But these competitive districts
10:21:14 9 which I highlight, those are the
10:21:15 10 districts where you're going to see
10:21:18 11 turnover in terms of the party that
10:21:20 12 represents those seats.

10:21:21 13 Q. And that's competitiveness
10:21:24 14 based on the relationship with those
10:21:28 15 maps and the 50,000 random maps your
10:21:34 16 logarithm generated.

10:21:34 17 Is that correct?

10:21:35 18 A. No, I'm sorry. I should
10:21:37 19 clarify. That's simply looking at the
10:21:39 20 plan and how many districts in that
10:21:42 21 plan have a partisan index that is
10:21:49 22 close to .25. So that's not drawing
10:21:51 23 any comparison to the simulations.
10:21:53 24 That's just saying across these
10:21:55 25 statewide races, how many districts

10:22:05 1 are --- are close to .5, close to 50
10:22:05 2 percent? That --- that's what I mean
10:22:05 3 when I am referring to
10:22:07 4 competitiveness.
10:22:07 5 Q. Okay.
10:22:07 6 And let's talk about the 50,000
10:22:09 7 plans that your logarithm generated.
10:22:13 8 You told one of the attorneys that was
10:22:15 9 asking you questions that you did not
10:22:20 10 adhere to equal population and you had
10:22:22 11 a variance of 30 --- up to 3,800
10:22:23 12 people per district?
10:22:23 13 Correct?
10:22:30 14 A. Yes, that's correct.
10:22:31 15 Q. Okay.
10:22:31 16 And also that you did not do
10:22:32 17 your analysis to avoid the ward
10:22:35 18 splits.
10:22:35 19 Correct?
10:22:37 20 A. That's correct.
10:22:37 21 Q. And you agree that you chose a
10:22:41 22 compactness score that represented
10:22:43 23 districts that were less compact
10:22:45 24 compared to the compactness scores of
10:22:47 25 all the maps submitted in this

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litigation.

Correct?

A. I would just clarify that I don't --- the model does not --- you don't tell the model to create a particular compactness score. The --- you instruct the model to give preference to the generation of districts that are compact and each of the 50,000 maps has a different compactness score. And so, I report the --- the median of those 50,000 plans, but then also the full range. And so there are some plans that have much higher scores and there are some plans that have lower scores.

Q. Okay.

So when --- when we talk about your 50,000 maps, it's just not accurate to say that they meet the six traditional redistricting principles?

Is that correct?

A. I think aside from the discussion we've had about equal population and the reasons for needing

10:23:45 1 to allow the model some amount of
10:23:48 2 deviation in terms of that criteria.
10:23:51 3 On the other criteria, I suppose like
10:23:56 4 setting aside wards in Philadelphia,
10:23:59 5 the model is meeting the criteria that
10:24:02 6 we're --- we've been discussing.

10:24:04 7 Q. Do you agree that the need, the
10:24:06 8 constitutional requirement for equal
10:24:08 9 population will necessarily mean we
10:24:13 10 have certain county and municipal
10:24:14 11 splits.

10:24:15 12 Correct?

10:24:15 13 A. Yes, I agree that that is going
10:24:18 14 to be the case.

10:24:19 15 Q. And with respect to splitting
10:24:23 16 Pittsburgh, you spoke critically of
10:24:26 17 splitting Pittsburgh.

10:24:28 18 Correct?

10:24:28 19 A. I indicated that I --- it to me
10:24:33 20 it's an unusual choice.

10:24:39 21 Q. Communities of interests should
10:24:42 22 be considered when deciding which
10:24:44 23 municipalities to split. You agree
10:24:46 24 with that.

10:24:46 25 Right?

10:24:48 1 A. I think it's one of the factors
10:24:51 2 that can be considered, but I think
10:24:54 3 there are other factors that might
10:24:56 4 also contribute to a decision that a
10:25:01 5 map maker makes as to which particular
10:25:01 6 counties or municipalities to split
10:25:07 7 and --- and how to split them.

10:25:08 8 Q. And you're aware that the 2018
10:25:12 9 map had two municipal splits in
10:25:14 10 Allegheny County.

10:25:15 11 Correct?

10:25:16 12 A. I --- I trust that that is ---

10:25:16 13 Q. Sure.

10:25:16 14 A. --- that is true. I couldn't
10:25:16 15 identify them off the top of my head
10:25:23 16 for you.

10:25:23 17 Q. And you have no reason to doubt
10:25:25 18 that the senate Democrat's map number
10:25:30 19 one also has two municipal splits in
10:25:32 20 Allegheny County?

10:25:33 21 A. Again, a few days ago I
10:25:36 22 probably could have pointed them out
10:25:38 23 exactly to you, but at this moment I
10:25:41 24 --- I trust that your representation
10:25:42 25 is correct.

10:25:44 1 Q. So with respect to splitting
10:25:46 2 Pittsburgh, did you do any analysis
10:25:51 3 with respect to Pittsburgh in its
10:25:52 4 uniqueness related to communities of
10:25:56 5 interest?

10:26:03 6 A. I'm, so I look at the split of
10:26:03 7 Pittsburgh in terms of the proportion
10:26:06 8 of the city that is allocated to each
10:26:08 9 of the districts. I'm not entirely
10:26:11 10 certain what you mean beyond in terms
10:26:12 11 of other definitions of communities of
10:26:15 12 interest.

10:26:15 13 Q. Well, are you aware that
10:26:16 14 Pittsburgh's really a --- it's really
10:26:21 15 a constellation of neighborhoods that
10:26:21 16 are separated by natural --- natural
10:26:29 17 geographic borders such as rivers and
10:26:30 18 mountains.

10:26:30 19 Are you aware of that?

10:26:31 20 A. I've --- I mean, I'm aware of
10:26:33 21 the geography of the city.

10:26:35 22 Q. Pittsburgh has three rivers,
10:26:37 23 466 bridges and most bridges in the
10:26:45 24 entire world more than Venice? Are
10:26:46 25 you aware of that?

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1 A. I was not aware of the
2 particular number, but I am aware that
3 it has three rivers and that it has a
4 very unique geography in that way.
5 Q. And we have unique
6 neighborhoods in Pittsburgh as well.
7 We have the east end, the north side
8 which formally was Allegheny City. We
9 have the west end, we have the south
10 side, the South Side Slopes, we have
11 the Brookline, Beechview
12 neighborhoods. And a lot of these
13 neighborhoods are split by natural
14 geography, and they all contain their
15 own unique individual cultures. And
16 do you have any familiarity with that?
17 A. Not to the degree that you are
18 describing, no.
19 Q. And are you aware that, you
20 know, the neighborhoods in Pittsburgh
21 in the southern and western
22 communities are areas that are more
23 residential as opposed to the downtown
24 part of Pittsburgh, and you know, in
25 most cases they have closer ties to

10:27:39 1 the suburban neighbors south of the
10:27:42 2 city. Especially in the South Hills
10:27:43 3 area with the west end neighbors. Do
10:27:46 4 you have any familiarity with that?

10:27:51 5 A. So again, to the degree that
10:27:53 6 you are describing, no, I'm not that
10:27:53 7 familiar with the geography of
10:27:55 8 Pittsburgh.

10:27:56 9 Q. Mount Washington, Allentown,
10:27:58 10 Overbrook, and Beechview, they share
10:27:58 11 the T with Dormont, Castle Shannon,
10:28:01 12 Mount Lebanon and Bethel Park. And
10:28:06 13 the last four places I listed are not
10:28:09 14 within the City of Pittsburgh. Again,
10:28:09 15 you're not familiar with that more
10:28:11 16 than what I'm just telling you now.

10:28:11 17 Right?

10:28:12 18 A. That's correct.

10:28:13 19 Q. And people actually when
10:28:14 20 they're in the South Hills, they
10:28:17 21 regularly mistake it --- mistakenly
10:28:21 22 refer to Banksville area as Green Tree
10:28:22 23 City. So they're outside the city ---
10:28:22 24 sorry, they're in the city and they
10:28:27 25 don't even realize it sometimes. They

10:28:28 1 believe they're in Banksville ---
10:28:30 2 Banksville area or they believe
10:28:31 3 they're in Green Tree City at times.
10:28:33 4 And the Brownsville Road Business
10:28:35 5 District unites the South Slopes,
10:28:35 6 Arlington, Knoxville, and Carrick. In
10:28:38 7 the city with boroughs of Mount
10:28:40 8 Oliver, Brentwood, Baldwin, and
10:28:42 9 Whitehall which are all not in the
10:28:44 10 city. And in the spider like city
10:28:46 11 border on our western edge, it's hard
10:28:47 12 to know when you're in Pittsburgh or
10:28:49 13 when you're in Crafton, Carnegie,
10:28:49 14 Ingram or McKees Rocks. But no
10:28:52 15 familiarity with that other than what
10:28:54 16 I'm telling you now.

10:28:54 17 Right?

10:28:55 18 A. No, I'm --- I'm not that
10:28:56 19 familiar with it.

10:28:59 20 Q. And in Pittsburgh, it's a big
10:29:01 21 deal for someone to move from one
10:29:04 22 neighborhood across the river to
10:29:04 23 another neighborhood. But you have no
10:29:07 24 familiarity with that, do you?

10:29:08 25 A. I mean, I'm sure that --- that

10:29:10 1 is the case as it would be in the city
10:29:12 2 that I live in if one were move to the
10:29:18 3 other side the City. The other side
10:29:20 4 of the city might look very different.

10:29:20 5 Q. And you're aware that right
10:29:22 6 now, Allegheny County currently has
10:29:24 7 --- well, let me strike that.

10:29:28 8 All that information was
10:29:29 9 available to you in --- in the Lamb
10:29:33 10 report that was submitted with our
10:29:36 11 brief. You didn't review that before
10:29:42 12 you gave your answers in your
10:29:42 13 testimony today.

10:29:43 14 Is that correct?

10:29:44 15 A. I --- I mean, as --- as we are
10:29:45 16 all aware, we had about 24 hours. And
10:29:48 17 so I ---.

10:29:49 18 Q. And I have about one minute, so
10:29:51 19 I'm going to cut you off.

10:29:52 20 A. Okay.

10:29:53 21 Q. You're also aware that right
10:29:54 22 now in Allegheny County, Allegheny
10:29:59 23 County has two Democratic
10:30:05 24 representatives in Congress? You're
10:30:05 25 aware of that.

10:30:05 1 Correct? Congressman Conor
10:30:06 2 Lamb and Congressman Mike Doyle
10:30:08 3 represent Allegheny County in
10:30:11 4 Congress?

10:30:11 5 A. That's correct.

10:30:12 6 Q. Okay.

10:30:12 7 And also, you're probably not
10:30:14 8 aware of the voting patterns within
10:30:16 9 the City, but we just had a mayoral
10:30:16 10 election in which a Democratic
10:30:16 11 candidate, Ed Gainey, was successful
10:30:25 12 when he ran against Republican
10:30:26 13 candidate Tony Marino? Did you do any
10:30:28 14 analysis of that whatsoever when
10:30:30 15 trying to determine communities of
10:30:35 16 interest for the City of Pittsburgh?

10:30:38 17 A. I did not consider mayoral
10:30:41 18 elections in my analysis.

10:30:41 19 Q. And more specifically, the
10:30:43 20 voting pattern. You can actually see
10:30:45 21 that there is geographic neighborhoods
10:30:45 22 track the voting pattern in that
10:30:49 23 election with respect to the
10:30:50 24 Republican candidate and Democratic
10:30:53 25 candidate that goes beyond just

10:30:57 1 registration. And that's nothing you
10:30:58 2 consider in making your opinions, is
10:31:00 3 it?

10:31:00 4 A. I certainly look at the
10:31:02 5 partisan distribution of voters in
10:31:02 6 Pittsburgh and the broader Allegheny
10:31:05 7 County area. I did not specifically
10:31:07 8 look at partisan voting behavior in
10:31:15 9 the mayoral race in Pittsburgh.

10:31:20 10 ATTORNEY ATTISANO:

10:31:20 11 Okay, thank you. I have
10:31:20 12 no further questions, Judge. Thank
10:31:22 13 you.

10:31:22 14 JUDGE MCCULLOUGH:

10:31:22 15 All right. Thank you,
10:31:23 16 Counsel. All right, Redirect.

10:31:30 17 ATTORNEY MORGAN:

10:31:30 18 Yes, Your Honor. But
10:31:31 19 first Your Honor, let me start by ---
10:31:31 20 by thanking Your Honor and the Court
10:31:32 21 Staff for staying very, very late this
10:31:35 22 evening and being patient. Much
10:31:35 23 appreciated.

10:31:35 24 ---

10:31:35 25 REDIRECT EXAMINATION

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BY ATTORNEY MORGAN:

Q. Doctor Barber, you received some questionings about the decisions made in your simulations, and one of them was it did not look at the splitting of wards.

Do you recall that?

A. Yes.

Q. In fact, the only municipality that can be split in your simulations is Philadelphia.

Correct?

A. This's correct.

Q. And so, is that the only place where wards can be split?

A. Yes.

Q. Now you also, if you recall, received a lot of questioning about your use of a .5 percent population deviation in your simulation. Do you recall that?

A. Yes.

Q. Okay.

Is --- is that a common

10:32:16 1 methodology used in this area?

10:32:17 2 A. It's extremely common. Most of
10:32:20 3 the algorithms that are used in these
10:32:20 4 redistricting cases allow for some
10:32:26 5 amount of population deviation because
10:32:26 6 the computer is just not capable of
10:32:28 7 --- of doing --- doing these
10:32:29 8 simulations otherwise. It's
10:32:31 9 noteworthy that I only allow a half of
10:32:34 10 a percent of deviation. There are
10:32:36 11 other simulations that have been used
10:32:39 12 in cases --- in --- in the League of
10:32:41 13 Women Voters cases that allowed for
10:32:42 14 larger deviations in terms of
10:32:43 15 population.

10:32:43 16 Q. Well actually, and let's look
10:32:44 17 at that, Doctor Barber. Can you
10:32:46 18 please refer to page 13 of your
10:32:48 19 report, specifically footnote 13?

10:32:53 20 A. Yes.

10:32:53 21 Q. And --- and what do you
10:32:54 22 indicate in footnote 13?

10:32:57 23 A. So I make reference to exactly
10:32:58 24 this. That other expert reports that
10:33:02 25 use similar simulation algorithms

10:33:05 1 allow for a population deviation of
10:33:08 2 two percent, some of them use a one
10:33:12 3 percent population deviation, others I
10:33:15 4 think the footnote continues to the
10:33:17 5 next page, allow for a one half of one
10:33:21 6 percent deviation.

10:33:22 7 Q. Now including Doctor Pegman's
10:33:25 8 analysis that was relied upon by the
10:33:27 9 Court in the LWV case.

10:33:31 10 Correct?

10:33:31 11 A. That's correct. He in fact
10:33:33 12 uses the largest deviation of two
10:33:36 13 percent.

10:33:36 14 Q. And did any of the experts who
10:33:36 15 have submitted reports in this case,
10:33:39 16 including the rebuttal reports, raise
10:33:41 17 this criticism in any of their
10:33:43 18 reports?

10:33:43 19 A. No.

10:33:43 20 Q. And in your opinion, will the
10:33:45 21 process of equalizing the population
10:33:45 22 in any of these maps, will that have a
10:33:53 23 meaningful impact on the outcomes of
10:33:54 24 the simulations?

10:33:55 25 A. No. So this is one of the

10:33:56 1 reasons why we don't typically fret
10:34:03 2 about this issue is that one, these
10:34:03 3 plans are never intended to be
10:34:03 4 proposals for what should or should
10:34:05 5 not be enacted. Two, suppose someone
10:34:06 6 unwisely did --- you would obviously
10:34:08 7 need to adjust the population, but
10:34:12 8 moving three --- 3,800 people is not
10:34:15 9 going to have a sizeable or, you know,
10:34:17 10 even measurable impact in a District
10:34:20 11 that contains more than 750,000
10:34:22 12 people.

10:34:23 13 Q. And have other experts in this
10:34:25 14 field recognized the same thing?

10:34:26 15 A. Yes.

10:34:26 16 Q. Does Doctor Duchin report
10:34:29 17 anywhere in her report what the
10:34:31 18 population deviation is in her
10:34:34 19 ensemble of 100,000 maps?

10:34:35 20 A. No.

10:34:35 21 Q. Now you were also asked about
10:34:37 22 your failure to test your algorithm
10:34:41 23 using the 2011 plan.

10:34:42 24 Do you recall that?

10:34:43 25 A. Yes.

10:34:43 1 Q. Does Doctor Duchin report doing
10:34:46 2 that for her 100,000 ensemble maps
10:34:49 3 anywhere in her report?

10:34:50 4 A. No.

10:34:51 5 Q. Let's talk quickly and briefly
10:34:51 6 about the index of elections that you
10:35:01 7 used. Again, just for reminder, you
10:35:01 8 used an index of all statewide
10:35:03 9 elections from 2012 to 2020.

10:35:06 10 Is that right?

10:35:06 11 A. Yes.

10:35:06 12 Q. And is it --- is it again a
10:35:08 13 common methodology in this area to use
10:35:11 14 an index of elections like that?

10:35:13 15 A. Yes, it's incredibly common for
10:35:15 16 the reasons that I described earlier
10:35:18 17 which is these races are not
10:35:21 18 Congressional races. And so, if we're
10:35:21 19 trying to use these races as a proxy,
10:35:21 20 we don't want the idiosyncrasies of
10:35:21 21 auditor races or attorney general
10:35:29 22 races or U.S. Senate races to have
10:35:30 23 much of an impact. And the average of
10:35:31 24 these races washes out that particular
10:35:34 25 impact.

10:35:34 1 Q. And did any of the experts
10:35:38 2 whose opinions the Court relied upon
10:35:40 3 in the League of Women Voters case use
10:35:44 4 an index of elections similar to what
10:35:44 5 you're using?

10:35:45 6 A. Yes, it's extremely common.

10:35:51 7 Q. Doctor Barber, you received a
10:35:52 8 lot of questions about the algorithm
10:35:55 9 that you're using. Was the SMC
10:35:55 10 algorithm that you used, was it
10:36:02 11 empirically validated?

10:36:02 12 A. Yes.

10:36:03 13 Q. And what does that mean?

10:36:04 14 A. So what it means is that the
10:36:06 15 researchers used a small set, a small
10:36:08 16 geographic unit in which we actually
10:36:10 17 know the discreet number of possible
10:36:15 18 maps that could be drawn. So in
10:36:18 19 Pennsylvania, it's trillions. We
10:36:19 20 could never know all of the maps, but
10:36:21 21 what we can do is we can validate this
10:36:24 22 by using a small subset of a --- of an
10:36:26 23 area. And so, we take a small
10:36:26 24 geographic unit and say we know all of
10:36:34 25 the possible maps that could be drawn.

10:36:34 1 Let's run the algorithm, take a sample
10:36:38 2 of those, and then compare the sample
10:36:41 3 to that population. That allows us to
10:36:41 4 validate if the model is in fact doing
10:36:44 5 what the math says it should be doing
10:36:48 6 which is drawing a representative
10:36:48 7 sample.

10:36:49 8 Q. And --- and I believe you
10:36:49 9 testified earlier that the Khalif Ali
10:36:49 10 was one of the developers of this
10:36:49 11 algorithm?

10:36:53 12 A. Yes.

10:36:53 13 Q. And is he a professor of
10:36:59 14 Harvard?

10:36:59 15 A. He is, yes.

10:36:59 16 Q. And has he also served as an
10:36:59 17 expert in redistricting cases and
10:36:59 18 related work?

10:37:00 19 A. Yes. He's used this exact
10:37:01 20 algorithm in testifying in the
10:37:03 21 legislative Reapportionment Commission
10:37:09 22 here in Pennsylvania as well as in
10:37:09 23 Ohio.

10:37:10 24 Q. And to your knowledge, Doctor
10:37:12 25 Barber, was Doctor Ali's algorithm and

10:37:14 1 testimony accepted as reliable and ---
10:37:17 2 reliable and relied upon by the Ohio
10:37:19 3 Supreme Court?

10:37:19 4 A. Yes.

10:37:32 5 Q. You also received a lot of
10:37:33 6 questions about the reasons that you
10:37:35 7 utilized certain percentages for race
10:37:37 8 in your secondary simulation that you
10:37:39 9 conducted, but --- but sort of relying
10:37:42 10 back, why is it that you even did this
10:37:45 11 secondary simulation in the first
10:37:47 12 instance?

10:37:48 13 A. So the second set of
10:37:50 14 simulations, what I call the race
10:37:53 15 conscious simulations, are really
10:37:53 16 simply there to act as a validation or
10:37:55 17 a check or a robustness check to make
10:38:00 18 sure that it's not the case that
10:38:02 19 explicit considerations of race would
10:38:05 20 have a big impact in what these
10:38:09 21 simulations look like. So you can
10:38:11 22 imagine that you could run a set of
10:38:14 23 simulations that don't consider race,
10:38:16 24 and then you get a bunch of experts up
10:38:20 25 here that say well, if you have

10:38:24 1 considered race, everything would be
10:38:24 2 different. The --- the purpose of
10:38:24 3 that second set of simulations is to
10:38:25 4 rebut that criticism or preemptively
10:38:34 5 say well no, that's not the case.
10:38:34 6 Let's --- let's make sure that that
10:38:35 7 isn't what's going on.
10:38:35 8 Q. And I think if I recall
10:38:35 9 correctly that one of the questions
10:38:36 10 you were asked about how many of the
10:38:37 11 simulations create, you know, a
10:38:39 12 majority black District and another
10:38:42 13 majority/minority District, similar to
10:38:43 14 what some of the plans proposed to the
10:38:46 15 Court have.
10:38:47 16 Do you recall that?
10:38:48 17 A. Yes, that's correct.
10:38:48 18 Q. And did you actually look at
10:38:50 19 that issue?
10:38:51 20 A. I did, yes. So in one of my
10:38:53 21 figures, I report only the
10:38:54 22 simulations, the race blind
10:38:59 23 simulations that incidentally also
10:39:01 24 create a majority/minority District
10:39:03 25 and a majority opportunity district.

10:39:07 1 Q. Can you turn to page 37 and
10:39:09 2 look at Figure 8 of your report,
10:39:12 3 please?

10:39:12 4 A. Yes.

10:39:12 5 Q. And is this the analysis you're
10:39:14 6 referring to?

10:39:15 7 A. Yes. So the middle panel of
10:39:18 8 this figure shows the results of that
10:39:23 9 --- of that analysis. I --- I refer
10:39:24 10 to it as the race filtered analysis.

10:39:26 11 Q. And is 1,852 maps different
10:39:31 12 maps, is that a significant enough
10:39:34 13 sample to be able to draw conclusions
10:39:35 14 from?

10:39:36 15 A. It is, yes. And it's more than
10:39:38 16 some people use in their entire
10:39:41 17 ensemble.

10:39:44 18 Q. So are there other experts that
10:39:44 19 use a similar number or lower number
10:39:44 20 of total maps to --- to be a
10:39:44 21 representative sample?

10:39:45 22 A. Yes.

10:39:45 23 Q. And those expert's opinions
10:39:47 24 have been relied upon by courts?

10:39:49 25 A. Yes.

10:39:50 1 Q. And so, looking at the middle
10:39:52 2 graph of Figure 8, how does this
10:39:56 3 demonstrate the, sort of the partisan
10:39:58 4 effect of, you know, looking at only
10:40:00 5 those maps that include one majority
10:40:07 6 minority District and one majority
10:40:08 7 black District?

10:40:10 8 A. So it really indicates that
10:40:10 9 there's minimal impact. So when you
10:40:12 10 look at the districts that only
10:40:17 11 contain these, or meet these --- the
10:40:17 12 simulations that meet these criteria,
10:40:19 13 if you compare the left panel to the
10:40:21 14 middle panel, you can see that there's
10:40:25 15 really minimal change. There's not
10:40:27 16 much of an impact on the partisan
10:40:29 17 breakdown of the simulations when you
10:40:31 18 restrict your consideration to
10:40:33 19 simulations that include these
10:40:35 20 districts that meet particular racial
10:40:39 21 thresholds.

10:40:39 22 Q. Doctor Barber, is there one
10:40:47 23 particular way to measure fairness of
10:40:48 24 a Congressional map?

10:40:49 25 A. No.

10:40:49 1 Q. In fact, there are lots of
10:40:50 2 ways, aren't there?

10:40:52 3 A. There are as many ways as there
10:40:54 4 are people who study this.

10:40:55 5 Q. And a lot of the fairness of a
10:40:57 6 map is based upon what the particular
10:40:59 7 goals of that party is.

10:41:01 8 Correct?

10:41:02 9 A. That's, party meaning the
10:41:04 10 person, not political party?

10:41:06 11 Q. Correct, like the person
10:41:08 12 analyzing the fairness of the map?

10:41:10 13 A. Yes.

10:41:11 14 ATTORNEY MORGAN:

10:41:11 15 Thank you, Your Honor.
10:41:13 16 No further questions.

10:41:14 17 JUDGE MCCULLOUGH:

10:41:14 18 All right, thank you.
10:41:15 19 You may step down, and Doctor, thank
10:41:18 20 you. That concludes for this evening.
10:41:24 21 I thank you all for your cooperation.
10:41:26 22 We will convene again tomorrow at 9:30
10:41:28 23 a.m., and we will begin with the
10:41:30 24 expert for Congressional Intervenors.
10:41:37 25 After we finish those experts, we will

10:41:40 1 have closing arguments and hopefully
10:41:43 2 we'll be done. Thank you.

10:41:43 3 Counsel, do you have a
10:41:44 4 question?

10:41:44 5 ATTORNEY WIYGUL:

10:41:44 6 Yeah, I'm sorry, Your
10:41:44 7 Honor. I just wanted to return for
10:41:44 8 --- for purposes of knowing what the
10:41:46 9 lay of the land will be tomorrow to
10:41:46 10 the question about a Department of
10:41:48 11 State witness. I know Your Honor
10:41:50 12 suggested earlier, if I understood
10:41:54 13 correctly, that perhaps that witness
10:41:58 14 wouldn't be necessary in this case.

10:42:00 15 I will say my --- my
10:42:00 16 concern in part is to make the record
10:42:02 17 on issues of what would be
10:42:04 18 administratively feasible with respect
10:42:06 19 to changes to the calendar. In part,
10:42:08 20 because I think only because of the
10:42:10 21 number of parties, the chances that
10:42:12 22 there will be an appeal from this
10:42:14 23 Court's decision are fairly good and
10:42:17 24 that the supreme --- I would like the
10:42:20 25 Supreme Court to be able to have a

10:42:22 1 record on administrative feasibility
10:42:24 2 of various potential changes to the
10:42:26 3 calendar.

10:42:27 4 My suggestion would be,
10:42:27 5 we might be able to do that in the
10:42:30 6 form of an affidavit to save time if
10:42:32 7 the parties would agree. And I would
10:42:33 8 be happy to work with my clients to
10:42:35 9 see if we can put that together and
10:42:36 10 circulate it in the morning.

10:42:37 11 JUDGE MCCULLOUGH:

10:42:38 12 And actually, you were
10:42:39 13 not at the meeting this morning. I
10:42:40 14 know you were stuck in traffic, but
10:42:42 15 that is generally the consensus of
10:42:48 16 counsel is we could do that by way of
10:42:49 17 an affidavit. Could I have a show of
10:42:51 18 nods of heads? Yes, okay? So, yes,
10:42:52 19 great suggestion and that's what we
10:42:53 20 agreed on in your absence.

10:42:54 21 ATTORNEY WIYGUL:

10:42:54 22 I'm glad I came to the
10:42:56 23 right conclusion late.

10:42:57 24 JUDGE MCCULLOUGH:

25 So I think an affidavit

1 would be --- would be perfectly fine.

2 ATTORNEY WIYGUL:

3 Thank you, Your Honor.

4 JUDGE MCCULLOUGH:

10:42:57 5 And you can offer it

10:42:59 6 tomorrow if you have it ready

10:43:01 7 tomorrow.

10:43:02 8 ATTORNEY WIYGUL:

10:43:02 9 Very good, thank you.

10:43:03 10 JUDGE MCCULLOUGH:

10:43:03 11 Okay.

10:43:03 12 Any other counsel need

10:43:04 13 to raise an issue? No? All right,

10:43:08 14 thank you.

10:43:14 15 COURT CRIER HOLLAND:

10:43:15 16 Commonwealth Court is

10:43:16 17 now adjourned.

18 * * * * *

19 HEARING CONCLUDED

20 * * * * *

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CERTIFICATE

I hereby certify that the foregoing
proceedings, hearing held before
Judge, was reported by me on 1/27/2022
and that I, Nicole Montagano, read
this transcript, and that I attest
that this transcript is a true and
accurate record of the proceeding.
Dated the 28 day of January, 2022



Nicole S. Montagano,
Court Reporter

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IN THE COMMONWEALTH COURT OF
PENNSYLVANIA

* * * * *

Carol Ann Carter; *
Monica Parrilla; * CASES
Rebecca Poyourow; * CONSOLIDATED
William Tung; *
Roseanne Milazzo; * No.
Burt Siegel; * 464 MD 2021
Susan Cassanelli; *
Lee Cassanelli; *
Lynn Wachman; *
Michael Guttman; *
Maya Fonkeu; *
Brady Hill; *
Mary Ellen Balchunis; *
Tom DeWall; *
Stephanie McNulty; *
And Janet Temin, *
Petitioners *

V.

Vernica Degraffenreid, *
in her official *
capacity as the Acting *
Secretary of the *
Commonwealth of *
Pennsylvania; and *
Jessica Mathis, in her *
Official capacity as *
Director for the *
Pennsylvania Bureau of *
Election Services and *
Notaries, *
Respondents *

BEFORE: PATRICIA A. MCCULLOUGH, JUDGE
CONTINUED HEARING: Friday, January 28,
2022
9:30 a.m.

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by the certifying agency

1 Philip T. Gressman; *

Ron Y. Donagi; *

2 Kristopher R. Tapp; *

Pamela Gorkin; *

3 David P. Marsh; *

James L. Rosenberger; *

4 Amy Meyers; *

Eugene Boman; *

5 Gary Gordojn; *

Liz McMahon; * No.

6 Timothy G. Freman; * 465 M.D. 2021

And Garth Isakk, *

7 Petitioners *

V. *

8 Vernica Degraffenreid, *

in her official *

9 capacity as the Acting *

Secretary of the *

10 Commonwealth of *

Pennsylvania; and *

11 Jessica Mathis, in her *

Official capacity as *

12 Director for the *

Pennsylvania Bureau of *

13 Election Services and *

Notaries, *

14 Respondents *

* * * * *

18 LOCATION: Pennsylvania Judicial Center

19 601 Commonwealth Avenue

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21 Harrisburg, PA 17120

22 WITNESSES: Keith Naughton, Devin

23 Caughey

25 Reporter: Nicole Montagano

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<u>Number</u>	<u>Description</u>	<u>Page</u> <u>Offered</u>
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P R O C E E D I N G S

00:16:35

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COURT CRIER TURNER:

00:16:36

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All rise. Commonwealth

00:16:36

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Court is now in session. The

00:16:36

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Honorable Judge McCullough presiding.

00:16:51

7

Please be seated.

00:16:51

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JUDGE McCULLOUGH:

9

Good morning.

10

I hope you all got some

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rest and food and heat. Thank you.

12

We're ready to move this morning.

13

I just want to tell

00:16:51

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Counsel that after we finish with the

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first expert witness, I will have a

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status conference with lead Counsel

00:16:54

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again in the same room where we met

00:16:58

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yesterday morning. And that also

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gives our IT some additional time that

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they will need to set the remote for

00:17:09

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this expert witness for the last, I

00:17:10

22

think, yes.

00:17:10

23

Okay.

00:17:12

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So we can tie up any

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loose ends at our status conference if

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there's anything else, Counsel, that we need to bring up in the Court afterwards. But for now we will proceed to hear testimony, from, I believe, Congressional Intervenors.

Mr. Haverstick?

ATTORNEY HAVERSTICK:

Good morning, Your Honor.

JUDGE MCCULLOUGH:

Good morning.

ATTORNEY HAVERSTICK:

Your Honor, I call Doctor Keith Naughton.

COURT CRIER TURNER:

Would you please raise your right hand?

DR. NAUGHTON,

CALLED AS A WITNESS IN THE FOLLOWING PROCEEDINGS, HAVING FIRST BEEN DULY SWORN, TESTIFIED AND SAID AS FOLLOWS:

COURT CRIER TURNER:

Thank you.

00:18:23 1 BY ATTORNEY HAVERSTICK:

00:18:25 2 Q. Good morning, Dr. Naughton.

00:18:27 3 A. Good morning.

00:18:27 4 Q. Doctor, spell your last name

00:18:28 5 for the court reporter, please.

00:18:28 6 A. N-A-U-G-H-T-O-N. I spent my

00:18:39 7 whole life spelling it for everybody.

00:18:39 8 Q. You're a doctor?

00:18:40 9 A. Correct.

00:18:40 10 Q. What's your doctorate?

00:18:42 11 A. Public Policy.

00:18:43 12 Q. That's, I think, different from

00:18:46 13 most of the other folks who testified

00:18:47 14 yesterday.

00:18:48 15 A. Well, my dissertation is in

00:18:52 16 part grounded in political science.

00:18:55 17 Q. What background do you have

00:19:03 18 that's relevant for the Courts when we

00:19:03 19 consider what maps are the right ones

00:19:09 20 for Pennsylvania?

00:19:10 21 A. Well, I spent 15 years working

00:19:12 22 in Pennsylvania campaign politics at

00:19:20 23 all levels, doing all types of jobs,

00:19:20 24 all types of responsibilities,

00:19:21 25 statewide races, local races, federal

00:19:22 1 races and so forth.

00:19:22 2 Q. And I'm going to ask you
00:19:24 3 another question about that in a
00:19:27 4 minute. In terms of your academic
00:19:29 5 background, what are some of the
00:19:30 6 disciplines that one studies when you
00:19:32 7 get a Ph.D. in Public Policy?

00:19:35 8 A. Well, a dissertation is a very
00:19:38 9 challenging thing. I mean, it can
00:19:42 10 take six years to accomplish. It's
00:19:44 11 very involved. You have to become an
00:19:47 12 expert in the field in which you're
00:19:47 13 studying.

00:19:47 14 So for me, I spent two years
00:19:48 15 reading about congressional politics,
00:19:54 16 about how constituents interact with
00:19:57 17 their members, all the theoretical
00:20:00 18 bases of representation, also some
00:20:02 19 economics, because I developed sort of
00:20:04 20 an economic model when it comes to
00:20:10 21 political interaction.

00:20:11 22 Q. And you're not a computer
00:20:12 23 scientist or mathematician, but did
00:20:12 24 you have to get conversant in
00:20:15 25 mathematics and statistics?

00:20:17 1 A. Yes. There's an enormous
00:20:19 2 quantitative component in the social
00:20:20 3 sciences for all Ph.D's. In my own
00:20:24 4 doctorate I used Heckman's selection
00:20:27 5 in a zero inflated negative binomial.
00:20:34 6 Those two were reliant on the
00:20:36 7 dependent variable. That's why I had
00:20:36 8 to do different models. And I haven't
00:20:38 9 done it in a while, so, you know, you
00:20:39 10 kind of use it or lose it. So I don't
00:20:42 11 think I could lecture anyone on the
00:20:42 12 Heckman selection, not that anyone
00:20:45 13 wants to hear it.

00:20:45 14 Q. I think none of us wants to
00:20:48 15 hear it, but maybe not. Let's go back
00:20:51 16 to your campaign consultant
00:20:53 17 experience.

00:20:59 18 A. Sure.

00:20:59 19 Q. Tell the Court why that
00:21:00 20 background is useful in what we're
00:21:02 21 doing today and yesterday and what the
00:21:04 22 Judge will be doing in the next couple
00:21:06 23 of days.

00:21:06 24 A. Running campaigns and getting
00:21:10 25 elected is not something you read

00:21:12 1 about in a book or can learn in a
00:21:13 2 classroom. I mean, if you've never
00:21:16 3 been a candidate or if you've never
00:21:18 4 run a campaign, you just --- you don't
00:21:19 5 know what it's like until you've done
00:21:21 6 it. And to win races in Pennsylvania
00:21:28 7 or any other state, particularly a
00:21:29 8 state like Pennsylvania, which is
00:21:30 9 incredibly diverse, you have to know
00:21:32 10 the ins and outs of the whole state.

00:21:35 11 I mean --- and I could sort of
00:21:36 12 regurgitate my resume and say I've
00:21:42 13 been in all 67 counties, which I have,
00:21:42 14 and experience in all 67 counties,
00:21:44 15 which I have. But I think the key
00:21:46 16 thing is I used to tell people if you
00:21:50 17 want --- if you're in politics, if
00:21:57 18 you're running campaigns, you know,
00:21:58 19 you have to win to eat. So you've got
00:22:00 20 to win races. So I did that for 15
00:22:05 21 years, and I think that demonstrates
00:22:06 22 my record.

00:22:07 23 Q. Any particular vignettes you
00:22:09 24 want to share with all of us in the
00:22:11 25 room about your experience as usual?

00:22:12 1 A. Well, there is a particular set
00:22:13 2 of races. I've done a lot of judicial
00:22:16 3 races in the state, and I've won ---
00:22:22 4 I've won a vast majority of them. And
00:22:25 5 these are tough races. And, you know,
00:22:26 6 the thing about being elected Judge in
00:22:34 7 Pennsylvania is being a Judge is the
00:22:35 8 pinnacle of the profession. And I've
00:22:37 9 been around a lot of lawyers and every
00:22:39 10 lawyer I know has always thought, you
00:22:41 11 know, I'd like to be a Judge some day.
00:22:44 12 But being a Judge has nothing to do
00:22:49 13 with how --- with getting votes.

00:22:49 14 And I always tell a candidate,
00:22:49 15 I said, look, you let me fly the
00:22:56 16 plane, you help me, and we'll get you
00:22:59 17 to where you want to go. So one
00:23:01 18 particular race I worked on was for
00:23:04 19 Judge Gantman. And she won by 13
00:23:08 20 votes. And that was the closest race
00:23:11 21 in the history of Pennsylvania, going
00:23:11 22 back to when Ben Franklin was flying
00:23:14 23 kites. And the thing about --- you
00:23:16 24 know, I've been asked, you know, what
00:23:17 25 makes the difference. Well, it's 13

00:23:19 1 votes. Everything makes a difference.

00:23:21 2 Q. In your opinion, can a

00:23:24 3 candidate win --- can you win a close

00:23:29 4 race like that in Pennsylvania without

00:23:33 5 knowing the Commonwealth at a regional

00:23:36 6 and maybe at a local level?

00:23:36 7 A. No. And, you know, like in

00:23:37 8 that particular race, you know, it's

00:23:40 9 the radio spots and where you put

00:23:41 10 them, and it's the mail and where you

00:23:43 11 send it, and it's where do you send

00:23:45 12 your candidate where they're best able

00:23:46 13 to collect votes, what interviews do

00:23:50 14 you do, what endorsements are you able

00:23:52 15 to go to. And when it's 13 votes, if

00:23:54 16 you make one wrong move, you're going

00:23:56 17 to lose. So we had to do everything

00:23:59 18 right.

00:24:03 19 Q. I imagine part of doing

00:24:05 20 everything right is really connecting

00:24:07 21 with people at a local level.

00:24:08 22 Is that fair?

00:24:09 23 A. Yes.

00:24:09 24 Q. Does that give you insight that

00:24:11 25 you can share with the Court about

00:24:13 1 what, in your opinion, congressional
00:24:14 2 or constituents, people, want from
00:24:22 3 their congressmen or women?

00:24:23 4 A. Well, I think it's a mistake to
00:24:25 5 believe that people are --- most
00:24:26 6 people are sort of hyper-partisan.
00:24:28 7 That is not my experience at all. And
00:24:30 8 I think it's backed up by the polling
00:24:33 9 research.

00:24:35 10 Most people, they kind of group
00:24:36 11 their elected officials together, and
00:24:37 12 they just want things to go well.
00:24:38 13 They want the government to run right.
00:24:40 14 They want the streets fixed, the
00:24:42 15 streets plowed. They want the schools
00:24:46 16 to run well. It's sort of very all
00:24:46 17 instrumental thinking.

00:24:52 18 And they also want to feel that
00:24:54 19 they're represented and they want to
00:24:55 20 feel that they're heard. And they
00:24:59 21 want to know that if they have an
00:25:00 22 issue they can go to their member of
00:25:01 23 Congress or State Representative and
00:25:03 24 ask for help and that they're going to
00:25:04 25 get some help. It's a very personal

00:25:06 1 relationship.

00:25:06 2 Q. Based on your knowledge of the
00:25:09 3 state, how many people actually vote
00:25:11 4 typically?

00:25:11 5 A. Well, it depends on, you know,
00:25:13 6 the year. On odd numbered or local
00:25:20 7 elections, it can be as low as
00:25:20 8 25 percent and on Presidential
00:25:23 9 Elections it can be over 70 percent.
00:25:25 10 Wide variance.

00:25:25 11 Q. Do you think that to understand
00:25:27 12 Pennsylvania politics and Pennsylvania
00:25:30 13 political geography you have to
00:25:32 14 understand about nonvoters, too?

00:25:34 15 A. Well, yes, because you want to
00:25:38 16 get the people who don't habitually
00:25:42 17 vote to come out for your candidate.
00:25:42 18 You've got to figure out who is and
00:25:44 19 isn't voting. You know, you've got to
00:25:47 20 target the best --- your best
00:25:48 21 opportunities. And, you know, I would
00:25:50 22 add one thing is, you know, if you're
00:25:52 23 a Republican in Pennsylvania, you have
00:25:54 24 got to find a way to convince
00:25:55 25 Democrats to vote for you.

00:25:57 1 Q. You know, I'm going to ask you
00:25:58 2 a question about that in one second.

00:26:01 3 A. Sure.

00:26:01 4 Q. One more follow-up. Are there,
00:26:01 5 in your view, regional or maybe even
00:26:06 6 hyper-local issues that transcend
00:26:09 7 party politics?

00:26:11 8 A. Absolutely, absolutely.

00:26:12 9 Q. Can you tell the Court some?

00:26:14 10 A. Every part of the state is
00:26:16 11 different and every part has its
00:26:21 12 needs. I don't know if this is
00:26:21 13 getting at your question, but, you
00:26:26 14 know, some parts of the state are
00:26:26 15 particularly focused on voting for
00:26:28 16 their own people, like sort of home
00:26:31 17 places. Like Johnstown is --- you
00:26:31 18 know, if you're from Johnstown and
00:26:31 19 you're running across the state,
00:26:37 20 everybody's voting for you. Scranton
00:26:38 21 is a very big, like, hometown kind of
00:26:40 22 focused electorate. You know,
00:26:42 23 Wilkes-Barre is as well. And the
00:26:45 24 Pittsburgh region is. You know, we
00:26:49 25 see this manifested actually in our

00:26:51 1 Court races.

00:26:54 2 You know, for decades the
00:26:55 3 Supreme Court has been dominated by
00:26:57 4 Judges from Pittsburgh. This goes
00:27:00 5 back to, you know, the 50s because
00:27:01 6 people in that region, they vote for
00:27:03 7 folks from that area. And they kind
00:27:05 8 of --- that happens in Johnstown and
00:27:07 9 it happens in the northeast, but it's
00:27:09 10 just there's so many votes in
00:27:09 11 Pittsburgh, it kind of crowds people
00:27:11 12 out.

00:27:11 13 Q. Are there nonpolitical issues
00:27:13 14 that cause people, voters and
00:27:15 15 nonvoters, to coalesce in certain
00:27:17 16 parts of the state?

00:27:18 17 A. All the time. All the time.
00:27:19 18 And people will coalesce around
00:27:19 19 philosophical things like pro-life or
00:27:19 20 pro-choice. But, you know, if you're
00:27:19 21 not serving the people in your
00:27:19 22 district, sort of not, as they say,
00:27:30 23 delivering the bacon for everybody,
00:27:33 24 you know, forget it. You can't ---
00:27:33 25 you cannot just go on auto pilot and

00:27:36 1 get the right American Conservative
00:27:39 2 Union or ADA score and cruise to
00:27:43 3 election. It doesn't work that way.
00:27:44 4 You got to connect with the people.

00:27:44 5 Q. So if you were going to design,
00:27:45 6 for instance, a district in a region
00:27:47 7 that had a significant elderly
00:27:49 8 population, you would want to know
00:27:50 9 that.

00:27:50 10 Right?

00:27:51 11 A. Yes.

00:27:51 12 Q. Why?

00:27:52 13 A. Well, because they have common
00:27:54 14 interests. And, you know, grouping
00:27:58 15 with people with common interests is
00:28:00 16 very important because besides this R
00:28:04 17 versus D issue, they have specific
00:28:08 18 needs. They need Social Security
00:28:10 19 protected. They need money for
00:28:13 20 Access, you know, for public transit.
00:28:16 21 They --- you know, they need just a
00:28:16 22 whole a variety of issues. You know,
00:28:24 23 people who are aged require healthcare
00:28:24 24 and so forth.

00:28:24 25 Well, if you have them sort of

00:28:28 1 split up chock-a-block in different
00:28:29 2 districts, what kind of representation
00:28:30 3 are they going to get?

00:28:31 4 Q. I gather there are all kinds of
00:28:33 5 issues, again, nonparty politics
00:28:36 6 issues, that could cause people to
00:28:38 7 want to coalesce all over the state?

00:28:41 8 A. The vast majority of people are
00:28:42 9 not thinking about far right, far left
00:28:46 10 on a daily basis. And, again, I think
00:28:48 11 that's shown by the poll.

00:28:50 12 Q. Now, before I ask you to
00:28:54 13 comment on yesterday's testimony,
00:28:55 14 which I'm about to do, let's --- let
00:29:01 15 me ask you a question. In fairness,
00:29:03 16 some of my colleagues all around us
00:29:05 17 may want to ask you a little bit
00:29:07 18 later. Your campaign history has been
00:29:12 19 one advocating for Republicans?

00:29:15 20 A. Yes.

00:29:15 21 Q. Would it be a fair criticism of
00:29:17 22 your testimony today to impugn it
00:29:21 23 because you only represented
00:29:22 24 Republicans when you were doing that
00:29:23 25 kind of work?

00:29:24 1 A. No.

00:29:25 2 Q. Why not?

00:29:26 3 A. Everything I said today about

00:29:28 4 how campaigns work I believe a

00:29:29 5 Democratic consultant would say

00:29:33 6 because the campaigns are the same.

00:29:34 7 And the matter is you're either

00:29:35 8 working for Republican campaigns or

00:29:41 9 Democratic campaigns. So, you know,

00:29:42 10 that is it.

00:29:43 11 Q. You get to learn the state as a

00:29:45 12 campaign consultant regardless of what

00:29:46 13 party?

00:29:46 14 A. You have to.

00:29:47 15 Q. All right.

00:29:48 16 I promised you we'd talk about

00:29:50 17 yesterday's testimony and now we will.

00:29:53 18 You did observe it, whether it was on

00:29:55 19 the television ---

00:29:56 20 A. Yes.

00:29:56 21 Q. --- or screens or live?

00:30:01 22 A. Yes.

00:30:01 23 Q. Explain to the Court what, in

00:30:03 24 your opinion, were some of the

00:30:05 25 weaknesses you heard in yesterday's

00:30:08 1 expert testimony, I mean, to the
00:30:09 2 extent you think there were
00:30:09 3 weaknesses.

00:30:14 4 A. Well, I think the first thing I
00:30:15 5 want to emphasize is I think all the
00:30:18 6 experts are brilliant individuals.
00:30:21 7 And these mathematical models are ---
00:30:25 8 have some extraordinary features.
00:30:35 9 They're very sophisticated and very
00:30:36 10 impressive. And they are --- you
00:30:37 11 know, these are brilliant individuals,
00:30:39 12 so I'm not impugning their
00:30:40 13 intellectualism in any way, shape or
00:30:44 14 form.

00:30:44 15 But the problem with what they
00:30:47 16 testified about is what's the power of
00:30:51 17 their models? Because we're running
00:30:55 18 --- we're running an election and
00:30:56 19 there's a lot of things that have to
00:30:59 20 --- that go into winning an election.
00:31:02 21 And that these models, as very
00:31:07 22 sophisticated as they are and as much
00:31:09 23 effort as they've put into them,
00:31:11 24 that's only part of things.

00:31:13 25 Q. Well, let's zero in on this a

00:31:14 1 little bit because it's, I think,
00:31:16 2 vital to what we're talking about
00:31:18 3 today. Can you put some meat on the
00:31:21 4 bones? Can you give us a couple of
00:31:22 5 examples of what you're talking about?
00:31:26 6 A. Yes. Let me back up for just a
00:31:28 7 second. So we've got a two-party
00:31:33 8 system. That's --- other countries,
00:31:33 9 many other countries, have a
00:31:37 10 parliamentary system. So you got a
00:31:37 11 bunch of parties and then they run an
00:31:39 12 election and then they negotiate to
00:31:41 13 form a government, to put it very
00:31:44 14 simplistically.

00:31:45 15 In the United States, all of
00:31:46 16 our squabbling, arguing folks are
00:31:54 17 under one or the other umbrella. So
00:31:56 18 when the President wins, he's on top
00:32:00 19 of this rickety coalition. And you
00:32:03 20 know, he just --- he can't satisfy all
00:32:04 21 their demands. So President Biden has
00:32:10 22 been elected. He's trying to satisfy
00:32:11 23 all these demands. It's really
00:32:11 24 challenging.

00:32:12 25 And you go through about two

00:32:14 1 years and you get to that first
00:32:14 2 midterm election. And so you've got a
00:32:17 3 whole bunch of people and they're
00:32:18 4 thinking, okay, we elected this guy.
00:32:20 5 He didn't give us what he wanted, and
00:32:22 6 so they're not too happy. You know,
00:32:24 7 they stay at home for that election.

00:32:27 8 Now, the other side is mad.
00:32:28 9 They lost and they don't like anything
00:32:30 10 that's going on. So their turn-up
00:32:32 11 goes up. The President's party's
00:32:36 12 turn-out goes down, and you have a
00:32:37 13 wipeout for the President on election
00:32:43 14 day.

00:32:43 15 Over the --- in three --- let's
00:32:45 16 see. Between 2018, 2008, 1994, all
00:32:49 17 first midterms, the President's party
00:32:54 18 has lost an average of 53 seats. Now,
00:32:59 19 the only time that this very powerful
00:33:03 20 dynamic doesn't work is when there's
00:33:03 21 like a national security crisis like
00:33:08 22 9/11, when George W. Bush's rating is
00:33:08 23 70 percent, Cuban missile crisis, '62,
00:33:10 24 although the Democrats still lost
00:33:12 25 seats.

00:33:12 1 So outside of this sort of
00:33:14 2 unpredictable, exogenous event, the
00:33:18 3 first midterm for a President is a
00:33:21 4 disaster for his party on
00:33:25 5 congressional elections. And this has
00:33:27 6 been going on for decades. This is
00:33:29 7 not unusual. The same dynamic is in
00:33:34 8 effect.

00:33:34 9 Q. Did you see the models
00:33:34 10 yesterday account for factors like
00:33:39 11 that?

00:33:39 12 A. I didn't see it. And I will
00:33:40 13 tell you this flat out, this November
00:33:40 14 the Democrats are going to lose,
00:33:43 15 barring this unpredictable event.
00:33:44 16 They are going to lose 30, 40 seats,
00:33:50 17 maybe more. And a year from now,
00:33:52 18 Democrats are going to be lucky to
00:33:55 19 have six seats. I don't care what the
00:33:56 20 model is. They're going to grind
00:33:59 21 these predictions right into the dust.

00:33:59 22 Q. What other factors, other than
00:34:01 23 a midterm that we're talking about,
00:34:03 24 would impact the models that we heard
00:34:05 25 yesterday that you don't think were

00:34:07 1 there, if there are any?

00:34:07 2 A. Well, this is a huge factor,
00:34:07 3 you know, as President, because then,
00:34:09 4 if I could say, when the President
00:34:12 5 runs, that party, the winning
00:34:15 6 President, tends to do better, so
00:34:17 7 they'll pick up seats. It's not as
00:34:20 8 powerful, but that tends to happen.
00:34:22 9 So there's that larger thing.

00:34:23 10 Look, it's fundraising. It's
00:34:25 11 the state of the economy. The state
00:34:28 12 of economy is a huge thing. If we're
00:34:28 13 in a recession, people are not happy
00:34:31 14 with what's going on. The incumbents
00:34:34 15 lose and they tend to blame the
00:34:35 16 President. That hurts the President.

00:34:39 17 So you got economy, you've got
00:34:39 18 fundraising, you got candidate
00:34:40 19 quality, a little bit harder to
00:34:42 20 quantify. Maybe who is the Governor
00:34:44 21 of the state might have some effect.
00:34:46 22 I'm kind of dubious about that.

00:34:50 23 Q. So am I right when you were
00:34:51 24 listing these factors, because I think
00:34:54 25 you answered my question, these aren't

00:34:56 1 factors that you heard discussed
00:34:57 2 yesterday in anyone's expert report?
00:34:59 3 A. No.
00:34:59 4 Q. Do they need to be there?
00:35:01 5 A. Of course.
00:35:01 6 Q. What's the relevant importance
00:35:03 7 to the factors that you did hear about
00:35:04 8 yesterday?
00:35:05 9 A. I can't say that unless you run
00:35:09 10 the model. But we've seen this
00:35:11 11 historically. We saw this in 2006. I
00:35:13 12 think that --- I think in the
00:35:14 13 redistricting in 2006, it was said
00:35:18 14 something like there were going ---
00:35:19 15 there were going to be 13 permanent
00:35:22 16 Republican seats, something like that.
00:35:24 17 But the second midterm, which
00:35:26 18 is also bad for the incumbent
00:35:28 19 President's party, in 2006, the
00:35:32 20 Republicans didn't get 13 seats, they
00:35:34 21 got 8. And the Democrats more than
00:35:38 22 doubled and they added seats the next
00:35:40 23 election. And that's --- that just
00:35:42 24 illustrates the power of the
00:35:45 25 Presidency and the power of these

00:35:48 1 national trends and this national
00:35:50 2 mood, and they overwhelm these
00:35:52 3 partisan turnout models.

00:35:55 4 And you can test this. We have
00:35:58 5 the data. You can test the power of
00:36:00 6 it. And that was really the enormous
00:36:00 7 weakness yesterday. And it has to be
00:36:09 8 included. You have to got to --- you
00:36:09 9 can talk about these turnout models
00:36:12 10 and the various theories, but you've
00:36:14 11 got to come before this Court and say,
00:36:16 12 okay, and we've tested it with all
00:36:18 13 these other important factors, and you
00:36:20 14 know what, it's ten percent of the
00:36:21 15 power.

00:36:22 16 If we don't know the power of
00:36:23 17 these models, why are we spending all
00:36:26 18 day talking about them?

00:36:27 19 Q. Let's talk, for the Court's
00:36:30 20 benefit and mine, about the actual
00:36:33 21 technical aspect of drawing a map and
00:36:36 22 what happens when a computer does it
00:36:39 23 as opposed to a live body. Can you
00:36:39 24 think of any problems you heard
00:36:46 25 yesterday in the testimony about

00:36:47 1 computer failures?

00:36:47 2 A. Well, I think the challenge ---
00:36:51 3 let me just say globally --- maybe I'm
00:36:51 4 not exactly answering the question, is
00:36:54 5 you know, I think these computers sort
00:36:57 6 of look at the state as 13 million red
00:36:59 7 and blue widgets and we're just going
00:37:02 8 to try to sort of mix them and put
00:37:03 9 them in the right place. And that's
00:37:05 10 not really what we're talking about.

00:37:06 11 We're talking about
00:37:07 12 individuals. But --- that the
00:37:08 13 computers can't really capture. And
00:37:11 14 they can't really capture sort of
00:37:12 15 context and anomaly.

00:37:14 16 And I want to mention something
00:37:14 17 sort of geographically, I think. So
00:37:14 18 when you look at Pittsburgh, and this
00:37:14 19 was mentioned in some of the briefs,
00:37:25 20 it's this very oddly-shaped city. And
00:37:27 21 that's an artifact of how it grew over
00:37:28 22 time. And Allegheny County itself,
00:37:30 23 Western Pennsylvania, all these ridges
00:37:32 24 and hills and water courses, and it
00:37:34 25 all developed in this kind of

00:37:35 1 chocka-a-block fashion.

00:37:38 2 Now, unfortunately, when people
00:37:40 3 formed their boroughs and cities and
00:37:42 4 townships in the 19th century, they
00:37:46 5 didn't realize that these shapes would
00:37:48 6 so upset Dr. Popper and his desire for
00:37:52 7 compactness.

00:37:52 8 So you have this unusually safe
00:37:54 9 city. And then there's a particular
00:37:58 10 suburb called Baldwin Borough, and
00:38:01 11 it's in the South Hills and it loops
00:38:03 12 from near the southern border of
00:38:06 13 Allegheny County and it sort of
00:38:09 14 expands up, and then it --- then it
00:38:10 15 narrows on this Becks Run, very
00:38:10 16 narrowly, this ravine, and it goes to
00:38:10 17 the Monongahela River. And then
00:38:10 18 there's a slice of the community that
00:38:10 19 goes along the river.

00:38:19 20 So it's this very unusually
00:38:21 21 shaped community, but it works for
00:38:22 22 that community because that's just how
00:38:22 23 --- that's just the topography that
00:38:22 24 developed it.

00:38:28 25 But it creates a problem for

00:38:29 1 the model, because the model wants to
00:38:32 2 fit it in with the city. It doesn't
00:38:34 3 matter that this long strip along the
00:38:38 4 river is just a row of railroad tracks
00:38:42 5 and a scrap yard. It doesn't matter
00:38:44 6 that this Beck's Run Valley is this
00:38:50 7 ravine, not a lot of people live
00:38:51 8 there, it's not really connected to
00:38:51 9 the city. To Arlington Heights on the
00:38:51 10 one side --- it's not really --- it's
00:38:58 11 just woods on the other side.

00:38:58 12 So I believe that this
00:39:00 13 Polsby-Popper and the Schwartzberg
00:39:03 14 models that try to have this
00:39:07 15 compactness, they want to put Baldwin
00:39:07 16 with the city first. They said you
00:39:09 17 know something, we got to take care of
00:39:10 18 this anomalous city. And that
00:39:12 19 naturally pushes the model to put
00:39:15 20 Whitehall and Brentwood in together.

00:39:17 21 So I think that's the model
00:39:19 22 wants to do first. So we got to do
00:39:21 23 this because we got to get this shape.

00:39:23 24 But that's a problem, because
00:39:25 25 even though those communities you can

00:39:27 1 make legitimate arguments to include
00:39:29 2 them, they're not the three
00:39:30 3 communities that, in my view, and I
00:39:32 4 think in most people in Allegheny
00:39:35 5 County would agree, that are best
00:39:37 6 connected or best attached to the City
00:39:39 7 of Pittsburgh.

8 So if you look at the east
9 border of Pittsburgh, it's this nice
10 straight line. And you have this
11 bulge in Homewood, Brushton. That's
12 great for the model. They love that.

13 Q. Would you like me to put it on
14 the screen?

15 A. Sure. Sure. Go ahead. Let me
16 keep talking.

17 Q. Okay.

00:39:57 18 I'm thinking this is a little
00:39:58 19 more abstract.

00:40:00 20 A. So the best city to attach to
00:40:02 21 the City of Pittsburgh is Wilkinsburg
00:40:05 22 because their high school students go
00:40:07 23 to Westinghouse High School. In the
00:40:08 24 city, they share a fire department,
00:40:10 25 they share some other services.

00:40:12 1 They're negotiating or discussing a
00:40:14 2 merger.

00:40:15 3 I mean, Wilkinsburg and
00:40:22 4 Pittsburgh are the number one --- you
00:40:23 5 know across the whole state, they're
00:40:23 6 most likely to merge as a municipality
00:40:24 7 in the future.

00:40:24 8 So if you're going to draw a
00:40:26 9 map, step one is you put those two
00:40:28 10 communities together. But see, the
00:40:30 11 computer model doesn't like that,
00:40:33 12 because it actually makes the line
00:40:35 13 longer. You know, it doesn't matter
00:40:37 14 that in this straight line, that
00:40:39 15 straight line that goes through
00:40:40 16 Wilkinsburg and Swissvale and
00:40:42 17 Edgewood, that slices through
00:40:45 18 neighborhoods. That slices through
00:40:48 19 back yards. Those are neighborhoods
00:40:50 20 that are very much connected and make
00:40:53 21 a lot of sense.

00:40:53 22 So, you know, if I'm drawing a
00:40:54 23 map and I want to do something that's
00:40:56 24 right for Allegheny County and do
00:40:59 25 something right for Pittsburgh, like

00:41:00 1 Pittsburgh plus Mount Oliver, I'm
00:41:00 2 going to put in Wilkinsburg, Edgewood,
00:41:04 3 Swissvale and Penn Hills because
00:41:08 4 they're very connected to the city.
00:41:09 5 They make a lot of sense, lots of
00:41:11 6 common interests.

00:41:12 7 Now, you know, the
00:41:14 8 Polsby-Popper score, I don't like
00:41:16 9 that, because it adds all these lines,
00:41:17 10 but it makes sense for these folks.

00:41:19 11 I mean, so if I'm doing
00:41:20 12 Allegheny County, it's Pittsburgh,
00:41:23 13 eastern suburbs, Mon Valley, and then
00:41:26 14 I kind of --- then I kind of figure
00:41:28 15 out where I'm going to rope things in
00:41:30 16 from there.

00:41:31 17 Q. Now, that's a nice transition
00:41:33 18 to the next area I want to discuss.
00:41:35 19 And I think we're --- for now we can
00:41:36 20 take that down.

00:41:37 21 I'd like to ask you in a big
00:41:40 22 picture sense about a couple of splits
00:41:45 23 in Pennsylvania.

00:41:45 24 A. Sure.

00:41:46 25 Q. Let's start, since you were

00:41:51 1 just talking about it with your
00:41:53 2 opinion on splitting Pittsburgh?
00:41:54 3 A. I think it's a terrible idea.
00:41:56 4 Q. Tell us why.
00:41:57 5 A. I absolutely disagree with it.
00:41:58 6 Because the city is it's own political
00:42:05 7 unit, and the city is a diverse city.
00:42:08 8 There's a lot of different interests.
00:42:10 9 But the fact that it's together unites
00:42:16 10 people's interests for resources.
00:42:17 11 They vote, you know, for the
00:42:19 12 same elected officials. I mean, just
00:42:21 13 the fact that they are within this
00:42:23 14 municipal unit gives them a series of
00:42:26 15 common interests. And I think
00:42:29 16 splitting them up, I think, that's a
00:42:31 17 mistake. I think it dilutes the vote
18 for the city. I think it dilutes
19 their advocacy.
20 You know, the thing about
21 running congressional races,
22 Pennsylvania is like very
00:42:43 23 geographical. Like, as I said before,
00:42:44 24 like, people in their neighborhood
00:42:47 25 like to vote for their own folks.

00:42:49 1 So if you take the city and if
00:42:50 2 you were to slice it in half and, say,
00:42:51 3 put the southern section, the South
00:42:54 4 Hills, South Side in one and you put
00:42:56 5 sort of East and North Side in the
00:42:57 6 other, you know, what's that, 120,000
00:43:00 7 or something along those lines in that
00:43:05 8 south end. If you put it in with
00:43:08 9 Beaver County and the outside suburbs,
00:43:14 10 I can very easily see a scenario ---
00:43:14 11 and this isn't a map that's reflected
00:43:14 12 of, by the way. I can very easily see
00:43:14 13 a scenario where someone's running for
00:43:14 14 Congress, and I think, you know
00:43:19 15 something, I'm not getting any votes
00:43:20 16 in the city, so I'm not going to deal
00:43:22 17 with the city at all. I'm going to go
00:43:24 18 into the suburbs. I can get votes in
00:43:27 19 Robinson Township. I can get votes in
00:43:31 20 Greentree. I cannot get votes in Bel
00:43:36 21 Seward, you know, I'm not going there.
00:43:37 22 And then those folks are going to lose
00:43:39 23 representation.

00:43:39 24 And the alternate --- the
00:43:42 25 alternate is a Democratic candidate

00:43:46 1 who thinks, you know, I've got these
00:43:48 2 Democratic votes, I feel I can take
00:43:51 3 them for granted. So I've got to go
00:43:56 4 get these swing voters in the suburbs
00:43:59 5 to, you know, to prop me up, to give
00:44:00 6 me that advantage.

00:44:01 7 So if you split the City of
00:44:03 8 Pittsburgh in two, I think it's most
00:44:05 9 likely that they're going to lose
00:44:07 10 representation. They're going to
00:44:09 11 look advocacy. And it's not going to
00:44:11 12 matter whether it's a Republican or
00:44:13 13 Democrat.

00:44:14 14 Q. Next split, Philadelphia and
00:44:16 15 Bucks County. Talk to us about what
00:44:18 16 you think should be done in
00:44:19 17 Philadelphia and Bucks County.

00:44:20 18 A. Bucks County should absolutely
00:44:21 19 not be combined with the city. The
00:44:25 20 right Bucks County district would have
00:44:27 21 Bucks in its entirety and then move
00:44:31 22 into Montgomery County, as they've
00:44:36 23 done for decades as they're used to,
00:44:37 24 as they have common interests. I
00:44:38 25 mean, that border between Bensalem and

00:44:39 1 Philadelphia, you know, you don't know
00:44:44 2 if you haven't been there.

00:44:45 3 If you --- you know, if you
00:44:45 4 walk across that line, you know you're
00:44:47 5 in Bucks County. You know it. It is
00:44:49 6 --- those are two different places.

00:44:51 7 And Bucks, even though it is a diverse
00:44:53 8 place and there's diversity between
00:44:57 9 lower Bucks and upper Bucks, it's used
00:44:59 10 to being together. They work
00:45:01 11 together. They like being a unit.
00:45:04 12 They don't want to be part of the
00:45:06 13 city. I guarantee you that.

00:45:07 14 Q. Well, it's funny you mention
00:45:09 15 they like being together. Are you
00:45:11 16 aware of the resolution passed by ---
00:45:13 17 unanimously by Bucks County Council on
00:45:17 18 whether it wants to be in a district
00:45:21 19 by itself?

00:45:22 20 A. Okay.
00:45:22 21 Heard about it, didn't read it.
00:45:24 22 And you just informed me it was
00:45:27 23 unanimous, which is surprising. The
00:45:31 24 Commissioners voted unanimously?

00:45:32 25 Q. Wait. Now, listen. Let's not

00:45:34 1 take my word for it. I'll show it to
00:45:36 2 you.

00:45:36 3 A. Sorry.

00:45:44 4 ATTORNEY HAVERSTICK:

00:45:45 5 Could we put this up on
00:45:46 6 the screen? And I'd would like to
00:45:48 7 mark this as Reschenthaler 1. I
00:45:48 8 apologize. I'd like to mark this as
00:46:06 9 Reschenthaler 1. We only have about
00:46:07 10 four copies. I'd like to show it to
00:46:09 11 him.

00:46:09 12 JUDGE McCULLOUGH:

00:46:10 13 Yes, you can show it to
00:46:11 14 him.

00:46:12 15 ATTORNEY HAVERSTICK:

00:46:13 16 I know it's on the big
00:46:14 17 screen, but I'll give it to you to
00:46:15 18 keep.

00:46:16 19 ATTORNEY WIYGUL:

00:46:17 20 Your Honor, if I may?

00:46:17 21 JUDGE MCCULLOUGH:

00:46:17 22 Yes.

00:46:17 23 ATTORNEY WIYGUL:

00:46:17 24 I have an objection,
00:46:17 25 Your Honor. I guess I'll file this

00:46:20 1 under goose and gander. This is not
00:46:21 2 an exhibit that was disclosed to us
00:46:24 3 previously, unless I'm mistaken.
00:46:26 4 We're seeing this for the first time,
00:46:27 5 and so I think the same objection that
00:46:29 6 was lodged against the exhibits that I
00:46:31 7 was going to offer, even though they
00:46:33 8 derived directly from the data of the
00:46:35 9 report, ought to apply here as well.

00:46:38 10 ATTORNEY HAVERSTICK:

00:46:39 11 Your Honor, may I
00:46:39 12 respond?

00:46:40 13 JUDGE McCULLOUGH:

00:46:40 14 Yes.

00:46:40 15 ATTORNEY HAVERSTICK:

00:46:41 16 Could he wait maybe
00:46:42 17 until I ask to move it into evidence?

00:46:44 18 JUDGE McCULLOUGH:

00:46:44 19 You're not asking to
00:46:50 20 move ---?

00:46:50 21 ATTORNEY HAVERSTICK:

00:46:51 22 Well, I haven't done it
00:46:51 23 yet.

00:46:51 24 JUDGE McCULLOUGH:

00:46:51 25 Well, yesterday he

00:46:52 1 wanted to use an exhibit for
00:46:53 2 demonstrative purposes, maybe moving
00:46:57 3 it or not into evidence, and Counsel
00:46:58 4 were objecting that they had not been
00:47:00 5 given a copy of it before.

00:47:01 6 ATTORNEY HAVERSTICK:

00:47:02 7 And I understand that.
00:47:03 8 I think there's --- I mean, I can
00:47:03 9 argue, I suppose, that there's a
00:47:05 10 significant difference between a
00:47:07 11 complicated computer animation that
00:47:08 12 they had, and I'm sure had done for a
00:47:10 13 long time, and a resolution that, I
00:47:12 14 think, only came out yesterday. And
00:47:13 15 anyway, it's something that the Court
00:47:15 16 can take judicial notice of.

00:47:17 17 I don't have to put it
00:47:18 18 into evidence. I just wanted him to
00:47:22 19 tell us if he was aware of it, and if
00:47:24 20 it reflects his, you know, his
00:47:25 21 testimony about what people in Bucks
00:47:32 22 wanted.

00:47:32 23 ATTORNEY SENOFF:

00:47:33 24 Your Honor, David Senoff
00:47:33 25 for the Democratic Caucus. We would

00:47:33 1 just lodge a separate objection which
00:47:33 2 is not really an objection, but we
00:47:36 3 would ask for an offer of proof with
00:47:37 4 regard to the relevance of this
00:47:39 5 particular resolution given that we
00:47:43 6 know as a matter of law that a
00:47:47 7 resolution at a local level is not
00:47:49 8 binding on the State General Assembly.

00:47:52 9 So I don't --- and I'm
00:47:54 10 talking about redistricting. I
00:47:56 11 understand this talks about
00:47:57 12 redistricting. The idea that the
00:47:57 13 Commissioners voted to do something or
00:48:04 14 other is kind of irrelevant because
00:48:06 15 the state law would preempt this in
00:48:08 16 any event, and so would the United
00:48:13 17 States Constitution.

00:48:13 18 ATTORNEY HAVERSTICK:

00:48:13 19 Your Honor, that's a
00:48:14 20 weight question. His testimony was
00:48:16 21 folks in Bucks wanted to keep Bucks in
00:48:19 22 a district by itself, and I think this
00:48:20 23 references it. He also testified that
00:48:21 24 he knew about it. But I'm not
00:48:24 25 hellbent and don't need to put it into

00:48:26 1 evidence.

00:48:26 2 I wanted to ask him if
00:48:28 3 this is what he was talking about when
00:48:30 4 he testified about it.

00:48:31 5 ATTORNEY SENOFF:

00:48:31 6 I'm going to object. I
00:48:33 7 think he said he didn't know about it
00:48:34 8 and that he would be willing to take
00:48:38 9 Counsel's word for it.

00:48:39 10 ATTORNEY HAVERSTICK:

00:48:40 11 No. He said he hadn't
00:48:41 12 read it. He said he knew about it.

00:48:43 13 JUDGE McCULLOUGH:

00:48:43 14 We can go back to the
00:48:44 15 record if you want.

00:48:45 16 ATTORNEY SENOFF:

00:48:45 17 No, no. I agree with
00:48:46 18 Counsel's representation that he said
00:48:47 19 he hadn't read it, but that he knew
00:48:49 20 about it.

00:48:50 21 So in light of that if
00:48:51 22 he wants to question him about it, you
00:48:53 23 know, I think an offer of proof with
00:48:56 24 regard to where we're going with this,
00:48:57 25 recognizing that the vote of the

00:49:00 1 county council is not the vote of the
00:49:02 2 population of a county, it's a vote of
00:49:05 3 representatives of the county, on one
00:49:07 4 hand.

00:49:08 5 And on the other hand,
00:49:09 6 I'm still not sure what the relevance
00:49:14 7 of this is to the constitutionality of
00:49:16 8 any particular matter.

00:49:17 9 JUDGE McCULLOUGH:

00:49:17 10 Okay.

00:49:19 11 Do you want to make an
00:49:19 12 offer of proof?

00:49:20 13 ATTORNEY HAVERSTICK:

00:49:20 14 Your Honor, I think the
00:49:21 15 witness testified that he was aware
00:49:22 16 --- first, the witness testified that
00:49:24 17 people in Bucks like to have Bucks in
00:49:26 18 a district by itself and not be
00:49:28 19 combined with Philadelphia. Then when
00:49:30 20 I asked him, he said he was aware of a
00:49:33 21 resolution to that effect, and it is,
00:49:36 22 in fact, unanimous. I made that
00:49:39 23 representation. But, you know, as the
00:49:40 24 Court can see and take note of, it is
00:49:42 25 signed by a 2-1 --- or I'm sorry, a

00:49:47 1 3-0 unanimous board member group.

00:49:51 2 Look, I don't mean to

00:49:53 3 belabor this. I think I made my

00:49:55 4 point. My point is he's right.

00:49:57 5 People in Bucks County, through their

00:49:59 6 elected representatives, want Bucks

00:50:04 7 County to be in a district by itself.

00:50:05 8 And that's his testimony and ---.

00:50:08 9 ATTORNEY SENOFF:

00:50:08 10 Your Honor, I'd object

00:50:09 11 to that statement and move that

00:50:11 12 Counsel's statement about what the

00:50:12 13 witness' testimony is and whether it's

00:50:13 14 right or wrong be stricken from the

00:50:16 15 record.

00:50:16 16 JUDGE McCULLOUGH:

00:50:17 17 Well, I'll let you

00:50:18 18 reserve to make that statement in your

00:50:19 19 closing argument.

00:50:20 20 ATTORNEY HAVERSTICK:

00:50:21 21 Fair enough.

00:50:22 22 JUDGE McCULLOUGH:

00:50:22 23 The Court will not put

00:50:23 24 weight in that particular statement at

00:50:25 25 this juncture.

00:50:26 1 ATTORNEY HAVERSTICK:

00:50:26 2 Fair enough.

00:50:27 3 JUDGE McCULLOUGH:

00:50:27 4 Okay.

00:50:27 5 So as to the resolution,

00:50:29 6 are you asking the Court to take

00:50:31 7 judicial notice? Do you need to ask

00:50:33 8 your witness additional questions

00:50:35 9 about this or ---?

00:50:38 10 ATTORNEY HAVERSTICK:

00:50:38 11 I don't think that I do,

00:50:40 12 Your Honor. I will --- we have

00:50:42 13 another issue the Court knows about,

00:50:44 14 an evidentiary issue that I think

00:50:48 15 either we're going to deal with in

00:50:49 16 chambers. I did intend to move into

00:50:52 17 evidence that other expert report at

00:50:53 18 the end of this today.

00:50:54 19 I'll probably try to

00:50:55 20 move this in and we can talk about it

00:50:58 21 then or maybe I'll just withdraw my

00:51:01 22 effort to put in what I marked as

00:51:02 23 Reschenthaler 1 into evidence.

00:51:03 24 As I said, I think the

00:51:04 25 testimony now speaks for itself.

00:51:06 1 JUDGE McCULLOUGH:

00:51:06 2 Okay.

00:51:07 3 And when I say not put

00:51:10 4 weight, I mean on your statement not

00:51:11 5 on your witness' statement ---

00:51:14 6 ATTORNEY HAVERSTICK:

00:51:15 7 Yes.

00:51:15 8 JUDGE McCULLOUGH:

00:51:16 9 --- which I did hear.

00:51:17 10 ATTORNEY WIYGUL:

00:51:17 11 Yeah. Just, generally,

00:51:17 12 Your Honor, if I may make one last

00:51:20 13 point. I understood the Court to be

00:51:22 14 enforcing a rule that witness

00:51:23 15 testimony had to be --- the

00:51:25 16 information they're testifying to had

00:51:27 17 to be set forth in the report. And

00:51:29 18 that's the rule I understood the Court

00:51:30 19 to enforce with respect to Dr.

00:51:33 20 Duchin's testimony.

00:51:33 21 And seeing that this was

00:51:34 22 not at all discussed in the report, I

00:51:36 23 don't think it's fair for the witness

00:51:39 24 to now opine on it for the first time

00:51:41 25 in the live testimony today.

00:51:43 1 ATTORNEY HAVERSTICK:
00:51:43 2 I don't know that he's
00:51:43 3 opining on it, Your Honor. He
00:51:43 4 testified about it, and I asked him is
00:51:46 5 this what you're talking about, and he
00:51:46 6 said yes. That's not an opinion on
00:51:48 7 it. It's saying, yes, that's the
00:51:52 8 thing that I just said, yes, I was
00:51:53 9 aware.

00:51:53 10 ATTORNEY WIYGUL:
00:51:54 11 The Court's been
00:51:54 12 enforcing the same rules as ---.

00:51:54 13 JUDGE McCULLOUGH:
00:51:55 14 Are you talking about
00:51:55 15 the resolution, Mr. Wiygul?

00:51:59 16 ATTORNEY WIYGUL:
00:51:59 17 Yeah. I'm talking
00:51:59 18 generally. I understood the Court's
00:52:00 19 ruling yesterday to be that, you know,
00:52:00 20 if there are facts that were not
00:52:02 21 discussed that don't appear anywhere,
00:52:04 22 that weren't relied in the expert
00:52:10 23 report, that cannot be the basis of
00:52:11 24 testimony by the expert during this
00:52:13 25 hearing. And if I understood the

00:52:15 1 Court's rule correctly, I think it can
00:52:17 2 apply equally in these circumstances.

00:52:19 3 ATTORNEY HAVERSTICK:

00:52:19 4 Look, Your Honor, ---.

00:52:19 5 JUDGE MCCULLOUGH:

00:52:19 6 Go ahead.

00:52:21 7 ATTORNEY HAVERSTICK:

00:52:21 8 I'm sorry. I thought
00:52:23 9 you were saying something. Look, I
00:52:25 10 didn't object when one of the folks
00:52:28 11 put in declarations or whatever they
00:52:30 12 did, because why am I bothering to
00:52:32 13 object to that. It seems silly,
00:52:34 14 right. I mean, this is a document
00:52:36 15 that's not hearsay, and you can take
00:52:39 16 judicial notice of it.

00:52:42 17 If you don't want or if
00:52:43 18 it's easier, I won't move it into
00:52:45 19 evidence. But I mean, good grief, he
00:52:47 20 testified that he knew about it and
00:52:49 21 I'm not allowed to even ask him is
00:52:51 22 this what you're talking about?
00:52:53 23 That's not what he said.

00:52:55 24 JUDGE MCCULLOUGH:

00:52:55 25 Okay.

00:52:59 1 Well, I think, Mr.
00:53:00 2 Wiygul, that Mr. Haverstick is not
00:53:07 3 going to pursue questioning on this
00:53:08 4 document.

00:53:08 5 ATTORNEY HAVERSTICK:

00:53:08 6 I'm done with it.

00:53:08 7 JUDGE MCCULLOUGH:

00:53:10 8 So we're good to go.

00:53:10 9 ATTORNEY WIYGUL:

00:53:10 10 Okay.

00:53:10 11 I would just ask, Your
00:53:10 12 Honor, that any testimony that the
00:53:12 13 witness gave with respect to the
00:53:13 14 resolution be stricken on the same
00:53:17 15 grounds that I laid out.

00:53:18 16 ATTORNEY HAVERSTICK:

00:53:19 17 Including the question
00:53:20 18 where I asked him if he knew about it
00:53:23 19 before he even saw it?

00:53:23 20 ATTORNEY WIYGUL:

00:53:23 21 Yes, Your Honor.

00:53:23 22 JUDGE McCULLOUGH:

00:53:24 23 I think you have a
00:53:26 24 different objection that's broader
00:53:27 25 than what you're trying to say right

00:53:29 1 now about a particular matter. As to
00:53:30 2 whether he's aware of something, I
00:53:33 3 understand your objection to be a
00:53:35 4 general objection, which I think we
00:53:38 5 discussed we would address after the
00:53:43 6 testimony has been presented. And I
00:53:47 7 think that's what you're ---.

00:53:50 8 ATTORNEY WIYGUL:

00:53:50 9 I don't --- I think it
00:53:51 10 goes beyond that, Your Honor. I think
00:53:52 11 --- and I apologize if I'm confusing
00:53:54 12 the matter. But the objection is that
00:53:56 13 in the report that the witness filed,
00:53:59 14 what was it, the day before yesterday,
00:54:01 15 irrespective of any issues we may have
00:54:05 16 about the fact that he was not the
00:54:06 17 initial expert disclosed by that
00:54:11 18 party, et cetera, my objection is this
00:54:15 19 information about this resolution was
00:54:17 20 not anywhere in his report. I have
00:54:18 21 his report. It's a burdensome report.
00:54:18 22 And I had understood the Court's
00:54:20 23 ruling to be consistent with what, I
00:54:21 24 think, the general approach to
00:54:25 25 disclosure requirements regarding

00:54:26 1 experts and expert reports, that
00:54:27 2 because it was outside the scope of
00:54:28 3 the Court, it could not then be the
00:54:30 4 basis of testimony at the hearing. So
00:54:33 5 that is the primary basis of the
00:54:34 6 objection I'm lodging today.

00:54:36 7 ATTORNEY HAVERSTICK:

00:54:37 8 It did happen after the
00:54:39 9 report was submitted, so it's not as
00:54:40 10 if we could have put this in the
00:54:42 11 report. I think it only happened a
00:54:48 12 day or two. I don't meant to ---.

00:54:49 13 JUDGE McCULLOUGH:

00:54:49 14 I'd have to say I'm
00:54:49 15 going to have to check the record.
00:54:51 16 I'm not on the same page with you
00:54:52 17 about the Court's ruling if you're
00:54:54 18 referencing the demonstrative exhibit
00:54:58 19 that you attempted to offer yesterday.

00:55:03 20 But at this juncture ---

00:55:06 21 ATTORNEY HAVERSTICK:

00:55:06 22 I'm moving on.

00:55:07 23 JUDGE McCULLOUGH:

00:55:07 24 --- Mr. Haverstick is
00:55:09 25 moving on. He is not going to further

00:55:12 1 question the witness about this.

00:55:13 2 And the Court will give
00:55:14 3 that testimony which occurred prior to
00:55:24 4 the attempt to introduce the
00:55:25 5 resolution its due weight. And if the
00:55:26 6 Court then decides it's no weight,
00:55:29 7 that's what I will do.

00:55:30 8 ATTORNEY WIYGUL:

00:55:31 9 Thank you, Your Honor.

00:55:33 10 ATTORNEY SENOFF:

00:55:33 11 Your Honor, I would just
00:55:35 12 say we would --- we asked for an offer
00:55:37 13 of proof because I believe the only
00:55:39 14 question that Counsel got to was have
00:55:41 15 you ever seen this. But based on
00:55:42 16 Counsel's representation that he
00:55:45 17 doesn't intend to further question on
00:55:47 18 this document, then we would withdraw
00:55:50 19 that request. Thank you.

00:55:52 20 JUDGE McCULLOUGH:

00:55:52 21 Okay.

00:55:52 22 Thank you very much.

00:55:55 23 ATTORNEY GORDON:

00:55:56 24 And Your Honor, just for
00:55:57 25 the record, very briefly, I'd like to

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JUDGE McCULLOUGH:
Can you take your mask
off? I never can understand you with
a mask on.

ATTORNEY GORDON:
I apologize.

JUDGE MCCULLOUGH:
That's okay.

ATTORNEY GORDON:
Matthew Gordon.
Just for the record, we
join in the Governor's Counsel's
objection to testimony going beyond
the four points of the expert report.

JUDGE McCULLOUGH:
Okay. So noted.

THE WITNESS:
And Bucks County has
commissioners --- oh, I'm sorry.

JUDGE McCULLOUGH:
You have to wait until
your Counsel asks you a question.

THE WITNESS:
I'm sorry. I'm sorry.

00:56:21 1 I was just trying to correct a
00:56:23 2 mistake.

00:56:23 3 ATTORNEY HAVERSTICK:
00:56:23 4 You got to wait for a
00:56:24 5 question.

00:56:24 6 THE WITNESS:
00:56:24 7 I apologize.

00:56:24 8 BY ATTORNEY HAVERSTICK:

00:56:26 9 Q. And we're not going to talk
00:56:27 10 about this anymore.

00:56:28 11 Okay?

00:56:28 12 I'm going to ask you one more
00:56:30 13 question about Bucks, but I don't want
00:56:32 14 you to talk about the thing.

00:56:34 15 A. I actually wasn't. I was just
00:56:35 16 correcting a mistake.

00:56:35 17 Q. Very good. Other than the
00:56:36 18 thing that we're not talking about
00:56:38 19 anymore, are there any other
00:56:39 20 observations you want to make about
00:56:41 21 Bucks County and Philadelphia beyond
00:56:43 22 your testimony? And if the answer is
00:56:44 23 no, that's fine.

00:56:46 24 A. The form of government of Bucks
00:56:47 25 County is a commissioner form of

00:56:49 1 government, not council.

00:56:54 2 Q. The last big pictures to
00:56:58 3 discuss, Luzerne County, Lackawanna
00:57:01 4 County. Same districts, different
00:57:03 5 districts?

00:57:04 6 A. Well, I think that different
00:57:07 7 districts makes a lot of sense because
00:57:09 8 I think it's what people up there
00:57:12 9 want. For many years, Scranton and
00:57:23 10 Wilkes-Barre have been in different
00:57:25 11 congressional districts.

00:57:25 12 Now, that changed in 2002, when
00:57:25 13 the Republican Senate was drawing the
00:57:29 14 map and they wanted to help out Don
00:57:31 15 Sherwood up there, so they pulled the
00:57:34 16 City of Scranton out of his district,
00:57:35 17 the 10th. And that was over the
00:57:36 18 objections of Sherwood and of, as I
00:57:38 19 understand it, the Republican Mayor
00:57:42 20 Connors up there. They wanted to keep
00:57:43 21 the district whole.

00:57:44 22 And in 2012, again, when those
00:57:48 23 communities didn't have power over the
00:57:53 24 process, they were also kept whole.
00:57:55 25 And in the Supreme Court's draw where

00:57:57 1 they didn't have power over process,
00:57:59 2 they were also kept whole.

00:58:01 3 But I think that they would
00:58:02 4 like to go back to the situation where
00:58:04 5 they each had a member of Congress,
00:58:07 6 where they would have more power. And
00:58:08 7 I think on this map, for example, if
00:58:10 8 we're looking at the 7th, you know,
00:58:13 9 Scranton would be the largest
00:58:14 10 municipal unit in the district. It's
00:58:19 11 --- as I said earlier, it's a very
00:58:19 12 sort of homer vote. They vote for
00:58:24 13 their hometown folks. That Lackawanna
00:58:26 14 County is a very powerful block.

00:58:28 15 Let's see. I mean, I feel
00:58:30 16 confident that it is the highest
00:58:31 17 population county in that district. I
00:58:36 18 think that will be confirmed when you
00:58:41 19 review the census data.

00:58:43 20 So any member elected in the
00:58:44 21 7th has either got to come from that
00:58:45 22 block or is going to have to take very
00:58:47 23 careful attention to the Scranton area
00:58:51 24 to forestall a primary challenge or a
00:58:56 25 loss in the general election.

00:58:57 1 Meanwhile, if you look at the
00:58:58 2 10th, and, you know, you keep Luzerne
00:59:00 3 together. That's a very good unit.
00:59:03 4 That will be a Wilkes-Barre seat. And
00:59:06 5 then the two of them would have
00:59:10 6 members like they've had for years and
00:59:12 7 years. I mean, back in the days of
00:59:12 8 McDade and Flood and McDade and
00:59:12 9 Canjorsky. I think that's what
00:59:12 10 they're used to. I think that's what
00:59:21 11 their preference would be. That's my
00:59:22 12 opinion.

00:59:22 13 Q. Okay.

00:59:27 14 I want to take the balance of
00:59:28 15 our time to talk about some particular
00:59:31 16 maps and your observations of those
00:59:33 17 particular maps for the Court.

00:59:34 18 Okay?

00:59:35 19 A. Sure.

00:59:35 20 ATTORNEY HAVERSTICK:

00:59:37 21 Could we put up the
00:59:38 22 Carter map, please? Okay.

00:59:51 23 BY ATTORNEY HAVERSTICK:

00:59:51 24 Q. Dr. Naughton, I think this is
00:59:54 25 the best we're going to be able to do.

00:59:54 1 A. Yeah. This is my primary ---
00:59:54 2 oh sorry. I apologize.

00:59:56 3 Q. So start out by saying I think
01:00:02 4 this is the best thing we can do in
01:00:03 5 terms of what you can see. So if you
01:00:05 6 need to zoom or anything, just call
01:00:08 7 out.

01:00:08 8 A. Just pull up the Allegheny
01:00:08 9 County section because that's, I
01:00:09 10 think, the primary issue with this
01:00:10 11 map.

01:00:10 12 Q. Okay.

01:00:13 13 A. As I said before, you know, if
01:00:15 14 I'm putting ---.

01:00:15 15 ATTORNEY GORDON:

01:00:15 16 Your Honor?

01:00:16 17 JUDGE McCULLOUGH:

01:00:16 18 Yes.

01:00:17 19 ATTORNEY GORDON:

01:00:18 20 Reflecting my earlier
01:00:22 21 objection, I don't recall. Maybe I'm
01:00:24 22 missing the report, but I don't recall
01:00:25 23 the report discussing the Carter maps
01:00:27 24 or the Carter maps --- particularly
01:00:30 25 the allegation concerning Allegheny

01:00:31 1 County. I don't think this is a part
01:00:33 2 of that consistent with my
01:00:34 3 understanding, which is consistent
01:00:36 4 with the Governor's and the limitation
01:00:38 5 of expert testimony, what was
01:00:40 6 contained within the reports. I would
01:00:41 7 object to the witness now testifying
01:00:43 8 about a map and features of the map
01:00:45 9 that I don't think he discussed in his
01:00:47 10 report.

01:00:51 11 ATTORNEY HAVERSTICK:

01:00:51 12 Your Honor, there's a
01:00:52 13 footnote in the report in which Dr.
01:00:54 14 Naughton references that he has
01:00:55 15 commentary on lots of the different
01:00:57 16 maps and lots of different regions.
01:00:59 17 He called out a couple for the sake of
01:01:02 18 brevity.

01:01:02 19 I hazard to guess that
01:01:06 20 yesterday's Directs went outside of
01:01:09 21 what was specifically in each of the
01:01:11 22 reports. Certainly the Crosses did.

01:01:13 23 He's testified about
01:01:15 24 today and put in his report the
01:01:18 25 factors that he thinks are important

01:01:20 1 to understand beyond computer
01:01:23 2 modeling, you know, when you're
01:01:25 3 drawing maps. He can't possibly apply
01:01:28 4 that in a way that's meaningful unless
01:01:31 5 he's allowed to look at maps and
01:01:34 6 comment on it. But his commentary and
01:01:36 7 his methodology and where it's coming
01:01:39 8 from was the heart of the report.

01:01:39 9 And now they're going to
01:01:40 10 say that we --- because we didn't
01:01:41 11 specifically talk about splitting
01:01:45 12 Venango, that he can't talk about it?
01:01:45 13 That's silly.

01:01:48 14 ATTORNEY GORDON:

01:01:48 15 Your Honor, I don't
01:01:48 16 think he talks about the Carter map at
01:01:50 17 all. The footnote that Counsel seems
01:01:51 18 to be referencing, the footnote that
01:01:51 19 says I have, of course, reviewed the
01:01:55 20 maps. It talks about regarding areas
01:01:57 21 other than Philadelphia and
01:01:59 22 Pittsburgh. He does talk about
01:02:01 23 Pittsburgh at length in his expert
01:02:03 24 report, but he doesn't --- again, I
01:02:07 25 don't believe he mentions the Carter

01:02:10 1 map at all.

01:02:11 2 ATTORNEY HAVERSTICK:

01:02:11 3 Is the Carter map so bad
01:02:13 4 that he didn't put Pittsburgh on it?

01:02:15 5 I mean, I see it up there. If the
01:02:17 6 objection is, well, he didn't --- you
01:02:17 7 know, he can only talk about specific
01:02:19 8 city or place names he put in the
01:02:21 9 report, he talked about Pittsburgh.

01:02:22 10 So at a minimum, he
01:02:25 11 should be allowed to look at every map
01:02:27 12 and say here's where I think Allegheny
01:02:27 13 County and politically what I think of
01:02:30 14 how the map drew it.

01:02:31 15 ATTORNEY GORDON:

01:02:31 16 He had an opportunity to
01:02:32 17 do that in his report. He had
01:02:34 18 criticisms of other maps. He had
01:02:36 19 those maps just like --- he had as
01:02:37 20 much time with the other maps as every
01:02:40 21 other expert. And despite Counsel's
01:02:43 22 hazarding a guess about the
01:02:43 23 examinations yesterday, there was no
01:02:45 24 objection, as far as I'm aware,
01:02:49 25 yesterday's expert going beyond the

01:02:51 1 scope of his reports. We're simply
01:02:53 2 asking that this expert be treated the
01:02:55 3 same as every other expert, that he be
01:02:57 4 limited to what he discussed in his
01:02:59 5 report.

01:02:59 6 ATTORNEY HAVERSTICK:

01:03:00 7 And he's about to.

01:03:01 8 ATTORNEY WIYGUL:

01:03:01 9 And, Your Honor, I just
01:03:02 10 want to qualify. I generally agree
01:03:03 11 with Counsel with the exception that
01:03:05 12 there being no objection because there
01:03:07 13 was, of course, objection to my
01:03:08 14 witnesses reportedly going beyond the
01:03:10 15 scope of the report, and I will note
01:03:11 16 that as an issue and as we described
01:03:13 17 ---.

01:03:13 18 JUDGE McCULLOUGH:

01:03:14 19 Let's be clear though,
01:03:15 20 Mr. Wiygul. What you were attempting
01:03:20 21 to offer was another configuration,
01:03:21 22 another chart which involved
01:03:23 23 calculation of statistics. Counsel's
01:03:27 24 objection was that they couldn't have
01:03:28 25 time to review that and assess that

01:03:30 1 and give that to their experts.

01:03:32 2 You are now objecting to
01:03:33 3 someone commenting on a map which they
01:03:37 4 all have. This is not new evidence.

01:03:41 5 And the expert, as I
01:03:42 6 understand, Mr. Haverstick, if I
01:03:44 7 understand what you just said, is
01:03:47 8 attempting to talk about the region
01:03:49 9 which he addressed ---

01:03:51 10 ATTORNEY HAVERSTICK:

01:03:51 11 In his report.

01:03:52 12 JUDGE McCULLOUGH:

01:03:52 13 --- in his report. If
01:03:54 14 we can limit it to that.

01:03:56 15 ATTORNEY HAVERSTICK:

01:03:56 16 Well, if --- I'll omit
01:04:01 17 discussions of other parts of the
01:04:04 18 state and concentrate on those areas
01:04:06 19 that I think they will agree were
01:04:09 20 specifically called out in the report.
01:04:09 21 You know, Philadelphia, Bucks County,
01:04:14 22 on the one hand and the Allegheny
01:04:15 23 County/Pittsburgh region on the other.
01:04:17 24 I mean, that will streamline my
01:04:18 25 ability to get this done. I'll agree

01:04:22 1 to that.

01:04:22 2 JUDGE McCULLOUGH:

01:04:23 3 Yeah, we don't want to
01:04:23 4 go outside the scope of the expert
01:04:25 5 reports. So I'm, of course, going to
01:04:26 6 ask you to limit it to areas where he
01:04:27 7 specifically addresses, as I
01:04:29 8 understand it, you're talking about
01:04:33 9 Pittsburgh?

01:04:34 10 ATTORNEY HAVERSTICK:

01:04:35 11 Talking about Pittsburgh
01:04:36 12 --- Pittsburgh and Allegheny County,
01:04:37 13 because I think you're talking about
01:04:37 14 the same thing there. And
01:04:39 15 Philadelphia and Bucks, because when
01:04:41 16 you talk about those two and you talk
01:04:43 17 about where people should go, you have
01:04:44 18 to naturally talk about the
01:04:46 19 surrounding communities.

01:04:47 20 But yes, I will limit it
01:04:48 21 to those two communities.

01:04:49 22 JUDGE McCULLOUGH:

01:04:50 23 Well, I will allow you
01:04:51 24 to ask him in a very limited manner,
01:04:54 25 you know, about the

01:04:54 1 Pittsburgh/Allegheny area on which he
01:04:58 2 opined throughout his report.

01:05:00 3 ATTORNEY WIYGUL:

01:05:00 4 If I may clarify, Your
01:05:01 5 Honor. I think part of the question I
01:05:02 6 asked is whether the witness will be
01:05:03 7 allowed --- I think he wants to talk
01:05:03 8 --- we can talk about his report, I
01:05:03 9 have no objection to that. But if
01:05:03 10 he's then going to go further and
01:05:12 11 start critiquing particular maps which
01:05:12 12 did not appear anywhere in his report,
01:05:14 13 I would object to that.

01:05:15 14 And I would note that all the
01:05:16 15 other experts in their rebuttal
01:05:18 16 reports did include critiques where
01:05:21 17 they had them of the other maps and
01:05:23 18 disclosed that critique in their
01:05:26 19 rebuttal report. So I don't believe
01:05:26 20 that would be proper, and the Governor
01:05:28 21 would object to that.

01:05:29 22 ATTORNEY GORDON:

01:05:29 23 And, Your Honor, that's
01:05:30 24 the nature of my objection as well.
01:05:31 25 If the witness wants to talk about his

01:05:33 1 analysis of Pittsburgh and
01:05:35 2 Philadelphia as set forth in the
01:05:36 3 report, that's fine.

01:05:37 4 What Counsel appears to
01:05:38 5 be doing is asking the witness to
01:05:41 6 offer a critique of the Carter map.
01:05:44 7 That critique is not contained in his
01:05:46 8 report. There is no mention of the
01:05:47 9 Carter map in his report. And Matt
01:05:51 10 didn't put us on notice, my clients
01:05:52 11 and me on notice, that he wanted to
01:05:55 12 critique the Carter map. If he wanted
01:05:57 13 to do that, he's fine to do that.

01:05:59 14 JUDGE McCULLOUGH:

01:05:59 15 I think you --- well,
01:05:59 16 Counsel, I strongly disagree with that
01:06:01 17 last statement. You're all on notice
01:06:03 18 that your maps could be critiqued by
01:06:06 19 --- at this --- in this courtroom. So
01:06:10 20 to say you're not prepared to defend a
01:06:12 21 critique of the map is not --- to me
01:06:14 22 is not a genuine concern. But I
01:06:17 23 understand your statement about going
01:06:20 24 outside the scope of the expert
01:06:23 25 report. I think limiting his

01:06:25 1 testimony to areas on which he has
01:06:27 2 already opined, to me, is still within
01:06:35 3 his expert report.

01:06:37 4 But please be careful
01:06:40 5 not to go off the scope of his report.

01:06:46 6 ATTORNEY HAVERSTICK:

01:06:46 7 I will specifically
01:06:47 8 confine my questions on these maps to
01:06:50 9 two regions, Allegheny
01:06:53 10 County/Pittsburgh, Philadelphia/Bucks.

01:06:56 11 ATTORNEY GORDON:

01:06:56 12 And, Your Honor, we
01:06:57 13 certainly --- it's certainly the case
01:07:00 14 that we came here expecting that each
01:07:02 15 of our maps would be critiqued by
01:07:05 16 other experts. We expected that any
01:07:07 17 such critique would be disclosed in
01:07:10 18 the report. This was not disclosed in
01:07:12 19 the report.

01:07:12 20 ATTORNEY HAVERSTICK:

01:07:13 21 Of course it was.

01:07:14 22 JUDGE McCULLOUGH:

01:07:15 23 If I understand you, Mr.
01:07:16 24 Haverstick, you're not offering
01:07:18 25 critique of this map. You're looking

01:07:20 1 at the particular areas of which your
01:07:21 2 expert has already opined?

01:07:23 3 ATTORNEY HAVERSTICK:

01:07:23 4 I view these maps as
01:07:25 5 demonstrable exhibits. And he's
01:07:27 6 already opined about what he thinks
01:07:27 7 from a political geographic standpoint
01:07:30 8 about Allegheny County specifically,
01:07:32 9 and Philadelphia, the city, county
01:07:34 10 specifically, and Bucks. That's in
01:07:36 11 his report.

01:07:36 12 He's not allowed to
01:07:37 13 comment on documents that they've put
01:07:39 14 into evidence? I mean, all of these
01:07:41 15 maps are into evidence, Your Honor.
01:07:43 16 If they're saying that he can't
01:07:44 17 comment on things that they put in
01:07:46 18 evidence, I hope ---.

01:07:47 19 JUDGE McCULLOUGH:

01:07:47 20 And that last point I
01:07:49 21 think is just what I was about to say.
01:07:51 22 These are all in evidence, unlike the
01:07:53 23 demonstrative chart that was proposed
01:07:56 24 to be introduced through your witness
01:07:59 25 yesterday, Mr. Wiygul. It was a whole

01:08:02 1 other configuration. Even though he
01:08:04 2 said it was, you know, just pictures,
01:08:06 3 it presented new statistics.

01:08:07 4 This is not new. This
01:08:08 5 is in evidence. So I'm going to allow
01:08:10 6 Mr. Haverstick to question his witness
01:08:13 7 to the extent that he has opined on
01:08:15 8 certain areas if you want to. And
01:08:20 9 your objections are noted.

01:08:22 10 ATTORNEY WIYGUL:

01:08:23 11 In response to Your
01:08:25 12 Honor's last comment, just to preserve
01:08:27 13 my offer of proof on the exhibits
01:08:30 14 yesterday, I believe Dr. Duchin's
01:08:33 15 testimony was the graphs that we were
01:08:33 16 going to show, that were not allowed
01:08:34 17 into evidence were --- in fact the
01:08:35 18 data for those was disclosed in the
01:08:37 19 report.

01:08:38 20 What wasn't disclosed is the
01:08:40 21 particular visualization that we
01:08:41 22 wanted to show. So I just wanted to
01:08:43 23 make that clear for the record.

01:08:44 24 JUDGE McCULLOUGH:

01:08:44 25 Okay.

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ATTORNEY WIYGUL:

Thank you.

JUDGE McCULLOUGH:

Thank you.

ATTORNEY HAVERSTICK:

May I proceed?

JUDGE McCULLOUGH:

Yes.

ATTORNEY HAVERSTICK:

Thank you, Your Honor.

BY ATTORNEY HAVERSTICK:

Q. Now, Dr. Naughton, I know you were in the room for all of that. We need to be very careful when we're talking about the Carter maps and the other maps that focus on Allegheny County?

A. Yes, absolutely.

Q. So do you have any critiques of the Carter map with respect to that region?

A. You know, like I said earlier, I would absolutely not separate Wilkinsburg into a separate district. I think it should absolutely be

01:09:20 1 integrated with the city. I think
01:09:21 2 that's a mistake.

01:09:21 3 And you have this bulge on the
01:09:21 4 eastern side of Penn Hills, and I
01:09:21 5 believe that's Verona and Oakmont. I
01:09:30 6 think that's the extent of it. I
01:09:31 7 wouldn't put Penn Hills over there. I
01:09:34 8 mean, it's --- I might put Oakmont in
01:09:37 9 with the 17th because, you know, it's
01:09:38 10 right across the Fulton Bridge. So
01:09:38 11 there is some connection there. A lot
01:09:42 12 of people sort of commute over and go
01:09:43 13 down the expressway there. So you
01:09:47 14 know, maybe Oakmont.

01:09:48 15 But I would certainly not have
01:09:51 16 this bulge and separate these
01:09:53 17 communities that are really associated
01:09:55 18 with Allegheny County. And it's very
01:09:57 19 easily remedied because you've got the
01:10:00 20 South Hills split up. You know,
01:10:00 21 you've got Upper St. Clair and Bethel
01:10:07 22 Park in with the 12, stretching out
01:10:09 23 through the valley. I mean, Bethel
01:10:11 24 Park and Upper St. Clair are much more
01:10:18 25 compatible with Mt. Lebanon and

01:10:19 1 Bridgeville and South Fayette and, you
01:10:25 2 know, and those communities. They
01:10:26 3 match together.

01:10:27 4 You're putting --- you're
01:10:27 5 taking --- you're taking a big chunk
01:10:28 6 of Allegheny County, that's really
01:10:31 7 related to the city, and you're tying
01:10:35 8 it in with that north region. And
01:10:37 9 then you're taking and you're
01:10:39 10 splitting up this --- this doesn't
01:10:41 11 make any sense. I mean, I would not
01:10:43 12 have the 12th and 17th District lines
01:10:47 13 sliced through the parking lot at
01:10:50 14 South Hills Village.

01:10:50 15 Q. Let's slide over to the eastern
01:10:52 16 part of the state and take a look at
01:10:54 17 Philadelphia County. And we will zoom
01:10:57 18 in there to Philly and the collar
01:11:05 19 counties. Do you have any critique of
01:11:07 20 the Carter map and how it treats the
01:11:08 21 Philadelphia area?

01:11:09 22 A. I think that it's Bucks
01:11:10 23 District, number one. I think it's
01:11:12 24 very good. Within the City of
01:11:14 25 Philadelphia, you know, I haven't

01:11:17 1 represented expertise. I don't mean
01:11:18 2 to. I just like the idea that you've
01:11:22 3 got two fully-contained seats within
01:11:22 4 the city. And I think I said that in
01:11:25 5 my report. I think that makes a lot
01:11:26 6 of sense.

01:11:27 7 Am I allowed to talk about 4
01:11:29 8 and 5?

01:11:30 9 Q. Well, if it relates to --- if
01:11:32 10 it relates in any way to the
01:11:34 11 relationship between Bucks and
01:11:35 12 Philadelphia?

01:11:45 13 A. I don't think it does. I mean,
01:11:46 14 I don't think there are big problems
01:11:51 15 with 4, 5 and 6. I mean, there's more
01:11:51 16 sort of --- I can express a little
01:11:53 17 personal preference, but I mean, I
01:11:53 18 don't --- I don't want to stray out of
01:11:55 19 my boundaries, but ---.

01:11:56 20 Q. Let's not.

01:11:57 21 A. I don't know. I'd pull 4 out
01:11:59 22 of Berks a little bit and I'd move
01:11:59 23 that 5. I'd probably put 5 more into
01:12:05 24 Chester and I'd have 4 ---.

01:12:05 25 ATTORNEY GORDON:

01:12:06 1 Objection.

01:12:11 2 JUDGE McCULLOUGH:

01:12:11 3 Excuse me.

01:12:11 4 THE WITNESS:

01:12:11 5 Have I gone beyond? I

01:12:13 6 apologize.

01:12:13 7 ATTORNEY HAVERSTICK:

01:12:13 8 Stop.

01:12:13 9 JUDGE MCCULLOUGH:

01:12:13 10 Counsel, you have an

01:12:13 11 objection?

01:12:13 12 ATTORNEY GORDON:

01:12:15 13 Continuing objection to

01:12:16 14 all this testimony. It's all a

01:12:18 15 critique of his argument. None of it

01:12:21 16 was in the report, as I stated before.

01:12:22 17 And the objection --- the witness just

01:12:23 18 said I don't want to stray out my

01:12:26 19 boundaries. Counsel said keep it to

01:12:29 20 Philadelphia, and now he's trying to

01:12:30 21 do exactly what he said.

01:12:33 22 JUDGE McCULLOUGH:

01:12:33 23 Yes, I'm going to

01:12:34 24 sustain that part of your objection.

01:12:35 25 And please move on with your witness.

01:12:35 1 ATTORNEY HAVERSTICK:

01:12:35 2 We will.

01:12:35 3 JUDGE MCCULLOUGH:

01:12:35 4 Thank you, Mr.

01:12:40 5 Haverstick.

01:12:40 6 ATTORNEY HAVERSTICK:

01:12:41 7 Please pull up the

01:12:42 8 Gressman map.

01:12:42 9 BY ATTORNEY HAVERSTICK:

01:12:43 10 Q. And I direct your attention on

01:12:47 11 the Gressman map to the Allegheny

01:12:47 12 County/Pittsburgh region. Do you have

01:12:51 13 any commentary on the treatment of

01:12:56 14 that region on this map?

01:12:58 15 A. Well, the first problem is

01:12:58 16 there's a section of the city that

01:12:59 17 crosses the river and goes off to the

01:13:02 18 southeast. It includes Hayes and

01:13:05 19 Lincoln Place and New Homestead. And

01:13:09 20 that area is very well integrated into

01:13:12 21 the rest of the Mon Valley.

01:13:15 22 I mean, Lincoln Place

01:13:16 23 neighborhood is half the --- it's

01:13:20 24 nearly twice as far to get to

01:13:24 25 Allegheny County Courthouse as it does

01:13:26 1 to get to McKeesport. So the center
01:13:27 2 of McKeesport. So it's very
01:13:29 3 integrated in the Valley. So I think
01:13:30 4 it's a mistake, you know, again,
01:13:32 5 separating that out. I'd really,
01:13:34 6 again, connect that into the Mon
01:13:34 7 Valley.

01:13:38 8 But there's also a very
01:13:39 9 specific issue, which is that part of
01:13:43 10 the New Homestead development is only
01:13:47 11 publicly accessible via the 17th
01:13:50 12 District. Now, you can get to New
01:13:53 13 Homestead from within the 14th if you
01:13:56 14 put on some hiking boots and did a
01:13:59 15 little trespassing. But if you want
01:14:02 16 public access via a vehicle or
01:14:05 17 sidewalk, you would have to go outside
01:14:08 18 the 14th and through the 17th to get
01:14:14 19 there.

01:14:14 20 I mean, I think just generally
01:14:15 21 --- and I think I've said this before,
01:14:16 22 if I'm looking at where Pittsburgh
01:14:18 23 matches up, it's East Hills and Mon
01:14:22 24 Valley, less so than this sort of
01:14:23 25 attachment to the South Hills.

01:14:25 1 And again, it's my belief that
01:14:29 2 this is being driven by this Polsby
01:14:33 3 model, which is a very good model.
01:14:35 4 I'm not arguing the model, and it may
01:14:39 5 work in a lot of contexts. But in the
01:14:39 6 very specific context of this part of
01:14:42 7 the state, given the municipal
01:14:43 8 boundaries, given how it's developed
01:14:46 9 over time, I don't think it is a good
01:14:48 10 fit. It's like trying to put a square
01:14:50 11 peg in a round hole. And you know,
01:14:52 12 you're looking for a hammer instead of
01:14:55 13 a round peg. Go look for a round peg.
01:14:57 14 Q. Switch over to the eastern half
01:14:59 15 of the state. Let's look at Philly
01:15:01 16 and Bucks. And I'd ask you to keep
01:15:02 17 your commentary limited to that
01:15:06 18 interaction. You know, if that has
01:15:08 19 some effect on Mon Co or Chest Co or
01:15:08 20 Del Co ---.
01:15:14 21 A. Yeah, I apologize for going
01:15:14 22 beyond --- I apologize for that. I
01:15:16 23 don't think the two should be reaching
01:15:19 24 into Bucks and as far into Lower
01:15:23 25 Bucks. I mean, Bucks County is a

01:15:25 1 diverse county, that is true. But,
01:15:28 2 again, it works together politically.
01:15:32 3 They've been a unit for decades.

01:15:36 4 Meanwhile, you know, why are
01:15:40 5 you moving in --- you know, why aren't
01:15:42 6 you drawing two seats entirely within
01:15:44 7 the City of Philadelphia for advocacy.

01:15:47 8 There's also a risk here, I
01:15:48 9 think, because this Lower Bucks area
01:15:51 10 is so unusual. And I believe this
01:15:54 11 would be a heavily Democratic seat. I
01:15:57 12 think the concentration of constituent
01:15:57 13 service, of issue advocacy would be
01:16:05 14 focused on northeast Philly and those
01:16:06 15 areas. I think Lower Bucks really
01:16:08 16 sort of loses out on representation by
01:16:12 17 a putative member.

01:16:12 18 ATTORNEY HAVERSTICK:

01:16:20 19 Let's call up the
01:16:22 20 Governor's map, please.

01:16:22 21 BY ATTORNEY HAVERSTICK:

01:16:24 22 Q. All right.

01:16:24 23 Directing your attention to
01:16:26 24 Allegheny County and Pittsburgh. You
01:16:28 25 know the question.

01:16:28 1 A. I wouldn't split up the city.

01:16:30 2 ATTORNEY WIYGUL:

01:16:31 3 I'm sorry, Your Honor.

01:16:32 4 I'd like to make sure that I renew my

01:16:34 5 objection with respect to the

01:16:35 6 Governor's map in particular. I

01:16:36 7 understand Your Honor's going to

01:16:38 8 overrule it based on what you said

01:16:40 9 earlier, but I did want to get that

01:16:42 10 objection and Your Honor's ruling on

01:16:45 11 the record, please.

01:16:45 12 JUDGE McCULLOUGH:

01:16:45 13 Is your objection that

01:16:47 14 it was not in the report?

01:16:50 15 ATTORNEY WIYGUL:

01:16:50 16 That he's critiquing the

01:16:52 17 Governor's map, yes.

01:16:52 18 JUDGE McCULLOUGH:

01:16:52 19 So I, again, would

01:16:53 20 instruct Mr. Haverstick to limit his

01:16:56 21 witness to testimony about the two

01:17:00 22 areas in which he opined previously.

01:17:03 23 ATTORNEY HAVERSTICK:

01:17:04 24 Understood.

01:17:04 25 JUDGE McCULLOUGH:

01:17:05 1 And I have another.

01:17:07 2 Counsel.

01:17:07 3 ATTORNEY SENOFF:

01:17:08 4 Your Honor, I don't have
01:17:09 5 an objection. Just a request because
01:17:11 6 when we go back and read the record,
01:17:13 7 could you put the question on the
01:17:14 8 record? Thank you.

01:17:15 9 ATTORNEY HAVERSTICK:

01:17:15 10 Yes, Mr. Senoff is
01:17:18 11 right.

01:17:18 12 JUDGE McCULLOUGH:

01:17:18 13 So we want to read the
01:17:20 14 question back?

01:17:21 15 ATTORNEY HAVERSTICK:

01:17:21 16 No, I didn't ask --- I
01:17:22 17 said something like same question or
01:17:22 18 you know the question. And I think
01:17:25 19 Mr. Senoff's right. The record
01:17:25 20 probably should actually have the
01:17:26 21 question in it.

01:17:26 22 BY ATTORNEY HAVERSTICK:

01:17:28 23 Q. Dr. Naughton, do you have any
01:17:31 24 commentary or critique of the
01:17:33 25 Governor's map with respect to

01:17:36 1 Allegheny County and Pittsburgh?

01:17:37 2 A. I don't think the city should

01:17:39 3 be split up. I think it'S a mistake.

01:17:45 4 You know, if we're looking at

01:17:47 5 common interests, I mean, you're going

01:17:48 6 to put --- you're going to split up

01:17:49 7 the city and put North View Heights

01:17:52 8 and Broadhead Manor and Esklin in with

01:17:56 9 Hooks Town and Beaver County? This

01:17:57 10 really just doesn't make a lot of

01:17:59 11 sense.

01:18:00 12 I think, as I've said before,

01:18:02 13 keep the city together. Keep it with

01:18:04 14 communities it's connected to, East

01:18:07 15 Hills and down into the Mon Valley.

01:18:09 16 And then sort of where you need to

01:18:10 17 add, you can add. But those suburban

01:18:13 18 areas are much more compatible with

01:18:16 19 Beaver County and certainly North View

01:18:18 20 Heights is not.

01:18:20 21 Q. Let's swing over to the

01:18:21 22 southeast. Do you have any critiques

01:18:30 23 or commentary about the Governor's

01:18:34 24 rendition of the Philadelphia/Bucks

01:18:34 25 County region?

01:18:34 1 A. I don't agree with the addition
01:18:36 2 of the 2nd district into Bensalem and
01:18:39 3 the sort of associated communities.
01:18:42 4 This actually runs an even greater
01:18:45 5 risk than the previous map of lack of
01:18:48 6 representation, It's so dominated by
01:18:49 7 the city.

01:18:49 8 Bucks County should remain
01:18:49 9 whole. It's in the interest of their
01:19:04 10 voters and all citizens.

01:19:04 11 Q. Lastly ---.

01:19:04 12 A. Sorry. And all their citizens
01:19:04 13 I should say.

01:19:04 14 ATTORNEY HAVERSTICK:

01:19:06 15 Lastly, can we call up
01:19:08 16 the Senate Democratic map, please?

01:19:09 17 Actually, no, it's not a
01:19:12 18 Democratic map.

01:19:12 19 BY ATTORNEY HAVERSTICK:

01:19:14 20 Q. Focusing on Allegheny County
01:19:16 21 and Pittsburgh, do you have any
01:19:18 22 critiques of the Senate Democratic map
01:19:21 23 with respect to this region?

01:19:23 24 A. I disagree with splitting up
01:19:26 25 the city. I don't think that area is

01:19:32 1 as great a common interest with areas
01:19:32 2 in Beaver County, as I said about the
01:19:39 3 previous map. So I disagree with
01:19:41 4 splitting up the city.

01:19:42 5 And, again, it's not necessary.
01:19:43 6 You don't have to do it.

01:19:44 7 Q. Okay.

01:19:45 8 If we could move to the
01:19:48 9 southeast, please. Do you have any
01:19:50 10 critique or commentary about this
01:19:52 11 map's treatment of the Philadelphia
01:19:54 12 and Bucks region?

01:19:56 13 A. May I speak about the 1st
01:19:58 14 district in its entirety or not?

01:20:06 15 Q. Go ahead. And we'll see if it
01:20:08 16 draws an objection?

01:20:08 17 A. Okay. All right.

01:20:10 18 I don't believe that the ---.

01:20:10 19 ATTORNEY ATTISANO:

01:20:11 20 Your Honor, Marco
01:20:11 21 Attisano on behalf of Senate
01:20:15 22 Democrats. I object as outside the
01:20:16 23 expert report.

01:20:17 24 JUDGE McCULLOUGH:

01:20:17 25 You actually asked him

01:20:18 1 for a critique of this map, and I
01:20:20 2 think we were trying to keep it
01:20:21 3 limited to just those areas, Mr.
01:20:26 4 Haverstick.

01:20:28 5 ATTORNEY HAVERSTICK:

01:20:28 6 Well, Philadelphia and
01:20:30 7 Bucks County. His testimony --- and I
01:20:31 8 know he objected it or they objected
01:20:31 9 to the resolution. I acknowledge
01:20:33 10 that. But there was no objection to
01:20:34 11 his prior testimony about Bucks County
01:20:37 12 and its people and wanting to be an
01:20:39 13 integrated unit. So I understood that
01:20:43 14 as long as we were talking about how
01:20:45 15 or whether to split Bucks, that was
01:20:46 16 something he talked about expressing.

01:20:49 17 JUDGE McCULLOUGH:

01:20:49 18 Yes.

01:20:50 19 ATTORNEY HAVERSTICK:

01:20:50 20 Yeah, that's all I'm
01:20:53 21 asking. Yes.

01:20:53 22 BY ATTORNEY HAVERSTICK:

01:20:53 23 Q. Can you answer --- can you
01:20:56 24 answer --- can you give your answer
01:20:58 25 and express it in a way that answers

01:21:04 1 the question of whether you have any
01:21:06 2 critiques of how and whether
01:21:10 3 Philadelphia and Bucks should be
01:21:14 4 merged in that way?

01:21:15 5 A. Yes.

01:21:16 6 Q. Go ahead.

01:21:17 7 A. Well, as I said previously, I
01:21:20 8 don't believe that Lower Bucks should
01:21:22 9 be part of the 2nd District. I don't
01:21:25 10 believe it should be connected to the
01:21:26 11 city. I believe Bucks County should
01:21:29 12 remain whole and it unnecessarily
01:21:32 13 pushes the district into other regions
01:21:35 14 that are less connected with Bucks
01:21:42 15 County.

01:21:42 16 ATTORNEY HAVERSTICK:

01:21:42 17 Okay.

01:21:43 18 I think we're good with
01:21:44 19 the maps.

01:21:44 20 BY ATTORNEY HAVERSTICK:

01:21:49 21 Q. Let's wrap up. Did you hear
01:21:53 22 yesterday several experts opine that
01:21:58 23 there was such a thing as a best map?

01:21:59 24 A. I did hear that.

01:22:02 25 Q. Do you agree that there can be

01:22:05 1 such a thing as a best map?

01:22:07 2 A. No.

01:22:07 3 Q. Why not?

01:22:08 4 A. It's too subjective. This is

01:22:10 5 politics. Politics is about --- it is

01:22:14 6 subjective, it's about perception.

01:22:16 7 Every single person is going to have a

01:22:20 8 favorite map or a best map based on

01:22:23 9 their own various opinions and based

01:22:25 10 on their own various experiences. You

01:22:27 11 can't do a best map. This isn't ---

01:22:34 12 you know, we're not reducing

01:22:35 13 equations.

01:22:36 14 Q. One last question and then I

01:22:38 15 will likely have some for you on

01:22:40 16 rebuttal. Is it your opinion, Dr.

01:22:45 17 Naughton, to a reasonable degree of

01:22:49 18 professional certainty, that we or the

01:22:51 19 Court can rely only on mathematical

01:22:53 20 models to create a good map?

01:22:55 21 A. No.

01:22:56 22 Q. Can you explain your answer?

01:22:57 23 A. Because the factors that go

01:22:59 24 into what is best for a map, which is

01:23:03 25 far beyond just partisanship and vote

01:23:07 1 totals, they are innumerable and --- I
01:23:17 2 shouldn't say innumerable. They are
01:23:17 3 very large and very involved. They
01:23:21 4 involve concepts of representation of
01:23:21 5 what's appropriate for people.

01:23:22 6 I think in one of the reports
01:23:23 7 that I read, it actually said that
01:23:26 8 some of the Supreme Court's
01:23:28 9 requirements were difficult to
01:23:31 10 quantify. Well, that's the whole
01:23:33 11 point. You can't perfectly quantify
01:23:36 12 everything. You can't create the
01:23:38 13 perfect variable to put into an
01:23:41 14 equation. It's just too complicated.
01:23:43 15 It really overwhelms the data and it's
01:23:49 16 too subjective.

01:23:51 17 There's going to be
01:23:52 18 subjectivity. That's just the way it
01:23:54 19 is. And we have to accept it and we
01:23:55 20 have to do the best job that we can to
01:24:00 21 provide people with their best
01:24:01 22 representation.

01:24:09 23 ATTORNEY HAVERSTICK:

01:24:09 24 I have no further
01:24:11 25 questions for the witness at this

01:24:11 1 time. I tender him for Cross.

01:24:13 2 Thanks, Dr. Naughton.

01:24:13 3 JUDGE McCULLOUGH:

01:24:14 4 Thank you.

01:24:14 5 We'll begin with Mr.

01:24:14 6 Gordon.

01:24:14 7 ---

01:24:14 8 CROSS EXAMINATION

01:25:02 9 ---

01:25:02 10 BY ATTORNEY GORDON:

01:25:03 11 Q. Good morning, Dr. Naughton.

01:25:03 12 A. Good morning.

01:25:03 13 Q. I'll wait until you drink your

01:25:03 14 water.

01:25:03 15 A. Okay.

01:25:15 16 Q. My name is Matthew Gordon. I'm

01:25:22 17 here on behalf of the Carter

01:25:24 18 Petitioners.

19 A. Nice to meet you.

20 Q. Nice to meet you as well.

21 Thank you.

22 Just some questions initially

23 about your background, Dr. Naughton.

01:25:25 24 You testified that you have a lot of

01:25:26 25 experience in, I think, over 15 years

01:25:29 1 of Pennsylvania politics?

01:25:30 2 A. Thereabouts.

01:25:31 3 Q. Working for various candidates?

01:25:33 4 A. Yes.

01:25:33 5 Q. A lot of judicial candidates,

01:25:35 6 you said?

01:25:36 7 A. Yes.

01:25:37 8 Q. On the Republican side?

01:25:39 9 A. Yes.

01:25:39 10 Q. And you've identified some of

01:25:41 11 the candidates that you worked with on

01:25:44 12 --- in your CV or worked for.

01:25:45 13 Correct?

01:25:46 14 A. Yes.

01:25:46 15 Q. And I believe there are 18 or

01:25:49 16 so candidates in there. Does that

01:25:53 17 sound right?

01:25:54 18 A. I suppose. I mean, I have no

01:25:55 19 reason to doubt your counting.

01:25:58 20 Q. Your CV says political work

01:26:01 21 experience, representative list. So

01:26:04 22 did you omit some candidates that you

01:26:05 23 worked for?

01:26:06 24 A. I'm sure that I did.

01:26:07 25 Q. And why did you omit some?

01:26:10 1 A. Well, because it's a very,
01:26:12 2 very, long list. There's a lot of
01:26:15 3 State Representative candidates,
01:26:19 4 legislative candidates, local
01:26:19 5 candidates, like Allegheny Council
01:26:22 6 candidates. And honestly, there ---
01:26:22 7 you know, since I don't really do the
01:26:25 8 campaign work anymore, it's not
01:26:26 9 something I sort of kept with.

01:26:28 10 I mean, there may have been
01:26:29 11 candidates I worked with in 1999 that
01:26:31 12 I sort of forgotten the name and, you
01:26:33 13 know, I don't have the records on. So
01:26:36 14 I don't want to misrepresent my resume
01:26:39 15 as being totally complete when I've
01:26:41 16 left out a District Attorney candidate
01:26:43 17 or a county council candidate and so
01:26:46 18 forth. So that's the purpose.

01:26:46 19 Q. But just to be clear, much of
01:26:46 20 your professional career has been
01:26:54 21 dedicated to helping Republican
01:26:55 22 candidates in Pennsylvania win their
01:26:57 23 seats?

01:26:57 24 A. My career has been working on
01:26:58 25 the Republican side of the aisle, yes.

01:26:58 1 Q. And devoted to helping them win
01:27:03 2 their races.

01:27:03 3 Correct?

01:27:04 4 A. Yes, that's the point.

01:27:04 5 Q. And in this case, you've been
01:27:06 6 retained by Republican politicians on
01:27:09 7 their behalf.

01:27:09 8 Correct?

01:27:09 9 A. Yes.

01:27:09 10 Q. And you're advocating that
01:27:11 11 their maps be adopted?

01:27:12 12 A. I've not been asked to advocate
01:27:16 13 for their maps.

01:27:16 14 Q. So you don't have an opinion
01:27:19 15 about whether or not the maps put
01:27:20 16 forth by the Reschenthaler parties are
01:27:24 17 better or worse than any other maps
01:27:27 18 before this Court?

01:27:29 19 A. I have an opinion, but I wasn't
01:27:30 20 retained to advocate for the maps.

01:27:36 21 Q. Understood.

01:27:37 22 A. Okay.

01:27:38 23 So that's the fine point. I
01:27:39 24 want to make sure that I'm very clear
01:27:41 25 about that. I have an opinion.

01:27:43 1 Q. Got it.

01:27:43 2 A. You can form an opinion about

01:27:46 3 every map. You could put --- you

01:27:47 4 could bring each of those maps. I

01:27:48 5 don't know how many. Are there 12?

01:27:51 6 Q. There are 14. And I

01:27:53 7 understand.

01:27:53 8 A. I could bring each of those 14

01:27:53 9 maps and I can go through all of them

01:27:54 10 right now. No problem.

01:27:54 11 Q. Dr. Naughton?

01:27:56 12 A. And offer you an opinion, an

01:27:57 13 analysis and so forth.

01:27:57 14 Q. Dr. Naughton, I'm sorry.

01:28:00 15 A. But so I do have an opinion on

01:28:01 16 that map if you want it. So sorry.

01:28:04 17 I'm sorry.

01:28:04 18 Q. And your opinion on the maps

01:28:06 19 for your clients who have hired you,

01:28:10 20 did you prefer that map or you think

01:28:12 21 it's a better map?

01:28:15 22 A. What's the best way to put

01:28:16 23 this, the most accurate way to put

01:28:18 24 this? I think Reschenthaler 1 and 2

01:28:28 25 are good maps. I think that they

01:28:29 1 would serve the state well.

01:28:30 2 But as I said earlier I don't
01:28:33 3 think that you can say that there is a
01:28:37 4 best map. I mean, you can submit 100
01:28:41 5 maps. And to say this is the best
01:28:44 6 map, I think it's --- in a way, it's
01:28:46 7 an impossible question.

01:28:48 8 But I think, it's my opinion,
01:28:50 9 that the Reschenthaler 1 and 2 maps
01:28:52 10 are good maps. They would well
01:28:56 11 represent the state given --- you
01:28:57 12 know, given the restraints we have
01:28:59 13 because we have to have equal
01:29:01 14 distribution ---

01:29:01 15 Q. Sure.

01:29:02 16 A. --- and so forth. And look,
01:29:03 17 you know, you got to make decisions at
01:29:05 18 some point. So, you know, as we said
01:29:05 19 yesterday, some counties have to be
01:29:11 20 split up. Some communities have to be
01:29:11 21 split up. We just don't have any
01:29:13 22 choices. We prefer not to. But,
01:29:15 23 again, I think 1 and 2 are good maps.

01:29:16 24 Q. Understood. Thank you.

01:29:16 25 A. Okay.

01:29:21 1 Q. And those maps, the
01:29:21 2 Reschenthaler maps, you heard the
01:29:23 3 testimony yesterday.
01:29:23 4 Correct?
01:29:24 5 A. Yeah, I listened to all --- I
01:29:26 6 mean, the connection was --- so some
01:29:29 7 of it sort of looped out. And I
01:29:29 8 didn't, like, look at the record or
01:29:29 9 anything, but I did watch the
01:29:29 10 testimony ---
01:29:29 11 Q. That's all I'm asking.
01:29:37 12 A. --- And I'd say maybe, like,
01:29:37 13 80 percent of it to be honest.
01:29:39 14 Q. Okay.
01:29:40 15 Did you hear Dr. Barber's
01:29:41 16 testimony?
01:29:42 17 A. Oh, no, I did not, because
01:29:46 18 yeah, we had left at that point.
01:29:46 19 Q. Well, I'll represent to you
01:29:49 20 that the maps that your client has put
01:29:51 21 forward are --- according to Dr.
01:29:54 22 Barber's mean-median analysis the most
01:29:56 23 bias towards Republicans.
01:29:58 24 Were you aware of that?
01:29:59 25 A. No. I haven't covered the

01:30:01 1 mean-median statistics, so ---.

01:30:02 2 Q. That's fine. Just a yes ---.

01:30:04 3 A. I'm really not in a position to

01:30:05 4 talk about mean-median and things of

01:30:07 5 that nature, so ---.

01:30:07 6 Q. Doctor, please.

01:30:08 7 A. Oh, I'm sorry. I apologize.

01:30:08 8 ATTORNEY GORDON:

01:30:09 9 Your Honor. I'm on a

01:30:11 10 time clock.

01:30:11 11 COURT CRIER TURNER:

01:30:16 12 Counsel, you cannot

01:30:16 13 speak at the same time. The court

01:30:17 14 report cannot get you.

01:30:17 15 JUDGE McCULLOUGH:

01:30:18 16 Mr. Gordon, Mr.

01:30:18 17 Haverstick has a comment objection.

01:30:21 18 ATTORNEY HAVERSTICK:

01:30:21 19 Your Honor, I do have an

01:30:22 20 objection. If a question can --- is

01:30:25 21 going to be asked and the witness is

01:30:27 22 attempting to answer it, I don't think

01:30:31 23 it's appropriate to talk over him.

01:30:33 24 JUDGE McCULLOUGH:

01:30:33 25 Well --- okay. Thank

01:30:35 1 you, Mr. Haverstick. I appreciate
01:30:35 2 that point. And I always ask Counsel
01:30:37 3 to let a witness finish an answer.
01:30:42 4 But sometimes the answer is going on
01:30:44 5 also past the question.

01:30:49 6 So I would advise the
01:30:50 7 witness to please carefully listen to
01:30:51 8 the question and when Counsel begins
01:30:53 9 to ask you another question ---.

01:30:53 10 THE WITNESS:

01:30:55 11 I apologize, I'm just
01:30:56 12 trying to be ---.

01:30:57 13 JUDGE McCULLOUGH:

01:30:58 14 If you don't have an
01:31:00 15 opportunity to finish your question,
01:31:01 16 I'm sure your Counsel will interject.
01:31:03 17 But just please be respectful. I
01:31:04 18 think Mr. Gordon was trying to ask you
01:31:06 19 now a different question.

01:31:08 20 So Mr. Gordon, proceed.

01:31:09 21 ATTORNEY GORDON:

01:31:09 22 Thank you.

01:31:09 23 BY ATTORNEY GORDON:

01:31:10 24 Q. Dr. Naughton, you offered a lot
01:31:12 25 of testimony on Direct about what you

01:31:14 1 think people in certain areas want
01:31:15 2 with respect to the representation.

01:31:16 3 Correct?

01:31:17 4 A. Yes.

01:31:17 5 Q. And you identify nothing in
01:31:19 6 your report about any public opinion
01:31:21 7 polling that you've done relative to
01:31:24 8 these issues.

01:31:24 9 Correct?

01:31:25 10 A. I don't think there is any
01:31:26 11 public opinion polling specific to
01:31:28 12 these issues.

01:31:29 13 Q. Okay.

01:31:29 14 And you've identified ---

01:31:29 15 A. Very specific issues.

01:31:30 16 Q. --- and just to be clear the
01:31:31 17 question was, you've identified
01:31:33 18 nothing in your report regarding
01:31:34 19 polling of the people about the issue
01:31:37 20 that you purport to represent their
01:31:39 21 interests on?

01:31:40 22 A. I have not seen any polling on
01:31:41 23 the issue.

01:31:42 24 Q. You currently have a firm
01:31:46 25 called Silent Majority Strategies?

01:31:49 1 A. Yes.

01:31:49 2 Q. Are you or your firm currently
01:31:51 3 consulting for or otherwise assisting
01:31:54 4 any political candidates, politicians
01:32:00 5 or judges?

01:32:01 6 A. No.

01:32:01 7 Q. Have you done any work on
01:32:02 8 campaigns in Pennsylvania since 2015?

01:32:04 9 A. I did. Let's see. I provided
01:32:13 10 some advice to, I believe, a Superior
01:32:15 11 Court candidate just sort of very
01:32:18 12 briefly.

01:32:18 13 Q. When was that?

01:32:20 14 A. I think it was --- was it '17
01:32:25 15 or '19? I'm not certain.

01:32:27 16 Q. Okay.

01:32:28 17 I want to ask you about your
01:32:29 18 other experience. You have not
01:32:31 19 appeared as an expert witness in a
01:32:34 20 redistricting litigation before?

01:32:36 21 A. No.

01:32:36 22 Q. And your report identifies no
01:32:39 23 particular experience in
01:32:40 24 redistricting.

01:32:41 25 Correct?

01:32:41 1 A. No.

01:32:43 2 Q. No, meaning ---?

01:32:45 3 A. Ask the question again. I'm

01:32:46 4 sorry.

01:32:46 5 Q. Your report identifies no

01:32:49 6 experience that you have particular to

01:32:53 7 redistricting.

01:32:53 8 Is that correct?

01:32:54 9 A. Yes.

01:32:55 10 Q. Thank you.

01:32:56 11 And have you actually tried to

01:32:58 12 draw a redistricting plan for

01:33:02 13 Pennsylvania that juggles all the

01:33:03 14 various constraints here?

01:33:05 15 A. Tried to draw a map for this

01:33:08 16 ---

01:33:08 17 Q. Yes.

01:33:08 18 A. --- this apportion process?

01:33:11 19 Q. Yes.

01:33:12 20 A. Have I? No.

01:33:13 21 Q. The scope of your report, as I

01:33:21 22 think reflected on the first page, is

01:33:26 23 that you were going to review the

01:33:26 24 proposed maps and the submissions in

01:33:26 25 this matter and offer opinions on the

01:33:26 1 same.

01:33:32 2 Is that accurate?

01:33:32 3 A. Yes.

01:33:33 4 Q. And your --- any opinions would
01:33:34 5 be identified in your report? Any of
01:33:39 6 the opinions that you arrived at?

01:33:42 7 A. I'm not sure.

01:33:45 8 Q. Were the opinions you arrived
01:33:46 9 at in this case reflected in your
01:33:48 10 report?

01:33:50 11 A. Yes, but --- yes. Yeah.

01:33:55 12 Q. Your report does not identify
01:33:58 13 any particular methodology that you
01:33:59 14 use to arrive at these opinions, does
01:34:02 15 it?

01:34:02 16 A. No, it's just my opinion,
01:34:04 17 expert opinion.

01:34:04 18 Q. And your report does not cite
01:34:06 19 any authority or particular evidence
01:34:08 20 for your opinions, does it?

01:34:11 21 A. Just my experience.

01:34:13 22 Q. And your report identifies no
01:34:15 23 opinions specific to the Carter map,
01:34:18 24 does it?

01:34:21 25 A. I don't believe so, but ---.

01:34:24 1 Q. I have a question for you about
01:34:25 2 something you say in your report about
01:34:27 3 partisanship. Are you saying the
01:34:32 4 Court should not take partisanship
01:34:34 5 into consideration?

01:34:34 6 A. I don't believe I said that.

01:34:35 7 Q. I'm just asking you that
01:34:37 8 question. Is that your opinion?

01:34:39 9 A. I mean, I don't ---.

01:34:42 10 Q. Is your opinion that the Court
01:34:43 11 should not take partisanship, partisan
01:34:50 12 fairness, into consideration in
01:34:51 13 deciding the map?

01:34:51 14 A. Okay.

01:34:51 15 That's a different question.
01:34:51 16 Partisan fairness ---

01:34:51 17 Q. Yeah.

01:34:54 18 A. --- or partisanship?

01:34:55 19 Q. Let me make sure we have the
01:34:57 20 same question.

01:34:57 21 A. Okay. Yeah.

01:34:58 22 Q. Is it your opinion that the
01:35:00 23 Court should not consider partisan
01:35:04 24 fairness when deciding upon a map?

01:35:05 25 A. Well, what's fairness? I have

01:35:07 1 to tell you something. Fairness is a
01:35:09 2 totally subjective word. I mean, fair
01:35:11 3 is the greatest word in politics,
01:35:13 4 because it can mean anything you want.
01:35:13 5 Like, to me, if something's fair ---
01:35:15 6 pardon me.

01:35:15 7 Q. So it your understanding of
01:35:19 8 what partisan fairness means? Is it
01:35:21 9 your opinion that the Court should not
01:35:23 10 consider partisan fairness in
01:35:25 11 considering which map to adopt?

01:35:28 12 A. Again, it depends on your
01:35:30 13 definition of fairness.

01:35:35 14 Q. Under your definition, is that
01:35:40 15 a consideration --- is that a
01:35:41 16 consideration you think the Court
01:35:41 17 should consider regardless of how
01:35:44 18 anybody identifies fairness? Should
01:35:46 19 the Court identify partisan fairness,
01:35:49 20 in your opinion?

01:35:50 21 A. But everybody defines fairness
01:35:51 22 differently.

01:35:51 23 Q. But should the Court consider
01:35:55 24 partisan fairness in deciding which
01:35:58 25 map to adopt? Yes or no?

01:35:59 1 A. Only if the Court establishes
01:36:01 2 an objective definition of fairness,
01:36:02 3 can it then make that judgment. But
01:36:03 4 if the Court were to define an
01:36:05 5 objective definition of fairness, then
01:36:10 6 it could accept that as a condition,
01:36:14 7 in my opinion.

01:36:15 8 Q. In your report, you talk about
01:36:16 9 splits and community of interests.

01:36:20 10 Correct?

01:36:20 11 A. Yes.

01:36:20 12 Q. And you say that it's a mistake
01:36:22 13 to focus on the number of
01:36:24 14 municipalities.

01:36:31 15 Correct?

01:36:31 16 A. I think what I said was that
01:36:33 17 the population matters because we're
01:36:35 18 talking about how many people are
01:36:37 19 affected or harmed. And so what we
01:36:40 20 really need to look at is population.
01:36:42 21 I don't think I said that we should
01:36:44 22 ignore --- completely ignore the
01:36:46 23 discreet number.

01:36:47 24 I'm just saying that, you know,
01:36:49 25 if you're splitting 500 people or 900

01:36:53 1 people that that is --- that affects
01:36:57 2 fewer people than if you're splitting
01:36:59 3 20,000 or 30,000. And we should
01:37:02 4 weight our consideration based on the
01:37:03 5 effect or based on the harm.

01:37:05 6 Q. Did you say in your report that
01:37:06 7 splitting municipalities should be
01:37:08 8 calculated on the total population
01:37:11 9 affected by municipal splits, not the
01:37:14 10 number of splits?

01:37:16 11 A. I believe you're reading from
01:37:18 12 my report, so I would agree.

01:37:18 13 Q. And you agree that's your
01:37:19 14 opinion?

01:37:20 15 A. Yes.

01:37:29 16 Q. Okay.

01:37:29 17 And just generally, in your
01:37:31 18 opinion, splitting smaller
01:37:38 19 municipalities is less concerning than
01:37:38 20 splitting larger municipalities?

01:37:40 21 A. Well, based on --- like, based
01:37:43 22 on the needs for federal advocacy and
01:37:43 23 based on what communities receive ---
01:37:44 24 like, if you look at a place -- like
01:37:46 25 the split in Reschenthaler 1 --- the

01:37:47 1 Reschenthaler maps is Plum Township,
01:37:47 2 Venango County.

01:37:51 3 No professional staff,
01:37:52 4 volunteer fire department. I think
01:37:54 5 most of the federal funds that go to
01:37:56 6 people there are transfer payments or
01:37:59 7 to formulate redistributed funds,
01:38:01 8 that's a community that --- you know,
01:38:04 9 it's fewer people, plus its needs
01:38:07 10 itself for federal aid, and its needs
01:38:10 11 for, particularly distributive ---
01:38:10 12 distributive or discretionary federal
01:38:10 13 funds are much less than the City of
01:38:16 14 Pittsburgh. So actually not only are
01:38:19 15 more people harmed when you split the
01:38:21 16 City of Pittsburgh, but the impact is
01:38:23 17 even greater than if you split a rural
01:38:26 18 or smaller community in my opinion.

01:38:28 19 Q. Okay.

01:38:29 20 So in answer to the question
01:38:30 21 --- and I appreciate the color, but
01:38:32 22 I'm just trying to get on record, your
01:38:34 23 opinion is that splitting a smaller
01:38:36 24 municipality is generally less
01:38:38 25 concerning or less of a problem than

01:38:40 1 splitting a larger municipality?

01:38:42 2 A. I think it has less weight,

01:38:45 3 less harm, yes.

01:38:46 4 Q. And you talked about the City

01:38:47 5 of Pittsburgh, and I know you've

01:38:50 6 mentioned in your report and on

01:38:51 7 testimony that you think it's a big

01:38:53 8 mistake to split the City of

01:38:56 9 Pittsburgh.

01:38:57 10 Is that correct?

01:38:57 11 A. I think it's a mistake, I think

01:38:59 12 it's unnecessary.

01:38:59 13 Q. And you would agree with me

01:39:00 14 that the Carter plan does not split

01:39:01 15 the City of Pittsburgh.

01:39:02 16 Correct?

01:39:02 17 A. I'd have to see --- yeah,

01:39:03 18 you're right --- your plan. Correct.

01:39:05 19 Yes.

01:39:05 20 Q. And you said also --- and this

01:39:07 21 is on pages seven and eight of your

01:39:11 22 report, that it's an error, in your

01:39:14 23 opinion, to extend Bucks County into

01:39:16 24 Philadelphia, that it absolutely

01:39:19 25 should not go into Philadelphia.

01:39:20 1 Correct?

01:39:22 2 A. Yes. I think that Bensalem,

01:39:24 3 Philadelphia line should be kept ---

01:39:25 4 Q. Just a yes or no, please.

01:39:27 5 A. --- should be the separation.

01:39:28 6 Q. Okay.

01:39:28 7 And that instead the Bucks

01:39:30 8 County should be extended into

01:39:32 9 Montgomery County.

01:39:33 10 Correct?

01:39:33 11 A. Yes, I think that is

01:39:36 12 preferable.

01:39:36 13 Q. And that is what the Carter

01:39:39 14 plan did.

01:39:39 15 Correct?

01:39:40 16 A. Yes. And I think I testified

01:39:41 17 that I thought that that was a good

01:39:44 18 draw.

01:39:44 19 Q. And you also said that

01:39:46 20 Philadelphia surplus should go to

01:39:48 21 Delaware County.

01:39:49 22 Correct?

01:39:49 23 A. I think of the options that

01:39:51 24 would be the best option.

01:39:52 25 Q. And that is what the Carter

01:39:55 1 plan does .

01:39:55 2 Correct?

01:39:55 3 A. I believe --- I would have to
01:39:57 4 look at the map again just to make
01:40:00 5 sure .

01:40:00 6 Q. We can pull it up .

01:40:00 7 A. I don't have the maps in front
01:40:04 8 of me .

01:40:04 9 ATTORNEY GORDON:

01:40:06 10 We can pull it up ,
01:40:07 11 page 14 of the Rodden , please . If you
01:40:07 12 can blow up the second paragraph ,
01:40:07 13 please .

01:40:07 14 BY ATTORNEY GORDON:

01:40:13 15 Q. You see here it says District 5
01:40:15 16 is based in Delaware County with a
01:40:17 17 portion reaching into south
01:40:20 18 Philadelphia . And then , if we go back
01:40:21 19 to the bottom of the paragraph it says
01:40:22 20 I elected once again to keep the
01:40:25 21 structure of the existing map . I keep
01:40:26 22 that south Philadelphia with Delaware
01:40:29 23 County .

01:40:29 24 Would you agree with me ?

01:40:30 25 A. Yes .

01:40:31 1 Q. And finally, you had some
01:40:34 2 criticism of computer drawn maps in
01:40:38 3 your Direct testimony.

01:40:38 4 Do you recall that?

01:40:43 5 A. Yes, I think I felt that they
01:40:46 6 don't --- using a purely number based
01:40:51 7 formula does not adequately capture
01:40:54 8 all of the information. And I think
01:40:55 9 that was also reflected in the expert
01:40:57 10 reports --- other expert reports.

01:40:58 11 Q. And you would agree with me
01:41:00 12 that the Carter map was drawn by a
01:41:01 13 human not a computer.

01:41:03 14 Correct?

01:41:03 15 A. I don't know, because ---.

01:41:04 16 Q. Did you hear Dr. Rodden testify
01:41:06 17 to that yesterday?

01:41:07 18 A. Well, I saw his testimony, but
01:41:08 19 again I didn't review the record, and
01:41:10 20 I didn't review every note. But if
01:41:13 21 you say that that's in the record,
01:41:14 22 than I would agree.

01:41:17 23 ATTORNEY GORDON:

01:41:18 24 Thank you, Dr. Naughton?

01:41:18 25 THE WITNESS:

01:41:21 1 Thank you.

01:41:21 2 JUDGE McCULLOUGH:

01:41:21 3 Thank you, Counsel.

01:41:25 4 ATTORNEY HAVERSTICK:

01:41:25 5 Your Honor, may I

01:41:26 6 correct the record? It's an important

01:41:27 7 point, I think.

01:41:31 8 JUDGE McCULLOUGH:

01:41:31 9 Let Mr. Gordon ---.

01:41:33 10 ATTORNEY GORDON:

01:41:33 11 I'm sorry, does this

01:41:34 12 address me?

01:41:34 13 ATTORNEY HAVERSTICK:

01:41:36 14 No.

01:41:36 15 JUDGE McCULLOUGH:

01:41:36 16 No, I don't think so.

01:41:37 17 So let him gather his things and then

01:41:41 18 you can approach the podium.

01:41:42 19 Take your time. All

01:41:45 20 right, sir.

01:41:46 21 ATTORNEY HAVERSTICK:

01:41:46 22 Your Honor, when I was

01:41:47 23 sent this document yesterday by the

01:41:49 24 client, I confess I did not read with

01:41:51 25 my glasses on. The date is from 2021,

01:41:54 1 not 2022.

01:41:55 2 Under the circumstances,
01:41:56 3 I'm not going to offer it into
01:41:58 4 evidence. I didn't get around to
01:42:00 5 offering it.

01:42:01 6 JUDGE McCULLOUGH:

01:42:01 7 Which document? The
01:42:04 8 Bucks County resolution?

01:42:05 9 ATTORNEY HAVERSTICK:

01:42:05 10 And with my apologies to
01:42:07 11 the Court for getting the date wrong,
01:42:08 12 but I'm not going to offer it into
01:42:10 13 evidence.

01:42:10 14 JUDGE McCULLOUGH:

01:42:10 15 Okay. Thank you. Thank
01:42:11 16 you for noting that for the record.

01:42:13 17 ATTORNEY HAVERSTICK:

01:42:13 18 Thank you.

01:42:13 19 JUDGE McCULLOUGH:

01:42:14 20 All right.

01:42:14 21 Now, we will proceed
01:42:17 22 with Petitioner Gressman.

01:42:25 23 ATTORNEY JOHNSON:

01:42:26 24 Good morning.

01:42:26 25 ---

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CROSS EXAMINATION

BY ATTORNEY JOHNSON:

Q. Good morning, Dr. Naughton?

A. Nice to meet you.

Q. Nice to meet you, too. Tassity Johnson for the Gressman Math Science petition.

JUDGE McCULLOUGH:

Can you remove your mask?

ATTORNEY JOHNSON:

I'm sorry. I thought to do it and immediately forgot.

BY ATTORNEY JOHNSON:

Q. Dr. Naughton, you are not a mathematician.

Correct?

A. No.

Q. It's a little confusing, I guess, for the record, but when I say correct, I guess maybe the answer is yes rather than no?

A. Did I say correct.

Q. No, you said no. I will re-ask

01:43:06 1 the question again. It's very
01:43:07 2 confusing.

01:43:07 3 So you're not a mathematician.
01:43:09 4 Correct?

01:43:10 5 A. Yes. Right. Okay.

01:43:12 6 Q. That is confusing. So in your
01:43:17 7 report you didn't provide a
01:43:19 8 quantitative analysis of how any of
01:43:19 9 the proposed plans perform on the
01:43:21 10 neutral redistricting criteria.

01:43:23 11 Correct?

01:43:24 12 A. Correct. Yes. Sorry.

01:43:27 13 Q. And you also didn't provide a
01:43:30 14 quantitative analysis of how any of
01:43:33 15 the proposed plans actually perform on
01:43:35 16 any metrics of partisan fairness. And
01:43:38 17 when I say partisan fairness I mean
01:43:40 18 whether the maps treat voters for the
01:43:42 19 same party --- I mean, for each party
01:43:45 20 equally.

01:43:47 21 Correct?

01:43:49 22 A. Yes.

01:43:49 23 Q. Instead you believe the
01:43:53 24 quantitative measures of partisan
01:43:57 25 fairness are incomplete.

01:43:59 1 Correct?

01:44:06 2 A. I don't agree with the word ---
01:44:08 3 the incomplete.

01:44:09 4 Q. Well, taking that directly ---?

01:44:14 5 A. Because that implies that the
01:44:17 6 models produced themselves are somehow
01:44:20 7 flood, and I'm not arguing that point.
01:44:21 8 I'm not arguing that your clients,
01:44:22 9 your experts or anyone else's are
01:44:24 10 doing bad math or bad analysis. I'm
01:44:27 11 not in a position to do so.

01:44:29 12 What I was saying is that the
01:44:31 13 models that you are --- that you have
01:44:35 14 presented, they're not --- they don't
01:44:39 15 provide --- they ignore other factors
01:44:42 16 and so they're only a portion of the
01:44:48 17 --- of what the final outcome of
01:44:50 18 elections would be.

01:44:53 19 So I'm not saying that the
01:44:55 20 modeling specific as a unit was
01:44:58 21 incomplete. I'm saying that unless we
01:45:00 22 take into account national factors,
01:45:04 23 President, midterms, state of the
01:45:08 24 economy, et cetera, et cetera, unless
01:45:10 25 we consider that, we cannot provide an

01:45:12 1 accurate prediction of the eventual
01:45:15 2 outcome of elections, and I think
01:45:18 3 that's been shown historically in
01:45:20 4 Pennsylvania.
01:45:21 5 Q. Okay.
01:45:22 6 Understood.
01:45:23 7 But you're not offering an
01:45:24 8 opinion about whether the Gressman
01:45:27 9 Math Science Petitioners map is fair
01:45:28 10 under the definition I gave you, under
01:45:30 11 any quantitative measure of partisan
01:45:33 12 fairness.
01:45:34 13 Right?
01:45:38 14 A. Could you repeat that again,
01:45:40 15 please?
01:45:40 16 Q. Of course. You're not offering
01:45:41 17 an opinion about whether the Gressman
01:45:44 18 Math Science Petitioner's map is fair
01:45:46 19 under any quantitative measure of
01:45:53 20 fairness.
01:45:54 21 Right?
01:45:54 22 A. Yes.
01:45:54 23 Q. And you're not offering an
01:45:56 24 opinion about whether the Gressman
01:45:58 25 Math Science Petitioner's map is fair

01:46:00 1 under any other measure of partisan
01:46:02 2 fairness.

01:46:02 3 Right?

01:46:06 4 A. Yes.

01:46:07 5 Q. So in your report, Dr.
01:46:16 6 Naughton, you state that you believe a
01:46:19 7 congressional map should be --- I'm
01:46:20 8 sorry, should keep Pennsylvanians
01:46:23 9 municipalities as whole as possible.

01:46:28 10 Right?

01:46:31 11 A. Provided --- you know, based
01:46:35 12 --- I believe that they should be kept
01:46:37 13 whole and the judgment should also
01:46:41 14 include factors of population of
01:46:43 15 community size. I believe it should
01:46:45 16 be weighted in that fashion. Those
01:46:49 17 factors should be considered. But as
01:46:50 18 far as keeping communities whole, yes.

01:46:53 19 Q. And just to be clear, when you
01:46:55 20 say communities, do you mean
01:46:57 21 municipalities?

01:46:58 22 A. Yes. I mean, municipalities I
01:47:00 23 mean the municipal units of township,
01:47:04 24 borough, city, et cetera.

01:47:05 25 Q. Thank you.

01:47:06 1 A. And I don't --- I'm sorry ---
01:47:08 2 oh no.

01:47:09 3 Q. Okay.

01:47:09 4 ATTORNEY JOHNSON:

01:47:10 5 And I'm just going to
01:47:12 6 show you something. I don't know
01:47:13 7 entirely how this works. I'm just
01:47:15 8 going to put the paper on it. Do I
01:47:17 9 need to push anything for the ELMO?

01:47:21 10 JUDGE McCULLOUGH:

01:47:21 11 You are asking the wrong
01:47:22 12 person. Sorry.

01:47:26 13 ATTORNEY JOHNSON:

01:47:27 14 Okay.

01:47:28 15 BY ATTORNEY JOHNSON:

01:47:28 16 Q. So Dr. Naughton, I'm showing
01:47:29 17 you a table from Dr. DeFord's expert
01:47:32 18 report, Table 6. And Table 6 shows
01:47:34 19 all political subdivision splits in
01:47:36 20 all of the parties maps, as well as
01:47:38 21 the 2018 plan.

01:47:41 22 Right?

01:47:46 23 A. Yes.

01:47:46 24 Q. And the middle row shows the
01:47:49 25 total number of split municipalities

01:47:51 1 in each map.

01:47:52 2 Right?

01:47:55 3 A. Yes.

01:47:56 4 Q. And that row shows that the

01:47:58 5 Gressman Math Science Petitioner's map

01:48:01 6 has 19 split municipalities.

01:48:03 7 Right?

01:48:04 8 A. I would say that this chart has

01:48:05 9 inadequate information, but yes.

01:48:08 10 Q. And if you look at the entire

01:48:10 11 table, that 19 split municipalities

01:48:15 12 listed in this table, that's the

01:48:17 13 lowest number of split municipalities

01:48:20 14 of all of the proposed maps and also

01:48:22 15 the 2018 plan.

01:48:23 16 Correct?

01:48:24 17 A. Where am I looking? I see the

01:48:26 18 19. What else am I supposed to be

01:48:29 19 looking at?

01:48:30 20 Q. Right. So if you just scan

01:48:31 21 across the table ---

01:48:31 22 A. Right.

01:48:32 23 Q. --- in that same row ---.

01:48:33 24 A. Okay.

01:48:34 25 Q. I don't want to put my hand on

01:48:36 1 that.

01:48:36 2 A. Oh, when you're pointing out

01:48:38 3 --- you want me to say 19 is lower

01:48:41 4 than 29?

01:48:43 5 Q. Well --- I want you to say it's

01:48:45 6 lower than every number in that table.

01:48:45 7 A. I apologize. Yes. I'm sorry,

01:48:50 8 yes.

01:48:50 9 Q. And so can you take a look at

01:48:52 10 the next table, Table 7?

01:48:54 11 A. Is that the one that is still

01:48:56 12 on the screen, right below 23,

01:48:59 13 paragraph 23?

01:49:01 14 Q. Yes?

01:49:02 15 A. Okay. Yes.

01:49:03 16 Q. And Table 7 shows all political

01:49:05 17 subdivision pieces and all of the

01:49:07 18 parties maps as well as the 2018 plan.

01:49:09 19 Right?

01:49:10 20 A. Yes.

01:49:11 21 Q. And in the middle row, again,

01:49:13 22 shows the total number of split

01:49:16 23 municipalities in each map.

01:49:20 24 Right?

01:49:20 25 A. Yes.

01:49:20 1 Q. And that row shows that the
01:49:22 2 Gressman Math Science Petitioners map
01:49:24 3 is tied for the lowest number of
01:49:26 4 municipality pieces of all the
01:49:28 5 proposed maps and also the 2018 plan.

01:49:30 6 Correct?

01:49:34 7 A. Yes.

01:49:40 8 Q. So in your report --- do you
01:49:42 9 have your report? I'm not sure if you
01:49:44 10 have it.

01:49:44 11 A. No, I do not.

01:49:45 12 Q. Okay.

01:49:45 13 If you need to see anything,
01:49:46 14 just let me know.

01:49:47 15 A. Thank you.

01:49:48 16 Q. So in your report you state
01:49:50 17 that harm from splitting
01:49:52 18 municipalities should be calculated on
01:49:55 19 the total population affected by
01:49:57 20 municipal splits not the number of
01:50:00 21 splits.

01:50:00 22 Right?

01:50:01 23 A. Yes.

01:50:01 24 Q. And you also stated that the
01:50:03 25 Reschenthaler maps are better than all

01:50:05 1 but the House Republican and Citizens
01:50:06 2 vote maps when calculating the total
01:50:09 3 population affected by municipal
01:50:12 4 splits and not the number of splits.

01:50:14 5 Right?

01:50:14 6 A. That is based on the
01:50:15 7 information that I received and that I
01:50:18 8 calculated. I certainly welcome a
01:50:20 9 confirmation of my numbers.

01:50:22 10 Q. Okay.

01:50:23 11 A. But yes, that's what I said in
01:50:24 12 the report.

01:50:24 13 Q. And you give specific numbers.
01:50:27 14 You state that removing Philadelphia
01:50:29 15 as the City must be split,
01:50:31 16 Reschenthaler map 1 splits communities
01:50:33 17 representing 1.567 percent and the
01:50:36 18 remaining population will
01:50:38 19 Reschenthaler map 2 splits 1.575
01:50:43 20 percent.

01:50:43 21 Right?

01:50:44 22 A. And that is of the remainder,
01:50:46 23 and I think that is the appropriate
01:50:49 24 math. You have to split Philadelphia,
01:50:50 25 so you should take that out of the

01:50:52 1 denominator and consider the rest of
01:50:54 2 the population, but yes, that's what
01:50:56 3 my calculator came up with. But
01:50:56 4 again, I'd certainly welcome a
01:50:56 5 confirmation if someone wants to
01:51:05 6 provide it.

01:51:05 7 Q. Okay.

01:51:05 8 And in concluding that these
01:51:07 9 maps performed better on total
01:51:08 10 population affected by municipal
01:51:10 11 splits than most of the other proposed
01:51:12 12 maps, you had to calculate the same
01:51:14 13 percentages for the other maps.

01:51:15 14 Right?

01:51:19 15 A. Yes.

01:51:19 16 Q. But you didn't disclose the
01:51:21 17 percentages you calculated for any of
01:51:24 18 the other proposed maps in your
01:51:26 19 report.

01:51:26 20 Right?

01:51:27 21 A. Well, let me --- let me
01:51:28 22 explain. No, I --- okay. I apologize
01:51:31 23 for my previous answer. What I was
01:51:34 24 provided was the total population that
01:51:36 25 was split, that was split from all the

01:51:40 1 communities. And so I just looked at
01:51:42 2 total population because obviously
01:51:45 3 when you convert it into a percentage
01:51:47 4 the smaller that numerator is, the
01:51:50 5 lower the percentage.

01:51:51 6 So I didn't calculate the
01:51:53 7 percentage for each one because it
01:51:57 8 wasn't necessary. I just needed to
01:51:58 9 know what the numerator was in order
01:52:00 10 to know which maps performed better.
01:52:03 11 So I apologize if I made a mistake in
01:52:07 12 precision. I did not calculate the
01:52:09 13 percentages, but I didn't need to.
01:52:12 14 All you need is the numerator to
01:52:14 15 determine whether the percent is
01:52:18 16 higher or lower.

01:52:19 17 Q. And I just want to understand.
01:52:20 18 So you did determine this figure for
01:52:24 19 every one of the proposed maps.

01:52:26 20 Correct?

01:52:26 21 A. I was provided a list of the
01:52:28 22 communities and I was provided a total
01:52:29 23 for each community. I did not go
01:52:32 24 through the census data. I was
01:52:36 25 provided with information from my

01:52:37 1 client that listed all the population
01:52:39 2 numbers.

01:52:39 3 Q. Right.

01:52:40 4 A. So subject to that information
01:52:42 5 that I received, that is what I based
01:52:45 6 my information on, my ranking. Again,
01:52:49 7 I welcome a confirmation of that.

01:52:52 8 Q. And so I just want to confirm
01:52:53 9 the way that you got to these
01:52:55 10 percentages, understanding, you know,
01:52:57 11 that you received --- maybe you didn't
01:52:59 12 do all of the full math to get to the
01:53:02 13 number, because you had some of it
01:53:03 14 done for you.

01:53:04 15 But am I right that the total
01:53:07 16 population number that you used ---
01:53:11 17 well, I'll start here. So am I right
01:53:13 18 that you first figured out what
01:53:15 19 municipalities were split in each
01:53:17 20 plan?

01:53:18 21 A. I was provided with the list.
01:53:20 22 I was provided with the list and I was
01:53:22 23 provided with the population numbers.

01:53:25 24 Q. Okay.

01:53:26 25 A. And actually, I was provided an

01:53:29 1 excel sheet and those numbers were sum
01:53:32 2 forming, and then, you know, I looked
01:53:33 3 at the bigger, smaller ones and then I
01:53:36 4 made that calculation.

01:53:37 5 Q. I see. I see. Now I
01:53:39 6 understand. So the total population
01:53:42 7 numbers that were provided for you,
01:53:44 8 they excluded Philadelphia.

01:53:45 9 Correct?

01:53:47 10 A. No, they included Philadelphia.

01:53:48 11 Q. Okay.

01:53:49 12 So then in doing your --- yeah,
01:53:53 13 I'm sorry.

01:53:54 14 A. I subtracted Philadelphia
01:53:55 15 because you have to split it. Like
01:53:58 16 why are you including it in the
01:54:01 17 enumerator and the denominator,
01:54:03 18 because you have to split the
01:54:05 19 community.

01:54:05 20 So why would you include it in
01:54:07 21 the percentage of something you got to
01:54:09 22 split anyway. So my calculation was
01:54:11 23 based on the remainder, and I think
01:54:13 24 that's legitimate.

01:54:14 25 Now, if you include the City of

01:54:16 1 Philadelphia, it doesn't change the
01:54:18 2 relative rankings, it just adds to the
01:54:18 3 enumerator and the denominator. You
01:54:20 4 just get a different number, but the
01:54:21 5 rankings stay the same, so it's kind
01:54:24 6 of a superfluous kind of move.

01:54:31 7 Q. And this final percentage
01:54:32 8 number, though, it excludes
01:54:34 9 Philadelphia and it also excludes
01:54:40 10 municipalities that were split along
01:54:43 11 county lines.

01:54:44 12 Right?

01:54:44 13 A. I was only provided the list of
01:54:47 14 communities that were split on the map
01:54:49 15 --- on the drawing of the map. I know
01:54:51 16 there are --- there are fairly small
01:54:53 17 number of communities in Pennsylvania
01:54:54 18 that straddle counties, like McDonald
01:54:58 19 and Trafford, and I think Bethlehem
01:55:00 20 does, so I didn't calculate whether a
01:55:03 21 community is in a different county. I
01:55:04 22 was only given a list of communities
01:55:06 23 that were split in the Congressional
01:55:09 24 District.

01:55:09 25 Q. Okay.

01:55:11 1 And so am I understanding
01:55:13 2 correctly that you didn't --- you
01:55:14 3 didn't do the math to get to these
01:55:15 4 numbers. You were given a chart with
01:55:17 5 the percentages in them and you just
01:55:26 6 arranged ---?

01:55:27 7 A. No. No, no, no. I was
01:55:28 8 provided a list of the communities
01:55:29 9 that were split with their populations
01:55:30 10 and the sum. So I was given a list
01:55:35 11 that says, okay, here are these maps
01:55:36 12 and here are how many people live in
01:55:39 13 split municipalities.

01:55:45 14 Q. Okay.

01:55:45 15 A. And then all I did in that was
01:55:45 16 say, okay, here's the ranking. Here's
01:55:45 17 --- here's what --- here's who ---
01:55:52 18 here's the population --- the total
01:55:53 19 populations. Here are the least ---
01:55:55 20 where the least number of populations
01:55:57 21 are split.

01:55:58 22 Q. Okay.

01:55:59 23 And so are you aware then that
01:56:02 24 using the math that was done to get to
01:56:05 25 this figure for the Reschenthaler map

01:56:07 1 in your report that the Gressman math
01:56:11 2 science petitioners map splits
01:56:12 3 municipalities representing just 1.72
01:56:15 4 --- I'm sorry, 1.712 percent of the
01:56:19 5 population?

01:56:19 6 A. In my review of the data I saw
01:56:21 7 that the Gressman map does split more,
01:56:24 8 a higher number of people than the
01:56:25 9 Reschenthaler map, yes.

01:56:26 10 Q. Well, the difference, though,
01:56:28 11 in that number is it's between --- the
01:56:31 12 difference between the Reschenthaler
01:56:33 13 figure for map 1 and the Gressman
01:56:35 14 math/science Petitioners map is 1.712
01:56:40 15 --- I'm sorry. The difference between
01:56:42 16 that number for the Gressman
01:56:44 17 math/science Petitioners map and for
01:56:48 18 Reschenthaler map 1, subject to your
01:56:48 19 verification, is 0.145 percent.

01:56:57 20 Right?

01:56:57 21 A. Well, actually it's --- I
01:57:01 22 wouldn't say percent, I would say
01:57:03 23 points. Because percent would imply
01:57:05 24 percentage of the whole. So it would
01:57:10 25 be 0.14 --- what you said, points,

01:57:12 1 rather than a percentage, yeah.

01:57:14 2 Q. But that's barely one-seventh
01:57:14 3 of one percent or one point.

01:57:23 4 Right?

01:57:24 5 A. I mean, yes.

01:57:25 6 Q. And so the difference is ---
01:57:27 7 well, between Reschenthaler map 2 and
01:57:27 8 Gressman math/science Petitioners
01:57:27 9 similarly is 0.137 points. So again
01:57:27 10 similarly ---.

01:57:37 11 A. The Gressman map exceeds the
01:57:40 12 Reschenthaler map but not by as much
01:57:42 13 as others, correct.

01:57:43 14 Q. And so the difference is small,
01:57:45 15 correct, between those two maps?

01:57:47 16 A. I think the raw number is
01:57:49 17 really what matters. I mean, the
01:57:51 18 percentage --- you know, it's nice to
01:57:53 19 talk percentages because they look
01:57:55 20 smaller, but I think the raw number is
01:57:57 21 what matters. But you know, the
01:58:02 22 Gressman map benefits significantly
01:58:04 23 because it doesn't split the city and
01:58:06 24 so it makes that number much smaller.

01:58:08 25 Q. And I see I'm out of time.

01:58:10 1 A. Oh, I'm sorry.

01:58:10 2 Q. No, no, you're fine. Thank
01:58:10 3 you, Dr. Naughton.

01:58:14 4 A. Thank you.

01:58:14 5 JUDGE McCULLOUGH:

01:58:16 6 Thank you, Counsel. And
01:58:21 7 now we will hear from attorneys for
01:58:23 8 Respondent Governor, I assume not
01:58:26 9 Secretary. Okay. Mr. Wiygul.

01:58:36 10 ATTORNEY WIYGUL:

01:58:37 11 Thank you, Your Honor.

01:58:38 12 I theoretically wear two hats, but
01:58:40 13 I've really only been wearing the one.

01:58:43 14 JUDGE McCULLOUGH:

01:58:43 15 Right.

01:58:43 16 ---

01:58:43 17 CROSS EXAMINATION

01:58:43 18 ---

01:58:43 19 BY ATTORNEY WIYGUL:

01:58:45 20 Q. I think it's still morning, but
01:58:46 21 I have not checked, Doctor.

01:58:46 22 A. Good morning.

01:58:50 23 Q. How are you? My name is Robert
01:58:53 24 Wiygul. I'm representing Governor
01:58:55 25 Wolf in this case.

01:58:56 1 A. Nice to meet you.

01:58:56 2 Q. I think some of this has been
01:58:58 3 covered already, but I want to nail
01:59:00 4 some things down?

01:59:01 5 A. Sure.

01:59:01 6 Q. You don't purport to be a data
01:59:04 7 scientist.

01:59:04 8 Correct?

01:59:05 9 A. Correct.

01:59:06 10 Q. You don't purport to be a
01:59:08 11 scholar in the area of redistricting.

01:59:10 12 Correct?

01:59:10 13 A. Correct.

01:59:10 14 Q. You have not published any
01:59:13 15 peer-reviewed articles on
01:59:13 16 redistricting.

01:59:15 17 Correct?

01:59:15 18 A. Correct.

01:59:16 19 Q. Have you published any articles
01:59:18 20 on the subject of redistricting
01:59:20 21 specifically?

01:59:21 22 A. I think I may have written an
01:59:24 23 opinion piece for The Hill, but it's
01:59:27 24 been quite sometime in which I was of
01:59:30 25 the opinion that we were focused too

01:59:34 1 much on the shapes of communities when
01:59:36 2 we really need to think about what
01:59:38 3 serves the voters' interests and what
01:59:41 4 really matters in issues of
01:59:44 5 representation, which are far more
01:59:45 6 complicated.

01:59:45 7 Q. Okay.

01:59:46 8 I understand?

01:59:47 9 A. So what I'm saying today is
01:59:48 10 consistent with an opinion that I've
01:59:50 11 have.

01:59:50 12 Q. Sir, my question is just have
01:59:53 13 you published articles. You mentioned
01:59:53 14 the one in The Hill. You'll agree
01:59:53 15 with me The Hill is not ---?

01:59:54 16 A. I should say I contributed an
01:59:57 17 article.

01:59:57 18 Q. You'll agree with me The Hill
02:00:03 19 is not a scholarly publication.

02:00:04 20 Correct?

02:00:04 21 A. Yes.

02:00:04 22 Q. Do you have any experience
02:00:06 23 working on the redistricting process,
02:00:08 24 advising Redistricting Commissions,
02:00:10 25 otherwise advising redistricting

02:00:10 1 bodies?

02:00:16 2 A. Well ---.

02:00:18 3 Q. I think it's a yes or no.

02:00:21 4 Isn't it?

02:00:21 5 A. I don't --- I've never had a
02:00:25 6 formal position in redistricting. I'm
02:00:27 7 certain that in the past I've offered
02:00:31 8 opinions --- I know that I've offered
02:00:33 9 opinions to people who have been
02:00:35 10 involved in the redistricting process.
02:00:39 11 I know that I've been solicited for my
02:00:39 12 opinion in the past. But it's
02:00:41 13 informal, so it's not part of any
02:00:43 14 public record.

02:00:43 15 Q. Okay.

02:00:43 16 And you'll agree with me that
02:00:45 17 you don't cite any of that in your
02:00:46 18 report.

02:00:46 19 Correct?

02:00:47 20 A. Correct. I felt ---.

02:00:49 21 Q. Just yes or no.

02:00:50 22 A. You're saying professional
02:00:51 23 stuff, so I didn't think it was ---.

02:00:52 24 Q. My time is limited.

02:00:53 25 A. Oh, I'm sorry. I'm sorry.

02:00:54 1 Q. I'm not trying to cut you off.

02:00:56 2 I'm just trying to be efficient.

02:00:57 3 A. I understand. I understand. I
02:00:59 4 apologize.

02:00:59 5 Q. And we'll agree --- I think
02:01:01 6 this has been covered, too. You don't
02:01:02 7 cite to any literature, academic,
02:01:04 8 scholarly literature, in your report
02:01:06 9 to support any of the theories that
02:01:07 10 you offer.

02:01:08 11 Correct?

02:01:09 12 A. Correct. It's based on my
02:01:10 13 expert opinion.

02:01:11 14 Q. And you don't identify any
02:01:13 15 methodology of any kind that you apply
02:01:15 16 to derive your conclusions, it's based
02:01:19 17 on just your personal opinion and
02:01:22 18 experience.

02:01:22 19 Is that fair?

02:01:23 20 A. I don't think personal opinion.
02:01:25 21 I think it's providing my expert and
02:01:27 22 professional opinion.

02:01:27 23 Q. We can agree that it's not the
02:01:30 24 result of an application of a
02:01:31 25 methodology?

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A. Well, no, I mean, there's a methodology.

Q. What is the methodology?

A. The methodology is based on judgment and personal experience. I think what you're getting at is, is it a mathematical ---.

Q. Sir, I just want to know what the methodology is.

ATTORNEY HAVERSTICK:
Your Honor.

JUDGE McCULLOUGH:
Okay.
Mr. Haverstick, I know.
Let him finish.

ATTORNEY HAVERSTICK:
Well, if you ask --- you go first. You're the Judge.

JUDGE McCULLOUGH:
Go ahead state your objection.

ATTORNEY HAVERSTICK:
If it's not a yes or no question and it's a question that begs a narrative answer, then, you know ---

02:02:08 1 if he's going to ask a narrative
02:02:08 2 question, then the witness should be
02:02:10 3 allowed to give a narrative answer,
02:02:10 4 not stop when it's not convenient
02:02:14 5 anymore for counsel.

02:02:15 6 JUDGE McCULLOUGH:

02:02:15 7 So noted. But I do
02:02:16 8 note, again, I ask the witness it
02:02:19 9 seems you answer a question, you stop,
02:02:21 10 and then you keep going. And I think
02:02:23 11 it's confusing counsel. So you can
02:02:25 12 say, wait, I need to say something
02:02:27 13 else, but can you make it clear
02:02:29 14 because I mean, counsel moves onto his
02:02:31 15 next question at your pause and then
02:02:32 16 you add another statement?

02:02:32 17 THE WITNESS:

02:02:35 18 I was kind of forming my
02:02:37 19 thoughts. I apologize.

02:02:38 20 ATTORNEY WIYGUL:

02:02:39 21 Thank you.

02:02:39 22 JUDGE McCULLOUGH:

02:02:39 23 All right.

02:02:39 24 BY ATTORNEY WIYGUL:

02:02:41 25 Q. You understand in this case

02:02:41 1 that in making a decision in this case
02:02:45 2 this Court is constrained to follow
02:02:47 3 the precedential decisions of the
02:02:49 4 Pennsylvania Supreme Court.

02:02:51 5 Correct?

02:02:52 6 A. Well I'm not an expert in the
02:02:53 7 law, so I don't think I can make that
02:02:55 8 judgment.

02:02:55 9 Q. Okay.

02:02:56 10 I'll represent to you that
02:02:57 11 that's the case. You can trust me or
02:02:58 12 not, but you're aware that one
02:03:02 13 precedential decision by the
02:03:03 14 Pennsylvania Supreme Court on the
02:03:04 15 subject of redistricting is the League
02:03:08 16 of Women Voters case from 2018?

02:03:09 17 A. Again, I'm not an attorney, so
02:03:10 18 I didn't review, you know, the Supreme
02:03:13 19 Court docket or anything of that
02:03:14 20 nature, so I can't make any
02:03:16 21 representation.

02:03:16 22 Q. Are you aware of the existence
02:03:18 23 of that case?

02:03:21 24 A. What case is that?

02:03:24 25 Q. League of Women Voters versus

02:03:26 1 the Commonwealth decided by the
02:03:27 2 Pennsylvania Supreme Court in 2018,
02:03:28 3 February of 2018.
02:03:29 4 A. I think I may have seen a
02:03:32 5 citation to it, but I mean awareness
02:03:35 6 implies sort of a kind of familiarity,
02:03:37 7 and I don't want to represent that,
02:03:39 8 but I think I've seen --- I've seen it
02:03:42 9 cited.
02:03:43 10 Q. Have you ever read the Opinion
02:03:44 11 or any portion of it?
02:03:45 12 A. Pardon me.
02:03:45 13 Q. Have you ever read the Opinion
02:03:47 14 or any portion of it?
02:03:49 15 A. Pardon me.
02:03:49 16 Q. Have you ever read the Opinion?
02:03:49 17 A. I have not read the Opinion.
02:03:50 18 Q. Have you ever had any summary
02:03:51 19 of the Opinion?
02:03:58 20 A. I don't believe so.
02:03:59 21 Q. So it's fair to say you don't
02:04:01 22 know what the factors discussed in
02:04:02 23 that Opinion are?
02:04:08 24 A. Yes.
02:04:09 25 Q. Is that fair?

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A. Okay.

Q. Correct?

A. I'm not aware of the fact, yes.

Q. Okay.

Have you ever --- well, I think I know the answer to this question based on what you said, but your testimony would then be that you never commented on that Decision in any way?

A. The League of Women Voters Decision?

Q. Correct.

A. I have not commented on it.

Q. Okay.

That's your testimony? You have not commented on it?

A. Yes.

Q. Okay.

Are you --- are you or have you been a columnist for a publication known as PA Townhall.com?

A. They've republished articles that I've done in The Hill, so I don't know if you would call it a columnist. I write for The Hill and they

02:04:56 1 republish in PA Town Hall.

02:04:58 2 Q. So you agree with me you have
02:04:59 3 had one or more articles published in
02:05:02 4 PA Town Hall?

02:05:03 5 A. Yes.

02:05:04 6 Q. Was one of those an article
02:05:06 7 published on February 14th, 2018,
02:05:08 8 called Gerrymandering Merry-Go-Round?

02:05:13 9 A. I don't know of the date, but I
02:05:16 10 have no reason to disbelieve you, and
02:05:18 11 that sounds like something I've
02:05:20 12 written.

02:05:20 13 Q. Do you remember writing an
02:05:20 14 article called something like
02:05:23 15 Gerrymandering Merry-Go-Round?

02:05:23 16 A. I remember writing an article
02:05:25 17 about gerrymandering and talking about
02:05:27 18 this overreliance on shapes and it's
02:05:29 19 more important to think about
02:05:31 20 interests.

02:05:31 21 Q. And if I represent to you that
02:05:32 22 February 14th, 2018, was very shortly
02:05:35 23 after the Supreme Court issued its
02:05:40 24 first Decision in League of Women
02:05:41 25 Voters, would you have any reason to

02:05:42 1 doubt me?

02:05:43 2 A. I have no reason to doubt you.

02:05:44 3 Q. Okay.

02:05:44 4 ATTORNEY WIYGUL:

02:05:47 5 Do we have that article?

02:05:48 6 Can we put it up, please?

02:05:48 7 BY ATTORNEY WIYGUL:

02:06:06 8 Q. Does this look familiar?

02:06:07 9 A. Yes.

02:06:07 10 Q. Okay.

02:06:09 11 Can we go to the last paragraph

02:06:09 12 of that article on page two. And if

02:06:09 13 it's easier, I believe I can give you

02:06:09 14 a copy of that article, sir. Would

02:06:11 15 you like a paper copy? Just let me

02:06:18 16 know. All right.

02:06:19 17 Do you see the last paragraph?

02:06:21 18 A. Do you mean that last sentence?

02:06:23 19 Q. Yes.

02:06:24 20 A. Yes.

02:06:24 21 Q. Those who shake their fists at

02:06:28 22 gerrymandering and clog the courts

02:06:28 23 with their lawsuits are really

02:06:37 24 announcing their own rigidity and

02:06:37 25 intellectual bankruptcy to the world.

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1 Do you recall writing that sentence?
2 A. I mean, I don't recall it, but
3 I'm sure I wrote it.
4 Q. The Supreme Court of
5 Pennsylvania disagrees with you.
6 Correct?
7 A. If you represent that.
8 Q. Well, they believe that ---
9 they ruled in that case that the 2011
10 Pennsylvania enacted district plan was
11 unlawful.
12 Correct?
13 ATTORNEY HAVERSTICK:
14 Your Honor, I object.
15 JUDGE McCULLOUGH:
16 Excuse me.
17 ATTORNEY HAVERSTICK:
18 Are we asking a
19 nonlawyer about legal questions now?
20 I mean, I understand why he wants to
21 --- we've established --- he said over
22 and over again I'm not a lawyer. How
23 are we expecting him to parse out the
24 League of Women Voters and ---.
25 JUDGE McCULLOUGH:

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Mr. Wiygul?

ATTORNEY WIYGUL:

Your Honor, I think his awareness of what the Opinion said and whether his opinions are consistent with a decision that's controlling law in the state are absolutely relevant to the credibility and the weight that this Court should give ---.

JUDGE McCULLOUGH:

Well, I think he already told he didn't read the LWV, so I think you're asking about it --- asking him about it again. So I don't know where you're going with that, but you can ask him about the article.

BY ATTORNEY WIYGUL:

Q. Are you aware that the Pennsylvania Supreme Court --- putting aside any specifics about the Decision, are you aware that in that decision or in any decision the Pennsylvania Supreme Court has held that there are such things as unconstitutional gerrymanderers that

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may require enacted congressional
district maps to be invalidated?
A. Could you repeat the question?
Q. Sure. Are you aware that the
Pennsylvania Supreme Court has held
that at least one suit shaking its
fist at gerrymandering was not
clogging the court and was not a
symptom of intellectual bankruptcy but
stated a meritorious case for which
the Court felt constrained to grant
relief?
A. I'm aware that the Court redrew
the map and rejected the old map. I
mean, that's what I'm aware of, and
that they rejected the 2011 or 2012
map, whichever --- whichever choice
you want to make to call it.
Q. And you see in the paragraph
above the one we just read, the first
sentence you wrote in the end there
really is no proof that weird-looking
congressional districts are inherently
unjust?
A. Yes.

02:08:53 1 Q. Do you see that?

02:08:53 2 A. Yes.

02:08:54 3 Q. Are you aware that in the
02:08:54 4 League of Women Voters case the Court
02:08:55 5 did focus on some of the extreme
02:08:58 6 weirdness of the districts under the
02:09:00 7 2011 plan and relied on that weirdness
02:09:03 8 in part to conclude that that plan was
02:09:05 9 unconstitutional?

02:09:06 10 A. I did not read the Opinion.

02:09:18 11 Q. I would like to talk a little
02:09:20 12 bit about the problem of prediction
02:09:20 13 that you raised in your article. Is
02:09:22 14 it fair to say that is an important
02:09:24 15 premise behind your conclusion that
02:09:27 16 reliance on partisan fairness metrics
02:09:30 17 is flawed?

02:09:31 18 A. Well, the problem with
02:09:37 19 prediction is that statistical
02:09:41 20 prediction and projection, all of it
02:09:42 21 is based on the past. It's all based
02:09:45 22 on the data that we already have. And
02:09:47 23 any of these analyses is simply saying
02:09:50 24 that a pattern will continue into the
02:09:52 25 future and tries to project what

02:09:55 1 happens if we offer different
02:09:56 2 treatment variables that would change
02:09:58 3 it. And what happens --- it's sort of
02:10:00 4 like the weather.
02:10:00 5 Q. Sir, I'm going to ---.
02:10:01 6 A. I'm sorry.
02:10:02 7 Q. I wasn't asking for an
02:10:05 8 explanation of that. I was just
02:10:05 9 asking is it an important premise
02:10:07 10 behind your conclusion that relying on
02:10:10 11 partisan metrics in the redistricting
02:10:15 12 context is misguided?
02:10:16 13 A. You mean that projection is
02:10:17 14 uncertain ---
02:10:17 15 Q. Correct.
02:10:18 16 A. --- and that there's like a
02:10:19 17 high --- there can be a high standard
02:10:20 18 deviation?
02:10:21 19 Q. Correct.
02:10:22 20 A. Yes.
02:10:22 21 Q. Okay.
02:10:23 22 But you'll agree with my that
02:10:27 23 there's actual academic scholarship
02:10:30 24 out there, extensive scholarship,
02:10:33 25 peer-reviewed scholarship, that does

02:10:36 1 believe you can draw not perfect
02:10:37 2 predictive conclusions but reliable
02:10:41 3 predictive conclusions based on past
02:10:43 4 election results?

02:10:45 5 A. I think that one of the
02:10:46 6 problems in this case ---.

02:10:46 7 Q. Sir, my question is are you
02:10:48 8 aware that that scholarship exists?

02:10:51 9 A. What is ---?

02:10:52 10 Q. Are you aware that scholarship
02:10:54 11 exists?

02:10:54 12 A. The scholarship of what?

02:10:56 13 Q. That holds that you can, in
02:10:57 14 fact, rely on the results of past
02:10:59 15 elections to make reasonable
02:11:01 16 predictions about future electoral
02:11:06 17 patterns. You're aware there's
02:11:10 18 peer-reviewed scholarships so holding?

02:11:13 19 A. I'm trying to recall from my
02:11:14 20 own dissertation if I've read that
02:11:20 21 literature. I think I've read some of
02:11:21 22 that literature at the time.

02:11:22 23 Q. Yesterday's testimony by Dr.
02:11:24 24 Rodden, by Dr. DeFord, by Dr. Duchin,
02:11:28 25 they all referred to that literature.

02:11:30 1 Right?

02:11:30 2 A. I believe so.

02:11:31 3 Q. Okay.

02:11:31 4 And in fact, even the expert

02:11:33 5 for the House Republicans in this

02:11:35 6 case, he also said --- I'm

02:11:38 7 paraphrasing because I don't have the

02:11:40 8 transcript in front of me, but that

02:11:42 9 either the political registration of a

02:11:46 10 voter was either the best or one of

02:11:48 11 the best ways of gauging how that

02:11:49 12 voter would vote. Did you hear that

02:11:51 13 testimony?

02:11:51 14 A. I did not hear his testimony.

02:11:53 15 Q. And in fact, the political

02:11:54 16 parties in this country,

02:11:55 17 non-parliamentary system, in this

02:11:58 18 country, just like the scholars who

02:12:00 19 are applying these methods in this

02:12:02 20 country, not parliamentary systems,

02:12:04 21 they believe you can use past election

02:12:10 22 results to gauge future electoral

02:12:13 23 patterns, don't they?

02:12:13 24 A. Past election results can

02:12:15 25 provide that with a --- and sometimes

02:12:17 1 there's a significant variance in
02:12:18 2 standard deviation which you have to
02:12:19 3 keep in mind. So they don't provide
02:12:21 4 exact predictions. And certainly
02:12:26 5 those predictions over time become
02:12:28 6 less reliable. So it's important to
02:12:29 7 understand that we're doing ---.

02:12:29 8 Q. Sir, you're getting away from
02:12:30 9 my question again.

02:12:30 10 A. I'm sorry.

02:12:32 11 Q. You will agree with me that the
02:12:33 12 political parties in this country have
02:12:35 13 reached that conclusion?

02:12:36 14 A. What was that?

02:12:37 15 Q. The conclusion that you can use
02:12:38 16 past election results to predict
02:12:40 17 future electoral patterns?

02:12:43 18 A. Not with absolute certainty,
02:12:45 19 but it is helpful.

02:12:45 20 Q. I didn't ask you. Okay. Thank
02:12:45 21 you.

02:12:45 22 ATTORNEY WIYGUL:

02:12:48 23 Can we go to the third
02:12:51 24 paragraph in Dr. Naughton's article,
02:12:57 25 please, first page?

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BY ATTORNEY WIYGUL:

Q. Do you see there you wrote, second sentence, using past voting behavior and matching that behavior with demographics, each party develops their own pretty solid predicting model of electoral behavior.

Did I read that correctly?

A. Yes.

Q. All right. Thank you.

I would like to talk a little bit about communities of interest. You really focus on the greater Philadelphia and Pittsburgh regions in your report.

Is that fair?

A. Mostly Pittsburgh, yes.

Q. Okay.

And you will agree with me that there are trade-offs among the traditional redistricting criteria and in particular between the number of split political subdivisions and compactness. I think you basically testified to that in your direct.

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Right?

A. Yes, there are trade-offs. You have to make trade-offs.

Q. And you're not testifying that any map that keeps Pittsburgh whole is better than any map that splits Pittsburgh, are you?

A. Well, I believe I testified that the maps that are better match up the city with sort of the east and the Mon Valley, but I --- but I --- what was the question again?

Q. I'm asking you are not testifying that any map that keeps Pittsburgh whole in one district is better than any map that splits Pittsburgh? That's not your testimony.

Right?

A. I think in my expert report I had said that Pittsburgh should not be split and that would be --- I don't know if I used the phrase disqualifying factor, but ---.

Q. I'm just asking you right now

02:14:28 1 is it your testimony that any map that
02:14:30 2 keeps Pittsburgh whole is better than
02:14:32 3 any map that splits Pittsburgh?

02:14:34 4 A. Oh, yes, yes.

02:14:36 5 Q. It is. So any map that keeps
02:14:38 6 Pittsburgh whole, no matter what else
02:14:40 7 it does in the whole rest of the
02:14:41 8 Commonwealth of Pennsylvania, is
02:14:43 9 superior to any map that splits
02:14:45 10 Pittsburgh, no matter what it does in
02:14:48 11 all of the rest of the Commonwealth of
02:14:50 12 Pennsylvania? That is your testimony?

02:14:51 13 A. Let me correct that because I
02:14:53 14 gave you an incorrect answer. I
02:14:54 15 should apologize for that. My
02:14:59 16 testimony, my opinion, is that a map
02:15:02 17 that splits Pittsburgh has significant
02:15:04 18 problems and have significant demerits
02:15:08 19 and it's unnecessary in western
02:15:10 20 Pennsylvania.

02:15:11 21 ATTORNEY WIYGUL:

02:15:11 22 Your Honor, if I can
02:15:12 23 just ask the Court's indulgence for
02:15:12 24 another a minute or two in light of
02:15:15 25 some of this?

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JUDGE McCULLOUGH:

Can we stop the clock?

I'm sorry, what?

ATTORNEY WIYGUL:

I was going to request another minute or 90 seconds in light of some of the longer answers.

JUDGE McCULLOUGH:

We stopped --- well, everyone has been giving long answers. I'll let you ask one more question and he can answer.

ATTORNEY WIYGUL:

Okay. Thank you.

BY ATTORNEY WIYGUL:

Q. Are you aware, did you hear the testimony that as part of the process of making of the Governor's map, the Governor set up a public portal where individuals and members of communities of interest in Pittsburgh and all over the State could actually offer their own opinion as opposed to your opinion about what's best for them and how the line should be divided?

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A. I did not examine the
Governor's process.

Q. Did you ---?

JUDGE McCULLOUGH:

I said one question.

ATTORNEY WIYGUL:

Fair enough, Your Honor.

Thank you.

JUDGE McCULLOUGH:

Thank you, Counsel. Now
we move to counsel for the Republican
Legislative Intervenors.

CROSS EXAMINATION

BY ATTORNEY LEWIS:

Q. Good morning. Patrick Lewis on
behalf of the Republican House
Intervenors?

A. Good morning.

Q. Doctor, did I hear you
correctly in your Direct Examination
that, in your view, computer models do
not take into account the specific
factors of individual races?

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A. Yes.

Q. So in your opinion as a political scientist has it been appropriate for the court to draw a plan or design a plan to specific partisan fairness metric score based on one of those computer models?

A. Could you repeat the question please?

Q. Sure. So in your opinion as a political scientist do you believe it's appropriate for the Court to select a map that was designed to achieve a specific partisan fairness score using a computer model?

ATTORNEY ATTISANO:
Objection Your Honor the senate Democratic caucus it calls for a legal conclusion and it doesn't call for a legal conclusion.

JUDGE McCULLOUGH:
Your response.

ATTORNEY LEWIS:
Sure, Your Honor. I've asked his opinion as a political

02:17:42 1 scientist. We've had political
02:17:45 2 scientists and mathematicians for the
02:17:46 3 past two days asking --- urging Your
02:17:48 4 Honor to do precisely the question
02:17:51 5 that I'm asking of this witness.

02:17:53 6 JUDGE McCULLOUGH:

02:17:53 7 Yes.

02:17:54 8 ATTORNEY ATTISANO:

02:17:54 9 Your Honor, if I may, he
02:17:55 10 asked --- the question he asked is, is
02:17:56 11 it appropriate for the Court to ---
02:17:58 12 and that's asking for a legal
02:18:00 13 conclusion.

02:18:00 14 JUDGE McCULLOUGH:

02:18:00 15 Okay.

02:18:01 16 Can you rephrase that
02:18:02 17 part of your question?

02:18:04 18 ATTORNEY LEWIS:

02:18:04 19 Yes, Your Honor.

02:18:04 20 JUDGE McCULLOUGH:

02:18:05 21 Okay.

02:18:05 22 BY ATTORNEY LEWIS:

02:18:06 23 Q. All right.

02:18:07 24 Doctor, in your opinion, as a
02:18:10 25 political scientist, is it appropriate

02:18:12 1 to draw a map that's designed to
02:18:15 2 achieve a specific partisan fairness
02:18:18 3 score using a computer model?

02:18:21 4 A. No.

02:18:21 5 Q. Now, you testified on Direct
02:18:27 6 Examination that you believe it was
02:18:28 7 appropriate to keep Pittsburgh in a
02:18:30 8 single district.

02:18:31 9 Is that right?

02:18:32 10 A. Yes.

02:18:34 11 Q. Okay.

02:18:37 12 And is there a benefit to a
02:18:39 13 city beyond just the partisan
02:18:42 14 affiliation of its congressional
02:18:46 15 representative to be kept in a single
02:18:48 16 district?

02:18:48 17 A. Yes.

02:18:48 18 Q. Okay.

02:18:48 19 And what are some of those
02:18:50 20 benefits?

02:18:51 21 A. Well, I think every political
02:18:54 22 benefit --- every political unit by
02:18:57 23 its very nature has interests.
02:19:02 24 Federal funds flow through city
02:19:05 25 governments, municipal governments,

02:19:08 1 federal funds flow through authority
02:19:11 2 that are often based on those lines.
02:19:13 3 Councils of government, other sorts of
02:19:16 4 organizations, so having a --- having
02:19:20 5 a municipality as a unit is helpful
02:19:25 6 when you're looking at advocacy. It's
02:19:28 7 helpful when you're looking at, will
02:19:31 8 you get that service and that advocacy
02:19:33 9 from the member of the Congress.

02:19:35 10 It's also helpful because you
02:19:37 11 can have that specialization. You
02:19:39 12 know, you're in a certain district
02:19:40 13 that has got certain folks that, you
02:19:44 14 know, a member develops a
02:19:48 15 specialization constituent service, a
02:19:48 16 member develop specialization, you
02:19:52 17 know, selecting their committees and
02:19:52 18 so forth. So keeping those
02:19:55 19 communities together is vital and it's
02:19:56 20 vitally important for --- you know,
02:20:00 21 the acquisition of federal funds and
02:20:01 22 for proper advocacy.

02:20:03 23 Q. And those would be benefits
02:20:04 24 that would flow to the voters of such
02:20:07 25 a city regardless of the political

02:20:10 1 affiliation of the member of Congress
02:20:14 2 representing that city.

02:20:15 3 Is that right?

02:20:16 4 A. They would flow to all
02:20:18 5 citizens, whether there are voters or
02:20:20 6 not voters.

02:20:21 7 Q. I just have a few questions for
02:20:22 8 you about House Bill 2146.

02:20:34 9 Are you familiar with that
02:20:35 10 plan?

02:20:35 11 A. I reviewed them. I looked at
02:20:37 12 the maps.

02:20:45 13 Q. And I will represent to you,
02:20:46 14 Doctor, that this is a rendering of
02:20:49 15 House Bill 2146, and it is attached as
02:20:52 16 Exhibit 1 to the Affidavit of Bill
02:21:02 17 Shaller, which is Exhibit I to our
02:21:04 18 opening report.

02:21:04 19 I would like to first start
02:21:09 20 with the Pittsburgh area district, so
02:21:11 21 I'm going to zoom in. If you need to
02:21:15 22 flip to a view that has the Pittsburgh
02:21:16 23 District let me know.

02:21:18 24 All right.

02:21:25 25 Now, this District 15 contains

02:21:27 1 the entire City of Pittsburgh.

02:21:32 2 Is that fair?

02:21:32 3 A. Yes, it appears so.

02:21:33 4 Q. And does this configuration of
02:21:36 5 Allegheny County --- I believe
02:21:37 6 District 17 contains the balance of
02:21:39 7 Allegheny County?

02:21:41 8 A. Yes.

02:21:45 9 Q. Based on your analysis, does
02:21:48 10 this configuration, you know, honor
02:21:52 11 the communities of interest in
02:21:53 12 Allegheny County that you've testified
02:21:56 13 about today?

02:21:58 14 A. Yes.

02:22:00 15 Q. Okay.

02:22:04 16 Now, I'm going to move east.
02:22:11 17 So we will start here with our
02:22:17 18 District 1 in this plan.

02:22:20 19 Does District 1 in the House
02:22:24 20 Bill 2146 plan keep Bucks County
02:22:27 21 whole?

02:22:30 22 A. Yes.

02:22:31 23 Q. And in your view, does District
02:22:33 24 1 fairly honor the communities of
02:22:35 25 interest of Bucks County?

02:22:36 1 A. In my opinion, yes.

02:22:38 2 Q. Here I'm going to Zoom a little
02:22:48 3 bit in. We're going to look at
02:22:49 4 Philadelphia.

02:22:53 5 Okay.

02:22:53 6 Now, Professor, this --- or
02:22:56 7 Doctor, I should say, this particular
02:22:57 8 plan, is it fair to say Districts 2
02:23:00 9 and 3 in this plan are contained
02:23:02 10 within Philadelphia?

02:23:04 11 A. Yes.

02:23:05 12 Q. Okay.

02:23:05 13 In your opinion, is that
02:23:08 14 consistent with the communities of
02:23:10 15 interest in Philadelphia?

02:23:14 16 A. I don't think I can offer an
02:23:15 17 opinion on the specifics within the
02:23:17 18 City of Philadelphia, but I believe it
02:23:19 19 is in the interest for the City to
02:23:21 20 have two districts contained entirely
02:23:25 21 within it.

02:23:27 22 Q. And I believe in your report
02:23:28 23 you discussed having overflow
02:23:30 24 population from Philadelphia go into
02:23:32 25 Delaware County.

02:23:33 1 Is that correct?

02:23:35 2 A. Yes.

02:23:35 3 Q. All right.

02:23:36 4 And District 5 in House Bill
02:23:40 5 2146 does precisely that.

02:23:42 6 Is that correct?

02:23:43 7 A. Yes.

02:23:46 8 ATTORNEY LEWIS:

02:23:47 9 I have no further
02:23:47 10 questions. Thank you.

02:23:47 11 THE WITNESS:

02:23:49 12 Thank you.

02:23:49 13 JUDGE McCULLOUGH:

02:23:49 14 Thank you, counsel.

02:23:54 15 Counsel for Republican Democratic

02:23:58 16 Intervenors. I'm sorry, Democratic

02:24:04 17 House Intervenors.

02:24:04 18 ATTORNEY SENOFF:

02:24:05 19 Thank you, Your Honor.

02:24:23 20 Your Honor, I have my

02:24:24 21 computer and a lot of papers, but I am

02:24:26 22 really going to try to be short.

02:24:27 23 JUDGE McCULLOUGH:

02:24:27 24 You get 15 minutes.

02:24:27 25 THE WITNESS:

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Good morning.

CROSS EXAMINATION

BY ATTORNEY SENOFF:

Q. Good morning, Doctor. What I said to your counsel earlier I really thought you and I were going to have much more disagreements than --- personally, anyway, than I think that we do. You may use a different word, which I won't put on the record.

Can you just as a point of clarification, with regard to Pennsylvanians voter registration, just globally, not looking at any partisan registration, but total number, do we know --- I mean, if I represent to you that there are more registered voters now than there were in 2011, would that comport with your ---?

A. I would not disagree with that. I don't know the magnitude, but I would not disagree with you on that.

02:25:13 1 Q. And have you read or studied
02:25:17 2 any reports about why it is that
02:25:19 3 Pennsylvania actually lost its seat in
02:25:21 4 the House of Representatives?

02:25:25 5 A. Have I read any specific
02:25:26 6 reports?

02:25:26 7 Q. Yeah, or articles. Or have you
02:25:28 8 looked at the reasons why?

02:25:31 9 A. I mean, I may have. It's hard
02:25:35 10 to say.

02:25:35 11 Q. Do you have a general idea of
02:25:38 12 why that occurred?

02:25:39 13 A. Well, Pennsylvania's population
02:25:48 14 has grown at a slower rate than the
02:25:54 15 nation as a whole, which has been
02:25:54 16 happening for -- you know, for quite
02:25:54 17 some time. And as a result it has to
02:25:57 18 lose a seat.

02:25:57 19 Q. Even though there's more ---?

02:25:59 20 A. Even though there's more people
02:25:59 21 yes. Yeah, California is bigger but
02:26:02 22 they're going to --- I think they ---
02:26:04 23 I think they're losing a seat. I
02:26:05 24 don't want to misrepresent anything.
02:26:08 25 But yes.

02:26:08 1 Q. Okay.

02:26:08 2 I appreciate that.

02:26:08 3 A. You don't have to lose

02:26:12 4 population to lose a seat.

02:26:13 5 Q. I appreciate that. Thank you.

02:26:16 6 So in talking about Bucks

02:26:18 7 County and Philadelphia I was happy to

02:26:21 8 hear you say you could see the

02:26:23 9 difference when you go from

02:26:24 10 Philadelphia to Bensalem, because I

02:26:26 11 grew up in the far northeast, and I

02:26:29 12 could never tell the difference when I

02:26:32 13 started driving. And I want to ask

02:26:33 14 you just hypothetically whether

02:26:37 15 there's a difference in your mind

02:26:39 16 between keeping Bucks County together

02:26:42 17 or slicing off the far northeast and

02:26:45 18 putting it into Bucks County?

02:26:47 19 A. You mean the far northeast of

02:26:49 20 the City.

02:26:50 21 Q. Of Philadelphia, the City of

02:26:51 22 Philadelphia. You know, and I'm

02:26:55 23 talking about the part that borders

02:26:56 24 Philadelphia --- a part of

02:26:58 25 Philadelphia that borders Bucks,

02:27:00 1 Montgomery --- you know, there's that
02:27:02 2 area they refer to as Philmont, I
02:27:04 3 think it might border --- it's like
02:27:06 4 the intersection of three counties.
02:27:09 5 A. I'm not good on the city
02:27:10 6 neighborhoods. I apologize.
02:27:13 7 Q. That's okay. But would you
02:27:15 8 take -- you know, when you said, like,
02:27:16 9 oh, you know, the northeast is
02:27:18 10 different than Bensalem, is that just
02:27:22 11 because they're more closely aligned
02:27:24 12 to the city interests or could the
02:27:27 13 residents of the northeast be equally
02:27:29 14 represented by somebody whose district
02:27:33 15 was primarily in Bucks County?
02:27:37 16 A. I think it depends on how much
02:27:38 17 of the northeast you attach to Bucks
02:27:43 18 County. It's kind of a numbers game.
02:27:44 19 You know, the smaller the grouping the
02:27:46 20 more likely they are to be --- I think
02:27:48 21 I called them orphans in my report.
02:27:52 22 So I think it would be --- I think ---
02:27:54 23 as I think it would not be in the
02:27:56 24 interest of a portion of Bucks County
02:27:58 25 to be attached to a city district, I

02:28:02 1 think it would not be advisable --- or
02:28:06 2 I wouldn't recommend attaching too
02:28:08 3 much of the northeast to Bucks. I
02:28:11 4 don't think it would be in their
02:28:13 5 interests.

02:28:14 6 Q. Okay.

02:28:16 7 Now, were you here yesterday to
02:28:21 8 see the expert testimony of the last
02:28:25 9 expert who testified whose name is now
02:28:29 10 escaping me?

02:28:29 11 A. Is it Barber?

02:28:30 12 Q. Barber.

02:28:31 13 A. I did not see his testimony.

02:28:33 14 Q. Okay.

02:28:35 15 Did you read Dr. Barber's
02:28:36 16 report?

02:28:37 17 A. No.

02:28:38 18 Q. If I represented to you ---
02:28:41 19 well, did you review the map that Dr.
02:28:44 20 Barber reviewed?

02:28:46 21 A. What map was that?

02:28:48 22 Q. I believe he reviewed --- well,
02:28:51 23 he reviewed all of the maps, but ---.

02:28:54 24 A. Yeah, I looked at them.

02:28:56 25 Q. Okay.

02:28:57 1 Now, I'm going to get this
02:28:59 2 wrong, but I'm paraphrasing his
02:29:01 3 testimony.

02:29:01 4 A. Sure.

02:29:01 5 Q. But one of Dr. Barber's
02:29:04 6 theories was that his map or the map
02:29:08 7 that he was testifying on behalf was
02:29:10 8 better, because it was randomly
02:29:13 9 created. In other words, it was race
02:29:16 10 blind, it was partisan blind, it met
02:29:24 11 the criteria of contiguousness and
02:29:28 12 population density and what people
02:29:30 13 have referred to here as the big six
02:29:33 14 factors went to consider metrics, went
02:29:36 15 to consider and came up with these
02:29:38 16 maps.

02:29:39 17 Now, in your opinion is that
02:29:41 18 the best way to create a map? A
02:29:47 19 redistricted map I should say. I'm
02:29:50 20 not talking maps of --- like, of the
02:29:52 21 highway system?

02:29:56 22 A. I have to say randomization is
23 a powerful tool to get
24 representativeness we --- we have to
25 use it in polling. For example, you

1 have to use --- if it's not a
2 randomized poll, it is worthless.
3 It's a selective sample.

02:30:07

4 So I would say you could
5 justify randomization as a helpful
6 tool, but I don't think --- I would
7 disagree that it should be the only
8 tool. I think it would be a
9 worthwhile contributory tool.

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10 Q. Okay.

02:30:25

11 I think we agree on that. Just
12 because I don't want to go over my
13 time, let me --- I'm going to switch
14 gears here.

02:30:28

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15 A. Sure. Sure.

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16 Q. Violently sometimes, and I
17 apologize for that. But you testified
18 earlier that you're not a lawyer, and
19 you didn't read the League of Women
20 Voters case.

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21 Right?

02:30:45

22 A. Yes.

02:30:45

02:30:46

23 Q. You're not here telling us
24 whether a particular map passes any
25 kind of constitutional scrutiny or

02:30:48

02:30:51 1 anything like that in a
02:30:51 2 technical/legal sense?

02:30:56 3 A. Yes.

02:30:56 4 Q. And you would agree with me
02:30:58 5 that the job reports to do --- to pass
02:31:02 6 that judgment?

02:31:02 7 A. Yes. Yes, of course. Of
02:31:03 8 course.

02:31:03 9 Q. And you're here to try and help
02:31:05 10 the Court essentially pick one of
02:31:12 11 these maps?

02:31:13 12 A. I'm here to provide --- I'm
02:31:13 13 sorry for talking over you. I'm here
02:31:14 14 to provide my expert opinions as
02:31:16 15 admitted by the Court.

02:31:17 16 Q. So were you here --- you know,
02:31:19 17 I sound like a broken record, but I
02:31:22 18 asked almost every expert if they
02:31:25 19 considered, initially, the voter
02:31:29 20 registration data of the citizens of
02:31:34 21 the Commonwealth of Pennsylvania when
02:31:36 22 they considered drawing their maps.

02:31:40 23 Do you remember hearing that?

02:31:41 24 A. I mean, I watched most of the
02:31:43 25 testimony. I can't represent to

02:31:45 1 having like --- I don't have a
02:31:47 2 photographic memory, but I wouldn't
02:31:49 3 disagree with your characterization.
02:31:51 4 I have no reason to.
02:31:52 5 Q. And do you agree --- having
02:31:53 6 reviewed what you reviewed that ---
02:31:56 7 and heard what you heard --- that the
02:31:59 8 maps that have been presented all fall
02:32:03 9 within a --- what I'll call is not
02:32:07 10 mathematical or scientific, but a
02:32:09 11 reasonable range when you measure them
02:32:13 12 based on those six metrics?
02:32:15 13 A. What were the six metrics?
02:32:17 14 Q. Now, you're going to test my
02:32:19 15 memory.
02:32:19 16 A. I'm sorry.
02:32:20 17 Q. But you know, like population
02:32:21 18 density, compactness, contiguousness.
02:32:31 19 Now, I've got three.
02:32:31 20 A. Yeah.
02:32:32 21 Q. But in other words, these maps
02:32:32 22 were not on those mathematical
02:32:35 23 metrics, tremendous --- tremendously
02:32:37 24 far apart from one another.
02:32:39 25 A. I don't know if I can say that,

02:32:41 1 because you mentioned density ---
02:32:47 2 population density, and necessarily in
02:32:48 3 the middle of the state you're going
02:32:50 4 to have low density. I mean it's such
02:32:55 5 a diverse state --- it's very
02:32:55 6 challenging to draw the map.

02:32:57 7 Q. I agree with you on that. I
02:32:58 8 just mean, all the maps fell within a
02:33:01 9 certain, say, standard deviation. And
02:33:02 10 again, I'm not using that in any
02:33:03 11 mathematical ---

02:33:03 12 A. Yeah, I wouldn't ---. Yeah.
02:33:03 13 Right.

02:33:04 14 Q. --- sense. But they're pretty
02:33:05 15 close together is all I'm saying on
02:33:07 16 those metrics that they were asked to
02:33:11 17 review. The objective metrics is what
02:33:13 18 I will call them.

02:33:14 19 A. Again, I don't think I can
02:33:16 20 represent that until I really --- you
02:33:20 21 know, if I looked at all six metrics
02:33:23 22 --- and I don't want to incorrectly
02:33:24 23 represent my opinion.

02:33:24 24 Q. I appreciate your concern, and
02:33:26 25 I thank you for that candor.

02:33:28 1 A. I apologize for that.

02:33:30 2 Q. But let me ask you this, if I
02:33:32 3 represented to you that hypothetically
02:33:34 4 they're all within a spectrum and
02:33:36 5 they're very close together in terms
02:33:38 6 of differences on these mathematical
02:33:40 7 metrics; right, and so, for example,
02:33:44 8 one map is not so wildly outrageous
02:33:48 9 that we can just say, you know, that's
02:33:50 10 way too out there on all these
02:33:52 11 metrics, there has to be a way for the
02:33:57 12 Court to decide which one to go with.

02:33:59 13 Right?

02:34:00 14 A. I'd like to accommodate you,
02:34:02 15 but I cannot accept your statement
02:34:05 16 that the maps are relatively close,
02:34:09 17 unless I were to actually look at the
02:34:13 18 metrics and look into detail for that,
02:34:15 19 so I'm sorry I can't accept that
02:34:18 20 premise.

02:34:18 21 Q. Fair enough. Let me ask it a
02:34:20 22 different way.

02:34:20 23 A. Yeah.

02:34:21 24 Q. Do you agree that if all of the
02:34:24 25 objective standards are similar and

02:34:26 1 they're not determinative on their
02:34:29 2 own, that some subjective standard ---
02:34:32 3 some subjective criteria has to be put
02:34:35 4 on top of those objective criteria in
02:34:37 5 order to make a decision.

02:34:41 6 And again, I'm not asking about
02:34:41 7 this.

02:34:41 8 A. Yeah.

02:34:42 9 Q. I'm just saying hypothetically
02:34:44 10 if all the objective data for all the
02:34:47 11 maps is exactly the same, do you agree
02:34:50 12 that in order to pick one, you have to
02:34:53 13 use some kind of subjective data?

02:34:56 14 A. Okay.

02:34:57 15 Let me get to where I think you
02:34:59 16 want me to go, but let me just
02:35:00 17 establish this first. You said if
02:35:03 18 they're all the same they'll never be
02:35:05 19 all the same, I think we would agree.

02:35:07 20 Q. I mean ---.

02:35:08 21 A. In fact, given this state
02:35:09 22 there's going to be significant
02:35:11 23 variance. I mean, as Philadelphia
02:35:13 24 city district is going to have huge
02:35:16 25 differences between the district in

02:35:18 1 the North Central portion, for
02:35:20 2 example. And there's nothing we can
02:35:22 3 do about it. There's nothing we can
02:35:24 4 do about it.

02:35:26 5 But I would say that I agree
02:35:27 6 that it's necessary to apply
02:35:30 7 subjective standards, because it's not
02:35:33 8 possible to satisfy all the objective
02:35:36 9 standards. And they present a really
02:35:39 10 incomplete picture. It's just not
02:35:41 11 appropriate.

02:35:41 12 Q. Okay.

02:35:41 13 So ---?

02:35:44 14 A. You have to include --- yeah, I
02:35:44 15 agree with you absolutely. You have
02:35:46 16 to got to include subjectivity.
02:35:48 17 There's no way to get out of it in
02:35:51 18 politics. Politics is a subjective
02:35:54 19 practice.

02:35:54 20 Q. So once you answered --- I was
02:35:56 21 trying to get you there and I am not
02:35:59 22 as smart as you are, and I couldn't
02:36:02 23 figure how to do that, so I thank you
02:36:04 24 for that.

02:36:04 25 So if we all agree --- or if

02:36:06 1 you and I at least agree that there is
02:36:08 2 some subjective standards, can we
02:36:13 3 agree that incumbency is a subjective
02:36:16 4 standard that some people might find
02:36:19 5 the protection of incumbency some
02:36:21 6 people find important as a subjective
02:36:22 7 standard?

02:36:23 8 A. Well, actually I think
02:36:25 9 incumbency could be considered an
02:36:28 10 objective standard, because it's sort
02:36:34 11 of a binary thing. It's yes or no
02:36:36 12 that you have an incumbent. But
02:36:38 13 interesting that you brought that up,
02:36:39 14 because I would answer does incumbency
02:36:45 15 matter, and the answer is sort of.

02:36:48 16 Because if you've got members
02:36:51 17 that are subcommittee chairs,
02:36:53 18 committee chairs, they --- I mean, you
02:36:55 19 got to keep those, you know. Everyone
02:36:56 20 wants to hang on the ---.

02:36:56 21 Q. So let me just cut you off.

02:36:58 22 A. I'm sorry, lesser seniority,
02:37:00 23 lesser important.

02:37:00 24 Q. Okay.

02:37:00 25 I'm running out of time.

02:37:01 1 A. Incumbency is less important if
02:37:04 2 you got lesser seniority.

02:37:05 3 Q. And would another subjective
02:37:06 4 factor be voter partisanship like the
02:37:12 5 party that somebody's registered with?
02:37:16 6 Could that be used as a subjective
02:37:17 7 factor? Even though I understand the
02:37:19 8 count is objective.

02:37:20 9 A. Yeah.

02:37:21 10 Q. But could you overlay that onto
02:37:23 11 a map that was designed based solely
02:37:26 12 on statistical modeling?

02:37:28 13 A. In Pennsylvania, I think it
02:37:30 14 depends on what part of the state,
02:37:32 15 because voter registration is --- it's
02:37:40 16 attenuated on how you win sort of at
02:37:41 17 the margin. Like, you got your blocks
02:37:44 18 who vote straight party, and that's a
02:37:46 19 key thing. So voter registration
02:37:48 20 matters, but it matters less in that
02:37:50 21 margin, in that swing voter.

02:37:52 22 Q. I understand. And you're
02:37:53 23 talking about --- you're talking about
02:37:56 24 like an outcome?

02:37:57 25 A. Yes. And I think we got to

02:37:57 1 think about ---.

02:37:57 2 Q. And I'm talking about --- I'm
02:38:00 3 talking about would you want to offer
02:38:05 4 lay the number of --- after the lines
02:38:07 5 are drawn, would you want to know,
02:38:08 6 hey, how many Republicans and how many
02:38:10 7 Democrats are within a particular
02:38:15 8 district. Is that information that
02:38:15 9 you would find helpful?

02:38:16 10 A. Yes, it should be part of it.
02:38:19 11 Not necessarily drive it, but it
02:38:20 12 should be part of it.

02:38:21 13 Q. And certainly I'm not
02:38:23 14 suggesting that any of these factors
02:38:25 15 should drive it, just that they should
02:38:26 16 be considered, that's all?

02:38:28 17 A. More information is better.
02:38:29 18 It's a matter of how you weight it.

02:38:31 19 Q. And I assume you agree with
02:38:33 20 that statement with regard to the
02:38:36 21 racial makeup of a particular
02:38:38 22 district, again, just a factor to
02:38:42 23 consider not make or break, but you
02:38:43 24 want to consider that or communities
02:38:45 25 of interests.

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Is that a fair statement?

A. I don't want to --- I don't want to break a mistake of going outside of my bounds, but I think it's a requirement; isn't it?

Q. I think --.

A. So I think the answer is ethnicity.

Q. Ethnicity, yes.

A. Ethnicity is a factor that you should consider in the proper context.

Q. And generally, when people talk about the dilution of a vote, do you have an understanding or what does that mean to you? Or the dilution of the power of a vote?

A. Pardon me.

Q. The dilution of the power of one vote versus another?

A. Yes. I think we're on the same page.

Q. And so is making sure that one person's vote is as powerful vote as another person's vote also one of these subjective factors that we ---

02:39:44 1 that you might want to use --- again,
02:39:46 2 not the sole factor, but one of the
02:39:48 3 factors to consider?

02:39:53 4 A. Could you repeat the question,
02:39:54 5 I'm sorry.

02:39:55 6 Q. Yes. Sure. Is the fact that
02:39:57 7 you're trying to make sure that
02:40:01 8 everybody's vote to the extent
02:40:03 9 possible counts for one vote, not less
02:40:06 10 than one vote, not more than one vote,
02:40:08 11 but one vote. In other words, you
02:40:10 12 don't want to dilute the vote, is that
02:40:12 13 a factor that you would consider in
02:40:16 14 one of these factors when you're
02:40:18 15 deciding how to make the map?

02:40:23 16 A. I have to tell you I'm not sure
02:40:24 17 how to answer that question.

02:40:31 18 JUDGE McCULLOUGH:
02:40:31 19 I don't want to cut you
02:40:32 20 off if you don't answer, but you are
02:40:36 21 now admitted over your time, Counsel.

02:40:38 22 ATTORNEY SENOFF:
02:40:40 23 I have so much credit in
02:40:41 24 the bank, Your Honor.

02:40:42 25 JUDGE McCULLOUGH:

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I think you got an
answer there.
ATTORNEY SENOFF:
Your Honor, I feel like
I have so much credit in the bank.
JUDGE MCCULLOUGH:
Credit?
ATTORNEY SENOFF:
From yesterday.
JUDGE McCULLOUGH:
You shouldn't have given
it up.
ATTORNEY SENOFF:
Thank you, Your Honor.
JUDGE MCCULLOUGH:
Now we have the senate
Democrat intervenors.

CROSS EXAMINATION

BY ATTORNEY ATTISANO:
Q. Good morning still.
A. Good morning.
Q. Did you consider vote dilution
as part of your analysis in reaching

02:41:34 1 your conclusions here today?

02:41:36 2 A. Vote dilution as defined as?

02:41:37 3 Q. Your understanding of that
02:41:38 4 term. Please go ahead and explain
02:41:39 5 what you understand vote dilution to
02:41:43 6 be.

02:41:43 7 A. Well, I would understand it as
02:41:47 8 whether or not, you know, a voter is
02:41:52 9 --- you know, has the sufficient power
02:41:54 10 of the vote, whether that voter is
02:41:57 11 able to exercise it and whether they
02:42:02 12 have influence.

02:42:02 13 Q. Did you consider vote dilution
02:42:06 14 in your analysis to reach the
02:42:07 15 conclusions you reached here today?

02:42:10 16 A. No.

02:42:10 17 Q. And you were asked earlier
02:42:15 18 about methodology. And feel free to
02:42:17 19 disagree if I'm mischaracterizing what
02:42:19 20 you said. My belief was you said
02:42:23 21 something to the extent of I rely on
02:42:25 22 my experience. Is that fair or is
02:42:28 23 there additional methodology that you
02:42:30 24 used in addition to your experience?

02:42:50 25 A. I want to try to answer this

02:42:50 1 correctly. What was the question
02:42:50 2 again?

02:42:53 3 Q. You were asked earlier if you
02:42:57 4 used some kind of methodology to
02:42:57 5 assist you in reaching your
02:42:58 6 conclusions in your report. You
02:42:59 7 answered to that, no, I used my
02:43:01 8 experience. Is that fair? You based
02:43:02 9 your conclusions in the report on your
02:43:04 10 experience, correct, your experience
02:43:06 11 and education?

02:43:07 12 A. Yes.

02:43:07 13 Q. Okay.

02:43:10 14 And you agree that your
02:43:12 15 experience has been helping Republican
02:43:14 16 candidates win elected office? You
02:43:16 17 started out by saying I think it was
02:43:19 18 got to win to eat.

02:43:23 19 Right?

02:43:24 20 A. Yes. Yes, I did say that.

02:43:25 21 Q. So you would agree that your
02:43:29 22 area of expertise is most specifically
02:43:31 23 in helping Republican candidates win
02:43:42 24 office, specific ---?

02:43:42 25 A. No.

02:43:42 1 Q. Are you not an expert in
02:43:44 2 helping Republican candidates win
02:43:46 3 office?

02:43:46 4 A. I think the way I put it is my
02:43:49 5 experience is working on campaigns,
02:43:52 6 helping individuals to get elected.
02:43:55 7 Maybe I shouldn't have agreed with
02:43:57 8 you. Yeah. Could you repeat the
02:43:58 9 question?

02:43:58 10 Q. I'm sorry. When you help these
02:44:00 11 individuals get elected, they're
02:44:02 12 members of the Republican party.

02:44:05 13 Correct?

02:44:05 14 A. Yes.

02:44:06 15 Q. So another way to say what
02:44:07 16 you're saying would be my experience
02:44:08 17 and expertise is in helping members of
02:44:11 18 the Republican party rather than just
02:44:13 19 individuals get elected to public
02:44:15 20 office. You agree with that.

02:44:16 21 Right?

02:44:17 22 A. When I was working on
02:44:18 23 campaigns, yes.

02:44:23 24 Q. And with respect to review, the
02:44:36 25 review of some materials that you

02:44:38 1 reviewed in this case you are familiar
02:44:40 2 with the 2011 congressional map in
02:44:45 3 Pennsylvania.

02:44:45 4 Correct?

02:44:46 5 I can refresh your recollection
02:44:48 6 if you don't remember it.

02:44:49 7 A. I mean I don't like the word
02:44:51 8 familiar.

02:44:52 9 Q. Let me just rephrase. You know
02:44:54 10 it exists.

02:44:55 11 Right?

02:44:55 12 A. Oh, yes, I know it exists.

02:44:59 13 Q. Perfect. And you also know
02:45:01 14 that in 2012 and 2014 and 2016 it
02:45:03 15 yielded a proportional representation
02:45:06 16 of 13 members of Congress from
02:45:11 17 Pennsylvania and five Democratic
02:45:13 18 members of Congress from Pennsylvania.
02:45:15 19 You know that obviously.

02:45:16 20 Correct?

02:45:17 21 A. Well, I will accept your
02:45:18 22 representation. I know that there was
02:45:21 23 a Republican majority. I will accept
02:45:23 24 your representation of 13/5.

02:45:26 25 Q. And earlier you talked about

02:45:28 1 how there are different political
02:45:31 2 factors that can affect the outcome of
02:45:34 3 elections obviously. You agree with
02:45:36 4 that.

02:45:36 5 Correct?

02:45:37 6 A. Yes.

02:45:37 7 Q. Okay.

02:45:38 8 And in 2012, 2014 and 2016, the
02:45:43 9 most significant factor that
02:45:48 10 influenced the outcome of a 13
02:45:50 11 Republicans to 5 Democratic split was
02:45:52 12 the gerrymandering congressional map.
02:45:56 13 Do you agree with that or disagree
02:45:57 14 with that?

02:45:58 15 A. I can't offer an opinion on it.

02:45:59 16 Q. You talked about some of the
02:46:12 17 analysis in your opinion, and correct
02:46:20 18 me if I'm wrong here, was lacking to a
02:46:21 19 certain degree because it relies on
02:46:24 20 vote history and only --- let me
02:46:29 21 rephrase that.

02:46:30 22 A. Yeah. Yeah.

02:46:30 23 Q. You were critical of some of
02:46:33 24 the analysis that was presented by
02:46:35 25 other experts because it relies on

02:46:37 1 vote history and it doesn't rely on
02:46:39 2 these additional factors that you
02:46:42 3 listed that can affect the outcome of
02:46:44 4 an election.

02:46:44 5 Correct?

02:46:45 6 A. I think that is a
02:46:46 7 mischaracterization of my opinion. If
02:46:48 8 you would permit me to explain?

02:46:52 9 Q. Please.

02:46:53 10 A. I think the best way to say ---
02:46:55 11 I am not criticizing their models and
02:46:57 12 their math and their intellectual
02:47:07 13 integrity and stuff. I am not
02:47:09 14 criticizing that at all.

02:47:09 15 Q. And I wasn't trying to put that
02:47:09 16 in your mouth.

02:47:11 17 A. My criticism of the models is
02:47:13 18 they fail to inform the Court of the
02:47:13 19 power of those models in the context
02:47:18 20 of what we know are many, many other
02:47:20 21 factors that will --- that influence
02:47:21 22 the eventual outcome, number one. And
02:47:25 23 number two, that over time prediction
02:47:28 24 becomes less certain. So as we move
02:47:31 25 forward over time, we get to 2028, it

02:47:36 1 is likely, not certain, but it is
02:47:38 2 likely that any predictive model is
02:47:38 3 going to degrade perhaps
02:47:48 4 significantly.

02:47:48 5 Q. And are you familiar with Plan
02:47:51 6 Score?

02:47:51 7 A. I've only seen it referred to,
02:47:54 8 so no.

02:47:54 9 Q. Okay.

02:47:55 10 And you reviewed the report
02:47:59 11 from Pittsburgh City Controller
02:48:01 12 Michael Lamb, which has been attached
02:48:03 13 as an exhibit to the Senate Democrats
02:48:06 14 brief entitled the Lamb Report. You
02:48:09 15 reviewed that.

02:48:09 16 Correct?

02:48:10 17 A. Yes.

02:48:10 18 Q. You also relied on it in
02:48:13 19 reaching the conclusions in your
02:48:15 20 expert report as well.

02:48:16 21 Correct?

02:48:17 22 A. No.

02:48:17 23 Q. You talk about --- you talk
02:48:20 24 about in your expert report as a piece
02:48:23 25 of material you reviewed. You

02:48:26 1 disagree with him.

02:48:26 2 Correct?

02:48:28 3 A. I think it would be proper to
02:48:29 4 characterize it as I responded to it
02:48:31 5 because I didn't feel --- I didn't
02:48:33 6 feel it was very --- I don't know if
02:48:37 7 the word probative is the right word,
02:48:39 8 but I didn't think it was very
02:48:42 9 contributory. I didn't think it
02:48:44 10 provided very good reason. I didn't
02:48:46 11 think it was contributory to the
02:48:46 12 process. I'm sure he's a nice person
02:48:50 13 and it was a very heartfelt report,
02:48:52 14 but I don't think it contributed much,
02:48:54 15 you know, to the discussion, and so I
02:48:56 16 felt that it was necessary ---.

02:48:57 17 Q. I'm sorry to cut you off.

02:48:58 18 A. I'm sorry.

02:48:59 19 Q. I'm only cutting you off, but
02:49:02 20 we'll talk about the content of the
02:49:04 21 report in a moment.

02:49:05 22 A. Okay.

02:49:05 23 Q. I'm simply asking you when you
02:49:08 24 wrote your report, before you wrote it
02:49:12 25 you read the Lamb Report. Yes or no?

02:49:15

1

A. In part.

02:49:16

2

Q. So you didn't read the whole

02:49:17

3

Lamb Report. Yes or no?

02:49:17

4

A. I did read the whole Lamb

02:49:19

5

Report.

02:49:19

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Q. So I'll make it very easy. You

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either read the report or you didn't.

02:49:27

8

You agree with that.

02:49:28

9

Correct?

02:49:29

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A. Yes.

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11

Q. And you agree that you read the

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12

report. You agree with that.

02:49:32

13

Correct?

02:49:32

14

A. Yes.

02:49:32

15

Q. And you agree you did that

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before you wrote your own report? You

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agree with that.

02:49:39

18

Correct?

02:49:39

19

A. In part.

02:49:40

20

Q. And you agree that you included

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in your report reference to the Lamb

02:49:46

22

Report?

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A. Yes.

02:49:46

24

Q. Okay.

02:49:47

25

So you agree that in making

02:49:48 1 your report you relied on the Lamb
02:49:53 2 Report? Whether you disagree with its
02:49:54 3 findings or not is a different
02:49:56 4 question I will ask you about, but you
02:49:57 5 do agree you relied on it as something
02:50:00 6 you reviewed in writing your report.

02:50:01 7 Correct?

02:50:03 8 A. No, because I don't agree with
02:50:06 9 the word relied.

02:50:07 10 Q. Okay.

02:50:09 11 So moving on to the substance
02:50:10 12 of the Lamb Report, in the Lamb Report
02:50:14 13 he talks about the uniqueness and some
02:50:17 14 of the communities of interest in
02:50:20 15 Pittsburgh. You agree with that.

02:50:21 16 Correct?

02:50:22 17 A. I would like to see it, but I
02:50:25 18 mean, yes.

02:50:29 19 ATTORNEY HAVERSTICK:

02:50:29 20 Can he see it?

02:50:31 21 THE WITNESS:

02:50:31 22 I mean ---.

02:50:31 23 JUDGE McCULLOUGH:

02:50:32 24 Excuse me, Mr.

02:50:32 25 Haverstick.

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ATTORNEY HAVERSTICK:

He asked if he
would ---.

ATTORNEY ATTISANO:

I wasn't asking a
question specifically but just
generally. If he didn't recall --- if
I ask him something specifically about
the report, Your Honor, I will show it
to him. But other than giving him a
break to read it, him seeing it, I
don't understand how that's going to
assist in the answer if he doesn't
remember something he can say that and
I'll refresh his recollection.

JUDGE MCCULLOUGH:

Mr. Haverstick.

ATTORNEY HAVERSTICK:

Fair enough. But he's s
asking questions about things I would
like to see it. So I think it's only
fair that you let him see it if you
are going to ask about any substance
of it beyond just did you read it or
not.

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ATTORNEY ATTISANO:

That's fine.

JUDGE MCCULLOUGH:

Counsel, you did ask him whether it said uniqueness or descriptions of uniqueness, something along those lines and did he agree. And he said he would like to see it. So do you have a copy of it or are you not going to ---?

ATTORNEY ATTISANO:

I do, Your Honor. Give me a brief moment and I will get a copy and bring it over.

JUDGE MCCULLOUGH:

I mean, if you intend to continue along the lines of questioning and he asks to see it, but if you only have general questions ---.

ATTORNEY ATTISANO:

I only have general ---
I'm not going to be ---.

JUDGE MCCULLOUGH:

Why don't you try to

02:51:36 1 move on and we will see how that goes.

02:51:38 2 ATTORNEY ATTISANO:

02:51:39 3 Okay.

02:51:39 4 BY ATTORNEY ATTISANO:

02:51:40 5 Q. If you don't remember
02:51:41 6 something, you know that you can just
02:51:42 7 simply tell us you don't remember?

02:51:44 8 You know you can do that.

02:51:46 9 Right?

02:51:46 10 A. Yes.

02:51:46 11 Q. Okay.

02:51:50 12 So in the --- in the Lamb
02:51:50 13 Report he explains that certain
02:51:53 14 neighborhoods in Pittsburgh he
02:51:55 15 believes represent certain communities
02:51:59 16 of interest and certain other
02:52:01 17 neighborhoods represent different
02:52:05 18 communities of interest. You agree
02:52:06 19 with that.

02:52:06 20 Right?

02:52:07 21 A. Yes.

02:52:07 22 Q. And you're also aware that
02:52:08 23 Allegheny County has to be split.

02:52:12 24 Correct?

02:52:13 25 A. Yes.

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Q. Okay.

And that's because the constitutional standard related to population equality.

Correct?

A. Yes.

Q. And you don't use the constitutional constraints when you do your analysis, though.

Correct?

A. What constitutional constraints?

Q. Let me ask you this. When you reached your conclusions, did you use any constitutional constraints in reaching them?

A. Well, I knew that Allegheny County would have to be split because it exceeds the --- you know, the population of a single congressional district as required by law.

Q. And in the 2018 congressional map, if I represent to you that Allegheny had two --- two split municipalities, South Fayette and Penn

02:53:02 1 Hills, you have no reason to doubt
02:53:02 2 that.

02:53:06 3 Correct?

02:53:06 4 A. I have no reason to disagree
02:53:08 5 with you.

02:53:08 6 Q. Okay.

02:53:08 7 And if I represent to you that
02:53:09 8 the maps put forward by the Senate
02:53:11 9 Democratic Caucus only split two
02:53:13 10 municipalities in Allegheny County,
02:53:17 11 you have no reason to disagree with
02:53:18 12 that either.

02:53:19 13 Correct?

02:53:22 14 A. Yes.

02:53:22 15 Q. And there's --- and with
02:53:28 16 respect to the --- the splits of
02:53:30 17 Pittsburgh put forward by the Senate
02:53:33 18 Democratic maps, it travels along the
02:53:36 19 natural border of the Monongahela
02:53:36 20 River. And you agree that the
02:53:40 21 Monongahela River is a natural divide
02:53:42 22 in the City of Pittsburgh.

02:53:43 23 Correct?

02:53:46 24 A. Is it also along the Ohio as
02:53:47 25 well? I'm trying to recall. Is it

02:53:51 1 possible for you to put the map up?

02:53:53 2 Q. I actually don't have that
02:53:54 3 section of the map blown up.

02:53:55 4 A. Okay.

02:53:56 5 Q. So I can't put that up right
02:53:58 6 now. But as a general factor, you
02:54:00 7 would agree that the rivers in
02:54:00 8 Pittsburgh do create natural
02:54:03 9 geographic divides? You agree with
02:54:05 10 that.

02:54:05 11 Right?

02:54:06 12 A. Natural geographic divide?

02:54:08 13 Q. Yes.

02:54:09 14 A. Yes.

02:54:09 15 Q. Okay.

02:54:12 16 And the decision of which
02:54:16 17 neighborhoods to put with which is a
02:54:20 18 subjective decision. You agree with
02:54:22 19 that.

02:54:22 20 Correct?

02:54:24 21 A. I believe that there are both
02:54:27 22 subjective and you could also have
02:54:30 23 objective factors to enter into it.
02:54:33 24 But it doesn't have to be purely
02:54:36 25 subjective, so I don't want to

02:54:37 1 represent it as only a judgment.

02:54:40 2 Q. And with respect to splitting

02:54:43 3 the City of Pittsburgh, I mean in your

02:54:46 4 report you stated with respect to

02:54:48 5 splitting the cities, and I'm on

02:54:50 6 page five, near the bottom, there's a

02:54:52 7 flip side for splitting municipalities

02:54:54 8 and counties and it is the opportunity

02:54:54 9 for expanded influence by having two

02:54:54 10 members of Congress. You remember

02:54:54 11 writing that in your report?

02:55:02 12 A. Yes.

02:55:02 13 Q. So you do agree that by

02:55:05 14 splitting Pittsburgh there is a

02:55:06 15 potential flip side of Pittsburgh

02:55:08 16 having two Representatives in Congress

02:55:12 17 and that could be beneficial to the

02:55:13 18 entire City of Pittsburgh? You do

02:55:17 19 agree that's possible.

02:55:17 20 Correct.

02:55:18 21 A. It is possible, yes.

02:55:22 22 Q. And additionally, you're aware

02:55:24 23 that right now Allegheny County is

02:55:26 24 represented by two Democrats,

02:55:31 25 Congressman Conor Lamb and Congressman

02:55:35 1 Michael Doyle? You're aware of that
02:55:35 2 as well.

02:55:36 3 Right?

02:55:36 4 A. Yes, I'm aware that they're
02:55:38 5 both in Congress. And they represent
02:55:41 6 the entirety of Allegheny County?

02:55:44 7 Q. Yes, together.

02:55:44 8 A. Yes.

02:55:47 9 Q. Okay?

02:55:47 10 And so additionally, did you do
02:55:49 11 any analysis of the Pittsburgh mayoral
02:55:54 12 race when determining your conclusions
02:55:57 13 with respect to splitting the City of
02:55:59 14 Pittsburgh?

02:56:06 15 A. You mean the primary or the
02:56:08 16 general?

02:56:08 17 Q. I mean the general in which
02:56:08 18 Pittsburgh elected in its history for
02:56:08 19 the first time an African-American
02:56:08 20 Mayor, Ed Gainey?

02:56:12 21 A. No, I did not look at that
02:56:13 22 race.

02:56:13 23 Q. You're aware that he ran
02:56:15 24 against a Republican candidate, Tony
02:56:18 25 Moreno? Do you have any awareness of

02:56:20 1 that?

02:56:20 2 A. I don't think hardly anyone in
02:56:26 3 the City of Pittsburgh had any
02:56:26 4 awareness of Mr. Moreno. So no, I did
02:56:26 5 not.

02:56:26 6 Q. You ought to talk to some
02:56:29 7 people on Beachview and Brookeline and
02:56:29 8 the West End,

02:56:31 9 A. Oh, he was the police officer.
02:56:33 10 Right.

02:56:33 11 Q. Tony Moreno outperformed ---
02:56:36 12 the Republican candidate outperformed
02:56:38 13 Ed Gainey in certain neighborhoods
02:56:39 14 throughout the City of Pittsburgh. Do
02:56:42 15 you have any familiarity with that?

02:56:43 16 A. That can happen. That's not
02:56:45 17 surprising.

02:56:45 18 Q. So in vote history --- history,
02:56:47 19 people can change their minds. It
02:56:49 20 just involves effort and a bit of
02:56:51 21 compromise. You agree with that
02:56:53 22 statement.

02:56:53 23 Right?

02:56:54 24 A. At times, yes.

02:56:54 25 Q. Your statement from the

02:56:56 1 Merry-Go-Round article that was up on
02:57:01 2 the screen earlier, so in the past
02:57:01 3 time you agreed with it. Do you agree
02:57:01 4 with it today?

02:57:04 5 A. I agree that campaigns matter,
02:57:06 6 absolutely.

02:57:06 7 Q. So to simply say that because
02:57:10 8 historically residents in the City of
02:57:12 9 Pittsburgh have voted for Democratic
02:57:15 10 candidates in the races you only
02:57:17 11 looked at it's simply incomplete and
02:57:20 12 lacking to try and conclude that
02:57:21 13 somehow if the City of Pittsburgh is
02:57:25 14 split a Republican candidate or
02:57:27 15 Democratic candidate might have less
02:57:31 16 of an interest in intending to further
02:57:34 17 those votes or providing constituent
02:57:41 18 services?

02:57:41 19 A. It's a matter of likelihood.
02:57:43 20 That's how you would apply it.

02:57:44 21 Q. And you agree that when you
02:57:44 22 determined your likelihood you didn't
02:57:45 23 look at the most recent trends in
02:57:47 24 voting history for the City of
02:57:50 25 Pittsburgh in a race that was

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competitive between a Democrat and
Republican? You didn't do that, did
you?
A. Once race is not a trend. You
said trend. That's not true. One
race is not a trend.
Q. But did you consider that race
in determining your trend?
A. I did not consider the Mayor's
race.
Q. Thank you.
JUDGE MCCULLOUGH:
Okay.
Counsel --- is Counsel
--- is someone's making a question?
Excuse me. I thought I heard a
question from counsel.
ATTORNEY ATTISANO:
Your Honor, I was not,
but at this time I would like to move
into admission the Lamb Report, which
has been provided to all counsel
because it was an exhibit in our brief
and an expert relied on it in drafting
their expert report. And under the

02:58:37 1 rules of expert reports, something
02:58:39 2 that is otherwise admissible in which
02:58:42 3 an expert relied on to form their
02:58:45 4 report can be admissible to the Court.

02:58:55 5 ATTORNEY HAVERSTICK:
02:58:55 6 Objection, Your Honor.

02:58:57 7 JUDGE MCCULLOUGH:
02:58:57 8 Do you want to wait
02:58:57 9 until you produce your --- do your
02:58:57 10 expert? Go ahead, Mr. Haverstick.

02:58:55 11 ATTORNEY HAVERSTICK:
02:59:04 12 I'm not sure I care, one
02:59:04 13 way or the other. No, I don't have
02:59:04 14 any objection.

02:59:04 15 THE WITNESS:
02:59:06 16 I --- I hate --- can I
02:59:06 17 get a quick trip to the restroom since
02:59:08 18 I went through two of these? I
02:59:13 19 apologize for that.

02:59:13 20 JUDGE MCCULLOUGH:

02:59:13 21 Hold on.

02:59:13 22 THE WITNESS:

02:59:14 23 Okay.

02:59:16 24 JUDGE MCCULLOUGH:

02:59:17 25 Mr. Attisano, you're

02:59:19 1 moving in --- but you are going to
02:59:19 2 have your expert after we break?

02:59:23 3 ATTORNEY ATTISANO:

02:59:23 4 We will be presenting an
02:59:25 5 expert, but at this time --- at this
02:59:26 6 time I'm asking ---.

02:59:26 7 JUDGE MCCULLOUGH:

02:59:26 8 Do you want to wait
02:59:27 9 until you do your expert testimony to
02:59:31 10 move for admission of the document
02:59:38 11 then.

02:59:39 12 ATTORNEY ATTISANO:

02:59:39 13 Our expert doesn't
02:59:42 14 incorporate the Lamb Report. I'd like
02:59:42 15 to do it now, Your Honor. I believe I
02:59:42 16 have a basis for it and I would like
02:59:43 17 to do it now.

02:59:43 18 ATTORNEY HAVERSTICK:

02:59:44 19 Now wait a minute, Your
02:59:44 20 Honor. I mean, I don't have a problem
02:59:46 21 with the report coming in, but isn't
02:59:47 22 counsel one of the gentlemen who stood
02:59:50 23 up and said, oh, no, no, if it's not
02:59:51 24 talked about in the report, you can't
02:59:52 25 talk about as an expert? Am I wrong

02:59:55 1 about that or did you not argue that
02:59:57 2 Mr. Naughton was not allowed to look
03:00:02 3 at maps that weren't in his report?

03:00:03 4 ATTORNEY ATTISANO:

03:00:04 5 Your Honor, I'm simply
03:00:04 6 asking for the admission of the Lamb
03:00:05 7 Report because Mr. Naughton relied on
03:00:08 8 in his report. That's all I'm moving
03:00:09 9 for at this time, Your Honor.

03:00:09 10 ATTORNEY HAVERSTICK:

03:00:09 11 And I don't have any
03:00:10 12 objection to that bit of it, Your
03:00:12 13 Honor.

03:00:12 14 ATTORNEY ATTISANO:

03:00:13 15 Okay.

03:00:13 16 ATTORNEY HAVERSTICK:

03:00:14 17 I may, depending on what
03:00:15 18 we're doing with it, but ---.

03:00:16 19 JUDGE MCCULLOUGH:

03:00:17 20 Does anyone have an
03:00:18 21 objection to moving the Lamb Report
03:00:21 22 into evidence?

03:00:25 23 ATTORNEY LEWIS:

03:00:27 24 Your Honor, Patrick
03:00:27 25 Lewis for the Republican House

03:00:31 1 Intervenor. We do object to this on
03:00:32 2 the basis that it appears to be an
03:00:36 3 expert report. He's offering an
03:00:36 4 assessment --- Mr. Lamb is offering an
03:00:37 5 assessment out of the House Democratic
03:00:39 6 plan.

03:00:47 7 ATTORNEY ATTISANO:

03:00:47 8 No.

03:00:48 9 ATTORNEY LEWIS:

03:00:50 10 We've been confusing all
03:00:51 11 day, but this is offering an analysis
03:00:54 12 outside of the personal knowledge of
03:00:56 13 this witness, and he's commenting
03:00:57 14 specifically on the proposed map.
03:00:59 15 It's an expert report. They have an
03:01:01 16 expert. It's not Mr. Lamb.

03:01:03 17 JUDGE MCCULLOUGH:

03:01:03 18 Let's --- let's defer
03:01:05 19 decision on this. We're going to
03:01:07 20 finish with the examination of this
03:01:09 21 witness first.

03:01:11 22 ATTORNEY HAVERSTICK:

03:01:11 23 Your Honor, I have no
03:01:12 24 further questions for the witness. I
03:01:14 25 only rose to the podium because I

03:01:17 1 think I have to do it now, move to put
03:01:19 2 into evidence the report of Dr.
03:01:22 3 Burnell. I expect that's something
03:01:24 4 we're going to talk about in Chambers,
03:01:26 5 but as a procedural matter, I think
03:01:28 6 now is when I'm supposed to move to
03:01:33 7 put it in.

03:01:34 8 But no, I have no
03:01:35 9 further questions for the witness.

03:01:37 10 JUDGE MCCULLOUGH:

03:01:37 11 Okay.

03:01:38 12 Dr. Naughton, you may
03:01:39 13 step down.

03:01:39 14 THE WITNESS:

03:01:40 15 Thank you.

03:01:41 16 JUDGE MCCULLOUGH:

03:01:42 17 Unless Counsel has any
03:01:44 18 Recross.

03:01:44 19 Okay.

03:01:44 20 So before we take a
03:01:45 21 break, does anyone have an objection
03:01:46 22 to moving into evidence the report of
03:01:52 23 Dr. Burnell?

03:01:52 24 ATTORNEY WIYGUL:

03:01:55 25 The Governor objects,

03:01:55 1 Your Honor.

03:01:55 2 JUDGE MCCULLOUGH:

03:01:55 3 And basis for your
03:01:55 4 objection?

03:01:57 5 ATTORNEY WIYGUL:

03:02:00 6 Dr. Burnell is not
03:02:00 7 called as a witness --- well, there's
03:02:02 8 several. He was not called as a
03:02:04 9 testifying as a witness in this matter
03:02:05 10 and in addition, that would have the
03:02:08 11 effect of allowing two expert reports
03:02:11 12 in evidence for this party which I
03:02:15 13 think is --- would be a privilege
03:02:18 14 enjoyed by no other party.

03:02:21 15 ATTORNEY HAVERSTICK:

03:02:21 16 With respect, Your
03:02:22 17 Honor, it's what your order allows.
03:02:24 18 And I have a bench memorandum I'm
03:02:26 19 prepared to hand up and provide to
03:02:30 20 Counsel as well. And I will do so.
03:02:32 21 Your order specifically contemplates
03:02:34 22 it, because it allows for one or more
03:02:37 23 experts or one or two experts to put
03:02:39 24 in reports. They don't have to be
03:02:43 25 the same person, but only one may

03:02:43 1 testify.

03:02:44 2 They could have done the
03:02:45 3 same thing, they just chose not to.
03:02:47 4 And you know, I thought yesterday we
03:02:49 5 were making some headway when we
03:02:51 6 agreed to admit declarations without
03:02:54 7 much of a problem. And I don't
03:02:57 8 understand why it's acceptable for
03:03:00 9 Counsel for the Governor, sometimes,
03:03:02 10 for out-of-court statements to come in
03:03:08 11 and not other times.

03:03:09 12 And as the Court rightly
03:03:09 13 noted yesterday Amici are putting in
03:03:12 14 expert reports that it Court is going
03:03:13 15 to review and give whatever weight the
03:03:18 16 Court believes they are due. It's no
03:03:20 17 different. It's no different.

03:03:21 18 JUDGE MCCULLOUGH:

03:03:21 19 I want to get the
03:03:22 20 objections on the record for Counsel
03:03:24 21 sake.

03:03:26 22 ATTORNEY JOHNSON:

03:03:26 23 Your Honor, for the
03:03:27 24 Gressman Math Scientist Petitioners
03:03:27 25 join in the objection. The Burnell

03:03:32 1 report is inadmissible hearsay. We
03:03:34 2 have two cites for that point if you
03:03:37 3 want, we can supply them during the
03:03:40 4 status conference if that makes sense
03:03:40 5 to do so. Thank you.

03:03:41 6 JUDGE MCCULLOUGH:

03:03:41 7 And Mr. Gordon?

03:03:42 8 ATTORNEY GORDON:

03:03:42 9 Yes, Your honor. The
03:03:43 10 Carter Petitioners join in the
03:03:43 11 objection lodged by Governor and the
03:03:46 12 Gressman Petitioners on the similar
03:03:49 13 matter.

03:03:51 14 JUDGE MCCULLOUGH:

03:03:51 15 And I see somebody is
03:03:53 16 stepping up on the other side.

03:03:55 17 ATTORNEY SENOFF:

03:03:55 18 Your Honor, just as a
03:03:57 19 point of clarification --- and perhaps
03:03:59 20 Mr. Haverstick can clear this up.
03:04:02 21 This is not --- Mr. Haverstick is not
03:04:04 22 intending to call this expert as a
03:04:05 23 live witness; am I correct?

03:04:10 24 ATTORNEY HAVERSTICK:

03:04:10 25 No.

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ATTORNEY SENOFF:

Thank you. Then we have
no objection, Your Honor.

JUDGE MCCULLOUGH:

Thank you Mr. Senoff and
Mr. Attisano?

ATTORNEY ATTISANO:

Join in the objection.

JUDGE MCCULLOUGH:

Okay.

So we have it all on the
record. We're going to take a break.
The Court will defer making a
judgement on it after our status
conference. So I'm asking Counsel now
to --- the lead counsel to meet again
first in the same conference room
where we met yesterday morning, and
then we will meet for 15 minutes.
Let's reconvene then --- what time is
it here? It's 12:18. I think we can
reconvene at 12:50 that will still
give you time for a comfort break for
all of you. So 12:50 back here in
Court. Thank you.

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ATTORNEY HAVERSTICK:

Thank you, Your Honor.

COURT CRIER TURNER:

Commonwealth Court is
now in recess.

(WHEREUPON, A BREAK WAS TAKEN.)

COURT CRIER HOLLAND:

All rise. Commonwealth
Court is back in session. Please be
seated.

JUDGE MCCULLOUGH:

Good afternoon. It is
afternoon now. And we did address
some matters in a status conference,
so thank you to Counsel for that.

We will begin now with
the testimony by the last expert
witness for the Senate Democratic
Intervenors, Mr. Attisano. I should
note this witness is as a virtual ---
is giving virtual testimony so we all
have to look at the screen and not the
witness box this time.

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COURT CRIER HOLLAND:

Before we begin, Mr. Caughey, can you please raise your right hand?

DEVIN CAUGHEY,
CALLED AS A WITNESS IN THE FOLLOWING PROCEEDINGS, HAVING FIRST BEEN DULY SWORN, TESTIFIED AND SAID AS FOLLOWS:

COURT CRIER HOLLAND:

Thank you.

DIRECT EXAMINATION

BY ATTORNEY ATTISANO:

Q. Good afternoon, Dr. Caughey, can you hear me okay?

JUDGE MCCULLOUGH:

We can't hear you. We are having trouble with his ---.

COURT CRIER HOLLAND:

Can you turn the volume up on your laptop?

THE WITNESS:

04:25:19 1 Can you hear me now?

04:25:19 2 ATTORNEY ATTISANO:

04:25:19 3 We can hear you now.

04:25:20 4 Thank you.

04:25:21 5 BY ATTORNEY ATTISANO:

04:25:22 6 Q. So Dr. Caughey, so you
04:25:26 7 understand, there seems to be a slight
04:25:27 8 half a second to one second delay in
04:25:29 9 between responses. So please just try
04:25:31 10 to be thoughtful of that for the
04:25:33 11 communication.

04:25:33 12 Can you do that for us?

04:25:39 13 A. Uh-huh (yes).

04:25:39 14 Q. Thank you. Okay. Can you
04:25:41 15 please introduce yourself to the
04:25:45 16 Court. Tell us what your current
04:25:46 17 position is and just describe,
04:25:48 18 generally, your work in the
04:25:50 19 redistricting field?

04:25:54 20 A. Well, first of all, my name is
04:26:02 21 Devin Caughey. I know it's hard to
04:26:02 22 pronounce, but I appreciate you
04:26:02 23 working on that.

04:26:02 24 And I just want to start out by
04:26:02 25 thanking you for the Court allowing me

04:26:08 1 to testify remotely. I'm actually
04:26:11 2 dealing a health crisis in my family
04:26:12 3 right now, so I couldn't leave. But I
04:26:14 4 appreciate being able to do this over
04:26:15 5 the computer.

04:26:17 6 So currently I'm an associate
04:26:22 7 professor with tenure at the
04:26:23 8 Massachusetts Institute of Technology
04:26:23 9 in the Department of Political
04:26:25 10 Science. I received a Ph.D. in
04:26:29 11 political science from the University
04:26:32 12 of California Berkley. I also hold a
04:26:34 13 history degree from Yale at Cambridge.

04:26:37 14 So my academic focus is mainly
04:26:42 15 on American politics and statistical
04:26:44 16 methods and the interaction between
04:26:45 17 those two. And I focus particularly
04:26:49 18 on public opinion, election,
04:26:52 19 representation. And I published many
04:26:58 20 academic articles, but among those
04:27:01 21 public research on gerrymandering in
04:27:03 22 places like the election law reviews
04:27:06 23 --- I'm sorry, Election Law Journal
04:27:08 24 and also I just finished a forthcoming
04:27:10 25 book with the University of Chicago

04:27:12 1 press that focuses, among other
04:27:14 2 things, on partisan gerrymandering at
04:27:16 3 the state level and how that fits into
04:27:16 4 the representational process.

04:27:16 5 So that's my academic
04:27:25 6 background, and I've also done some
04:27:29 7 expert witness in the past.

04:27:30 8 Q. Could you generally describe
04:27:31 9 the expert witness work you've done in
04:27:31 10 the past?

04:27:39 11 A. On --- I completed one case
04:27:41 12 that I can sort of talk really about,
04:27:42 13 but it was very similar to this case
04:27:45 14 in that I was asked to analyze the
04:27:48 15 partisan bias of a districting map,
04:27:52 16 and I did so. I did that in Oregon.

04:27:56 17 Q. Okay.

04:27:57 18 Thank you?

04:27:57 19 And here you were retained by
04:28:00 20 the Senate Democratic Caucus to review
04:28:02 21 certain maps for partisan fairness.

04:28:04 22 Correct? Is that a yes?

04:28:04 23 Dr. Caughey, I'm not able to
04:28:04 24 hear you there when you respond.

04:28:22 25 A. Let me see if this will work

04:28:23 1 better.

04:28:23 2 Q. That was better when you

04:28:24 3 said ---.

04:28:24 4 JUDGE MCCULLOUGH:

04:28:24 5 I think when he leans

04:28:27 6 forward.

04:28:28 7 BY ATTORNEY ATTISANO:

04:28:29 8 Q. I think when you lean forward

04:28:31 9 it may be better. Please keep that in

04:28:32 10 mind. Thank you.

04:28:38 11 And so Dr. Caughey, which maps

04:28:41 12 did you review for your analysis?

04:28:43 13 A. As a baseline, I started with a

04:28:50 14 current map that was in place since

04:28:52 15 2018. I also reviewed Governor Wolf's

04:28:55 16 proposal. I reviewed two proposals by

04:29:00 17 Senate Democrats, which I refer to in

04:29:02 18 my report as Democratic map number 1

04:29:04 19 and number 2.

04:29:05 20 A proposal by the Pennsylvania

04:29:07 21 House Republican Caucus and a map ---

04:29:12 22 I did a very --- as an appendix I

04:29:12 23 added a brief analysis of

04:29:20 24 Representative Reschenthaler, which I

04:29:20 25 think I referred to in my Senator

04:29:20 1 Reschenthaler and I apologize for
04:29:30 2 that.

04:29:30 3 Q. He probably won't mind the
04:29:31 4 promotion. And just to be clear, you
04:29:33 5 have an analysis of one Reschenthaler
04:29:36 6 map in your report.

04:29:37 7 Correct? Okay. Sorry, could
04:29:41 8 you repeat your answer?

04:29:45 9 Okay.

04:29:46 10 I apologize again, Dr. Caughey,
04:29:51 11 I could not hear you that time. It's
04:29:51 12 correct that you have the analysis of
04:29:53 13 one map for the Congressman
04:29:55 14 Reschenthaler.

04:29:56 15 Correct? I apologize and your
04:30:03 16 answer was not audible.

04:30:05 17 A. All right. That is correct.

04:30:06 18 Q. That is much better. Thank
04:30:09 19 you. Thank you very much.

04:30:09 20 And that was map 2, the
04:30:13 21 Reschenthaler map 2.

04:30:14 22 Correct?

04:30:15 23 A. I believe so. That's how it
04:30:17 24 was labeled the files that I received.

04:30:21 25 Q. Thank you.

04:30:22 1 And just why do you only have
04:30:23 2 analysis of Reschenthaler map 2 rather
04:30:25 3 than also Reschenthaler map 1?

04:30:30 4 A. Well, I suppose --- I don't
04:30:32 5 know the ultimate --- it's probably a
04:30:41 6 combination of matter of a limited
04:30:42 7 time, but that was the only map that I
04:30:44 8 received. So it was not the I
04:30:44 9 declined to --- I reviewed all the
04:30:45 10 maps that I received.

04:30:48 11 Q. Okay.

04:30:50 12 And could you please describe
04:30:51 13 your process in comparing the maps in
04:30:55 14 doing your analysis?

04:30:57 15 A. Sure. So I followed what I
04:30:58 16 considered to be a very standard
04:31:00 17 process in political science, my
04:31:03 18 discipline, where I was asked to
04:31:07 19 evaluate the partisan fairness of
04:31:09 20 these maps, of all the maps. And I
04:31:12 21 did so in a perfectly parallel way. I
04:31:14 22 applied the same methods to every one.

04:31:18 23 And so the first thing I would
04:31:18 24 like to say, though, is that partisan
04:31:21 25 fairness is a somewhat abstract

04:31:27 1 concept, right. And so I think it's
04:31:29 2 important to talk about it in the
04:31:30 3 abstract before thinking about
04:31:32 4 specific measures of partisan
04:31:34 5 fairness. So in the abstract of a map
04:31:39 6 --- political scientists consider a
04:31:40 7 map fair if it treats parties equally
04:31:44 8 or symmetrically or neutrally in the
04:31:49 9 sense that the outcome of elections
04:31:51 10 shouldn't depend on which party you
04:32:00 11 substitute in --- which party got the
04:32:01 12 X number of votes, right. So it
04:32:03 13 should depend on the party in question
04:32:03 14 what the outcome is.

04:32:06 15 So there are different ways of
04:32:11 16 operationalizing that or measuring
04:32:12 17 that in practice, right, and each of
04:32:13 18 those different measures captures a
04:32:15 19 different aspect or a different way of
04:32:17 20 getting at that basic idea of partisan
04:32:19 21 fairness.

04:32:25 22 And so since there are
04:32:26 23 different measures, I took --- there
04:32:27 24 are four very common measures that are
04:32:29 25 used, partisan symmetry, the

04:32:31 1 efficiency gap, mean-median difference
04:32:35 2 and the declination, was just four
04:32:38 3 standard measures. And they're all
04:32:40 4 trying to get at the same idea of
04:32:44 5 fairness, partisan fairness.

04:32:46 6 Q. And Dr. Caughey, what were
04:32:54 7 those four measures you said that you
04:32:54 8 used here?

04:32:54 9 A. The first one is called
04:32:54 10 partisan symmetry or its reverse is
04:32:57 11 partisan bias, that's how I will be
04:32:58 12 referring to it primarily. The
04:33:00 13 efficiency gap is the second one, the
04:33:03 14 mean-median difference is the third
04:33:08 15 one. And the declination is the
04:33:11 16 fourth one.

04:33:12 17 Q. Okay.
04:33:12 18 Could you just briefly describe
04:33:13 19 what each one of those are?

04:33:17 20 A. Sure. I'll start with partisan
04:33:19 21 symmetry because in some ways it's the
04:33:21 22 most fundamental or the most general.
04:33:23 23 So partisan symmetry is based on the
04:33:26 24 concept of what's called the seats
04:33:28 25 votes curve, the seats votes function,

04:33:31 1 which is basically just the
04:33:36 2 relationship between a party's vote
04:33:39 3 share and their expected seat share,
04:33:41 4 okay. And generally speaking,
04:33:43 5 obviously, we expect that function to
04:33:45 6 be increasing, right, to go up. As
04:33:49 7 vote share goes up, a party's vote
04:33:51 8 share goes up, we would expect its
04:33:53 9 seat share to increase as well. But
04:33:54 10 it can increase at --- you know, the
04:33:57 11 exact shape of that function can look
04:34:00 12 very different, right. And there's
04:34:02 13 two basic characteristics of that
04:34:06 14 curve.

04:34:06 15 One is you might call it a
04:34:08 16 slope or sometimes that's called the
04:34:10 17 responsiveness. And that's just how
04:34:12 18 steeply seat share increases as a
04:34:12 19 function of vote share. Okay. So in
04:34:20 20 a proportional system, for example, a
04:34:21 21 system of proportional representation,
04:34:26 22 that slope is about a one-to-one
04:34:28 23 slope. All right. So you increase
04:34:30 24 your vote share by one percent, your
04:34:32 25 seat chair increases by one percent

04:34:38 1 for a given party. But that's not
04:34:40 2 typically what you observe in a
04:34:41 3 majoritarian system such as
04:34:41 4 Pennsylvania or other U.S. states,
04:34:44 5 which is where the slope can vary, but
04:34:46 6 it's usually, you know, somewhere like
04:34:48 7 two to one. And that's due to a
04:34:48 8 phenomenon sometimes known as a
04:34:55 9 winner's bonus, when we just naturally
04:34:57 10 expect the party that earns the
04:34:59 11 majority of votes to earn a super
04:35:01 12 majority of seats, okay. So that's
04:35:05 13 one part of the seats vote curve is
04:35:08 14 how steeply the curve rises.

04:35:10 15 But another key characteristic
04:35:12 16 is the bias of the curve, which is
04:35:14 17 sort of like --- you can think of that
04:35:16 18 as how at every point is it --- how
04:35:19 19 high is it if you move it up and down.
04:35:21 20 You're increasing it or decreasing the
04:35:23 21 bias in favor of a one party or
04:35:26 22 another. And a key characteristic of
04:35:36 23 a symmetrical or fair seats votes
04:35:38 24 curve is that it should treat both
04:35:39 25 parties symmetrically or neutrally.

04:35:43 1 So if one party earns 55 percent of
04:35:47 2 the votes and then gets 60 percent of
04:35:49 3 the seats and then if other party gets
04:35:49 4 50 percent of the votes --- or 55
04:35:49 5 percent of the votes, I'm sorry, they
04:35:52 6 should also get 60 percent of the
04:35:54 7 seats. So it's not that the seat
04:35:55 8 share has to be proportional to vote
04:36:01 9 share, but it does have to be the same
04:36:01 10 bonus for each party, right.

04:36:02 11 And usually that's sort of easy
04:36:05 12 to think about when we just consider
04:36:07 13 what happens if both parties get
04:36:10 14 50 percent of the vote, right. If
04:36:12 15 they both get 50 percent of the vote,
04:36:14 16 they tie, right. But if they win
04:36:18 17 50 percent of the vote and one party
04:36:20 18 gets 55 percent of the seats, that
04:36:21 19 indicates a bias of five percentage
04:36:26 20 points in favor of the party that got
04:36:31 21 more seats, right. So that is what we
04:36:35 22 call partisan bias. That's one
04:36:35 23 measure I look at.

04:36:35 24 Another measure which is also
04:36:38 25 very common is called the efficiency

04:36:39 1 gap.

04:36:39 2 Q. And Dr. Caughey, before you go
04:36:39 3 into the efficiency gap, just to be
04:36:47 4 clear, with the party symmetry and the
04:36:53 5 winner bonus, is there a particular
04:36:55 6 winner bonus that you believe deviates
04:37:01 7 from partisan fairness or is it more
04:37:03 8 about it being symmetrical and the
04:37:05 9 same for whichever party wins?

04:37:07 10 A. So I think that reasonable
04:37:09 11 arguments can be made for different
04:37:11 12 winner's bonuses, so I don't have a
04:37:14 13 firm position that there is a single
04:37:16 14 number that the majority party should
04:37:18 15 get, say 2 to 1, you know, seats to
04:37:22 16 votes. But it is I think very
04:37:27 17 difficult to argue with the idea that
04:37:31 18 whatever the bonus is it should be the
04:37:37 19 same for both parties, right. So if
04:37:39 20 one party gets a two to one bonus,
04:37:39 21 then the other party should get a two
04:37:45 22 to one bonus. So the answer to your
04:37:46 23 question is, no, there is no single
04:37:47 24 number, but it should be the same
04:37:49 25 between the two parties.

04:37:51 1 Q. Thank you. And I think you
04:37:52 2 were believing --- I believe you were
04:37:53 3 starting to discuss the efficiency gap
04:37:56 4 when I cut you off. Could you please
04:37:58 5 go ahead and describe the efficiency
04:38:00 6 gap?

04:38:00 7 A. Sure. So the efficiency gap is
04:38:00 8 another way of operationalizing this
04:38:09 9 notion of a partisan fairness, you
04:38:10 10 know, the notion that a map should
04:38:11 11 treat the parties equally or mutually.
04:38:15 12 And instead of focusing directly on
04:38:18 13 the seats votes curve, it focuses on
04:38:21 14 this notion of wasted votes, okay.
04:38:21 15 And according to the efficiency gap is
04:38:32 16 based on the idea that the number of
04:38:33 17 wasted votes or the share of wasted
04:38:33 18 votes for each party should be equal.
04:38:35 19 And what does that mean? What's a
04:38:36 20 wasted vote? Well, a wasted vote, as
04:38:38 21 I'm sure someone has said it in this
04:38:40 22 trial so far, is a vote cast for a
04:38:46 23 losing candidate or a vote cast for a
04:38:49 24 winning candidate beyond the minimum
04:38:51 25 necessary to ensure that that

04:38:53 1 candidate won, beyond 50 percent plus
04:38:53 2 one, right.

04:38:54 3 So when one party wastes more
04:39:07 4 votes than the other party, then their
04:39:07 5 votes, in sum and substance, count for
04:39:07 6 less, right. More of their votes
04:39:07 7 don't make a difference in terms of
04:39:10 8 who wins seats, right. They're
04:39:10 9 diluted relative to the other party.

04:39:12 10 And you can see there is a
04:39:13 11 natural connection there to the sort
04:39:17 12 of traditional pattern of packing and
04:39:19 13 cracking in partisan gerrymandering
04:39:24 14 where a gerrymandering party tends to
04:39:29 15 want to take all of their --- the
04:39:30 16 opposing party's votes and pack them
04:39:32 17 into a few districts, right, where if
04:39:34 18 they're winning by, say, 90 percent,
04:39:37 19 they're winning 90 percent of the vote
04:39:37 20 in those districts, then a full
04:39:40 21 40 percent of the votes cast in those
04:39:43 22 districts are going to be wasted,
04:39:44 23 right, because they're way over what
04:39:47 24 you would need to win, right.

04:39:48 25 And similarly, that makes the

04:39:49 1 other party's votes very efficient.
04:39:50 2 But cracking, which is trying to make
04:39:54 3 sure that gerrymandering parties'
04:39:55 4 votes are spread evenly, is a very
04:39:58 5 efficient way of spreading votes,
04:40:00 6 right. It ensures that --- it means
04:40:03 7 that if you are winning every district
04:40:05 8 by 55 or 60 percent, you're only
04:40:08 9 wasting about 10 to 15 percent of the
04:40:10 10 votes in each of those districts,
04:40:12 11 right, so the efficiency gap picks up
04:40:23 12 on that pattern specifically.

04:40:23 13 Q. And with respect to the
04:40:25 14 efficiency gap that you just
04:40:26 15 described, does it matter which
04:40:28 16 previous election data is selected
04:40:32 17 when doing the analysis?

04:40:33 18 A. Yes, that's an important point.
04:40:37 19 So all of these measures depend on
04:40:41 20 exactly what you think the vote share
04:40:43 21 is going to be, right. And the vote
04:40:47 22 share in every district and therefore
04:40:49 23 what the seat share is a function of
04:40:52 24 that. So always when academic
04:40:58 25 political scientists are making these

04:40:58 1 evaluations, they want to not only
04:40:59 2 have a realistic predictions of what
04:41:01 3 the vote share --- what they expect
04:41:02 4 the vote share to be, but also to have
04:41:03 5 a realistic sense of what the
04:41:06 6 uncertainty of those predictions are
04:41:08 7 and to evaluate these metrics across a
04:41:11 8 range of scenarios that they --- that
04:41:16 9 are realistic going forward. All
04:41:16 10 right.

04:41:18 11 So you can --- it's often
04:41:21 12 possible to sort of cherry pick a
04:41:27 13 particular vote share that makes your
04:41:29 14 map look good, right, where you pick a
04:41:29 15 vote share to make sure that the other
04:41:36 16 side barely wins a few districts. But
04:41:37 17 that's not a realistic or common
04:41:39 18 scenario, and therefore, can give a
04:41:39 19 misleading sense of the fairness of
04:41:42 20 the map.

04:41:43 21 Q. And could you go on to the next
04:41:47 22 factor in your analysis, the
04:41:49 23 mean-median?

04:41:50 24 A. Sure. And I will talk about
04:41:52 25 these fairly briefly because they pick

04:41:54 1 up on similar dynamics. So the
04:41:54 2 mean-median difference, which we've
04:41:54 3 already heard discussion of, is just
04:41:54 4 the difference because the average
04:42:04 5 vote share amongst districts, which if
04:42:05 6 turn out equal is just a statewide
04:42:08 7 share that a party earns, and the
04:42:10 8 difference in the median district,
04:42:15 9 right.

04:42:15 10 So it might be easiest to think
04:42:19 11 about it if there's one district that
04:42:21 12 a party wins by 90 percent or, you,
04:42:24 13 know 90/10, then loses all the
04:42:30 14 districts by 49/51, the average vote,
04:42:35 15 depending on other districts, is going
04:42:38 16 to be close to 50/50. But from --- it
04:42:38 17 could be 50/50, but the median
04:42:43 18 district is going to be higher than
04:42:44 19 that, right. If the median vote is
04:42:47 20 that if you lined up all the districts
04:42:51 21 in a line in order of how increasing
04:42:55 22 Republican share, the one in the
04:42:56 23 middle is the median, right. So in
04:42:59 24 that case, in that concocted scenario
04:43:01 25 that I just gave you, the median is

04:43:03 1 guaranteed to be 49 percent in that
04:43:07 2 case for the party that won 90 percent
04:43:14 3 in the one district.

04:43:15 4 So that's an indication the
04:43:15 5 mean-median just picks up on the
04:43:15 6 asymmetry of the distribution of
04:43:19 7 district partisanship, the skewness
04:43:20 8 sometimes called, of the distribution
04:43:23 9 of partisanship.

04:43:26 10 And the next measure I talk
04:43:28 11 about is the declination, which is a
04:43:28 12 little bit more technical and recently
04:43:32 13 developed measure. It was originally
04:43:33 14 formulated in thinking about how the
04:43:35 15 angles, if you line up all the
04:43:37 16 districts and the Democratic districts
04:43:40 17 are over here and the Republican
04:43:41 18 districts over here, the angle --- how
04:43:43 19 the angle changes where partisanship
04:43:43 20 shifts, where party control shifts,
04:43:47 21 but I think ---.

04:43:47 22 Q. Dr. Caughey, when you say line
04:43:52 23 up the districts are you referring to
04:43:53 24 lining them up on a graph?

04:43:55 25 A. Yes. Thank you for --- and I

04:44:00 1 know maybe my hand gestures are not
04:44:02 2 admissible as evidence there, so I
04:44:04 3 will try to avoid that, but I think a
04:44:13 4 more intuitive way of thinking about
04:44:13 5 the declination it just you compare
04:44:15 6 --- more normalized compared to the
04:44:20 7 lopsidedness of Democratic and
04:44:23 8 Republican districts, right.
04:44:23 9 Democratic districts tend to be much
04:44:23 10 more --- Democratic won districts tend
04:44:23 11 to be much more lopsided than the
04:44:31 12 angle of the Democratic side of the
04:44:33 13 district --- that hypothetical block
04:44:33 14 that we were just talking about is
04:44:35 15 going to be steeper.

04:44:37 16 So I think the key thing to
04:44:38 17 keep in mind here is that all of these
04:44:41 18 are different ways of getting at the
04:44:43 19 idea that the distribution of district
04:44:47 20 partisanship is asymmetrical or treats
04:44:47 21 the parties differently, right, in
04:44:56 22 ways that --- in terms of the
04:44:56 23 translation of their votes into seats.
04:44:58 24 And all of these measures have been
04:45:04 25 shown to reliably detect instances of

04:45:12 1 partisan gerrymandering and also to
04:45:17 2 coincide with each other very closely,
04:45:17 3 especially in competitive states like
04:45:17 4 Pennsylvania. So as we're going to
04:45:17 5 see in my analysis they essentially
04:45:20 6 never disagree with each other at
04:45:22 7 least a major way in their
04:45:24 8 evaluations. There are very small
04:45:27 9 discrepancies. They are --- they all
04:45:28 10 coincide, so --- and that gives us
04:45:33 11 confidence that they're all picking up
04:45:36 12 on different aspects of the same
04:45:36 13 concept which is partisan symmetry or
04:45:43 14 partisan fairness.

04:45:43 15 Q. Dr. Caughey, could you describe
04:45:44 16 the process you use to compare the
04:45:46 17 maps?

04:45:46 18 A. Sure. So there is a sort of
04:45:51 19 standard procedure that --- that is
04:45:54 20 standard in the political science
04:45:56 21 literature for --- political
04:46:00 22 methodology for conducting these sorts
04:46:04 23 of analyses of partisan fairness. So
04:46:06 24 the first is to take the shape files
04:46:11 25 of the districts and merge them with

04:46:13 1 whatever electoral and demographic
04:46:21 2 data we have at the precinct level,
04:46:25 3 right. Then using that data estimate
04:46:26 4 or forecasting forward, right, you
04:46:28 5 know you want to know how
04:46:33 6 Congressional elections will be in the
04:46:35 7 future of this map. So we're
04:46:37 8 predicting a Congressional vote in
04:46:39 9 each district as a function of the
04:46:41 10 information that we have, plus the
04:46:44 11 uncertainty in that prediction and
04:46:47 12 that uncertainty --- so the way we do
04:46:50 13 this is in political science is we
04:46:51 14 pick what's called --- usually called
04:46:53 15 a multilevel model where we are
04:46:58 16 fitting this to the entire country's
04:46:58 17 data, right, we have data on
04:46:58 18 Congressional elections across the
04:47:02 19 country and we also know things of how
04:47:04 20 --- what the Presidential vote is in
04:47:07 21 every congressional district. So we
04:47:11 22 model, we try to predict ---
04:47:13 23 Congressional vote is a function of
04:47:14 24 things like incumbency and
04:47:19 25 presidential vote. But also take into

04:47:19 1 account the specific idiosyncrasies of
04:47:26 2 a given election, or a given state and
04:47:26 3 then we use those --- the estimates of
04:47:29 4 that model to project forward, okay.
04:47:31 5 And the key thing is that when we make
04:47:33 6 those projections we take into account
04:47:38 7 the fact that in some years Democrats
04:47:42 8 do very well and some years very
04:47:44 9 poorly across the board. We also take
04:47:47 10 into account the fact that the
04:47:48 11 relationship between presidential vote
04:47:48 12 and congressional vote can vary across
04:47:49 13 states. And we also take into account
04:47:52 14 that there is idiosyncratic variation
04:47:55 15 across --- in a given race. In a race
04:47:59 16 the candidate may run a very good
04:48:00 17 campaign, a very poor campaign and
04:48:02 18 that can affect the outcome of the
04:48:05 19 election, too. So when we make these
20 predictions, we take into account
21 those various sources of uncertainty
22 to come up with a realistic range of
23 prediction for a given Congressional
24 election. So that's the basic
25 methodology.

1 And then, so if you had
04:48:23 2 infinite time, I would do that myself.
04:48:26 3 But recently, you know, the Plans
04:48:33 4 Score website which I think you have
04:48:34 5 heard something about has developed
04:48:37 6 --- has made it possible to do this
04:48:38 7 exact procedure, to automate it and
04:48:45 8 make it faster, more transparent to
04:48:47 9 the public, which --- and so --- and I
04:48:48 10 worked closely with the people who
04:48:50 11 developed a methodology underlying
04:48:55 12 Plan Score. Plan Score is very
04:48:55 13 transparent about the methodology it
04:48:57 14 uses. So I rely on plans for ---.
04:49:01 15 Q. Doctor ---.
04:49:02 16 A. What I actually did is I
04:49:04 17 uploaded these map shape files to Plan
04:49:07 18 Score and downloaded the prediction as
04:49:09 19 a result of the process that I just
04:49:11 20 described.
04:49:12 21 Q. And Dr. Caughey, Plan Score is
04:49:17 22 open to the public. It's publicly
04:49:19 23 accessible.
04:49:19 24 Correct?
04:49:20 25 A. That's right. So it's publicly

04:49:21 1 accessible not just in that you can go
04:49:26 2 it and look at scores for existing
04:49:27 3 maps, but it has functionality for
04:49:29 4 uploading chief files or proposed
04:49:32 5 maps, even ones you, yourself, have
04:49:35 6 come up with and scoring them
04:49:37 7 according to partisan fairness. So
04:49:41 8 that is a procedure that I used.

04:49:54 9 Q. Okay.

04:49:54 10 And if you haven't already
04:49:56 11 covered it, could you just briefly
04:49:56 12 cover the methodology and familiarity
04:49:59 13 of the code related to Plan Score?

04:49:59 14 A. Sure. So one of things that
04:50:01 15 distinguishes Plan Score from other
04:50:01 16 websites that do gerrymandering or
04:50:05 17 partisan fairness type analysis like
04:50:08 18 538.com is that first of all, it's a
04:50:10 19 non-profit and a non-partisan website.
04:50:15 20 And second of all, it's entirely ---
04:50:18 21 it's entirely transparent about the
04:50:19 22 methodology underlying its assumption,
04:50:24 23 underlying its predictions.

04:50:26 24 So it tells you what the data
04:50:28 25 --- it tells you exactly what the

04:50:30 1 model is and how the model was fixed.
04:50:33 2 And in fact, I've seen the code that
04:50:37 3 was used. I emailed the people who
04:50:44 4 created it and I was able to see the
04:50:45 5 code myself. So I have a very
04:50:47 6 intimate understanding. By code I
04:50:48 7 mean the statistical software code
04:50:50 8 that was done in a software program
04:50:50 9 called R, which I'm very familiar
04:50:55 10 with.

04:50:55 11 Q. Are you familiar with who
04:50:56 12 created Plan Score?

04:50:57 13 A. Yeah. So different people
04:50:57 14 worked on some aspects of it, the
04:50:57 15 political scientists involved, who did
04:50:57 16 the political science side of the work
04:51:10 17 were primarily, as I understand, Eric
04:51:13 18 McGee and Christopher Warshaw, both
04:51:15 19 political scientists. And Chris
04:51:18 20 Warshaw is my most closest
04:51:21 21 academic ---.

04:51:22 22 Q. And that's the same Dr. Warshaw
04:51:24 23 who's an expert in the League of Women
04:51:29 24 Voters case in 2018?

04:51:29 25 A. Yes.

04:51:29 1 Q. And you started your analysis
04:51:34 2 with the 2018 congressional map. I
04:51:36 3 would like to discuss that with you.

04:51:37 4 A. Sure.

04:51:37 5 Q. And the graph associated with
04:51:37 6 that is on page eight of your expert
04:51:37 7 report which is attached in the Senate
04:51:37 8 Democrat's reply brief that was filed
04:51:56 9 in this case. Do you have page eight
04:51:57 10 in front of you?

04:51:58 11 A. I do, yes.

04:51:59 12 Q. Could you go to that? And
04:52:00 13 first off, before we discuss it, the
04:52:03 14 2018 map can't be used in this case,
04:52:08 15 because --- it can't be used going
04:52:10 16 forward, because Pennsylvania has went
04:52:11 17 from 18 seats to 17 seats. So why did
04:52:15 18 you decide to do an analysis of the
04:52:17 19 2018 map if it can't be selected as a
04:52:21 20 map to resolve this litigation?

04:52:24 21 A. I think one very important
04:52:26 22 reason I wanted to do it, is just to
04:52:29 23 validate the approach and make sure
04:52:31 24 that the predictions being generated
04:52:32 25 by the model plans for uses, were

04:52:36 1 reasonable and well calibrated.

04:52:38 2 And sorry, my connection is
04:52:45 3 flickering back and forth, but if you
04:52:46 4 can still hear me, let me know.

04:52:48 5 Q. I can hear you, yes.

04:52:50 6 A. Okay.

04:52:52 7 And so I wanted to, first of
04:52:57 8 all, just run it on the current map
04:53:00 9 just to make sure that this is good
04:53:01 10 statistical practice, right. If you
04:53:03 11 have a model that's generating
04:53:05 12 predictions, you want to compare it to
04:53:11 13 some reasonable --- something that you
04:53:12 14 know --- you want to compare something
04:53:12 15 you know is right, something that has
04:53:15 16 already happened right to validate it.

04:53:17 17 So in this case I was able to
04:53:19 18 do that. So for example, in the
04:53:27 19 average vote share predicted,
04:53:30 20 according to Plan Score was rather
04:53:32 21 than Republican vote share in U.S
04:53:38 22 Congressional elections is predicted
04:53:38 23 going forward to be on average
04:53:39 24 51 percent.

04:53:41 25 And then what was reassuring

04:53:42 1 what that that's actually the same,
04:53:43 2 not only --- that's the same as the
04:53:45 3 actual vote share that Republicans
04:53:48 4 received in 2020, but also the same as
04:53:52 5 the average share that they received
04:53:54 6 over the entire 2010 to 2020 period.

04:53:58 7 So that reassures me that this
04:54:02 8 is a reasonable prediction, although
04:54:06 9 one of course, that is accompanied by
04:54:09 10 uncertainty.

04:54:20 11 Q. And can you take us to your
04:54:22 12 graph on page eight and walk us
04:54:24 13 through what you're seeing there?

04:54:26 14 A. Sure. This graph lines up all
04:54:29 15 districts ordered by how Republican
04:54:31 16 they are. So on the far left side of
04:54:33 17 the screen you have the most
04:54:36 18 Democratic district, which is District
04:54:42 19 3. It won't surprise you to learn is
04:54:43 20 in Philadelphia, and then increasing
04:54:46 21 order of the prediction of how
04:54:51 22 Republicans that each District is
04:54:52 23 likely to be.

04:54:53 24 So you'll notice that they
04:54:55 25 change color halfway through. That's

04:54:58 1 the --- if the prediction is above
04:55:00 2 50 percent, I colored it red. If the
04:55:04 3 prediction is below 50 percent I
04:55:06 4 colored it blue. You'll also notice
04:55:08 5 that there are these vertical lines
04:55:13 6 around each dot, and the dot refers to
04:55:15 7 what one might consider our best
04:55:16 8 guess. But the vertical lines are an
04:55:18 9 indication of how uncertain we are
04:55:21 10 about that guess. And in particular,
04:55:22 11 they represent the one standard
04:55:25 12 deviation up or down.

04:55:28 13 Standard deviation is just a
04:55:30 14 way of saying that's like the typical
04:55:33 15 amount that we would expect to be off
04:55:35 16 in our guess. That might be one way
04:55:36 17 of thinking about it. So you can see
04:55:38 18 that especially for, you know, for
04:55:41 19 several of the closer districts these
04:55:46 20 predictions are predicted to be wrong,
04:55:48 21 close to 50 percent of the time,
04:55:50 22 right, because we are highly uncertain
04:55:52 23 about exactly how they're going to
04:55:53 24 land, depending on idiosyncratic
04:55:56 25 factors in that race as well as shifts

04:55:59 1 across the election.

04:56:00 2 Q. Are you referring to the

04:56:01 3 districts identified on the graph with

04:56:04 4 number 1, 7, 17 and 10?

04:56:10 5 A. Yes. Those were the closest

04:56:12 6 districts, yes.

04:56:12 7 Q. Okay.

04:56:14 8 And do you have a dotted line

04:56:17 9 going across horizontally the

04:56:19 10 50 percent mark.

04:56:20 11 Correct?

04:56:21 12 A. Yeah. Yes, I do.

04:56:27 13 Q. And could you just discuss that

04:56:28 14 and how it interacts with the vertical

04:56:32 15 lines, specifically in the example you

04:56:35 16 gave in Districts 1, 7, 17 and 10?

04:56:39 17 A. Right. So if you notice in

04:56:41 18 each of those --- so the 50 percent

04:56:43 19 line represents if a --- if the

04:56:46 20 prediction falls above that line, then

04:56:51 21 we predict the Republicans will carry

04:56:51 22 that district, or a Republican will

04:56:53 23 carry that district. And if it falls

04:56:54 24 below we would expect the Democrats to

04:56:54 25 carry.

04:57:02 1 All of the districts that we
04:57:02 2 just mentioned 1, 7, 17, 10 all are
04:57:05 3 close enough to that line that there's
04:57:09 4 substantial uncertainty about where
04:57:11 5 they will land, right.

04:57:13 6 In other words, they're the ---
04:57:15 7 even if we say that our best guess is
04:57:17 8 that this will be a Democratic
04:57:20 9 district, say, for 7 we predict that
04:57:24 10 if we had to guess, we would say that
04:57:27 11 about have be won by a Democrat, and
04:57:29 12 we would also say about that half of
04:57:31 13 the time or almost half the time we
04:57:34 14 will be wrong about that, because
04:57:40 15 almost half of that vertical line is
04:57:41 16 of the other side.

04:57:42 17 Q. And that's referring to the
04:57:43 18 close congressional districts 1, 7, 17
04:57:48 19 and 10.

04:57:48 20 Correct?

04:57:50 21 A. At that particular case I was
04:57:51 22 thinking about District 7 as an
04:57:51 23 example, but it applies to all of it.

04:57:52 24 Q. And your motto is a no
04:57:56 25 incumbency model.

04:57:58 1 A. That's right.

04:57:58 2 Q. Can you just explain what it
04:58:01 3 means?

04:58:02 4 A. Right. So perhaps one of the
04:58:03 5 best established findings in political
04:58:06 6 science is that a party's vote share
04:58:09 7 tends to be higher in congressional
04:58:13 8 elections, when they have an incumbent
04:58:15 9 running for office, right? Because
04:58:18 10 for a variety of reasons.

04:58:19 11 When we're predicting going
04:58:21 12 forward we have to decide are we going
04:58:23 13 to --- what scenario are we going to
04:58:25 14 imagine. Are we going to imagine an
04:58:27 15 open seat scenario. And that seems to
04:58:30 16 be the standard thing to do.

04:58:32 17 Let's predict how the party
04:58:35 18 would do if neither --- how the
04:58:37 19 parties would do, how the election
04:58:39 20 would turn out, if neither party had
04:58:42 21 an incumbent in the race or neither
04:58:44 22 party had an incumbency advantage
04:58:46 23 here, but in order to do that we would
04:58:47 24 have to, obviously estimate what
04:58:49 25 typical incumbency advantage is and

04:58:52 1 subtract that from the --- basically
04:58:54 2 account for that in our model of
04:58:58 3 non-predicted model. So in this case
04:59:00 4 we're projecting what would happen in
04:59:03 5 these cases if no incumbents were
04:59:05 6 running.

04:59:05 7 Q. Okay.

04:59:06 8 And just going back to your
04:59:07 9 graph here very quickly. Looking at
04:59:12 10 4, 6, 1, 7, 17, 10, 8 and then 16, it
04:59:20 11 looks slightly like mirror images to
04:59:22 12 some degree, is that symmetry --- how
04:59:24 13 does that relate to symmetry when you
04:59:27 14 talk to us about symmetry?

04:59:29 15 A. Right. So you know, this isn't
04:59:36 16 exactly a vote seats curve, so it's
04:59:40 17 not literally what partisan symmetry
04:59:42 18 measure is characterizing, but what it
04:59:45 19 does show is that if you moved ---
04:59:46 20 because the distribution there, is
04:59:52 21 symmetric around say the --- the
04:59:55 22 district that you mentioned look
04:59:56 23 similar to each other in terms of how
04:59:59 24 far they are from 50 percent on either
04:59:59 25 side.

05:00:04 1 If you move the line up by one
05:00:09 2 percent that would mean that Democrats
05:00:10 3 were doing one percent better and they
05:00:11 4 would capture --- you know, if they it
05:00:12 5 one percent they capture one district.
05:00:13 6 If you move it up five percent, they
05:00:14 7 would capture two more districts
05:00:17 8 beyond that. And the same is true if
05:00:20 9 you lower the Democratic vote,
05:00:22 10 something similar.

05:00:23 11 So what that means is that the
05:00:25 12 amount of additional districts that a
05:00:28 13 party could expect to earn based on an
05:00:28 14 increase of their vote share by one
05:00:33 15 percent or five percent across the
05:00:35 16 board is roughly the same between the
05:00:38 17 two parties, that's what symmetry
05:00:39 18 means. Right. It means that what ---
05:00:42 19 the seats you earn from given vote
05:00:47 20 share are close to identical.

05:00:51 21 Q. And Doctor, you have a table,
05:00:54 22 Table 1 on page nine of your report.

05:00:55 23 A. Sure.

05:00:56 24 Q. Could you go to that table and
05:00:58 25 quickly summarize for us what we're

05:01:00 1 seeing there?

05:01:04 2 A. Sure. So there are a lot of
05:01:06 3 numbers here, but the first thing to
05:01:08 4 know is on the far left column where
05:01:09 5 it says metric, that part identifies
05:01:13 6 what measure are we talking about
05:01:18 7 here. There's the partisan bias,
05:01:21 8 there's the efficiency gap, there's
05:01:21 9 the mean median and the declination.
05:01:24 10 And recall of these are trying to tap
05:01:25 11 into the same thing, which is how much
05:01:28 12 does this map deviate from partisan
05:01:30 13 fairness. How unfair is it. And
05:01:33 14 across the board here, higher numbers
05:01:35 15 are indicating more bias in a
05:01:37 16 Republican direction, okay.

05:01:41 17 Some positive numbers are
05:01:43 18 complicated for Republican bias and
05:01:45 19 negative numbers are for Democratic
05:01:48 20 bias, and so that --- each row
05:01:54 21 corresponds to a different measure and
05:01:54 22 for each measure we do the same thing.
05:01:56 23 The first --- the columns that's
05:01:57 24 predicted value that --- that's our
05:02:00 25 best guess for how --- according to

05:02:02 1 this measure of what the bias is or
05:02:04 2 what the advantage to Republicans are.

05:02:07 3 So for example, for the
05:02:09 4 partisan bias the predicted partisan
05:02:12 5 bias is 2.1 percent. What does that
05:02:15 6 mean? That means that in an election
05:02:18 7 where both parties get exactly
05:02:22 8 50 percent of the vote, in other words
05:02:24 9 they tie statewide. Because they're
05:02:27 10 tying there's no winner, there's no
05:02:29 11 winners bonus, right? So any
05:02:30 12 difference between the vote share that
05:02:32 13 they receive, the vote and the seat
05:02:35 14 chair they receive, represents the
05:02:37 15 bias in favor of the advantaged party.

05:02:40 16 So here 2.1 means that
05:02:42 17 Republicans are predicted to win
05:02:46 18 52.1 percent of seats on average when
05:02:51 19 the two parties win 50 percent. Each
05:02:54 20 both win 50 percent of the vote. So
05:02:56 21 that's what we're doing down that
05:02:59 22 column, unpredicted value, we're just
05:02:59 23 saying that's our best guess going
05:03:05 24 forward for what each of these metrics
05:03:05 25 is.

05:03:05 1 Would you like me to go through
05:03:07 2 the rest of the columns as well or is
05:03:16 3 that ---?

05:03:16 4 Q. I think we're going to move on.
05:03:17 5 Let us know briefly what you wanted to
05:03:17 6 share about the rest of the columns
05:03:17 7 and then we're going to move on to
05:03:22 8 Governor Wolf's matter.

05:03:25 9 A. Sure. The rest of the columns
05:03:27 10 are just --- the one that is called
05:03:27 11 prod GOP advantage, that's like ---
05:03:31 12 how sure are we that this map bias
05:03:34 13 favors Republican party as opposed to
05:03:36 14 the Democrat.

05:03:37 15 And you see across the board we
05:03:39 16 are about 70 percent sure, about
05:03:41 17 70 percent of simulated elections that
05:03:44 18 will favor the --- the Republicans by
05:03:46 19 30 percent, Democrats. But the
05:03:49 20 advantage and that --- that's a
05:03:50 21 reflection of what we discussed
05:03:52 22 earlier, which is the actual bias can
05:03:54 23 depend somewhat on what exactly the
05:04:09 24 vote share ends up being. Who ends up
05:04:09 25 --- for example, who ends up winning

05:04:09 1 those very narrowly contested
05:04:09 2 districts.
05:04:09 3 That being said --- so that's
05:04:10 4 the probability to the advantage. The
05:04:10 5 remaining two columns are measures of
05:04:13 6 how severe or how extreme this bias is
05:04:16 7 relative to other plans that have been
05:04:19 8 scored in other states, other enacted
05:04:23 9 plans historically. And in
05:04:27 10 Pennsylvania. So all the plans that
05:04:27 11 have ever been enacted and all the
05:04:31 12 enacted plans that have ever been
05:04:33 13 scored by Plan Score, how unusual is
05:04:37 14 this, how bad is this, where higher
05:04:40 15 numbers are. This is really pretty
05:04:42 16 bad. And so in this case it's not
05:04:45 17 that bad. So that yes, this is a
05:04:50 18 slightly Republican leaning map, but
05:04:54 19 it --- you know, only compared to the
05:04:55 20 existing --- the distribution of other
05:04:58 21 maps, it's, you know --- it's more
05:05:06 22 Republican than about 65 percent
05:05:07 23 maybe, and it's less bias in absolute
05:05:10 24 terms than about three-quarters of
05:05:13 25 those maps. That is the final column.

05:05:15 1 Q. Okay.

05:05:16 2 A. How many --- now, so the
05:05:17 3 important thing --- one thing to keep
05:05:19 4 in mind though, this is comparing this
05:05:21 5 map to the observed distribution,
05:05:25 6 historical distribution of the
05:05:29 7 efficiency gap, which is not
05:05:30 8 necessarily fair.

05:05:32 9 You know, there has been
05:05:32 10 gerrymandering in the past. So this
05:05:34 11 includes cases of gerrymandering in
05:05:36 12 the nominator, but it does give a
05:05:38 13 sense of just how much of an outlier
05:05:40 14 is this map.

05:05:41 15 Q. And Doctor Caughey, with that
05:05:43 16 I'm going to move you onto Governor
05:05:43 17 Wolf's map, which the graph is located
05:05:43 18 on page 11. Could you just walk us
05:05:55 19 through the graph on page 11 and let
05:05:57 20 us know what you view as significant
05:05:58 21 there related to partisan fairness.

05:06:00 22 A. Sure. I think the most
05:06:00 23 important thing to note about Governor
05:06:11 24 Wolf's map is, it's very similar to
05:06:12 25 the --- in terms of its partisan

05:06:15 1 fairness score it's very similar to
05:06:17 2 the current.

05:06:18 3 Like, there are small details
05:06:19 4 here and there, so you'll notice, for
05:06:21 5 example, that there is --- instead of
05:06:27 6 there being one highly Democratic
05:06:30 7 district, District 3, now there are
05:06:34 8 more like two, which is District 3 and
05:06:34 9 2.

05:06:38 10 But overall in terms of what we
05:06:41 11 would expect to happen, we respect the
05:06:44 12 partisan bias is slightly larger on
05:06:49 13 Governor Wolf's map than in the
05:06:50 14 current map, but in the same ballpark.
05:06:53 15 It's like --- for example, it's 2.9
05:06:57 16 percent. So what that's saying is if
05:06:59 17 Republicans win 50 percent of the
05:07:01 18 vote, we would expect them to win 52.9
05:07:05 19 percent of seats on average, which is
05:07:06 20 about --- I can't do it off the top of
05:07:07 21 my head, one additional seat.

05:07:11 22 And so that is pretty close to
05:07:17 23 fair, but not completely. It is very
05:07:19 24 similar to the existing map.

05:07:23 25 Q. And I'm going to move you onto

05:07:27 1 the House Republican map, which has
05:07:29 2 been referred to as HB-2146, and your
05:07:32 3 graph for that map is located on
05:07:34 4 page 14 of your report.

05:07:37 5 A. Yes.

05:07:38 6 Q. Could you please go there, Dr.
05:07:41 7 Caughey, and tell us what this graph
05:07:43 8 is communicating about partisan
05:07:46 9 fairness?

05:07:49 10 A. Sure. So one of the things we
05:07:53 11 should just note is that to cross all
05:07:55 12 these maps with the predicted
05:07:58 13 Republican vote share is always
05:08:00 14 51 percent, right, that is what the
05:08:02 15 model says on average what we would
05:08:05 16 expect Republicans to win in terms of
05:08:06 17 votes in congressional elections.

05:08:08 18 And so the only difference
05:08:09 19 across these maps is how these votes
05:08:12 20 are allocated across districts. So
05:08:15 21 you'll notice in the previous two
05:08:17 22 maps, under that scenario, under the
05:08:19 23 average scenario where Republicans win
05:08:22 24 51 percent of votes they are predicted
05:08:25 25 to win 55 percent of seats. That is

05:08:29 1 super proportional, but that's not
05:08:29 2 uncommon given a winner's vote of ---
05:08:33 3 you know, pretty standard winner's
05:08:34 4 bonus, maybe a little larger than
05:08:36 5 usual. That is under the previous
05:08:39 6 first two maps we looked at.

05:08:41 7 This map, the winner bonus is
05:08:44 8 quite larger, we notice that
05:08:46 9 51 percent of the vote Republicans are
05:08:50 10 predicted to win 58 percent of seats,
05:08:56 11 so that's a three extra point seat
05:08:58 12 here relative to the other two maps.
05:09:01 13 And you can see that same kind of
05:09:04 14 three percent --- three percentage
05:09:08 15 point additional bias. It shows up
05:09:09 16 also --- I'm sorry, I was going to
05:09:11 17 scroll down to the table, the
05:09:12 18 resulting table below.

05:09:14 19 Go ahead. I don't want to skip
05:09:17 20 ahead.

05:09:17 21 Q. Please go to the table and I'll
05:09:19 22 bring you back to the graph if I need
05:09:23 23 you there.

05:09:24 24 A. Sure. Sounds good. You can
05:09:25 25 see that same three percent

05:09:27 1 additional, you know, bonus for
05:09:28 2 Republicans in, for example, the
05:09:31 3 partisan bias. So again, here the
05:09:34 4 partisan bias is 6.3 percent, right.

05:09:37 5 So in the previous two maps we
05:09:39 6 looked at, the current map and the
05:09:41 7 Governor's map, the partisan bias was
05:09:44 8 under three, right. 6.3, that means
05:09:50 9 in a tied election Republicans would
05:09:52 10 expect to win 56 percent of seats on
05:09:55 11 average, right.

05:09:59 12 And you'll also notice that ---
05:10:01 13 okay, you can take me back if you
05:10:03 14 want. So that's about double the
05:10:06 15 advantage, say the bias is about
05:10:09 16 double than what the current map is
05:10:11 17 and also the Governor's proposal.

05:10:14 18 Q. I do want to ask you a few more
05:10:16 19 questions about the graph?

05:10:17 20 A. Sure.

05:10:17 21 Q. On the graph, you agree there
05:10:20 22 are ten red dots that are above the
05:10:24 23 dotted line and then seven blue dots
05:10:28 24 that are below the dotted line.

05:10:30 25 Correct?

05:10:34 1 A. That's right.

05:10:35 2 Q. Tell us what that represents.

05:10:36 3 A. So that means that if we based

05:10:39 4 our prediction on --- so if we wanted

05:10:43 5 to guess --- for every District if we

05:10:46 6 wanted to guess one best guess about

05:10:49 7 whether Democrat or Republican

05:10:51 8 District, we would predict that 10 out

05:10:53 9 of the 17 districts would go

05:10:55 10 Republican.

05:10:56 11 Now some of those are close

05:10:58 12 and ---.

05:11:00 13 Q. Dr. Caughey, let's talk about

05:11:04 14 that closeness.

05:11:05 15 A. Go ahead.

05:11:06 16 Q. If you take that dotted line at

05:11:08 17 50 percent and you move it down just a

05:11:11 18 little bit then number one and number

05:11:13 19 six, they would be above the dotted

05:11:14 20 line and become red.

05:11:16 21 A. That's right.

05:11:17 22 Q. Can you explain what that

05:11:19 23 means?

05:11:20 24 A. So that means that in a year

05:11:22 25 where Republicans do a little better

05:11:24 1 than average, so they do about two
05:11:29 2 percentage points better than average,
05:11:31 3 meaning they win 53 percent of the
05:11:34 4 vote, they would likely capture on the
05:11:38 5 Democratic --- currently Democratic
05:11:43 6 districts 1 and 6.

05:11:45 7 Q. Okay.

05:11:46 8 A. And that's --- you know, so
05:11:47 9 just for a frame of reference, that's
05:11:49 10 --- you know, in 2016 for example,
05:11:51 11 Republicans won 54 percent of the
05:11:59 12 two-party vote in congressional
05:12:02 13 elections in Pennsylvania. So that
05:12:02 14 would be --- if 2016 happened all over
05:12:03 15 again they would probably capture 1
05:12:06 16 and 6.

05:12:08 17 Q. Okay.

05:12:08 18 And Dr. Caughey, is that
05:12:11 19 significant with respect to your
05:12:12 20 conclusions for partisan fairness on
05:12:14 21 this particular map?

05:12:22 22 A. So what I would say is that in
05:12:24 23 this particular --- in this particular
05:12:26 24 map there are more --- so what I would
05:12:33 25 say the key pattern that I would draw

05:12:36 1 attention to in this map is the fact
05:12:39 2 that there are all but 1 and 6. There
05:12:44 3 are a lot of highly Democratic
05:12:46 4 districts, right, districts where not
05:12:49 5 only --- I mean, obviously the most
05:12:51 6 extreme is District 3, as it is in all
05:12:55 7 the maps.

05:12:56 8 But there are also a number of
05:12:58 9 --- several --- there are four other
05:13:00 10 districts where Democratic are
05:13:01 11 predicted to win over 60 percent of
05:13:04 12 the vote and Republicans are predicted
05:13:06 13 to win under 40 percent, right, so
05:13:12 14 that's 5, 4, 15 and 2. Right? So
05:13:12 15 that's outside of the normal range of
05:13:18 16 being captured. So those are --- so
05:13:18 17 those are --- those are seats where
05:13:18 18 there are a fair number of --- in
05:13:21 19 addition to the wasted votes in
05:13:22 20 District 3 there are a bunch of other
05:13:25 21 --- four other seats where there are a
05:13:28 22 lot of Democratic wasted votes, right?
05:13:36 23 The Democrats are leading very
05:13:38 24 comfortable --- are likely to be very
05:13:38 25 comfortable in all the seats in almost

05:13:40 1 every election.

05:13:41 2 Where you just --- if you look
05:13:42 3 on the other side, there just is no
05:13:44 4 equivalently one-sided seat on the
05:13:47 5 Republican side. But there are a lot
05:13:50 6 of --- it would be hard for Democrats
05:13:54 7 to break through the Republicans in
05:13:58 8 the firewall in a good year for
05:14:00 9 Democrats.

05:14:01 10 Q. And when you say it would be
05:14:03 11 hard for Democrats to break through in
05:14:06 12 a good year for Democrats, does that
05:14:10 13 also hold true for Republicans in this
05:14:13 14 map?

05:14:14 15 A. Not as much, right, because
05:14:16 16 there are two districts that would be
05:14:18 17 captured --- so you can think about
05:14:20 18 the typical variation across election
05:14:22 19 cycles is about three percentage votes
05:14:27 20 here and there --- here or there, one
05:14:28 21 way or the other. So in a typical
05:14:29 22 one, the Democrats would capture 1 and
05:14:31 23 6 --- or I'm sorry, the Republicans 1
05:14:33 24 and 6 in a normal good year for
05:14:37 25 Republicans, but there's only really

05:14:39 1 --- 7 is the only District --- the
05:14:43 2 only Republican District that's
05:14:44 3 especially vulnerable to being taken
05:14:48 4 over by Democrats. Even though there
05:14:49 5 is some probability of 17 and 8 in a
05:14:52 6 very Democratic year.

05:14:55 7 Q. So in a vote share of 53 or
05:14:58 8 54 percent, the Republicans would have
05:14:59 9 a proportional share of 12 seats ---

05:15:02 10 A. That's right.

05:15:03 11 Q. --- and Democrats would have 5?

05:15:06 12 A. Yeah. And I don't know that --
05:15:06 13 I'm not going to do that percentage
05:15:13 14 off the top of my head, but that would
05:15:13 15 be an unusually large winner's bonus.

05:15:15 16 Q. And that winner's bonus you
05:15:18 17 just described for Republicans in this
05:15:19 18 map, it is not the same winner's bonus
05:15:24 19 that exists for Democrats in the map?
05:15:27 20 Right?

21 A. That's right. That's right.
22 So ---.

23 Q. And ---?

24 A. Yes, I could --- it's a little
25 hard for ---.

05:15:28 1 Q. Well, Dr. Caughey, ---.

05:15:28 2 ATTORNEY ATTISANO:

05:15:31 3 Judge, I apologize for

05:15:31 4 interrupting.

05:15:33 5 BY ATTORNEY ATTISANO:

05:15:33 6 Q. I'm going to move you on to

05:15:35 7 Senate Democratic maps 1 and 2 --- and

05:15:39 8 we have about ten minutes left, so I'm

05:15:44 9 going to move them a little quicker

05:15:45 10 than before. Okay?

05:15:45 11 A. I will do my best.

05:15:46 12 Q. And page 17 of your report has

05:15:49 13 the Senate Democrats map 1.

05:15:53 14 A. Yeah.

05:15:53 15 Q. Can you take us through quickly

05:15:55 16 what we're looking at here that is

05:15:57 17 relevant to determining partisan

05:15:58 18 fairness?

05:16:00 19 A. So I think that the --- once

05:16:03 20 again, I think the key takeaway from

05:16:08 21 this, this map, is --- or this

05:16:11 22 distribution is that once again the

05:16:12 23 predicted Republican vote share is

05:16:14 24 51 percent and the predicted

05:16:17 25 Republican seat share is 54 percent.

05:16:21 1 So the Republicans are predicted to
05:16:23 2 win a majority of seats in the typical
05:16:26 3 election.

05:16:27 4 But notice that winner's bonus
05:16:31 5 is low. Right? And that's in part
05:16:32 6 because they have more seats that are
05:16:35 7 in play, right? They have 1, 7, 8 and
05:16:39 8 10 that could reasonably, even through
05:16:40 9 they're predicted to win them,
05:16:40 10 probably in any given election given
05:16:42 11 the right combination of candidates,
05:16:43 12 at least one of those might flip over
05:16:46 13 to the Democrats. So the Democrats
05:16:49 14 have a better chance of getting closer
05:16:49 15 to parity in your typical election.
05:16:56 16 And you can see the same thing
05:16:58 17 probably more clearly in the partisan
05:17:01 18 bias measure, which is only 1.8 in
05:17:06 19 this map. And that means that ---.

05:17:09 20 Q. And that's ---.

05:17:09 21 A. Sorry. This is ---.

05:17:10 22 Q. That's located in Table ---
05:17:12 23 Table 4 on the following page, page
05:17:14 24 18. Please go ahead, Dr. Caughey?

05:17:14 25 A. Right.

05:17:21 1 So the --- so in a 50/50
05:17:24 2 election Republicans would be expected
05:17:26 3 to win just about 52 percent of seats,
05:17:28 4 51.8 percent of seats on average,
05:17:29 5 right. So that's a --- that's a ---
05:17:32 6 that's still a little bit of
05:17:34 7 Republican advantage, because we still
05:17:37 8 expect Republicans to have a majority
05:17:39 9 of seats even when the parties tie.
05:17:40 10 But it's less of an advantage than in
05:17:45 11 any of the previous seats that we've
05:17:46 12 seen.

05:17:47 13 Q. And Dr. === and Dr. Caughey,
05:17:48 14 let's move forward to Senate Democrats
15 Map Number 2, which is located on page
16 20, the graph that I'm referring you
17 to. And can you tell us what we're
18 seeing there in that graph related to
19 bipartisan fairness?

05:18:08 20 A. Sure. So the top line results
05:18:08 21 are identical, which is to say that
05:18:11 22 with 51 percent of the vote
05:18:11 23 Republicans would be expected to win
05:18:12 24 54 percent of seats, which ties for
05:18:18 25 the lowest closest to fair of all the

05:18:19 1 maps that we have considered or that
05:18:22 2 the only known real difference in, you
05:18:24 3 know, --- and as you look at measures
05:18:26 4 of bipartisan bias, it's similar ---
05:18:27 5 the bipartisan bias in this map is
05:18:30 6 actually even a little bit smaller.
05:18:32 7 But the --- I think --- you know, ---
05:18:35 8 and there is a difference in the way
05:18:37 9 that --- there are differences in the
05:18:39 10 way that the districts are
05:18:40 11 distributed. So in here there are
05:18:41 12 actually two pretty Democratic
05:18:44 13 districts, but a bunch of only
05:18:44 14 moderately Republican --- Democratic
05:18:48 15 ones.
05:18:48 16 Q. And Dr. Caughey, ---
05:18:50 17 A. Go ahead.
05:18:51 18 Q. Dr. Caughey, sorry, in Table 5,
05:18:52 19 the bipartisan bias you said is
05:18:54 20 1.5 percent.
05:18:54 21 A. Right.
05:18:55 22 Q. Is that correct?
05:18:58 23 A. Yes.
05:18:58 24 Q. Okay.
05:18:59 25 And I interrupted you there.

05:19:02 1 So if you have anything else to
05:19:03 2 conclude on that map, please conclude
05:19:07 3 and then I'm going to move you on to
05:19:07 4 the next map?

05:19:07 5 A. Sure.

05:19:07 6 That's all I have to say about
05:19:08 7 this, other than to say that it's very
05:19:10 8 similar to the other Democratic map in
05:19:14 9 terms of its overall bias towards one
05:19:16 10 party or the other.

05:19:16 11 Q. Okay.

05:19:18 12 So, we're moving on now to
05:19:19 13 Congressman Reschenthaler's plan, and
05:19:21 14 that's map 2, as we discussed earlier.

05:19:21 15 A. Yeah.

05:19:26 16 Q. And it is on page 24 of your
05:19:28 17 report.

05:19:29 18 Can you take us through what
05:19:31 19 you're seeing on that chart?

05:19:32 20 A. Yeah, I think --- you know, so
05:19:33 21 this is, again, similar to the House
05:19:37 22 Republican's map, it has a very strong
05:19:41 23 Republican bias.

05:19:42 24 You can see that first and
05:19:46 25 foremost in the predicted vote in seat

05:19:48 1 shares, so 51 percent vote, 58 percent
05:19:50 2 seat share. One reason for that is
05:19:52 3 that even the districts that are
05:19:53 4 predicted to be Democratic, 12, 11 and
05:19:58 5 15, three --- they are three very
05:20:03 6 narrowly Democratic districts, but
05:20:03 7 only narrowly Republican one.

05:20:05 8 So if the you look down at
05:20:06 9 Table 8, which is on the same page
05:20:09 10 here, the bipartisan bias is 5.9.
05:20:13 11 That's in the same ballpark as the
05:20:15 12 Republican map that we examined
05:20:20 13 earlier.

05:20:20 14 So in terms of overall partisan
05:20:24 15 bias, this is very similar to
05:20:27 16 Republican map where the bias is about
05:20:27 17 twice as large as in the current
05:20:31 18 assessment.

05:20:31 19 Q. And if the dotted line at
05:20:33 20 50 percent, if we move that down a
05:20:37 21 little bit, does that represent a vote
05:20:39 22 increase for Democrats or Republicans?

05:20:41 23 A. If we move it down that
05:20:43 24 represents a vote increase for
05:20:45 25 Republicans. Or another way to think

05:20:50 1 about is if we move --- yeah. Yeah.

05:20:50 2 We can also think about it as moving

05:20:52 3 all the districts all up by three

05:20:54 4 percent. That might be --- that might

05:20:55 5 be an easier way of thinking about it.

05:20:56 6 But if we did that ---.

05:20:56 7 Q. What happens ---?

05:20:56 8 A. Yeah.

05:20:59 9 Q. Yeah, sorry, I interrupted you.

05:20:59 10 I think you were going to answer it.

05:21:02 11 What happens when we move all

05:21:04 12 the districts up by three percent to

05:21:07 13 the proportionality of Republican

05:21:14 14 versus Democrats seats with this map?

05:21:17 15 A. Yeah, so it's --- then you have

05:21:17 16 three seats, 15, 11 and 12 that are

05:21:20 17 likely to flip, or at least where our

05:21:22 18 point predictions would --- our best

05:21:22 19 guess about whether it would be

05:21:22 20 Republican or Democrat --- would flip

05:21:22 21 from Democrat to Republican.

05:21:26 22 So what that means is that, you

05:21:29 23 know, three of the Democrats --- what

05:21:36 24 is it, eight seats are highly

05:21:37 25 vulnerable to a Republican takeover.

05:21:38 1 Q. Is that same --- is that the
05:21:38 2 same in the other direction?
05:21:41 3 A. No, not at all. I mean,
05:21:42 4 there's a big asymmetry at that --- in
05:21:46 5 those districts where there are very
05:21:49 6 few Republican districts that are
05:21:50 7 vulnerable, realistically vulnerable
05:21:52 8 to the Democratic takeover. There are
05:21:54 9 just --- if you just look at Districts
05:21:56 10 8 through 5 --- or let's say, 9
05:21:58 11 through 5, all the way down, are all,
05:22:01 12 you know, safely Republican, but not
05:22:03 13 over --- not so overwhelming that
05:22:04 14 you're wasting very many votes.

05:22:15 15 Q. And Dr. Caughey, I'm going to
05:22:16 16 move you on now.

05:22:16 17 Did you review the report or
05:22:16 18 hear any of the testimony of Dr.
05:22:19 19 Barber?

05:22:19 20 A. So unfortunately I wasn't able
05:22:22 21 to see his testimony, but I did read
05:22:25 22 his report.

05:22:25 23 Q. And in his report he purported
05:22:28 24 there was a geographic bias in
05:22:35 25 Pennsylvania for Republicans, yet his

05:22:37 1 report claimed that the House GOP map,
05:22:39 2 HB-0246 actually had a --- leaned
05:22:39 3 Democrat, was favorable to Democratic
05:22:44 4 seats. How can this be? Can you ---?
05:22:46 5 A. Well, there's a little bit of a
05:22:46 6 bait and switch there. I think one
05:22:49 7 thing that is not transparent in that
05:22:50 8 report, and I don't think it's
05:22:52 9 mentioned anywhere, is --- so he uses
05:22:56 10 --- he has to come up what's his
05:23:01 11 prediction for how --- for the
05:23:03 12 Democratic or Republican vote
05:23:05 13 statewide, right? And so he does that
05:23:08 14 using an average of statewide races
05:23:13 15 over the last decade. Now those are a
05:23:13 16 bunch of races --- that includes a
05:23:16 17 bunch of races where Democrats are
05:23:16 18 incumbents and did very well, right?
05:23:18 19 So on average, based on my just
05:23:22 20 kind of --- he never states anywhere
05:23:23 21 in the report, as far as I can tell,
05:23:24 22 what his actual prediction is, like
05:23:28 23 for Democratic vote share. But based
05:23:32 24 on sort of my comparison between where
05:23:34 25 his districts lie and where I predict

05:23:37 1 them to lie, I think they're across
05:23:39 2 the board about three percentage
05:23:41 3 points more Democratic than I would
05:23:43 4 predict. So what that means is that
05:23:46 5 he's saying I'm predicting that
05:23:48 6 Democrats are going to win 54 percent
05:23:52 7 of the congressional vote on average
05:23:55 8 going forward, but they're going to
05:23:58 9 win --- well, he goes back and forth
05:24:01 10 between 8 and 9 seats. Right?

05:24:03 11 Q. So, Dr. --- so Dr. Caughey,
05:24:06 12 does it matter which elections an
05:24:09 13 expert selects to use in their
05:24:10 14 dataset? Does it matter with respect
05:24:12 15 to the ultimate outcome they get?

05:24:15 16 A. Yes, definitely. So it matters
05:24:18 17 for two reasons. It matters both in
05:24:18 18 what you predict the outcome to be,
05:24:18 19 obviously, like how many seats --- how
05:24:25 20 many seats you project a party to win.
05:24:28 21 Also it matters what you estimate the
05:24:33 22 bias to be.

05:24:33 23 Q. And ---.

05:24:35 24 A. Go ahead.

05:24:36 25 Q. And Dr. Caughey, if you could

05:24:39 1 tie that into how the Plan Score
05:24:42 2 accounts for this?
05:24:42 3 A. Sure. So Plan Score is a much
05:24:45 4 --- you know, instead of sort of
05:24:46 5 naively saying --- instead of doing
05:25:06 6 that ---.
05:25:06 7 Q. Dr. Caughey, I apologize. You
05:25:06 8 had cut out. Could you --- when you
05:25:06 9 move away from --- when you move back
05:25:11 10 from your computer ---. Dr. Caughey,
05:25:11 11 can you hear me now?
05:25:12 12 A. Yes, I can. I'm sorry.
05:25:13 13 Q. Okay.
05:25:14 14 Please try to stay close to
05:25:15 15 your computer.
05:25:17 16 A. Yes.
05:25:18 17 Q. So Dr. Caughey, I was asking
05:25:21 18 you how the selection of previous
05:25:23 19 election data affects the outcome and
05:25:26 20 what Plan Score does to control for
05:25:29 21 that factor?
05:25:32 22 A. So Plan Score estimates what
05:25:37 23 the relationship between Presidential
05:25:39 24 vote and Congressional vote is, both
05:25:39 25 nationally, but also taking into

05:25:39 1 account specific factors. And as we
05:25:39 2 saw Plan Score's estimates, it
05:25:51 3 estimates 51 percent. It's very ---
05:25:54 4 it's a very accurate --- it's very
05:25:56 5 close to the actual percentage earned
05:25:59 6 on average by Republicans over the
05:26:01 7 last ten years, as well as in the last
05:26:03 8 election.

05:26:04 9 So that's its projection as its
05:26:08 10 best guess going forward. But it also
05:26:10 11 takes into account the likely
05:26:13 12 variability around that, right, that
05:26:14 13 in some years Democrats will do better
05:26:17 14 on average and in some years
05:26:18 15 Republicans will do better on average.

05:26:22 16 And so it's taking into account
05:26:23 17 that variation, but I think the one
05:26:27 18 fundamental flaw in Barber's analysis
05:26:35 19 is that he's pegging the --- he's
05:26:35 20 predicting the Democratic vote share
05:26:40 21 to be around 54 percent, which is
05:26:42 22 higher than it has been in almost
05:26:44 23 every election over the last decade.
05:26:47 24 So it's not a realistic prediction.

05:26:47 25 But he also --- even if it

05:26:47 1 were realistic to say it was 54
05:26:54 2 percent, winning only eight seats or
05:26:57 3 between 8 and 9 seats would not be the
05:27:00 4 normal winner's bonus that we would
05:27:04 5 expect. Right? We saw that
05:27:05 6 Republicans would be expected to win
05:27:07 7 58 percent of seats with 51 percent of
05:27:07 8 the vote. So with 54 percent of the
05:27:10 9 --- you know. So you can see there's
05:27:12 10 a bit of a kind of the eight ball
05:27:16 11 there, I think, in that report.

05:27:17 12 Q. Thank you, Dr. Caughey. And
05:27:17 13 I'm going to wrap up right here for
05:27:20 14 you.

05:27:21 15 All the conclusions you gave
05:27:22 16 today about partisan fairness, have
05:27:25 17 you given those to a reasonable degree
05:27:27 18 of professional certainty in your
05:27:29 19 field?

05:27:32 20 A. Can you say that again?

05:27:33 21 Q. Have you given your conclusions
05:27:36 22 to within a reasonable degree of
05:27:37 23 professional certainty?

05:27:38 24 A. Yes.

05:27:40 25 ATTORNEY ATTISANO:

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Thank you.

JUDGE McCULLOUGH:

Okay. Thank you. Now,
we're going to start with Cross
Examination.

We'll begin with
attorney --- or you're not Attorney
Carter. The attorney for Petitioner
Carter.

ATTORNEY POSIMATO:

Good afternoon, Your
Honor.

JUDGE MCCULLOUGH:

Good afternoon.

ATTORNEY POSIMATO:

Joe Posimato on behalf
of the Carter Petitioners.

CROSS EXAMINATION

BY ATTORNEY POSIMATO:

Q. Good afternoon, Dr. Caughey.

A. Hi.

Q. My name is Joe Posimato. I'm
Counsel on behalf of the Carter

05:28:09 1 Petitioners. I just have a few
05:28:09 2 questions for you. That said, I want
05:28:10 3 to say I'm sorry about the health
05:28:11 4 crisis you're dealing with, and I
05:28:13 5 thank you for being here.

05:28:14 6 You produced two reports in
05:28:16 7 this case?

05:28:16 8 Correct?

05:28:19 9 A. I produced two reports, meaning
05:28:28 10 two different --- I actually don't how
05:28:30 11 --- I don't actually know the answer
05:28:31 12 to that, because ---. Do you mean for
05:28:33 13 --- I produced a report on the State
05:28:33 14 Senate in a separate and then also on
05:28:40 15 the State House. Is that what you're
05:28:41 16 referring to?

05:28:41 17 Q. No. I'm just referring to the
05:28:42 18 fact that you filed the report on the
05:28:44 19 24th that was provided on Monday of
05:28:47 20 this week and then there was another
05:28:48 21 one filed on the 26th.

05:28:48 22 Correct?

05:28:50 23 A. Yes, I'm sorry. I believe ---
05:28:54 24 I believe you're right, but I actually
05:28:58 25 don't honestly remember.

05:28:58 1 Q. Sure. And in those reports you
05:28:59 2 only analyzed a few of the plan
05:29:01 3 proposals that are before the Court
05:29:03 4 today?

05:29:06 5 A. I think so. To be honest, I
05:29:09 6 don't even --- I'm not even sure the
05:29:13 7 universe of plans that have been
05:29:13 8 submitted, but that's correct.

05:29:15 9 Q. And you didn't analyze the
05:29:19 10 Carter Petitioner's proposal produced
05:29:20 11 by Dr. Rodden?

05:29:22 12 A. I don't think so. At least I
05:29:26 13 don't know it by that name, Carter,
05:29:32 14 sorry.

05:29:33 15 Q. And you didn't analyze a report
05:29:35 16 produced by Dr. Rodden? You don't
05:29:39 17 recall doing that?

05:29:39 18 A. No, I did not.

05:29:40 19 Q. How did you decide which
05:29:42 20 proposals to include in your analysis?

05:29:46 21 A. I was given --- I was provided
05:29:51 22 with saved files and I did the
05:29:57 23 analysis of all the ones that I was
05:30:01 24 provided. Let me --- let me just take
05:30:07 25 a moment to think about --- let me

05:30:11 1 just check on one that I --- make sure
05:30:15 2 I'm correct on that, if you don't
05:30:18 3 mind. I know you're under the clock.
05:30:20 4 Q. Yeah. If it won't take you
05:30:22 5 that long, I'll give you the time.
05:30:24 6 A. Okay. Thank you.
05:30:34 7 I did --- I did one --- no,
05:30:37 8 sorry, I did one more analysis very
05:30:40 9 quickly. I didn't have time --- I
05:30:44 10 received many, many drafts and it
05:30:46 11 takes a while to like work them up.
05:30:47 12 So there is one that I didn't include
05:30:49 13 in the report, is as I understand it,
05:30:51 14 which is submitted by someone named
05:30:53 15 Ollie. And I did --- I think I
05:30:59 16 submitted its Plan Score to briefly
05:31:01 17 look at but didn't incorporate it into
05:31:06 18 the report at the time.
05:31:07 19 Q. You claim in your reports that
05:31:11 20 among the plans you did analyze, the
05:31:12 21 Senate Democratic --- the two
05:31:14 22 proposals of the Democrats were most
05:31:20 23 fair?
05:31:20 24 A. That's right. Of the ones that
05:31:25 25 I analyzed those were the most fair,

05:31:26 1 correct.

05:31:26 2 Q. Dr. Caughey, you have your

05:31:28 3 second report before you ---

05:31:30 4 A. Correct.

05:31:31 5 Q. --- that was filed on the 26th?

05:31:32 6 Yeah. Can you please turn to page 21

05:31:34 7 of that report?

05:31:38 8 A. Yes.

05:31:38 9 Q. And on this page in Table 5 you

05:31:40 10 analyze the partisan fairness of

05:31:42 11 Senate Democratic Plan 2.

05:31:45 12 Correct?

05:31:46 13 A. Correct.

05:31:46 14 Q. And you conclude in this table

05:31:50 15 that the Senate Democratic Plan 2 has

05:31:52 16 a .5 percent mean-median deviation.

05:32:02 17 Correct?

05:32:02 18 A. That's right.

05:32:03 19 Q. And further down the page in

05:32:05 20 the last paragraph, in fact, you

05:32:06 21 describe this plan, the Senate

05:32:08 22 Democratic Plan 2, as being unusually

05:32:10 23 fair.

05:32:11 24 Correct?

05:32:14 25 A. That's --- well, I assume ---

05:32:19 1 yes, taking into account all the
05:32:22 2 metrics.
05:32:23 3 Q. Sure. And could you see the
05:32:30 4 exhibit we have displayed?
05:32:33 5 A. I'm sorry. I lost you for a
05:32:36 6 second there. Can you repeat that?
05:32:37 7 Q. I asked whether you could see
05:32:38 8 the exhibit we're displaying on our
05:32:38 9 side.
05:32:42 10 A. Repeat that one more time. I
05:32:44 11 could hear the second half. Go ahead.
05:32:46 12 Q. I asked whether you could see
05:32:47 13 the exhibit we're displaying on our
05:32:49 14 side.
05:32:50 15 A. I can.
05:32:50 16 Q. Okay.
05:32:53 17 Dr. Caughey, I'd like to now
05:32:58 18 show you part of Dr. Rodden's report
05:32:59 19 in this case, in fact, a table from
05:33:01 20 his second report, Table 6 on page 11.
05:33:05 21 We're going to blow it up for you.
05:33:09 22 A. Sure.
05:33:09 23 Q. And in Table 6 you see here
05:33:10 24 that Dr. Rodden calculated the
05:33:15 25 mean-median deviation of the proposed

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plans ---
A. Yup.
Q. --- in this case. And in this table Dr. Rodden presented the scores in decimals.
Correct?
A. I assume that's what that means, yes.
Q. And forgive my rudimentary math here, but you --- it's possible to convert decimals into percentages by just multiplying by a hundred, right, moving the decimal place ---
A. Yes.
Q. --- a couple of zeros? Okay.
And when you do that conversion, you can see that the Carter plan here analyzed is --- has a .5 percent mean-median deviation?
A. I do see that.
Q. And that number is equal to the mean-median deviation of the Senate Democrat Plan 2 which you had called unusually fair?
A. The only thing I would --- the

05:34:08 1 number is equal, but its meaning might
05:34:12 2 be slightly different because I assume
05:34:13 3 that --- I'm not sure, because the
05:34:18 4 main-median depends on what exactly
05:34:22 5 the results you're using are, what the
05:34:22 6 two results you're using are. And
05:34:26 7 that is --- you know, it's probably
05:34:27 8 based on slightly different data, but
05:34:29 9 that's still a very small difference,
05:34:33 10 yes. It absolutely is.

05:34:33 11 Q. Right. A perfect mean-median
05:34:35 12 deviation score would be zero.

05:34:36 13 Correct?

05:34:37 14 A. Correct.

05:34:37 15 Q. And a .5 percent deviation is
05:34:39 16 very close to zero?

05:34:40 17 A. Correct.

05:34:41 18 Q. And that's --- that very close
05:34:43 19 to zero score is the same score that
05:34:52 20 the Senate Democratic Plan 2 has in
05:34:52 21 your report?

05:34:53 22 A. Yes, the score is the same ---
05:34:53 23 the data might be different but I'm
05:34:55 24 sure they're very similar.

05:34:56 25 Q. Sure.

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ATTORNEY POSIMATO:

Okay. Thank you, Dr. Caughey. No further questions.

JUDGE McCULLOUGH:

Okay. Thank you. Counsel. All right. Attorneys for Petitioner Gressman.

CROSS EXAMINATION

BY ATTORNEY HARRISON:

Q. Hi, Dr. Caughey. My name is Lindsay Harrison, and I represent the Gressman Math Science Petitioners in the case. And I also just wanted to say I hope everyone in your family is doing okay and that you guys get through this. Thank you for being here.

A. Thank you.

Q. Plan Score is a website that existed before this litigation was filed six weeks ago.

Correct?

A. Correct.

05:35:46 1 Q. Okay.

05:35:47 2 And as far as you know, it was
05:35:49 3 not created by any of the experts who
05:35:51 4 are testifying here in this
05:35:52 5 litigation.

05:35:53 6 Correct?

05:35:56 7 A. I don't actually know who all
05:35:57 8 the experts are, but as far as I know,
05:36:00 9 that is correct.

05:36:00 10 Q. Okay.

05:36:01 11 It was not created by Dr.
05:36:06 12 DeFord, Gerald DeFord?

05:36:08 13 A. No.

05:36:08 14 Q. Okay.

05:36:09 15 And as far as you know, it
05:36:11 16 wasn't created by any of the parties
05:36:13 17 participating in this litigation
05:36:16 18 either?

05:36:16 19 Correct?

05:36:17 20 A. Correct.

05:36:17 21 Q. And I think you said it's
05:36:19 22 available to any member of the public
05:36:22 23 who might want to check a map's
05:36:24 24 partisan fairness.

05:36:25 25 Is that right?

05:36:26 1 A. Yes.

05:36:27 2 Q. All they need is the shape
05:36:29 3 file, they would upload it and then
05:36:31 4 they would be able to see what Plan
05:36:33 5 Score estimates its partisan fairness
05:36:36 6 to be.

05:36:36 7 Correct?

05:36:37 8 A. That's correct.

05:36:38 9 Q. Okay.

05:36:42 10 And I think we've established
05:36:44 11 you didn't review all of the reports
05:36:46 12 --- all the maps that are submitted in
05:36:48 13 the record in this case.

05:36:49 14 Is that right?

05:36:50 15 A. I didn't evaluate them ---
05:36:52 16 that's right. I didn't do the
05:36:54 17 evaluation that I described. Yes, I
05:36:57 18 didn't do a formal evaluation of all
05:36:59 19 of them.

05:37:02 20 Q. Okay.

05:37:02 21 And were you aware that there
05:37:04 22 was a map submitted by a group of
05:37:05 23 Pennsylvania math and science
05:37:08 24 professors in the case?

05:37:09 25 A. I was --- I was --- I did learn

05:37:12 1 about that at some point in the last
05:37:14 2 few days, and I read the brief that
05:37:16 3 accompanied that.

05:37:17 4 Q. Okay.

05:37:19 5 Did you ever run that map
05:37:20 6 through Plan Score, even if it didn't
05:37:22 7 appear in your reports?

05:37:24 8 A. I did not. At least I don't
05:37:29 9 believe I did. The --- I don't think
05:37:33 10 I ever received the shape files for
05:37:36 11 it.

05:37:36 12 Q. Okay.

05:37:36 13 Did you ever review the expert
05:37:40 14 report of Dr. DeFord, who is the
05:37:42 15 expert for the Gressman Math and
05:37:46 16 Scientist Petitioners? He prepared
05:37:48 17 two expert reports in the case.

05:37:48 18 A. I had read the an expert report
05:37:54 19 that discussed that map, which I
05:37:55 20 assume it could have been him, but I
05:37:57 21 actually am not a 100 percent
05:37:59 22 positive.

05:37:59 23 Q. Okay.

05:38:02 24 A. But I can look that up if it's
05:38:04 25 important.

05:38:04 1 Q. No, that's okay.

05:38:08 2 I --- let me just represent to
05:38:10 3 you that Dr. DeFord testified and put
05:38:12 4 in his report that he ran all the maps
05:38:14 5 that were submitted to the Court
05:38:16 6 through Plan Score and then attached
05:38:19 7 the results as Appendix D to his
05:38:28 8 expert report.

05:38:28 9 A. Okay.

05:38:28 10 Q. And so what I would like to do
05:38:30 11 now is --- we'll see if I'm able to
05:38:32 12 use it, show you the first part of
05:38:34 13 Appendix D to his expert report, which
05:38:37 14 is the Gressman Math and Science
05:38:40 15 Petitioners Plan Score report.

05:38:43 16 A. Okay.

05:38:51 17 Q. Okay.
05:38:53 18 Does this look to you like a
05:38:56 19 Plan Score report that you would
05:38:57 20 receive when using the website?

05:39:00 21 A. Yes, it does.

05:39:01 22 Q. Okay.

05:39:05 23 And just for completeness,
05:39:06 24 there is a second page of it. That
05:39:09 25 also looks to you ---

05:39:10 1 A. Yes

05:39:11 2 Q. --- like the Plan Score reports
05:39:16 3 that you reviewed as well.

05:39:18 4 A. Yes.

05:39:19 5 Q. Okay.

05:39:22 6 So now what I want to do is go
05:39:23 7 to page 22 of your rebuttal report,
05:39:34 8 and this is your comparison of maps.

05:39:36 9 Do you see at that?

05:39:38 10 A. Yes.

05:39:38 11 Q. Okay.

05:39:40 12 And what I would like to do is
05:39:42 13 walk through with you if you had
05:39:44 14 evaluated the Gressman Math and
05:39:50 15 Science Map, how it would compare to
05:39:51 16 the other maps that you compared on
05:39:54 17 this chart. So I've written GMS next
05:40:02 18 to where you have current map,
05:40:04 19 Governor, Republican, Democratic 1 and
05:40:08 20 Democratic 2.

05:40:09 21 Okay?

05:40:10 22 A. Yup. Uh-huh (yes).

05:40:11 23 Q. So if you had run the Gressman
05:40:17 24 Math Science map through Plan Score
05:40:20 25 and gotten the report that Dr. DeFord

05:40:24 1 got, the partisan bias score for the
05:40:36 2 GSM map would be .9 percent. That's
05:40:47 3 correct, right?
05:40:48 4 A. That's what it looks like, yes.
05:40:49 5 Q. And that's lower than all of
05:40:50 6 the maps that you reported on.
05:40:51 7 Correct?
05:40:51 8 A. Correct.
05:40:52 9 Q. And that means that the
05:40:55 10 partisan bias of the Gressman Math and
05:40:55 11 Science Map is less than the partisan
05:40:55 12 bias of all of those other maps.
05:40:58 13 Correct?
05:40:58 14 A. Correct.
05:40:59 15 Q. Okay.
05:41:16 16 And the efficiency gap of the
05:41:17 17 Gressman Math and Science Map in Plan
05:41:20 18 Score is 1.4 percent.
05:41:24 19 Correct? That's this number
05:41:25 20 right here?
05:41:26 21 A. Correct.
05:41:29 22 Q. And that number is also less
05:41:32 23 than all of the maps that you
05:41:34 24 evaluated in Plan Score.
05:41:37 25 Right?

05:41:37 1 A. That's right.

05:41:38 2 Q. And that means that as measured
05:41:40 3 in terms of efficiency gap, the
05:41:42 4 Gressman Math and Science Map is also
05:41:46 5 less partisan biased, more fair and
05:41:48 6 equal to all of the other voters than
05:41:51 7 the other maps that you did evaluate.

05:41:52 8 Correct?

05:41:53 9 A. According to that metric, yes.

05:41:55 10 Q. And according to Plan Score,
05:42:15 11 the mean-median difference for the
05:42:20 12 Gressman Math and Science Map is .4
05:42:28 13 percent R, which means that, as
05:42:28 14 measured by that metric, the Gressman
05:42:30 15 Math and Science Map is also less
05:42:32 16 biased than all of the other maps that
05:42:32 17 you evaluated.

05:42:35 18 Correct?

05:42:35 19 A. That's correct. And also I
05:42:37 20 just want to say that I'm assuming
05:42:44 21 that there are --- well, anyway, I
05:42:45 22 don't know exactly what --- whoever
05:42:46 23 uploaded these, like there is one
05:42:49 24 switch you need to toggle and like you
05:42:51 25 need to choose whether to base your

05:42:53 1 results on the 2020 --- or the 2020
05:42:59 2 average --- 2012 to 2020 average. The
05:43:01 3 default is 2020, which is what I used,
05:43:01 4 so I assume they did the same thing
05:43:03 5 here, so this is the apples to apples.

05:43:06 6 Q. Okay.

05:43:06 7 And I will represent to you
05:43:07 8 that Dr. DeFord actually attached all
05:43:11 9 of the Plan Score reports to his
05:43:13 10 report, not just this one, so that it
05:43:16 11 can be seen as apples to apples.

05:43:19 12 So let's look at the last one,
05:43:21 13 which is declination. And so
05:43:30 14 declination of the Gressman Math
05:43:36 15 Science Map is .03, which again is
05:43:38 16 lower than all of the other maps you
05:43:38 17 evaluated.

05:43:57 18 Correct?

05:43:57 19 A. Correct.

05:43:57 20 Q. Okay.

05:43:57 21 And so on each of the four
05:44:02 22 metrics that Plan Score uses to
05:44:02 23 evaluate partisan bias, you would
05:44:04 24 agree that the Gressman Math Science
05:44:07 25 Map achieves better less biased scores

05:44:08 1 than all of the maps you evaluated.

05:44:08 2 Correct?

05:44:10 3 A. That is correct. And can I
05:44:12 4 just add one more thing, which is I
05:44:13 5 realize that I did not actually review
05:44:16 6 this report that I said I thought I
05:44:18 7 had reviewed. That was a different
05:44:20 8 report for the State Senate Plan.

05:44:21 9 Q. Thank you.

05:44:23 10 ATTORNEY HARRISON:

05:44:24 11 Thank you. I have
05:44:24 12 nothing further.

05:44:26 13 JUDGE McCULLOUGH:

05:44:26 14 Thank you, Counsel. Now
05:44:27 15 we'll hear from Governor Wolf and not
05:44:38 16 Secretary Chapman. Okay. Attorney
05:44:44 17 Wiygul.

05:44:46 18 ATTORNEY WIYGUL:

05:44:53 19 Thank you, Your Honor.

05:44:53 20 ---

05:44:53 21 CROSS EXAMINATION

05:44:53 22 --

05:44:53 23 BY ATTORNEY WIYGUL:

05:44:55 24 Q. Good afternoon, Professor -- is
05:44:58 25 it Caughey.

05:45:00 1 A. Caughey (corrects

05:45:00 2 pronunciation).

05:45:00 3 Q. Okay.

05:45:00 4 Sorry about that. And let me
05:45:02 5 be the next to express my appreciation
05:45:05 6 for you being here despite the
05:45:07 7 circumstances. Thank you?

05:45:08 8 I just want to confirm what I
05:45:11 9 thought I heard you say during your
05:45:13 10 Direct Examination, which was that ---
05:45:15 11 and I represent Governor Wolf, that
05:45:18 12 the Governor's plan performed very
05:45:18 13 similarly on partisan fairness metrics
05:45:24 14 to the current plan, the plan adopted
05:45:26 15 by the Pennsylvania Supreme Court in
05:45:28 16 2018.

05:45:28 17 Is that correct?

05:45:34 18 A. That's correct.

05:45:34 19 Q. I'm sorry, it is correct?

05:45:36 20 A. Yes, it is correct.

05:45:36 21 Q. Thank you.

05:45:37 22 I'd like to ask you a few
05:45:39 23 questions about Plan Score, which has
05:45:41 24 already come up a number of times
05:45:42 25 today. Are you aware that Plan Score

05:45:45 1 is based on an election index that
05:45:48 2 blends a collection of elections into
05:45:51 3 an average and then adds random noise?
05:45:59 4 A. So it's not --- it actually
05:46:00 5 does depend on which --- there are two
05:46:02 6 models that one can choose from. It
05:46:07 7 is true that it uses data from
05:46:10 8 multiple elections, at least one of
05:46:15 9 its incarnations to provide the
05:46:15 10 baseline. So in that sense, yes.
05:46:21 11 Q. You agree it's a blended
05:46:24 12 average of the election results?
05:46:26 13 A. Well, I just wouldn't call it a
05:46:29 14 blended average. I would say it uses
05:46:34 15 information from multiple elections to
05:46:36 16 make predictions.
05:46:37 17 Q. It doesn't then look at those
05:46:39 18 elections individually, right? It ---
05:46:40 19 whether you want to call it a blended
05:46:42 20 average, it aggregates that in some
05:46:42 21 way.
05:46:48 22 Correct?
05:46:48 23 A. Yes. It averages them together
05:46:50 24 and then it uses the information about
05:46:52 25 the distribution that it learns. It

05:46:53 1 learns also about the spread and then
05:46:59 2 uses that in its simulations to create
05:47:01 3 that variation.

05:47:01 4 Q. Okay.

05:47:01 5 Do you know which elections
05:47:01 6 were used in Plan Score for
05:47:09 7 Pennsylvania?

05:47:09 8 A. They are the Presidential
05:47:09 9 election results. Again, I can
05:47:19 10 confirm, but the baseline is the 2020
05:47:20 11 results.

05:47:20 12 Q. It's only the Presidential year
05:47:26 13 election results?

05:47:26 14 A. So what it's doing, right, is
05:47:28 15 it's using the Presidential election
05:47:30 16 results plus incumbency to predict
05:47:35 17 Congressional election results in all
05:47:38 18 the years between 2012 and 2020. So
05:47:40 19 it's using both the Congressional
05:47:43 20 election results and the Presidential
05:47:48 21 election results as sort of like a
05:47:48 22 helper to make those predictions, if
05:47:48 23 that makes sense. And then it's also
05:47:48 24 of course using --- that's what ---
05:47:51 25 that's how it projects it forward,

05:47:53 1 right, using the relationship it
05:47:56 2 learns between the Presidential
05:47:56 3 Election results and Congressional
05:48:01 4 ones to project those forward, if that
05:48:03 5 makes sense.

05:48:03 6 Q. I think I understand, but just
05:48:05 7 so we're on the same page, in terms of
05:48:05 8 the actual historical election results
05:48:05 9 that Plan Score is using, it's the
05:48:12 10 Presidential and Congressional results
05:48:15 11 from 2012 to 2020?

05:48:17 12 A. Yes.

05:48:17 13 Q. So no other elections besides
05:48:19 14 those.

05:48:21 15 Correct?

05:48:22 16 A. That's right. As far as I
05:48:23 17 know, no --- yes, that's right.

05:48:25 18 Q. Would you agree that election
05:48:27 19 data includes complicated statistical
05:48:30 20 work that transforms precinct level
05:48:34 21 results into common geographical
05:48:36 22 units?

05:48:39 23 A. Involves? What do you mean by
05:48:42 24 ---? In order to take --- you have to
05:48:43 25 take --- if what you're saying is in

05:48:46 1 order to make these projections, you
05:48:46 2 need to take precinct-level data and
05:48:46 3 match them to the Congressional
05:48:46 4 districts using the shape files, the
05:48:55 5 answer is yes.

05:48:55 6 Q. Okay.

05:48:57 7 And is it fair to describe that
05:49:00 8 as, you know, fairly complicated
05:49:00 9 statistical work?

05:49:01 10 A. You know, I actually wouldn't
05:49:03 11 call that statistics. I would call
05:49:05 12 that more just, you know, data
05:49:11 13 analysis or data management, but I
05:49:11 14 mean, they're all pretty similar
05:49:14 15 things, so yes.

05:49:14 16 Q. Did you have an opportunity to
05:49:14 17 check and vet the election data that
05:49:14 18 Plan Score relied on or do you have
05:49:18 19 any idea of how it was collected and
05:49:21 20 compiled?

05:49:22 21 A. I do. So it was collected on
05:49:26 22 --- I don't have --- I don't have the
05:49:31 23 dataset --- I'm sorry. What I mean to
05:49:32 24 say is they --- the ultimate data is
05:49:38 25 based on an open source website run by

05:49:42 1 the Voting and Election Science Team
05:49:45 2 at the University of Florida, which is
05:49:51 3 one of state universities. So that's
05:49:51 4 the ultimate precinct-level data. And
05:49:54 5 so I have looked at that
05:49:56 6 precinct-level data, if that makes ---
05:49:58 7 if that's what you mean?

05:50:00 8 Q. Did you vet that data? Did you
05:50:06 9 see that data?

05:50:07 10 A. No. I mean, did I go through
05:50:08 11 and make sure that that data was
05:50:08 12 correct in every instance, like every
05:50:08 13 piece ---?

05:50:08 14 Q. Right.

05:50:13 15 A. I did not,

05:50:13 16 Q. Correct.

05:50:14 17 A. I relied on --- I relied on
05:50:16 18 that team to have done that.

05:50:16 19 ATTORNEY WIYGUL:

05:50:18 20 Can we pull up Table 7
05:50:40 21 of the Professor's report? And I
05:50:40 22 apologize I think I just surprised my
05:50:40 23 assistant with a request so if you
05:50:40 24 could bear with us?

05:50:40 25 BY ATTORNEY WIYGUL:

05:50:47 1 Q. Can you see that or do you
05:50:49 2 otherwise have access to your report?

05:50:53 3 A. I do.

05:51:09 4 Q. I'm not sure that's it. But in
05:51:12 5 Table 7 you report --- across four
05:51:14 6 kinds of partisan scores.

05:51:15 7 Correct?

05:51:17 8 A. Did you say Table 7?

05:51:18 9 Q. Yes.

05:51:19 10 A. Yes, I did.

05:51:20 11 Q. Okay.

05:51:21 12 And are you testifying that in
05:51:23 13 your expert opinion it's good practice
05:51:24 14 to take an average of metrics that are
05:51:27 15 in different units?

05:51:30 16 A. So these are all in the same
05:51:31 17 units. They're all in percentiles of
05:51:36 18 severity relative to the distribution.
05:51:39 19 So in that sense I think it is
05:51:41 20 reasonable to take an average as a
05:51:44 21 summary of --- as a summary across
05:51:49 22 these different metrics. It's as if
05:51:56 23 you are weighting --- you took them
05:51:56 24 equally. So yeah, I actually think
05:51:59 25 that it is reasonable in this case.

05:51:59 1 Q. Would you agree with me that
05:52:00 2 partisan bias is measured in seat
05:52:03 3 share units?

05:52:04 4 A. Partisan bias is measured in
05:52:06 5 seat share units, but this is not the
05:52:09 6 average of the partisan bias. This is
05:52:09 7 average of the extremity relative ---
05:52:09 8 this is the average of the ---
05:52:14 9 basically where it falls in the
05:52:15 10 distribution. So it is true that
05:52:19 11 partisan bias is measured as seat
05:52:21 12 shares, yeah.

05:52:22 13 Q. So just so I understand, you're
05:52:23 14 taking different unit measurements,
05:52:25 15 you're converting them into a
05:52:27 16 distribution share and then averaging
05:52:31 17 that?

05:52:31 18 A. That's right. So it would be
05:52:34 19 like --- you know, it would be like
05:52:39 20 taking --- you know, you have two
05:52:40 21 tests where, you know, there are
05:52:42 22 different numbers of questions and
05:52:45 23 different content and you got 91
05:52:47 24 percent on one and a 95 percent on the
05:52:47 25 other. You average those together to

05:52:49 1 be 92.5.

05:52:50 2 Q. All right.

05:52:51 3 You're aware that other experts

05:52:52 4 have collected and compiled and vetted

05:52:55 5 election data and have computed

05:52:57 6 essentially the same scores,

05:53:00 7 efficiency gap, mean-medium ---

05:53:00 8 mean-median and partisan bias on each

05:53:04 9 election individually before reporting

05:53:06 10 on aggregate performance?

05:53:11 11 A. Am I aware that they have done

05:53:13 12 that?

05:53:13 13 Q. Correct.

05:53:19 14 A. I assume --- I guess --- I

05:53:19 15 guess I am.

05:53:20 16 Q. Well, I just want to know do

05:53:24 17 you know that that is, in fact, what

05:53:26 18 happened and happened with at least

05:53:27 19 one or two of the experts in this

05:53:29 20 case?

05:53:34 21 A. I would believe you if you told

05:53:36 22 me that. Let's put it that way.

05:53:37 23 Q. Fair enough. Fair enough.

05:53:39 24 Very good answer.

05:53:39 25 Are you testifying that in your

05:53:41 1 professional opinion a push-button
05:53:43 2 website with the data sourcing that
05:53:46 3 you haven't vetted at least in its
05:53:48 4 entirety should be considered more
05:53:51 5 reliable than having leading experts
05:53:56 6 using vetted election data to report
05:54:06 7 on the partisan metrics in more detail
05:54:07 8 one election at a time?

05:54:07 9 A. No, I'm not saying that. But
05:54:08 10 what I'm saying is that --- first of
05:54:08 11 all, I would say that the experts that
05:54:11 12 --- the reports that I've seen and the
05:54:12 13 testimony that I saw from other
05:54:14 14 experts, especially from who I believe
05:54:19 15 the expert for you is, Moon Duchin,
16 was excellent, and I have no reason to
17 doubt anything that she said.

18 And I would say that she did a
19 different set of analyses than I did.
20 I wouldn't quite call this a
21 push-button website because in order
05:54:42 22 to --- one of the virtues of Plan
05:54:42 23 Scores is it's meant to democratize
05:54:42 24 these types of techniques and not keep
05:54:49 25 them just so that experts or map

05:54:50 1 drawers can use them, and do so in a
05:54:53 2 way that academically rigorous. So I
05:54:53 3 would say that that's a virtue of Plan
05:54:53 4 Score.

05:54:59 5 And I don't think there's
05:55:00 6 anything wrong with taking advantage
05:55:02 7 of that process. In the same way that
05:55:04 8 there's no problem with using
05:55:04 9 open-source software that has been
05:55:06 10 produced by other people to do one's
05:55:08 11 own work. That all being said I ---
05:55:11 12 I'll just say one more thing, which is
05:55:13 13 it is always better to vet one's data,
05:55:18 14 but there's --- its is impossible to
05:55:20 15 know --- you have to at some point in
05:55:21 16 academia always trust someone else
05:55:23 17 that they have done their job
05:55:25 18 correctly. And in this case I'm
05:55:26 19 choosing --- with regard to the data,
05:55:28 20 I'm choosing to trust the academics in
05:55:28 21 charge of the Voting Science Team and
05:55:28 22 also those that put together Plan
05:55:28 23 Score's algorithm and so forth did a
05:55:41 24 good job. But if you could show me
05:55:42 25 otherwise, that would be, you know,

05:55:44 1 important to know.

05:55:45 2 ATTORNEY WIYGUL:

05:55:45 3 Thank you very much for
05:55:47 4 your time and for your responsive and
05:56:05 5 thoughtful answers, Doctor.

05:56:05 6 JUDGE McCULLOUGH;

05:56:05 7 Thank you, Counsel.

05:56:06 8 Now we will move to
05:56:07 9 attorneys for the House Republican
05:56:07 10 Legislature.

05:56:07 11 ---

05:56:07 12 CROSS EXAMINATION

05:56:07 13 ---

05:56:17 14 BY ATTORNEY TUCKER:

05:56:17 15 Q. Good afternoon, Dr. Caughey.

05:56:21 16 A. Hello.

05:56:21 17 Q. My name is Rob Tucker. I'm
05:56:21 18 Counsel for the House Republican
05:56:23 19 Intervenors, and thank you for your
05:56:24 20 time this afternoon.

05:56:27 21 Just to clarify, so you didn't
05:56:29 22 personally calculate the partisan
05:56:31 23 fairness scores in your report.

05:56:38 24 Correct?

05:56:38 25 A. No, I relied on the scores

05:56:38 1 produced by the Plan Score website,
05:56:40 2 correct.

05:56:40 3 Q. You loaded shape files in the
05:56:43 4 Plan Score website and it gave you the
05:56:45 5 scores?

05:56:45 6 A. That's right. So I --- that's
05:56:51 7 correct.

05:56:51 8 Q. And I think you talked about
05:56:52 9 just earlier with Counsel for the
05:56:54 10 Governor that in Plan Score you can
05:56:57 11 score the maps using an index of
05:56:59 12 elections.

05:57:00 13 Is that right?

05:57:02 14 A. No, I would not call them --- I
05:57:04 15 would not say an index. What it does
05:57:10 16 is it uses information on Presidential
05:57:13 17 vote, primarily, to project or to
05:57:18 18 predict what Congressional election
05:57:21 19 votes are likely to be like on average
05:57:23 20 and also how much they are likely to
05:57:26 21 vary across elections. So I would not
05:57:29 22 refer to that as an index, but rather
05:57:31 23 as a set of simulations or predictions
05:57:34 24 based on a model of Congressional
05:57:37 25 election results.

05:57:37 1 Q. But it looks at multiple
05:57:39 2 elections and multiple years.
05:57:41 3 Correct?
05:57:42 4 A. Correct.
05:57:42 5 Q. And I'm assuming Plan Score
05:57:44 6 wouldn't do that if it didn't believe
05:57:46 7 that to be a reliable methodology.
05:57:48 8 Right?
05:57:50 9 A. Yes. I think it does so
05:57:52 10 because it believes that it's
05:57:53 11 important to take into account swings,
05:57:57 12 in particular differences across
05:58:00 13 states, differences across election
05:58:02 14 years.
05:58:02 15 Q. But as I understand it, the
05:58:04 16 scores that you calculated were only
05:58:06 17 based on 2020 elections, not multiple
05:58:09 18 years of elections.
05:58:11 19 Is that right?
05:58:11 20 A. No, that's not quite right. So
05:58:15 21 there --- the Plan Score --- as the
05:58:20 22 2020 election have come online, they
05:58:24 23 have the created a new option which is
05:58:27 24 to use the 2020 results as a sort of
05:58:30 25 expected baseline and the baseline for

05:58:37 1 the model, and then add in the yearly
05:58:42 2 --- the sort of year-specific swings
05:58:45 3 that it has estimated over the
05:58:47 4 previous decade. So if it has
05:58:49 5 estimated that in a typical year the
05:58:54 6 standard deviation, say, of Republican
05:58:58 7 vote share across years is three,
05:59:01 8 which I think is its estimate, it adds
05:59:04 9 in --- in its simulations it adds in
05:59:09 10 variations ---.

05:59:09 11 Q. I apologize, Doctor, but we're
05:59:10 12 on a tight --- let me try to cut to
05:59:12 13 the chase here.

05:59:13 14 A. Sorry.

05:59:13 15 Q. So in the elections you used,
05:59:15 16 does it include elections from
05:59:18 17 multiple years of elections or just
05:59:19 18 one year of elections?

05:59:20 19 A. It's based on the Congressional
05:59:23 20 elections from 2012 and 2020, but the
05:59:26 21 baseline estimate projecting forward
05:59:27 22 is based on --- you use 2020 as the
05:59:34 23 baseline and then used the historical
05:59:34 24 variability in its projections going
05:59:34 25 forward. It takes into account

05:59:38 1 historical variability.

05:59:38 2 Q. You agree that the mere fact
05:59:40 3 that an apportionment scheme makes it
05:59:43 4 more difficult for a particular group
05:59:47 5 in a particular district to elect
05:59:48 6 Representatives of its choice does not
05:59:48 7 render that scheme unconstitutional.

05:59:48 8 Correct?

05:59:55 9 A. I have no --- I have no formal
05:59:56 10 legal training, so I actually don't
05:59:57 11 --- especially not in the Constitution
05:59:59 12 of Pennsylvania, so I don't think I
06:00:00 13 have a basis to answer that.

06:00:04 14 Q. Well, that was listed --- that
06:00:04 15 was written in your article that you
06:00:04 16 co-authored, correct, Relying upon the
06:00:11 17 Bandemer Case?

06:00:11 18 A. Let me pull that up.

06:00:12 19 Q. Well, unfortunately, we're on
06:00:14 20 the time clock here. We don't have
06:00:16 21 the time for you to pull it up.

06:00:18 22 ATTORNEY ATTISANO:

06:00:19 23 Your Honor.

06:00:19 24 JUDGE McCULLOUGH:

06:00:19 25 Yes, Counsel.

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ATTORNEY ATTISANO:

I object. I believe if he's going to impeach the witness, an expert with an article, he has to show him the article so he can have an opportunity to rebut it and understand exactly what he's attempting to impeach him with.

JUDGE McCULLOUGH:

Do you have the article?

ATTORNEY TUCKER:

I don't have it up, and I'm willing to move on, Your Honor, I was just asking him if recalls writing that in his article. If he doesn't, I will move on.

JUDGE McCULLOUGH:

The clock is stopped for one minute if you want to find the article.

ATTORNEY TUCKER:

That's okay, Your Honor. I'll move on.

JUDGE McCULLOUGH:

All right. Thank you.

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THE WITNESS:

It won't take me very long to find it if that's important.

JUDGE McCULLOUGH:

Mr. Tucker, the witness --- can you stop the clock for a second? The witness offered to find the article if you want.

ATTORNEY TUCKER:

If I'm not going to use up my time while he finds the article, then that would be fine. I just don't want to waste my time looking for the article.

JUDGE McCULLOUGH:

If you want to ask the question ---.

THE WITNESS:

Would you like to tell me the quotation you are referring to?

JUDGE McCULLOUGH:

You can start the clock again. Excuse me.

BY ATTORNEY TUCKER:

Q. And I believe it's on the

06:01:12 1 opening --- the paragraph of the
06:01:15 2 article that --- the mere fact that an
06:01:16 3 apportionment makes it more difficult
06:01:19 4 for a particular group in a particular
06:01:19 5 district to elect Representatives of
06:01:21 6 its choice does not render that scheme
06:01:23 7 unconstitutional.

06:01:27 8 A. So yeah, that's an epigraph
06:01:32 9 quoting Davis v. Bandemer. So that's
06:01:33 10 not me saying that. That's me quoting
06:01:38 11 relevant Supreme Court cases. I would
06:01:38 12 say that's 1986 also. I don't know if
06:01:42 13 that's ---.

06:01:42 14 Q. Thank you, Doctor.

06:01:43 15 I think we got the answer. I
06:01:44 16 appreciate that.

06:01:47 17 How do you define a fair map?

06:01:49 18 A. Yeah, that's a good question.
06:01:51 19 I would say that, you know, in my
06:01:53 20 analysis I focus specifically on what
06:01:56 21 I consider --- what I call partisan
06:01:58 22 fairness. And I think that partisan
06:01:59 23 fairness is only one aspect perhaps of
06:02:04 24 a broader set of fairness
06:02:05 25 considerations. But I take the

06:02:06 1 fundamental idea of partisan fairness
06:02:09 2 is that the representation a party
06:02:12 3 receives in the legislature does not
06:02:21 4 --- given the amount --- number of
06:02:29 5 votes they get shouldn't depend on
06:02:30 6 the identity of the party in question.

06:02:30 7 Q. Thank you.

06:02:30 8 And various ways to measure
06:02:33 9 that are the metrics you used in your
06:02:34 10 report?

06:02:34 11 Correct?

06:02:35 12 A. Correct.

06:02:35 13 Q. Okay.

06:02:35 14 I want to quickly look at
06:02:47 15 page 15 in your report.

06:02:48 16 A. Yeah.

06:02:49 17 Q. And specifically looking at the
06:02:51 18 metrics that you calculated for
06:02:54 19 HB-2146. And that's what's reflected
06:03:02 20 here in Table 3.

06:03:05 21 Correct?

06:03:05 22 A. Let me just make sure. Yes,
06:03:05 23 that's right, the proposed Republican
06:03:05 24 House Map. That's what I call it,
06:03:08 25 yes.

06:03:08 1 Q. And based upon these metrics,
06:03:10 2 do you consider HB-2146 to be a fair
06:03:13 3 plan based upon these partisan
06:03:15 4 fairness metrics?

06:03:19 5 A. So it's certainly not --- I
06:03:21 6 mean fairness is a matter of degree.
06:03:24 7 Any deviation from zero is somewhat
06:03:27 8 unfair. I would say that --- I think
06:03:33 9 I'm more comfortable making a relative
06:03:39 10 claim which is that among the plans
06:03:41 11 that I evaluated in this report is one
06:03:46 12 of --- I think one of the two least
06:03:50 13 fair.

06:03:50 14 Q. But you can't say it's unfair.
06:03:52 15 Correct?

06:03:53 16 A. Well, I would say that it's one
06:03:54 17 of those situations, again, where
06:03:57 18 there are degrees of, you know, how
06:03:59 19 close you get to ---.

06:03:59 20 Q. Doctor, I'm not asking you
06:04:02 21 about degrees. I'm asking are you
06:04:04 22 testifying that this plan is unfair?

06:04:06 23 A. You know, I don't want to take
06:04:08 24 a position on one way or the other on
06:04:11 25 that. So I'm going to say no. I woul

06:04:20 1 say that these are indicators of
06:04:20 2 unfairness. That's how I would put
06:04:21 3 it.
06:04:21 4 Q. Thank you.
06:04:21 5 You testified earlier that you
06:04:23 6 were --- you served as an expert in a
06:04:26 7 redistricting case in Oregon.
06:04:27 8 Correct?
06:04:28 9 A. That's correct.
06:04:29 10 Q. And did you calculate similar
06:04:31 11 metrics the regarding the Oregon
06:04:34 12 Congressional Plan as you've
06:04:37 13 calculated here?
06:04:37 14 A. I did.
06:04:37 15 Q. And including the efficiency
06:04:39 16 gap?
06:04:40 17 A. That's right.
06:04:40 18 Q. And were your opinions in
06:04:42 19 Oregon that the Congressional map in
06:04:47 20 Oregon was a fair map under partisan
06:04:54 21 metrics.
06:04:54 22 A. I can bring up exactly what I
06:04:56 23 wrote but my general --- my
06:04:57 24 recollection is that my assessment was
06:04:59 25 that the estimates of the partisan

06:05:06 1 bias of map were mixed and uncertain
06:05:12 2 and there was a discrepancy between
06:05:12 3 different measures and also a great
06:05:14 4 deal of uncertainty depending on
06:05:16 5 future --- what exactly future
06:05:17 6 elections would look like. So that
06:05:19 7 was the rough gist of my ---.

06:05:22 8 Q. But did you --- did you testify
06:05:24 9 ultimately in support of that map
06:05:26 10 being upheld?

06:05:27 11 A. I did.

06:05:28 12 Q. And do you recall what the
06:05:33 13 efficiency gap score gap for the
06:05:35 14 Oregon Congressional Map?

06:05:40 15 A. Well, I want to distinguish
06:05:40 16 between the actual efficiency gap the
06:05:41 17 and predictions, right, and so the
06:05:43 18 predicted value --- I don't remember
06:05:47 19 what it was exactly, but I think it
06:05:49 20 was probably on the same order of
06:05:51 21 magnitude as --- the point estimate
06:05:53 22 was something like this, but there was
06:05:54 23 a huge amount of uncertainty
06:05:57 24 surrounding it, if I recall correctly.

06:05:59 25 Q. I'll represent to you that we

06:05:59 1 ran the Oregon shape files through
06:06:03 2 Plan Score, the system you used and
06:06:04 3 the efficiency gap was 8.5 percent.

06:06:07 4 Does that sound right?

06:06:12 5 A. I don't disbelieve you.

06:06:15 6 Q. And that would be over two
06:06:16 7 percent points higher than what you
06:06:18 8 calculated as the efficiency gap for
06:06:19 9 HB-2146.

06:06:21 10 Is that right?

06:06:21 11 A. I believe that predicted value
06:06:25 12 was higher, but the uncertainty was
06:06:27 13 much greater. It's also an election
06:06:30 14 with a state with only five or six
06:06:40 15 Congressional districts, and the
06:06:40 16 efficiency gap is not thought to be
06:06:40 17 particularly reliable in districts ---
06:06:44 18 in states with fewer than seven.

06:06:44 19 Q. Have you heard of the Princeton
06:06:46 20 Gerrymandering Project?

06:06:50 21 A. I have.

06:06:51 22 Q. And do you believe it to be an
06:06:55 23 on authoritative source of information
06:06:57 24 on partisan fairness?

06:06:57 25 A. No, actually I wouldn't say

06:06:59 1 authoritative, but it can be useful.

06:07:01 2 Q. And are you aware that the

06:07:02 3 Princeton Gerrymandering Project

06:07:02 4 scored the partisan fairness of the

06:07:03 5 Oregon Congressional Plan as an F, the

06:07:09 6 worst score?

06:07:10 7 A. I was aware, but I actually

06:07:12 8 looked very closely into the

06:07:15 9 methodology they used and it was very

06:07:18 10 --- it was quite suspect, because it

06:07:19 11 relied on a very selected index of

06:07:20 12 statewide races, if I recall, and I

06:07:23 13 didn't view it as reliable. But then

06:07:25 14 the second thing is it didn't have any

06:07:26 15 indications --- it doesn't --- the

06:07:30 16 Princeton Gerrymandering Project

06:07:30 17 doesn't use any measures of

06:07:32 18 uncertainty, right. And as we've ---

06:07:33 19 or any measures of how much elections

06:07:36 20 are like to vary across time.

06:07:38 21 And so I didn't view it as

06:07:43 22 nearly as useful as Plan Score's

06:07:45 23 approach for that reason. So I didn't

06:07:48 24 view it as well on that instance.

06:07:50 25 Q. But you aware of the grade that

06:07:53 1 they gave to the Oregon Congressional
06:07:58 2 Plan.

06:07:59 3 A. That sounds right to me.

06:08:01 4 Q. Are you aware of the grade that
06:08:02 5 they gave to HB-2146 in Pennsylvania?

06:08:06 6 A. No.

06:08:07 7 Q. You indicated in your testimony
06:08:09 8 earlier that Dr. Barber didn't present
06:08:12 9 the predicted vote share for the
06:08:14 10 Democrats --- or I'm sorry, let me
06:08:14 11 restate that.

06:08:16 12 That he didn't report the
06:08:20 13 predicted Democratic vote share for
06:08:20 14 the districts in HB-2146.

06:08:20 15 Correct?

06:08:20 16 A. What He didn't project was that
06:08:26 17 --- the statewide. I didn't see it,
06:08:28 18 that's why I said that.

06:08:28 19 Q. And I think you testified that
06:08:30 20 you believed that the average
06:08:33 21 Democratic vote share statewide for
06:08:36 22 averaging 2012 to 2020 elections was
06:08:40 23 54 percent?

06:08:42 24 A. That was based on my kind of
06:08:43 25 --- you know, often trying to back out

06:08:46 1 what it was likely to be given where
06:08:49 2 he put different districts relative to
06:08:53 3 what I had predicted for those
06:09:00 4 districts.

06:09:00 5 Q. Doctor, I put on the screen
06:09:02 6 here an excerpt from Dr. Rodden's
06:09:02 7 report, another one of the experts
06:09:04 8 who's testified in the case, and he
06:09:05 9 likewise calculated the Democratic
06:09:08 10 vote share for all elections statewide
06:09:11 11 from 2012 to 2020, and he calculated
06:09:15 12 it at 52.5 percent.

06:09:15 13 Do you see that?

06:09:18 14 A. Yeah, I do. That's about what
06:09:19 15 I expected Barber's to be.

06:09:21 16 Q. So not the 54 percent you were
06:09:23 17 stating earlier?

06:09:25 18 A. Yeah, I was basing that off of
06:09:28 19 --- because he didn't provide that
06:09:29 20 information, I had to kind of read it
06:09:31 21 off of the graph. He didn't --- he
06:09:31 22 also didn't provide, you know,
06:09:31 23 numerical estimates for each of the
06:09:31 24 date. He didn't do a table of the
06:09:31 25 district shares, so I was doing it

06:09:43 1 reading it off the graph.

06:09:43 2 Q. You have all of this election
06:09:46 3 data.

06:09:47 4 Right?

06:09:47 5 A. I do somewhere.

06:09:48 6 Q. So you could calculate these
06:09:50 7 numbers just as easily as Dr. Barber
06:09:54 8 and Rodden have.

06:09:55 9 Correct?

06:09:56 10 A. Given sufficient time, yes.

06:09:59 11 Q. I'm sure everybody wished they
06:10:04 12 had more time preparing their reports
06:10:05 13 in this case.

06:10:06 14 A. Yeah, I'm sure they do.

06:10:08 15 Q. Dr. Caughey, going back to your
06:10:14 16 metrics of --- the partisan fairness
06:10:15 17 metrics of mean-median and efficiency
06:10:19 18 gap and partisan bias, none of those
06:10:21 19 directly take into account the
06:10:22 20 political geography of the state.

06:10:25 21 Correct?

06:10:26 22 A. Right. So well, what I would
06:10:26 23 say --- the way I would put it is they
06:10:28 24 are measures of the effect of the
06:10:30 25 outcome of the map, right. They don't

06:10:35 1 say anything about why a map is
06:10:37 2 biased.

06:10:37 3 Q. And so you can have a metric,
06:10:42 4 like an efficiency gap be high or show
06:10:43 5 high bias and that could result, for
06:10:46 6 example, from the concentration of
06:10:48 7 Democratic voters in highly dense
06:10:50 8 areas.

06:10:51 9 Is that fair?

06:10:53 10 A. I would say that the
06:10:57 11 characteristics of a map are a joint
06:11:02 12 consequence of the distribution of
06:11:02 13 voters and the choices of map makers.
06:11:04 14 And so yes, that could definitely
06:11:06 15 contribute to it.

06:11:11 16 Q. And do you recognize, like many
06:11:13 17 other experts have in this case, that
06:11:14 18 in Pennsylvania there is a tilt in
06:11:16 19 favor of Republicans based upon the
06:11:18 20 concentration of Democratic voters in
06:11:21 21 certain areas of the state?

06:11:23 22 A. Yeah, so what I --- the way I
06:11:24 23 would put that is that if you draw
06:11:29 24 maps randomly, according to a certain
06:11:34 25 set of criteria involving compactness

06:11:35 1 and so forth, you will tend to get
06:11:37 2 Republican-leaning maps. But I think
06:11:40 3 what other analysis that we've heard
06:11:42 4 of have shown is that it's not
06:11:44 5 impossible. And in fact, it's quite
06:11:47 6 possible to get --- to satisfy both
06:11:50 7 traditional geographic criteria for
06:11:51 8 districting and achieve partisan
06:11:56 9 fairness, for example.

06:11:56 10 Q. I understand, Doctor. And I
06:11:56 11 think you've answered my question, and
06:11:56 12 I'm about out of time so I want to get
06:11:57 13 my last question out, which is did you
06:11:58 14 do any calculations or analysis to
06:12:01 15 determine how much of the bias that
06:12:04 16 you are calculating in HB-2146 is due
06:12:07 17 to the political geography of the
06:12:09 18 state?

06:12:09 19 A. I did not.

06:12:11 20 ATTORNEY TUCKER:

06:12:11 21 Thank you. No further
06:12:12 22 questions.

06:12:12 23 JUDGE McCULLOUGH:

06:12:13 24 Thank you, Counsel.

06:12:14 25 Now, we will move to the

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Congressional Intervenors
Counsel.

CROSS EXAMINATION

BY ATTORNEY VANCE:
Q. Thank you, Doctor. Thank
you for being here under the
circumstances. Shohin vance, and I
represent Congressman Reschenthaler as
well as a group of other Intervenors.
So let me ask you first, you
haven't reviewed every map that has
been submitted in this case.
Right?
A. As I said, I am actually not
even sure what is the complete list of
the maps that have been submitted are.
But a lot of maps, yes. All the maps
that I was able to review --- I
received in time to actually review
are in my report, and that includes
---.
Q. And your review ---?
A. Go ahead.

06:13:18 1 Q. And your reviews is based ---
06:13:18 2 and your assessment centers entirely
06:13:24 3 on the partisan fairness.

06:13:25 4 Is that correct?

06:13:26 5 A. That's right. I was asked to
06:13:28 6 assess the partisan fairness of the
06:13:31 7 maps and that's what I did.

06:13:31 8 Q. Okay.

06:13:31 9 So based on that metrics, what
06:13:33 10 do you think the best map is?

06:13:37 11 A. Of the ones that I reviewed?

06:13:39 12 Q. Yeah.

06:13:39 13 A. I would actually say that there
06:13:46 14 are sort of three tiers of maps. I
06:13:49 15 would say in terms of partisan, the
06:13:51 16 ones with the least bias are the two
06:13:56 17 Democrats maps. The current --- I'm
06:13:57 18 sorry, the Governor's map is sort of
06:13:59 19 in the middle, and the Republican ---
06:14:07 20 the House Republican map and the
06:14:07 21 Reschenthaler map are --- have the --
06:14:11 22 are the --- have the highest partisan
06:14:15 23 bias. In all the maps, the partisan
06:14:16 24 bias favors Republican, but it's the
06:14:18 25 most extreme. And then I ---.

06:14:18 1 Q. And to clarify --- I'm sorry.
06:14:20 2 But to clarify, when you say the
06:14:20 3 Reschenthaler map, you just mean
06:14:22 4 Reschenthaler 2.

06:14:23 5 Correct?

06:14:25 6 A. As I understand it, it's
06:14:26 7 Reschenthaler 2.

06:14:27 8 Q. Okay.

06:14:28 9 And to clarify, you did not
06:14:29 10 review Reschenthaler 1?

06:14:34 11 A. I don't believe so. I received
06:14:36 12 a file called Reschenthaler 2, and
06:14:37 13 that is what I reviewed.

06:14:46 14 Q. Okay.

06:14:46 15 So in using a Plan Score, you
06:14:48 16 sort of describe it as being in line
06:14:53 17 with standard political science
06:14:59 18 practices. And you say the account was
06:15:01 19 based on the 2020 Presidential vote
06:15:03 20 and accounts for incumbency status and
06:15:06 21 state and election-specific factors,
06:15:11 22 How does it account for those?

06:15:14 23 A. So you're talking about how
06:15:15 24 does it account for specifically the
06:15:19 25 election and state-specific factors?

06:15:19 1 Q. Right.

06:15:20 2 A. So it has what is called ---
06:15:23 3 it's what is called a multilevel
06:15:28 4 model where if you have a --- like, in
06:15:31 5 a typical progression model you have a
06:15:33 6 a coefficient associated with every
06:15:33 7 variable, right, so the coefficient
06:15:43 8 associated with a presidential vote
06:15:43 9 describes the relationship between
06:15:43 10 presidential vote and congressional
06:15:44 11 vote.

06:15:44 12 In a simple progression model
06:15:47 13 model, you would just have one
06:15:48 14 coefficient to describe that
06:15:48 15 relationship across all states and all
06:15:54 16 time. But in a multilevel model you
06:15:56 17 allow that relationship to vary across
06:15:59 18 states and across time.

06:16:00 19 Q. I'm sorry, I just want to
06:16:03 20 understand, specifically for
06:16:03 21 Pennsylvania for the maps you
06:16:08 22 assessed, how does it account for it?
06:16:09 23 I mean you're saying over time. And I
06:16:10 24 understand the theoretical --- how
06:16:10 25 does it do it here?

06:16:14 1 A. So it basically --- it
06:16:14 2 estimates it as sort of a
06:16:16 3 Pennsylvania-specific relationship
06:16:19 4 that also --- that is informed by the
06:16:21 5 global relationship, but it takes into
06:16:24 6 account what that specific factor ---
06:16:26 7 you know, what's unique about
06:16:29 8 Pennsylvania, the relationship in
06:16:30 9 Pennsylvania. It also ---.

06:16:30 10 Q. Takes into account how?

06:16:38 11 A. It just uses essentially --- it
06:16:40 12 uses data --- is uses what the
06:16:42 13 relationship is in Pennsylvania
06:16:44 14 empirically, between a Presidential
06:16:48 15 vote and congressional vote.

06:16:49 16 Q. So it's the Plan Score that
06:16:50 17 came up with this, not you? You don't
06:16:52 18 --- you didn't use the data and the
06:16:53 19 relationship? You don't know what
06:16:54 20 the relationship is, it's a formula
06:16:57 21 that Plan Score generated or based on
06:17:00 22 a formula that Plan Score ---?

06:17:01 23 A. Yeah.

06:17:01 24 Q. Okay.

06:17:03 25 A. It's a result of a model. I

06:17:06 1 mean, Plan Score did not come up with
06:17:07 2 a number, it estimated a model, which,
06:17:09 3 you know, according to a certain
06:17:13 4 functional form which it --- which it
06:17:16 5 reports and which I have, that such
06:17:17 6 that the --- yeah, so --- yeah, I sort
06:17:23 7 of lost track of the question.

06:17:25 8 Q. That's okay.

06:17:25 9 I will sort of try to narrow
06:17:29 10 that a little bit.

06:17:29 11 A. What's that?

06:17:29 12 Q. I'll try to narrow it.

06:17:29 13 JUDGE McCULLOUGH:

06:17:30 14 You are both talking.

06:17:30 15 BY ATTORNEY VANCE:

06:17:33 16 Q. Sorry. I'll try to narrow that
06:17:33 17 a little bit to help you out.

06:17:35 18 So state specific, does it
06:17:37 19 account, for example, for changes in
06:17:41 20 voting procedure such as straight
06:17:43 21 party ticket voting or not?

06:17:44 22 A. So it does --- by changes you
06:17:44 23 mean with a given state? Like the
06:17:44 24 party ---?

06:17:44 25 Q. I mean when a states changes

06:17:52 1 its laws?

06:17:53 2 A. I see. So it is --- it is not
06:17:57 3 taking anything explicitly into
06:18:00 4 account, like it's not taking that
06:18:03 5 explicitly into account, but if that
06:18:06 6 affects what the relationship between
06:18:07 7 Presidential vote and Congressional
06:18:10 8 vote is in that state, the model will
06:18:10 9 pick up on that, like if that makes it
06:18:11 10 more distinctive.

06:18:11 11 Q. Right, eventually. Right? But
06:18:14 12 not immediately --

06:18:15 13 A. Yeah. You know, it's not going
06:18:18 14 to --- mean, it's not a perfect
06:18:26 15 oracle. It doesn't know things for
06:18:27 16 sure.

06:18:28 17 Q. You also rely on Plan Score's
06:18:29 18 historic library. But You haven't
06:18:29 19 actually looked at Plan Score's entire
06:18:32 20 library, have you? You don't know
06:18:32 21 what it is?

06:18:33 22 A. Have I scrolled through every
06:18:35 23 plan, no.

06:18:35 24 Q. Okay.

06:18:36 25 And you don't know how

06:18:37 1 accurately it reflects what, you know,
06:18:39 2 the typical plan would look like,
06:18:41 3 whether it's skewed one way or the
06:18:44 4 other?

06:18:45 5 A. Well, the library is --- as I
06:18:46 6 understand it the library is
06:18:51 7 comprehensive since the 1970s.

06:18:53 8 Q. Okay.

06:18:55 9 A. For every --- go ahead.

06:18:55 10 Q. And one of the reasons why you
06:18:57 11 rely on Plan Score and have such
06:19:00 12 confidence in it, as I understand it
06:19:03 13 from the report, is that it is, as you
06:19:04 14 said it, non-partisan.

06:19:05 15 Is that correct? I would say
06:19:08 16 the reason I have confidence in it is
06:19:10 17 not because it has --- it is
06:19:12 18 non-partisan. I mean, I guess that is
06:19:14 19 helpful. But the main reason I have
06:19:15 20 confidence in it is it's very
06:19:16 21 transparent about the the data methods
06:19:16 22 it uses and I believe them to be
06:19:21 23 rigorous.

06:19:21 24 Q. Okay.

06:19:21 25 And by non-partisan you don't

06:19:23 1 mean that they don't necessarily
06:19:29 2 advocate for certain policies, right?
06:19:31 3 You just mean they're not associated
06:19:33 4 with a particular party?

06:19:35 5 A. That's right. Yeah.

06:19:36 6 Q. You say that declination is a
06:19:39 7 relatively recent development.

06:19:42 8 Is that correct?

06:19:43 9 A. Yeah. That's right.

06:19:45 10 Q. So it doesn't have an
06:19:47 11 established history of being used, nor
06:19:51 12 is there much data to reflect how
06:19:54 13 accurately it predicts future
06:20:01 14 outcomes, is there?

06:20:01 15 A. So --- I don't know what you
06:20:01 16 mean by future outcomes because
06:20:01 17 there's no data on future outcomes yet
06:20:05 18 for any of these metrics. But the ---
06:20:06 19 it has been retrospectively applied to
06:20:09 20 many past elections, in fact, just as
06:20:13 21 many as the other measures. But you
06:20:13 22 are right that it has been --- it was
06:20:15 23 developed about five --- I think five
06:20:19 24 years ago, and it has come into fairly
06:20:25 25 frequency use since then. But it has

06:20:26 1 not --- it has not been used as long
06:20:29 2 as most of the other metrics have.

06:20:31 3 Q. Okay.

06:20:36 4 And your model and the
06:20:41 5 simulation, I guess that you ran or
06:20:42 6 the model is based on no incumbency.

06:20:47 7 Is that correct?

06:20:48 8 A. Right. So the model itself is
06:20:49 9 estimated with knowing whether someone
06:20:52 10 is an incumbent or not, you know, when
06:20:55 11 you're estimating the model. But when
06:20:56 12 you're projecting forward, you know,
06:20:57 13 you're saying, okay, we have to have a
06:20:58 14 particular scenario. What's the
06:21:01 15 scenario? It's going to be --- it
06:21:03 16 makes more sense to think about
06:21:05 17 open-seat scenarios.

06:21:06 18 Q. Based on your experience as a
06:21:07 19 professor of political science, with a
06:21:12 20 state that has anywhere between, let's
06:21:14 21 say, 15 and 18 congressmen, how often
06:21:19 22 is it that there is an election with
06:21:22 23 not a single incumbent?

06:21:26 24 A. Oh I'm sure that's very rare.
06:21:29 25 So this would be a case where ---.

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Q. Has it ever happened in Pennsylvania in the 15 years?

A. I don't know, but it's not meant to estimate what --- if you have a particular scenario you were interested in, saying like stipulating that this person is going to run for the election or not, you can put that in. But it seems like a --- you know, if you want to think about a map as a neutral playing field, you want to evaluate it as a neutral playing field it seems like the fairest way to do that is not to presume that one party has an advantage systematically over the other in terms of incumbents.

ATTORNEY VANCE:

I have no further questions.

JUDGE McCULLOUGH:

Thank you, Counsel. And now Counsel for the House Democratic Intervenor.

ATTORNEY SENOFF:

Your Honor, we have no

06:22:28 1 questions for this witness. Thank
06:22:30 2 you.

06:22:30 3 JUDGE McCULLOUGH:

06:22:30 4 Oh, you're relinquishing
06:22:33 5 your time again. Okay. All right.
06:22:33 6 Thank you.

06:22:34 7 So now we'll.

06:22:35 8 Back to Counsel for
06:22:42 9 Senate Democratic Intervenors for
06:22:42 10 Redirect.

06:22:42 11 ---

06:22:42 12 REDIRECT EXAMINATION

06:22:58 13 ---

06:22:58 14 BY ATTORNEY ATTISANO:

06:22:59 15 Q. Dr. Warshaw --- excuse me,
06:22:59 16 sorry.

06:23:04 17 Doctor Caughey. I was thinking
06:23:04 18 of Dr. Warshaw.

06:23:06 19 You compared the actual
06:23:08 20 outcomes with the 2018 Congressional
06:23:12 21 Map to the Plan Score analysis of the
06:23:14 22 2018 map essentially to get a baseline
06:23:18 23 of reliability?

06:23:19 24 Correct?

06:23:20 25 A. Correct.

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Q. All right.

Now, are you aware if any other experts in this case took their methodology and compared it to the 2018 Congressional Map to determine how reliable their methodology was when dealing with real world outcomes related to the 2018 map?

A. I am not aware.

Q. And with respect to the election data that Plan Score uses, can you please just explain if they use a set of data that simply reflects previous election results or if they use variations in combination with that data and if so why that matters?

A. So what --- Plan Score doesn't just give simply average or project formal elections from the past. What it's trying to do --- what it uses is a model, it uses information from past elections such as from past Presidential elections to predict how a Democratic or Republican district will be in future Presidential

06:24:59 1 elections and it uses past
06:24:59 2 Presidential --- past Congressional
06:25:00 3 election results and the variation in
06:25:00 4 those results across multiple cycles,
06:25:05 5 2012, 2014, 2016, 2018, 2020 to come
06:25:12 6 up with a reasonable baseline for the
06:25:20 7 uncertainty of projections going
06:25:24 8 forward.

06:25:24 9 So it's a combination of past
06:25:24 10 results, and a model that relates
06:25:24 11 those to what we already know about
06:25:24 12 Congressional elections and how they
06:25:25 13 vary.

06:25:25 14 Q. And if anybody wanted to
06:25:27 15 challenge the actual reliability of
06:25:29 16 Plan Score's predictions, they could
06:25:31 17 simply plug a map in from a previous
06:25:36 18 election and test it against what is
06:25:38 19 actually happened in the real world.

06:25:40 20 Correct?

06:25:42 21 A. That's right.

06:25:43 22 Q. And all the experts in this
06:25:48 23 case, to the best of your knowledge,
06:25:50 24 know how to do that and have the
06:25:50 25 ability if they so cared to do so.

06:25:54 1 Correct?

06:25:55 2 A. Yes.

06:25:57 3 ATTORNEY ATTISANO:

06:25:57 4 Thank you. No further
06:25:58 5 questions.

06:25:58 6 JUDGE McCULLOUGH:

06:25:59 7 All right. Thank you.

06:25:59 8 And thank you, Dr.

06:26:01 9 Caughey, for making yourself

06:26:02 10 available. We wish you and your

06:26:04 11 family well.

06:26:05 12 Thank you.

06:26:05 13 THE WITNESS:

06:26:06 14 Thank you very much.

06:26:10 15 JUDGE McCULLOUGH:

06:26:11 16 Okay.

06:26:11 17 Right now we will take a

06:26:12 18 recess and then reconvene for closing

06:26:15 19 arguments and that should be

06:26:18 20 everything that we need to take care

06:26:20 21 of.

06:26:20 22 We have some --- the

06:26:22 23 Court will note some other matters.

06:26:26 24 Did you have a question,

06:26:28 25 Mr. Wiygul?

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ATTORNEY WIYGUL:

Sorry, Your Honor. Just with regard to one of those other matters, which, at least from my perspective, concerns potential witness testimony, I just wanted to clarify whether we wanted to resolve that prior to the --- officially closing the evidence and moving into closing arguments?

JUDGE McCULLOUGH:

Are you are talking about the affidavit?

ATTORNEY WIYGUL:

Correct. Yes.

JUDGE McCULLOUGH:

Well, I thought we were going to deal with that during the closing arguments. That would be submitted as part of your closing argument as a --- what was requested was a schedule, a proposed --- the current schedule, and you had offered --- I guess, somebody wanted to do this on your behalf to submit a

06:27:10 1 schedule of what would have to be
06:27:12 2 changed by the secretary, or what
06:27:18 3 should be changed for them to have the
06:27:19 4 election done in light of the current
06:27:21 5 timeframe.

06:27:22 6 ATTORNEY WIYGUL:

06:27:23 7 I understand. From our
06:27:25 8 prospective, we would like to present
06:27:27 9 witness testimony --- we being the
06:27:29 10 Department of State on the topic,
06:27:31 11 which I had understood was one of the
06:27:32 12 topics to be discussed in this hearing
06:27:35 13 on potential changes to the election
06:27:39 14 calendar.

06:27:40 15 And I understand from
06:27:41 16 our colloquy off the record that the
06:27:43 17 Court may have a different view as to
06:27:46 18 the proper scope of that testimony.

06:27:47 19 JUDGE McCULLOUGH:

06:27:48 20 Well, I think Counsel
06:27:48 21 has an objection of --- different
06:27:51 22 Counsel has different objections.

06:27:52 23 ATTORNEY WIYGUL:

06:27:52 24 Yes.

06:27:53 25 JUDGE McCULLOUGH:

06:27:53 1 So if you want to ---
06:27:54 2 did you provide everyone with a copy
06:27:56 3 all counsel have a copy?
06:27:57 4 ATTORNEY WIYGUL:
06:27:58 5 I did prior to our
06:28:00 6 conference, Your Honor.
06:28:01 7 JUDGE McCULLOUGH:
06:28:01 8 And are you moving that
06:28:02 9 into evidence?
06:28:03 10 ATTORNEY WIYGUL:
06:28:04 11 Yes, Your Honor.
06:28:04 12 JUDGE McCULLOUGH:
06:28:04 13 So any Counsel have
06:28:05 14 objection to moving into evidence the
06:28:10 15 --- could you identify it, Mr. Wiygul?
06:28:14 16 ATTORNEY WIYGUL:
06:28:14 17 Yes, Your Honor. I
06:28:14 18 haven't marked it and I would like to
06:28:14 19 however is the best way to do that,
06:28:16 20 but I will identify it for the record,
06:28:17 21 this is an affidavit by Jonathan
06:28:21 22 Marks, who is the deputy secretary for
06:28:23 23 elections and commissions for the
06:28:25 24 Commonwealth's Department of State,
06:28:29 25 and I don't know what exhibit number

06:28:33 1 this should be.

06:28:33 2 JUDGE McCULLOUGH:

06:28:34 3 So if any Counsel has
06:28:35 4 any objection, would you please state
06:28:36 5 it for the record now.

06:28:38 6 ATTORNEY TUCKER:

06:28:39 7 Yes, Your Honor. Robert
06:28:41 8 Tucker on behalf of the Republican
06:28:44 9 House Intervenors.

06:28:44 10 We don't object to
06:28:45 11 admitting the document but we would
06:28:47 12 object to the inclusion of
06:28:48 13 paragraphs 18 to 26, as though
06:28:51 14 paragraphs relate to deadlines related
06:28:55 15 to the legislative redistricting
06:28:55 16 process, not the congressional
06:28:59 17 redistricting process and they are not
06:29:00 18 relevant to these proceedings, and
06:29:01 19 they frankly don't need to be in
06:29:02 20 there.

06:29:03 21 Thank you.

06:29:15 22 JUDGE McCULLOUGH:

06:29:16 23 Were there other
06:29:18 24 Counsel? I thought that had an
06:29:20 25 objection.

06:29:20 1 Okay.

06:29:20 2 You said paragraphs 18

06:29:22 3 through 26.

06:29:23 4 Correct?

06:29:24 5 ATTORNEY TUCKER:

06:29:24 6 That's correct, Your

06:29:32 7 Honor.

06:29:32 8 JUDGE McCULLOUGH:

06:29:32 9 So I note for the

06:29:33 10 record, as paragraphs 18 through 26 as

06:29:33 11 noted in paragraph 20 of the affidavit

06:29:40 12 reference litigation that is currently

06:29:41 13 pending in this Court and is not

06:29:43 14 before this particular Court at this

06:29:45 15 time, this Judge in this trial, so the

06:29:49 16 Court would not include those

06:29:51 17 paragraphs simply because there's

06:29:53 18 pending litigation and cannot address

06:29:57 19 the issues, which will be addressed in

06:29:59 20 that case which you cite as David, et

06:30:03 21 al. versus Chapman at Number 22 MD

06:30:06 22 2022.

06:30:07 23 ATTORNEY WIYGUL:

06:30:08 24 Thank you, Your Honor.

06:30:08 25 And I understand the

06:30:09 1 Court's ruling. I'd just like to note
06:30:12 2 for the record, I understand the Court
06:30:14 3 is sustaining the grounds other than
06:30:15 4 hearsay. To the extent there was a
06:30:17 5 hearsay objection, I just want to note
06:30:19 6 that we have Jonathan Marks here and
06:30:23 7 he's prepared to testify.

06:30:23 8 JUDGE McCULLOUGH;

06:30:23 9 I didn't hear him say a
06:30:24 10 hearsay objection on the record.

06:30:25 11 ATTORNEY TUCKER:

06:30:26 12 We're not objecting on
06:30:27 13 hearsay. It's on relevance grounds.

06:30:29 14 JUDGE McCULLOUGH:

06:30:30 15 It's on relevance and
06:30:33 16 the fact that there is pending
06:30:34 17 litigation.

06:30:35 18 ATTORNEY TUCKER:

06:30:35 19 Correct, Your Honor.

06:30:37 20 ATTORNEY WIYGUL:

06:30:37 21 And I understand that
06:30:38 22 the Court is sustaining.

06:30:39 23 JUDGE McCULLOUGH:

06:30:40 24 I'm sustaining on the
06:30:41 25 relevance and the fact that

06:30:43 1 paragraph 20 of your affidavit clearly
06:30:45 2 states pending litigation,
06:30:50 3 paragraph 18 through 26 not in front
06:30:52 4 of this Court at this time. So it
06:30:54 5 would be inappropriate for this Court,
06:30:56 6 one, to hear anything on that, and
06:30:58 7 two, on the relevance that matter is
06:31:00 8 not in particular before us.

06:31:02 9 ATTORNEY WIYGUL:

06:31:03 10 And I understand the
06:31:03 11 Court's ruling. Thank you.

06:31:04 12 And I understand that
06:31:06 13 the affidavit has been marked for the
06:31:07 14 record.

06:31:07 15 JUDGE McCULLOUGH:

06:31:08 16 And it's so admitted
06:31:09 17 with those exceptions.

06:31:12 18 ATTORNEY WIYGUL:

06:31:13 19 Thank you, Your Honor.

06:31:13 20 JUDGE McCULLOUGH:

06:31:14 21 Thank you very much for
06:31:14 22 providing it, Counsel.

06:31:14 23 Okay.

06:31:18 24 Anything else? I don't
06:31:19 25 want to assume that we don't have

06:31:22 1 anything else for right now. So we
06:31:24 2 will reconvene at 4:15. And that
06:31:30 3 gives you all a little bit of a
06:31:32 4 comfort break, and then we will do
06:31:39 5 closing arguments.

06:31:47 6 COURT CRIER HOLLAND:
06:31:47 7 The Court is now in
06:32:25 8 recess.

06:32:25 9 ---
06:32:25 10 (WHEREUPON, A SHORT BREAK WAS TAKEN.)

07:02:21 11 ---
07:02:21 12 COURT CRIER HOLLAND:
07:05:10 13 All rise. Commonwealth
07:05:12 14 Court is back in session.

07:05:12 15 JUDGE McCULLOUGH:
07:05:13 16 The much awaited moment,
07:05:14 17 right, closing arguments and wrapping
07:05:21 18 up this very expedited process. So we
07:05:25 19 will begin but this time in reverse
07:05:30 20 order as we discussed at the pretrial
07:05:36 21 conference. Are you ready? No?
07:05:53 22 Okay.

07:05:53 23 JUDGE McCULLOUGH:
07:05:53 24 Are you, Mr. Attisano?

07:05:59 25 ATTORNEY ATTISANO:

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Yes, Your Honor.

JUDGE McCULLOUGH:

Okay. Proceed.

ATTORNEY ATTISANO:

Other counsel and may it please the Court, Your Honor, first I'd like to address the election calendar issue. And I would like the Court to know that it's the position of the Senate Democratic Caucus that the 2022 primary election schedule required by Pennsylvania law, including the primary election itself scheduled for May 17th, 2022, is essentially unworkable at this point in time.

It will disenfranchise millions of Pennsylvania voters and severely prejudice candidates running for public office if it's not modified by the Pennsylvania Supreme Court. And as the Legislative Reapportionment Commission has not yet approved the final plan, the period for review of the plan by the Pennsylvania Supreme

07:07:11 1 Court has not yet commenced. And
07:07:13 2 these facts together with this ongoing
07:07:15 3 litigation involving the congressional
07:07:18 4 map and today's decision IN McLinko
07:07:21 5 versus Commonwealth of Pennsylvania
07:07:23 6 involving mail-in voting compelled the
07:07:24 7 conclusion that the primary election
07:07:27 8 must be postponed and pre-primary
07:07:30 9 deadlines should be adjusted by the
07:07:33 10 Pennsylvania Supreme Court. And
07:07:33 11 that's the position from the Senate
07:07:37 12 Democratic Caucus with regard to the
07:07:39 13 election calendar.

07:07:39 14 JUDGE McCULLOUGH:

07:07:40 15 Thank you.

07:07:40 16 ATTORNEY ATTISANO:

07:07:41 17 And moving on, Your
07:07:42 18 Honor, to addressing which map this
07:07:45 19 Court should choose in this
07:07:47 20 litigation, I'd first like to start by
07:07:49 21 just reiterating something I talked
07:07:51 22 about briefly in my opening, Your
07:07:55 23 Honor, and that was that with respect
07:07:58 24 to choosing HB-2146, the House put
07:08:02 25 forward by the rep --- excuse me, the

07:08:08 1 plan put forward by the Republican
07:08:10 2 legislative leaders, if this Court
07:08:11 3 were to pick that map, this Court
07:08:14 4 would be doing much more than simply
07:08:16 5 picking the map.

07:08:17 6 It would be shifting the
07:08:20 7 balance of powers between the
07:08:22 8 legislative branch and the executive
07:08:24 9 branch with respect to redistricting.
07:08:27 10 It would create incentive in the
07:08:28 11 future for whichever party is in the
07:08:30 12 majority in the legislative branch
07:08:32 13 whenever there is a member of the
07:08:33 14 opposing party in the Governor's
07:08:36 15 office to not move forward in a way
07:08:40 16 that passes legislation that the
07:08:49 17 Governor could sign into law because
07:08:49 18 they would know --- whichever party
07:08:49 19 was in that majority would know that
07:08:50 20 they could go to the judicial branch
07:08:52 21 and receive special deference or
07:08:54 22 special consideration as the
07:08:57 23 Republican legislators have requested
07:09:04 24 in this case with the plan.
07:09:04 25 And so by doing that and selecting

07:09:05 1 that map, this Court would be shifting
07:09:07 2 the balance of powers among the
07:09:09 3 legislative branch and executive
07:09:09 4 branch with respect to redistricting
07:09:12 5 and creating a disincentive for more
07:09:16 6 redistricting cases to end up in an
07:09:19 7 impasse and have to be resolved with
07:09:23 8 judicial litigation rather than being
07:09:25 9 resolved by the political branches.

07:09:28 10 And I will just say as
07:09:29 11 well that I would like to remind the
07:09:32 12 Court of something the Court is
07:09:34 13 already aware of, is that the only
07:09:36 14 elected official in this litigation,
07:09:38 15 in this process, that has received a
07:09:41 16 majority of votes from Pennsylvania is
07:09:45 17 Governor Wolf. And so when the
07:09:51 18 Republican legislative leaders argue
07:09:51 19 that their plan has the support of the
07:09:57 20 people in some sense, I'd like to
07:09:57 21 remind the Court of the fact about
07:09:58 22 that Governor Wolf is the only elected
07:10:02 23 official involved in this that that
07:10:04 24 has received a majority of votes of
07:10:06 25 Pennsylvanians.

07:10:07 1 And additionally, Your Honor,
07:10:09 2 the HB-2146 has failed the Democratic
07:10:11 3 process. And so that brings me to
07:10:14 4 which map this Court should select in
07:10:17 5 litigation. And some of the experts
07:10:20 6 talked about tiers of maps and
07:10:23 7 clustered maps together and we heard a
07:10:27 8 lot about the six traditional
07:10:27 9 redistricting factors. And in the
07:10:31 10 League of Women Voters case our
07:10:31 11 Supreme Court said something that I
07:10:33 12 think was very, very wise and forward
07:10:36 13 looking.

07:10:36 14 They acknowledge the
07:10:37 15 fact that due to the mathematical
07:10:43 16 capability we have, it's very possible
07:10:45 17 and even likely that somebody could
07:10:48 18 draw a map that on its face meets the
07:10:52 19 six traditional redistricting
07:10:54 20 principles that have been discussed at
07:10:56 21 length here these last two days. And
07:10:58 22 so in that instance, the Court should
07:11:01 23 be considering the partisan fairness
07:11:02 24 of the map and it should go beyond
07:11:06 25 that facial criteria and look

07:11:08 1 underneath to see if that map in the
07:11:11 2 partisan fairness is violating the
07:11:16 3 Elections Clause of the Pennsylvania
07:11:19 4 Constitution.
07:11:19 5 And you heard at length from multiple
07:11:21 6 experts. And the expert that Senate
07:11:25 7 Democratic Caucus put on focused
07:11:28 8 specifically on that question of
07:11:29 9 partisan fairness. And he was able to
07:11:31 10 explain to this Court about symmetry
07:11:34 11 and the win bonus. And I hope it all
07:11:39 12 came through with him being on video.
07:11:41 13 And I know it's been a lot of
07:11:43 14 information coming at everyone the
07:11:45 15 last couple days, but the biggest
07:11:47 16 takeaway from our expert witness, Your
07:11:52 17 Honor, I submit is that he talks about
07:11:53 18 symmetry, meaning that if the win
07:11:57 19 bonus occurs at a certain percentage
07:11:59 20 for party A, then it should also occur
07:12:03 21 for a certain percentage for party B.
07:12:06 22 And that indicates partisan fairness.
07:12:08 23 And that's what I was trying to flesh
07:12:10 24 out with him with respect to the
07:12:12 25 graph, is the visual representation of

07:12:14 1 that. And so we just ask the Court to
07:12:16 2 really focus on that metric and their
07:12:20 3 analysis.

07:12:20 4 And as the Court
07:12:21 5 recalls, it was the HB-2146 and the
07:12:26 6 plan from Map Number 2 from
07:12:29 7 Reschenthaler which scored the worst
07:12:31 8 on the partisan fairness index as
07:12:34 9 reported by our expert.

07:12:36 10 And it was Senate
07:12:38 11 Democratic Caucus Plan 1 and Plan 2
07:12:42 12 that scored the highest on that. And
07:12:45 13 so I'm really asking the Court today
07:12:47 14 to look at those initial six
07:12:51 15 redistricting principles and go on and
07:12:54 16 see what's underneath them. Because
07:12:56 17 the vast majority of the maps on their
07:12:59 18 face do appear to meet those
07:13:00 19 principles. But when it comes to
07:13:03 20 what's happening underneath with
07:13:04 21 respect to partisan fairness, there is
07:13:06 22 a wide range that's happening. And
07:13:10 23 Your Honor, that is the factor that we
07:13:14 24 would ask the Court to look to in
07:13:17 25 making a final decision.

07:13:19 1 And I thank you for your
07:13:20 2 time today. Thank you for proceeding.
07:13:22 3 We know it couldn't --- we know it's
07:13:25 4 an unenviable task that's happening
07:13:29 5 here today, and thank you again for
07:13:31 6 permitting our expert to testify by
07:13:32 7 video.

07:13:32 8 JUDGE McCULLOUGH:

07:13:32 9 Thank you, Counsel, Mr.
07:13:35 10 Attisano. Now, Mr. Senoff for House
07:13:44 11 Democratic Intervenors.

07:13:46 12 ATTORNEY SENOFF:

07:13:52 13 Good afternoon. Your
07:13:53 14 Honor, may it please the Court, David
07:13:55 15 Senoff for Intervenors, the House
07:14:01 16 Democratic Caucus. Your Honor, this
07:14:02 17 case is something.

07:14:05 18 As you quite correctly
07:14:07 19 pointed out when you took the bench,
07:14:09 20 this is not exactly like League of
07:14:13 21 Women Voters, not exactly like the
07:14:14 22 Mellow case. Nobody is asking that
07:14:19 23 any currently enforced map be ruled
07:14:22 24 unconstitutional because we know that
07:14:26 25 the map that we currently have is

07:14:28 1 obsolete given the results of the
07:14:30 2 census.

07:14:31 3 So instead, what we've been
07:14:32 4 doing over the last two days is we
07:14:34 5 focused on the technical details of
07:14:36 6 redistricting, the minute differences
07:14:43 7 between these maps, and the --- using
07:14:46 8 in some cases the minute technical
07:14:50 9 differences to obscure the larger
07:14:52 10 point in this case. And what you're
07:14:54 11 --- what we saw over two days and what
07:14:57 12 you're being asked to decide is not
07:15:00 13 really a beauty contest between maps.
07:15:03 14 We've used that term shorthandly, but
07:15:08 15 when --- but the question, in all
07:15:11 16 seriousness, is whether Pennsylvania's
07:15:17 17 elections will be fair and allow every
07:15:18 18 voter to have an equal opportunity to
07:15:18 19 elect their chosen candidate, win or
07:15:18 20 lose.

07:15:24 21 The Republican Intervenors
07:15:26 22 have noted that the United States and
07:15:28 23 Pennsylvania Constitutions --- I'm
07:15:32 24 sorry, the United States and
07:15:34 25 Pennsylvania Constitutions permit

07:15:37 1 Congressional redistricting to be a,
07:15:42 2 quote, fundamentally legislative task
07:15:44 3 and their proposals should, therefore,
07:15:46 4 somehow be given some deference. Of
07:15:47 5 course, as I said in my opening
07:15:49 6 statement, that does not mean that the
07:15:50 7 legislature have the sole voice.

07:15:53 8 The Supreme Court of the
07:15:55 9 United States held in the Arizona
07:15:56 10 State Legislature case that
07:15:57 11 redistricting can take different forms
07:16:01 12 in different states. And in Arizona
07:16:04 13 they had a Redistricting Commission.
07:16:05 14 In Pennsylvania, Congressional maps
07:16:07 15 are developed through the normal
07:16:09 16 legislative process.

07:16:12 17 They are proposed in a
07:16:13 18 bill. They have to pass both Houses.
07:16:15 19 The Governor then has to sign or veto
07:16:22 20 it. As we know, the Governor vetoed
07:16:29 21 the one bill.

07:16:30 22 And so there's clearly a role
07:16:30 23 for all branches of government,
07:16:31 24 including the courts. And the role
07:16:33 25 for the courts is you have to decide

07:16:36 1 which criteria, the neutral criteria
07:16:39 2 set forth in Mellow and then later in
07:16:44 3 League of Women Voters, has that been
07:16:47 4 met. And I think it is Attorney Voss
07:16:48 5 that used the phrase entry free ---
07:16:52 6 entry fee. And I wrote that down
07:16:54 7 because I liked it because it's worth
07:16:56 8 noting that --- that entry fee is sort
07:17:00 9 of the minimum standard that your map
07:17:04 10 needs to meet in order to get into the
07:17:07 11 contest. But that's not the end of
07:17:09 12 the question. Right.

07:17:10 13 And I note that the
07:17:12 14 Republican Intervenors
07:17:14 15 supported the Congressional map
07:17:17 16 in 2018 that was ultimately
07:17:19 17 found unconstitutional. But my
07:17:21 18 broader point is, is that
07:17:23 19 there's a longstanding,
07:17:25 20 established and most
07:17:26 21 importantly constitutional
07:17:28 22 process for creating
07:17:30 23 Congressional districts in
07:17:32 24 Pennsylvania that does not make
07:17:34 25 the legislature paramount to

07:17:39 1 other co-equal branches of
07:17:42 2 government. And that is what
07:17:43 3 makes the Republican
07:17:48 4 Intervenors calling for this
07:17:49 5 Court to give the now vetoed
07:17:49 6 map some kind of deference or
07:17:54 7 preference kind of
07:17:55 8 extraordinary in my mind.

07:17:57 9 Doing what the
07:17:59 10 Republican Intervenors have ask
07:17:59 11 the Court to do, select their
07:18:02 12 preferred map despite it being
07:18:04 13 vetoed by the Governor, would
07:18:06 14 have the Court do what the
07:18:07 15 intervenors could not do as
07:18:09 16 leaders of the legislature
07:18:12 17 chambers, garner enough votes
07:18:14 18 to override the Governor's
07:18:14 19 veto.

07:18:19 20 I'm not aware of another
07:18:21 21 situation in juris prudentially
07:18:22 22 which a court forced the
07:18:23 23 adoption of a bill onto the
07:18:25 24 citizens of the Commonwealth
07:18:27 25 that had been vetoed by the

07:18:30 1 Governor. That's not how the
07:18:31 2 system was designed to work and
07:18:34 3 that's essentially what they're
07:18:36 4 asking this Court to do by
07:18:38 5 asking the Court to simply give
07:18:40 6 their map deference by virtue
07:18:44 7 of the fact that it passed two
07:18:47 8 houses.

07:18:48 9 And it's not exactly
07:18:49 10 correct that the map was ---
07:18:52 11 that particular map was the
07:18:57 12 only one proposed that was
07:18:59 13 drawn in public but through an
07:19:01 14 accountable process. And that
07:19:04 15 it represents the will of the
07:19:06 16 legislature, but you know, the
07:19:07 17 map was drawn in a partisan
07:19:14 18 process and it was approved in
07:19:15 19 a partisan manner. Not a
07:19:16 20 single Democratic in the
07:19:19 21 General Assembly voted for that
07:19:19 22 map. And House Bill 2146 was
07:19:24 23 rejected in a bipartisan manner
07:19:26 24 because some House Republican
07:19:29 25 members actually did not vote

07:19:30 1 for it. So if you need
07:19:31 2 additional evidence that House
07:19:34 3 Bill 2146 is not the
07:19:36 4 legislature's maps, all you
07:19:37 5 need to do is consider that all
07:19:40 6 four caucuses of the General
07:19:42 7 Assembly separately are
07:19:43 8 intervenors in this case. The
07:19:44 9 map approved by the legislature
07:19:46 10 is merely a reflection of the
07:19:50 11 position of the leaders of the
07:19:52 12 Republican party and
07:19:52 13 legislature, two of the four
07:19:55 14 caucuses.

07:19:55 15 It doesn't automatically
07:19:58 16 cloak those maps in some type
07:19:59 17 of presumption of fairness,
07:20:05 18 legality or even inequality.
07:20:05 19 The Republican map --- the
07:20:11 20 Republican map, House Bill
07:20:13 21 2146, therefore is due no
07:20:13 22 deference.

07:20:14 23 Of course, partnership
07:20:16 24 should not be and is not the
07:20:19 25 sole criterion for rejecting a

07:20:20 1 map. Redistricting of course
07:20:22 2 is an inherently political
07:20:25 3 process. But when partisanship
07:20:28 4 manifests itself as --- under
07:20:28 5 constitutional criteria, those
07:20:29 6 maps cannot go forward. And
07:20:31 7 while the Republican
07:20:32 8 Intervenor may dismiss those
07:20:33 9 concerns as policy choices,
07:20:36 10 that's just not true because
07:20:38 11 that's not Pennsylvania law.

07:20:40 12 And so what I would like
07:20:42 13 to say briefly in closing is
07:20:46 14 just take a look at some of the
07:20:50 15 things that these maps have
07:20:53 16 done, the Republican maps have
07:20:55 17 done, particularly both the
07:20:57 18 House and Senate proposal and
07:20:58 19 the Congressional Republican
07:21:00 20 proposal. We're going to go
07:21:02 21 from an even split to nine
07:21:05 22 Republican safe seats when
07:21:07 23 there are 500,000 more
07:21:10 24 registered Democrats in
07:21:12 25 Pennsylvania.

07:21:13 1 There will be the split
07:21:14 2 of Harrisburg. There will be
07:21:16 3 the movement of Philadelphia
07:21:17 4 suburbs into more rural
07:21:18 5 districts, not to mention
07:21:20 6 whatever would happen with the
07:21:22 7 City of Pittsburgh.

07:21:24 8 So all lumped together,
07:21:26 9 these indelible defects make
07:21:29 10 the maps proposed by the
07:21:30 11 leaders of the House and Senate
07:21:32 12 Republicans and Republican
07:21:35 13 Congressional Intervenors
07:21:38 14 unacceptable under the
07:21:38 15 constitutional criteria.

07:21:39 16 And I see my time is
07:21:40 17 short and I would just like to
07:21:42 18 close by saying, you know, I
07:21:48 19 don't envy your job right now
07:21:50 20 particularly because to me the
07:21:53 21 issue is not which map is
07:21:56 22 better under these criteria.
07:21:57 23 All these maps are the same
07:21:59 24 within a range of
07:22:00 25 reasonableness. Likely anybody

07:22:02 1 could find that one of these
07:22:05 2 maps satisfies the
07:22:07 3 constitutional criteria. But
07:22:08 4 the question is what do you do
07:22:10 5 to break the tie.

07:22:11 6 And I think to break the
07:22:13 7 tie, one, you would look at
07:22:15 8 Mellow and at the League of
07:22:20 9 Women Voters case where the
07:22:21 10 Supreme Court predicted that
07:22:25 11 map mapping would advance to
07:22:26 12 the point where you could make
07:22:27 13 up a map that met the six
07:22:32 14 constitutional criteria but
07:22:33 15 still not satisfy
07:22:35 16 Pennsylvania's Free and Equal
07:22:38 17 Election Clause. And so, as a
07:22:41 18 result, we would suggest that
07:22:42 19 this Court take a look at some
07:22:43 20 of the subjective factors that
07:22:44 21 all of these witnesses
07:22:45 22 testified about and consider
07:22:47 23 the partisan makeup of these
07:22:50 24 various districts in order to
07:22:53 25 protect the power of one person

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and one vote and not to dilute any votes of any Pennsylvanian. Thank you, Your Honor.

And as for the election calendar, if I may just briefly ---?

JUDGE McCULLOUGH:

Yes.

ATTORNEY SENOFF:

We agree with the Senate Republicans. But as I said in conference earlier, I did have a chance to take a look at President Judge Craig's Opinion in Mellow, which is appended to the Supreme Court's Opinion, and he does talk about in there that the idea of maintaining a single primary day should be something that would be given paramount consideration in order just to avoid the confusion of potentially having a primary for congressional and a primary for everybody else on

07:23:47 1 different timelines with
07:23:49 2 different petitioning periods,
07:23:49 3 it would just be
07:23:55 4 administratively unworkable.
07:23:56 5 So I suggest his solution seems
07:23:58 6 like a reasonable one in this
07:24:00 7 instance. Thank you, Your
07:24:01 8 Honor.

07:24:01 9 JUDGE McCULLOUGH:

07:24:01 10 Thank you very much,
07:24:02 11 counsel. Next we'll move to
07:24:02 12 Congressional Intervenors.
07:24:17 13 Attorney Haverstick?

07:24:17 14 ATTORNEY HAVERSTICK:

07:24:18 15 May it please the Court,
07:24:18 16 good afternoon, Your Honor.
07:24:20 17 Matt Haverstick for the
07:24:21 18 Congressional Intervenors.

07:24:23 19 Let's start where we
07:24:24 20 always must, the Constitution.
07:24:27 21 Article 2, Section 16, has been
07:24:30 22 applied by League of Women
07:24:32 23 Voters to this context is a
07:24:34 24 directed to the Court and to
07:24:36 25 the General Assembly, but here

07:24:38 1 we're talking about the Court,
07:24:39 2 about what the floor
07:24:40 3 considerations are for a map.
07:24:42 4 These are must haves. These
07:24:46 5 can't be negotiated away. They
07:24:48 6 can't be watered down. They
07:24:48 7 can't be bargained away. They
07:24:48 8 can't be traded up.

07:24:53 9 With these metrics the
07:24:55 10 Reschenthaler maps are
07:24:57 11 superior, they are at the top,
07:24:58 12 the top two I believe in terms
07:25:00 13 of compactness. Of course, I
07:25:06 14 think we all recognize --- and
15 parenthetically, it's
16 recognized by Dr. Burnell's
17 report that numerically our
18 districts are equivalent as
19 they need to be. Dr. Brunell's
20 report has not been rebutted by
21 any expert or any other
22 testimony in this case.

07:25:23 23 The most important
07:25:25 24 factor I think, though, for
07:25:26 25 this Court to look at when it's

07:25:27 1 considering the hard stop
07:25:28 2 constitutional requirements are
07:25:30 3 splits. The language again in
07:25:36 4 Article 2, Section 16, is
07:25:38 5 directive. It doesn't brook
07:25:40 6 any compromise when it says
07:25:41 7 split the least amount of
07:25:42 8 counties, districts, et cetera,
07:25:44 9 as possible.

07:25:45 10 There's only one map
07:25:46 11 that splits counties --- really
07:25:52 12 there's two maps that split the
07:25:53 13 counties in the least amount at
07:25:55 14 13, and those are the
07:25:56 15 Reschenthaler maps.

07:25:57 16 Other experts have
07:25:59 17 acknowledged that they could
07:26:00 18 have drawn maps with 13 county
07:26:04 19 splits if possible but they
07:26:07 20 didn't. There has been no
07:26:10 21 evidence presented of any other
07:26:10 22 map by any of the presenters
07:26:10 23 that split counties that equal
07:26:16 24 amount or less than the
07:26:16 25 Reschenthaler maps.

07:26:17 1 The Reschenthaler maps
07:26:18 2 also tied. I think for first
07:26:18 3 place, if you want to look at
07:26:24 4 it that way for municipal
07:26:26 5 splits. So there are two maps
07:26:27 6 that undisputedly perform
07:26:29 7 better than any other on
07:26:30 8 objective factors in the
07:26:33 9 constitution, and those are the
07:26:34 10 Reschenthaler maps.

07:26:35 11 Now, I recognize that
07:26:35 12 the Court may not see it that
07:26:37 13 way. They may have a different
07:26:38 14 view of what the constitution
07:26:40 15 requires. And I credit Mr.
07:26:42 16 Senoff for acknowledging that
07:26:45 17 there are other things that can
07:26:49 18 be looked at in your decision
07:26:50 19 for what maps --- or what map
07:26:52 20 is the appropriate
07:26:54 21 Congressional map for
07:26:55 22 Pennsylvania.

07:26:56 23 You know, I had thought
07:26:57 24 at one point even this
07:26:59 25 afternoon that I was going to

07:27:00 1 come to the podium and bash on
07:27:06 2 computers and bash on computers
07:27:07 3 and make some funny statement
07:27:07 4 INEAC or Watson or something
07:27:10 5 like that. But you know,
07:27:10 6 especially with Dr. Duchin
07:27:13 7 yesterday, I've come to
07:27:14 8 understand and appreciate these
07:27:16 9 computer models. Because when
07:27:19 10 they are applied neutrally to
07:27:20 11 Pennsylvania's admittedly
07:27:22 12 unique political geography that
07:27:25 13 multiple experts, including Dr.
07:27:27 14 Duchin recognized favor
07:27:28 15 Republicans not by malice, not
07:27:31 16 because of a grand plan, it's
07:27:34 17 just where people live in
07:27:36 18 Pennsylvania, an immutable
07:27:36 19 characteristic at least for ten
07:27:38 20 years. When computers run
07:27:39 21 those models, applying our
07:27:41 22 neutral constitutional
07:27:43 23 criteria, guess what, the maps
07:27:45 24 are overwhelmingly favorable to
07:27:48 25 Republican congressional seats.

07:27:51 1 Overwhelmingly favorable.

07:27:54 2 So Dr. Duchin and

07:27:56 3 multiple other experts

07:27:58 4 acknowledge in the state and

07:27:59 5 nature of Pennsylvania when you

07:28:00 6 run these maps with the neutral

07:28:02 7 criteria, they favor

07:28:03 8 Republicans.

07:28:05 9 I like it. I think that

07:28:07 10 is indicative of the map that

07:28:09 11 we drew and the Reschenthaler

07:28:12 12 maps. And I think that's the

07:28:14 13 right result, because it's a

07:28:15 14 neutral application of facts on

07:28:19 15 the ground, numbers on the

07:28:21 16 ground, the census data.

07:28:23 17 Here's the part of the

07:28:24 18 computing that I don't like.

07:28:26 19 We heard lots of testimony

07:28:31 20 about map equations and formula

07:28:33 21 that purport to resolve a

07:28:35 22 problem that isn't really a

07:28:37 23 problem. This idea that

07:28:38 24 there's got to be partisan

07:28:39 25 fairness. That there's an

07:28:41 1 efficiency gap, that votes are
07:28:44 2 wasted. And by the way, what
07:28:45 3 an offensive thing to say.
07:28:47 4 That if you learn that your
07:28:50 5 vote, if you cast, might not
07:28:51 6 help your candidate win because
07:28:55 7 somebody has too many votes, or
07:28:57 8 you know, your candidate is
07:28:58 9 going to get so many votes that
07:29:00 10 it doesn't matter, that your
07:29:04 11 vote is wasted. Is that what
07:29:04 12 these folks are telling
07:29:05 13 Pennsylvanians to do, don't
07:29:05 14 bothering voting your votes are
07:29:10 15 wasted. I'm sorry, I'm not
07:29:10 16 going to waste my time talking
07:29:13 17 about that.

07:29:14 18 But I do want to talk
07:29:15 19 about these equations that are
07:29:17 20 trying to over correct or make
07:29:18 21 more fair or make more
07:29:24 22 representatives and eliminate
07:29:24 23 what these experts acknowledge
07:29:24 24 is, again, an immutable fact
07:29:24 25 about Pennsylvania's political

07:29:30 1 geography that Republicans live
07:29:31 2 in the T. Democrats are
07:29:32 3 concentrated in southeast and
07:29:36 4 in the southwest and to fix
07:29:37 5 that, we have to have all of
07:29:39 6 these other formulas to spread
07:29:41 7 this out.

07:29:42 8 There are two primary
07:29:43 9 problems I have with that, Your
07:29:43 10 Honor. The first thing we
07:29:44 11 don't have a parliament. We
07:29:46 12 have a Congress. We have a
07:29:47 13 winner take all electoral
07:29:49 14 system and there are going to
07:29:51 15 be times where the vote count
07:29:52 16 for statewide races when you do
07:29:54 17 partisan splits or party
07:29:57 18 politic splits are going to
07:29:59 19 suggest well, there were more
07:30:01 20 Republicans voting statewide in
07:30:03 21 a race than in individual
07:30:05 22 districts who elected Democrats
07:30:07 23 or Republicans, and those
07:30:08 24 numbers aren't always going to
07:30:10 25 match up.

07:30:11 1 But that's what happens
07:30:12 2 sometimes when you don't have a
07:30:18 3 parliamentary system. And we
07:30:18 4 don't turn parliament with
07:30:19 5 these false or ginned up
07:30:24 6 equations that are really back
07:30:24 7 to gerrymander. But here's the
07:30:27 8 more pressing problem with
07:30:29 9 these things.

07:30:30 10 And it was candidly ---
07:30:32 11 and I appreciate you saying so,
07:30:32 12 acknowledged by Dr. Duchin,
07:30:36 13 these formulas are attempts to
07:30:37 14 offer correct for a very
07:30:38 15 specific partisan purpose, the
07:30:41 16 natural inclination of
07:30:42 17 Pennsylvanians to elect
07:30:46 18 Republicans based on political
07:30:47 19 geography.

07:30:48 20 Again, not based on
07:30:49 21 malice or intent, just based on
07:30:53 22 where they live. She testified
07:30:56 23 I like these formulas because
07:30:56 24 they're going to spread out
07:30:57 25 more Democratic votes and

07:31:00 1 they're going to make it more
07:31:01 2 even. And I am doing that
07:31:02 3 deliberately. That's
07:31:03 4 gerrymandering.

07:31:03 5 When you --- that's
07:31:05 6 gerrymandering, and that's what
07:31:05 7 the League of Women Voters had
07:31:08 8 a problem with. The Supreme
07:31:10 9 Court had a problem with League
07:31:12 10 of Women Voters this notion
07:31:13 11 that you should ignore facially
07:31:15 12 neutral criteria and instead
07:31:18 13 try to purposely district based
07:31:21 14 on party politics. That's a
07:31:23 15 gerrymander.

07:31:24 16 When the Governor splits
07:31:26 17 Pittsburgh in two, I would
07:31:27 18 submit that is a funny shape,
07:31:29 19 just like the funny shapes that
07:31:30 20 were attacked in League of
07:31:33 21 Women Voters, and especially
07:31:33 22 when it's done for the
07:31:34 23 invalidly --- for the
07:31:40 24 admittedly invalid purpose of a
07:31:43 25 partisan basis or for partisan

07:31:45 1 politics, which is spread out
07:31:47 2 Democrats so they have more
07:31:50 3 influence. That is
07:31:50 4 gerrymandering. We can't do
07:31:52 5 that. This Court can't do
07:31:53 6 that.

07:31:54 7 I'm out of time, Your
07:31:55 8 Honor. I'd like to close by
07:31:56 9 acknowledging that Dr. Naughton
07:32:00 10 while not a mathematician, not
07:32:02 11 a computer scientist, I think,
07:32:03 12 had something very valuable to
07:32:06 13 talk to this Court about. And
07:32:07 14 it wasn't about which map is
07:32:12 15 --- is sort of the best.

07:32:13 16 Right? Although I would
07:32:14 17 say --- and I wasn't the one
07:32:15 18 that asked him the question.
07:32:16 19 The only testimony from Dr.
07:32:18 20 Naughton about a good map in
07:32:19 21 terms of the political
07:32:20 22 geography was the Reschenthaler
07:32:23 23 maps.

07:32:23 24 But what Dr. Naughton
07:32:26 25 reminded us and reminded this

07:32:28 1 Court is that we are
07:32:29 2 redistricting for people. We
07:32:31 3 are not redistricting for
07:32:33 4 political parties, we're not
07:32:35 5 redistricting for particular
07:32:38 6 Congressmen and women, we're
07:32:40 7 redistricting for
07:32:41 8 Pennsylvanians. And these
07:32:43 9 Pennsylvanians deserve to get
07:32:44 10 districts that reflect, as Dr.
07:32:47 11 Naughton said, not that they
07:32:49 12 are red or blue widgets but
07:32:51 13 they are people who, frankly,
07:32:52 14 don't think about politics, he
07:32:54 15 testified all that much at all.
07:32:55 16 They have a lot more important
07:32:57 17 things going on. And
07:33:00 18 understanding what those
07:33:02 19 important things are and
07:33:03 20 understanding why they care
07:33:04 21 about their communities, why
07:33:06 22 they want to be associated in
07:33:07 23 one community and not another.
07:33:09 24 Where there natural affinities
07:33:11 25 are. What they are pressing

07:33:13 1 social and economic issues are,
07:33:14 2 those are the things that you
07:33:16 3 have to bear in mind.

07:33:17 4 JUDGE McCULLOUGH:

07:33:17 5 And Counsel, could you
07:33:18 6 also just address the election
07:33:20 7 schedule quickly.

07:33:24 8 ATTORNEY HAVERSTICK:

07:33:24 9 Quickly, Your Honor,
07:33:25 10 there is absolutely no reason
07:33:26 11 to move the calendar. I don't
07:33:28 12 yet take a position onto move
07:33:30 13 the primary. I think that's
07:33:31 14 premature.

07:33:32 15 But in 2018 the
07:33:34 16 Secretary moved the calendar,
07:33:38 17 and I think the --- you know,
07:33:39 18 if you correct for this year's
07:33:40 19 calendar, it would be I think
07:33:41 20 February 22nd we could have a
07:33:43 21 map. It's not the first time
07:33:44 22 the Secretary had said we can't
07:33:45 23 do it, we can't do it and does
07:33:47 24 it. They did it in League of
07:33:51 25 Women Voters, they frankly did

07:33:52 1 it in the ballot question
07:33:54 2 issue, if you recall a few
07:33:56 3 years ago and it got changed at
07:33:59 4 the last minute for retirement
07:34:01 5 age for Justices. And they
07:34:04 6 said they couldn't move the
07:34:04 7 deadlines and then they moved
07:34:05 8 the deadlines and it all worked
07:34:05 9 out fine. It can be done.

07:34:06 10 JUDGE MCCULLOUGH:

07:34:06 11 Okay.

07:34:07 12 Just to be clear, did
07:34:07 13 you say no reason not to move
07:34:09 14 the calendar.

07:34:10 15 ATTORNEY HAVERSTICK:

07:34:10 16 I think the calendar
07:34:11 17 should be moved.

07:34:12 18 JUDGE McCULLOUGH:

07:34:15 19 You are talking about
07:34:16 20 circulation of petitions?

07:34:18 21 ATTORNEY HAVERSTICK:

07:34:19 22 Yes, ma'am. Thank you,
07:34:21 23 Your Honor.

07:34:21 24 JUDGE MCCULLOUGH:

07:34:21 25 Thank you, Mr.

07:34:26 1 Haverstick.

07:34:27 2 And now House of
07:34:28 3 Representatives is going first?

07:34:28 4 Okay.

07:34:30 5 Representative
07:34:30 6 Benninghoff and Cutler.
07:34:41 7 Attorney Lewis.

07:34:41 8 ATTORNEY LEWIS:

07:34:42 9 Your Honor, when the ---
07:34:42 10 when this trial began we said
07:34:44 11 that the evidence would show
07:34:45 12 that the General Assembly's
07:34:46 13 plan House Bill 2146, adheres
07:34:48 14 to the traditional districting
07:34:51 15 criteria set forth in
07:34:53 16 Pennsylvania's Constitution.
07:34:54 17 The evidence has borne that
07:34:56 18 out. It is undisputed in this
07:34:58 19 case, that HB-2146 is equal
07:35:07 20 population is contiguous intact
07:35:07 21 and respect and the integrity
07:35:09 22 of the Pennsylvania counties,
07:35:10 23 political subdivisions and
07:35:12 24 precincts.

07:35:14 25 Governor Wolf's own

07:35:15 1 expert agreed. And it meets
07:35:17 2 those criteria, in fact, better
07:35:19 3 than many of the plans. In
07:35:20 4 particular House Bill 2146
07:35:23 5 performs very well in
07:35:24 6 preserving the integrity of
07:35:25 7 political subdivisions. A
07:35:27 8 preeminent criteria that has
07:35:30 9 part of Pennsylvania's
07:35:33 10 Constitution since 1790.

07:35:36 11 In contrast, whether by
07:35:37 12 splitting the City of
07:35:37 13 Pittsburgh as the Governor in
07:35:39 14 both senate Democratic plans
07:35:41 15 --- and I believe some of the
07:35:43 16 Amici as well, or by splitting
07:35:45 17 precincts or by playing other
07:35:47 18 games many of the plans
07:35:51 19 subordinate those criteria.

07:35:52 20 Back to 2146. HB-2146
07:35:54 21 was the product of the most
07:35:56 22 transparent process and what we
07:35:57 23 understand in the
07:35:58 24 Commonwealth's history. The
07:36:00 25 House held 11 regional

07:36:01 1 hearings, took comments from
07:36:04 2 hundreds of members of the
07:36:05 3 public and many people
07:36:06 4 testified, and ultimately
07:36:09 5 adopted a map not drawn by a
07:36:11 6 super computer. Not drawn in a
07:36:14 7 back smoked filled room. But
07:36:17 8 drawn well-known good
07:36:18 9 government advocate Amanda
07:36:19 10 Holt. Yes, that Holt from the
07:36:21 11 Pennsylvania Supreme Court Holt
07:36:22 12 decisions of the last decade.

07:36:24 13 This plan was subject to
07:36:28 14 public scrutiny for many weeks
07:36:30 15 before it's passage, which of
07:36:30 16 course is way many of the
07:36:30 17 experts in this case were able
07:36:32 18 to analyze 2146 in their
07:36:35 19 opening reports, not just the
07:36:36 20 rebuttal reports.

07:36:37 21 No other plan before
07:36:38 22 this Court has gone through
07:36:40 23 that kind of public scrutiny
07:36:41 24 and deliberative process that
07:36:44 25 the Pennsylvania General

07:36:45 1 Assembly undertook and is in
07:36:48 2 the best position to undertake
07:36:50 3 as the body charged with this
07:36:52 4 role. In fact, this trial is
07:36:56 5 still unclear who drew most of
07:36:56 6 these plans placed before the
07:36:57 7 Court for consideration.

07:36:58 8 Let's turn to the
07:37:01 9 politics. From a partisan
07:37:02 10 standpoint HB-2146 is balanced.
07:37:06 11 It draws nine Democratic
07:37:08 12 leaning districts to eight
07:37:10 13 Republican leaning districts
07:37:14 14 which is very much in line with
07:37:16 15 the Nine-to-Nine plan drawn by
07:37:17 16 the Pennsylvania Supreme Court
07:37:19 17 special master in 2018. That
07:37:20 18 is a commonsense resolved and
07:37:22 19 it is consistent with Mellow,
07:37:23 20 which found favor in that case
07:37:25 21 with a plan that evenly divides
07:37:28 22 the loss between two seats by
07:37:29 23 the parties.

07:37:30 24 It's also consistent
07:37:31 25 with language in the League of

07:37:36 1 Women Voters decision that
07:37:36 2 recognizes as a permissible
07:37:37 3 redistricting principle, the
07:37:37 4 maintenance of the political
07:37:38 5 balance, which existed prior to
07:37:40 6 the prior reapportionment.
07:37:43 7 Nine-to-nine --- going from and
07:37:43 8 nine-to-nine to nine-to-eight
07:37:46 9 just makes sense. In fact,
07:37:46 10 unable to meaningfully
07:37:51 11 demonstrate that 2146 is not a
07:37:52 12 valid plan, a lot of the other
07:37:53 13 parties have asked the Court to
07:37:54 14 embark on a beauty contest, to
07:37:57 15 pick the best or the fairest
07:37:59 16 map, exactly as my colleague
07:38:02 17 Mr. Tucker predicted yesterday
07:38:07 18 morning.

07:38:07 19 But adherence to
07:38:07 20 traditional districting
07:38:07 21 criteria, the essential
07:38:08 22 standards set forth in League
07:38:10 23 of Women Voters and the main
07:38:11 24 focus of Mellow serves as the
07:38:14 25 north star to guide a fairy

07:38:17 1 districting process in the
07:38:18 2 stormy seas of shifting
07:38:18 3 partisan preferences of the
07:38:18 4 Commonwealth's voters.

07:38:24 5 Regardless, let's go
07:38:26 6 down the fairness rabbit hole
07:38:27 7 for a moment. It is
07:38:29 8 established in this case, and
07:38:32 9 undisputed that drawing maps
07:38:32 10 without referencing the
07:38:36 11 partisan and racial data will
07:38:36 12 generate a slight tilt towards
07:38:39 13 Republicans. That is due to
07:38:41 14 public geography where the
07:38:43 15 voters live.

07:38:44 16 Dr. Barber's simulations
07:38:46 17 demonstrated that. In fact,
07:38:47 18 the only other expert in this
07:38:49 19 case ran a simulation, Dr.
07:38:49 20 Duchin, got a consistent
07:38:51 21 result. So a fair process
07:38:53 22 might result in a tilt, but
07:38:56 23 that's not because the process
07:38:58 24 is unfair. It's because this
07:39:01 25 moment in history in

07:39:01 1 Pennsylvania Democratic
07:39:01 2 supporting supporters are
07:39:01 3 concentrated in the city and
07:39:08 4 Republicans are not.

07:39:09 5 Nonetheless HB-2146
07:39:10 6 produces a very competitive map
07:39:13 7 with a nine Democratic seat
07:39:15 8 line and an eight Republican
07:39:16 9 seat lean. As Dr. Barber
07:39:19 10 confirms, it's five competitive
07:39:20 11 districts more than any other
07:39:22 12 submission and as Carter's
07:39:24 13 Petitioner expert, Dr. Rodden,
07:39:26 14 conceded under the right
07:39:28 15 electoral environment could
07:39:30 16 swing up to ten Democratic
07:39:32 17 seats. It is hard to describe
07:39:35 18 HB-2146 as unfair. Perhaps
07:39:37 19 unsurprisingly, most of the
07:39:38 20 experts have downplayed looking
07:39:40 21 at fairness based on expected
07:39:40 22 seat share, which is sort of
07:39:42 23 how everyone in politics
07:39:42 24 understands this.

07:39:44 25 But instead focused

07:39:46 1 on these , you know, interesting
07:39:47 2 but complex mathematical
07:39:50 3 partisan fairness measures. So
07:39:52 4 we have heard at length about
07:39:54 5 how negative .02 median
07:39:55 6 difference is unfair, but a
07:39:56 7 negative .006 difference is
07:39:59 8 somehow fair or a declination
07:40:02 9 score or some other metric.
07:40:04 10 The hyper focus on these
07:40:06 11 metrics masks real fairness
07:40:08 12 concerns with many of the
07:40:10 13 submissions.

07:40:10 14 The Carter, Gressman,
07:40:13 15 Wolf and Senate Democratic
07:40:16 16 maps --- well map 2 anyway,
07:40:16 17 draws a ten Democrat, seven
07:40:19 18 Republican map. The House
07:40:21 19 Democrats managed to beat the
07:40:22 20 field drawing 11 Democrat to 6
07:40:25 21 Republican plan. In what world
07:40:28 22 is it fair to go from a
07:40:30 23 nine-to-nine to a ten-to-seven
07:40:32 24 or to an eleven-to-six map in
07:40:35 25 such a closely divided state

07:40:35 1 like Pennsylvania.

07:40:35 2 It's especially
07:40:36 3 interesting in Carter's
07:40:36 4 Petitioners, which claimed to
07:40:40 5 have created a least change the
07:40:40 6 map, yet they still go from
07:40:42 7 nine-to-nine to a ten-to-seven.
07:40:49 8 Interesting how that worked
07:40:50 9 out.

07:40:50 10 Another problem
07:40:50 11 expressed for the fairest map,
07:40:50 12 that in order to achieve
07:40:52 13 excellent scores on these
07:40:53 14 different political science
07:40:54 15 measures, the map maker must
07:40:56 16 draw district boundaries to
07:41:01 17 overcome a natural advantage.
07:41:01 18 What that means is they're
07:41:02 19 assigning voters to districts
07:41:04 20 based not on traditional
07:41:06 21 criteria, but based on partisan
07:41:08 22 preferences.

07:41:08 23 Sorting voters in the
07:41:11 24 districts based on their
07:41:11 25 partisanship unfairly dilutes

07:41:11 1 the power of a community's
07:41:13 2 votes, the very concern in LWV.
07:41:15 3 Because this is about the
07:41:16 4 voters not the parties.

07:41:19 5 In any event, there's a
07:41:20 6 word for sorting voters based
07:41:22 7 on partisanship.
07:41:24 8 Gerrymandering. Dr. Barber's
07:41:29 9 rebuttal report shows that
07:41:29 10 Figure 5, Table 4's appendix,
07:41:31 11 it's very clear when you look
07:41:33 12 at those middle swing districts
07:41:35 13 that all the plans more or less
07:41:40 14 have, the Carter, Gressman,
07:41:40 15 Governor, House Dem, Senate Dem
07:41:43 16 plans all draw those Democratic
07:41:47 17 leaning than 96 to 100 percent
07:41:47 18 of the simulations.

07:41:49 19 So great the map scores
07:41:51 20 excellent on a metric, but
07:41:53 21 yields a map that gives
07:41:55 22 Democrats a big advantage. I
07:41:57 23 can go on, but I won't. You've
07:42:01 24 heard the testimony of several
07:42:02 25 experts who each argue that his

07:42:04 1 or her map is the best and
07:42:06 2 arguments over which is fair,
07:42:08 3 which is most compact. But I
07:42:11 4 think Dr. Naughton I think put
07:42:12 5 it best. There is no agreed
07:42:14 6 upon objective of fairness.
07:42:15 7 That's because it's a political
07:42:17 8 question. That's what Johnson
07:42:19 9 versus Wisconsin Election
07:42:22 10 Commission held in Wisconsin
07:42:22 11 Supreme Court last year. And
07:42:25 12 that's why once the General
07:42:27 13 Assembly's proposed plan is
07:42:28 14 shown to satisfy the
07:42:28 15 Constitutional criteria as ours
07:42:31 16 has, we would urge the Court to
07:42:32 17 defer to those legislative
07:42:34 18 policy choices. General
07:42:34 19 Assembly consists of 253
07:42:36 20 elected representatives. They
07:42:37 21 have the Constitutional role to
07:42:39 22 redistricting. And their
07:42:40 23 ability to do so in this case
07:42:42 24 was thwarted on only the
07:42:44 25 Governor's insistence on asking

07:42:46 1 the Court to give him a
07:42:46 2 ten-to-seven plan.

07:42:48 3 With that, Your Honor, I
07:42:48 4 see my time is up. And we'll
07:42:49 5 thank you for your time and
07:42:50 6 consideration.

07:42:50 7 JUDGE MCCULLOUGH:

07:42:51 8 I would like you to
07:42:51 9 comment on the election
07:42:52 10 schedule.

07:42:54 11 ATTORNEY LEWIS:

07:42:55 12 Your Honor, I think my
07:42:56 13 --- our clients would prefer to
07:43:00 14 a least possible change to any
07:43:01 15 election calendar. And we do
07:43:02 16 not believe changing the
07:43:03 17 primary date would be
07:43:04 18 appropriate.

07:43:07 19 JUDGE MCCULLOUGH:

07:43:08 20 Okay. Thank you,
07:42:54 21 Counsel.

07:42:54 22 ATTORNEY LEWIS:

07:42:54 23 Thank you, Your Honor.

07:43:10 24 Your Honor, I believe my
07:43:12 25 colleague and I have a flight

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in about less than an hour.

May we have --- my colleague,
Mr. Mann, take over for us for
any further proceedings?

JUDGE MCCULLOUGH:

Yes. And I ---.

ATTORNEY LEWIS:

Thank you, Your Honor.

JUDGE MCCULLOUGH:

But the Senate?

ATTORNEY LEWIS:

Yes, they will.

JUDGE MCCULLOUGH:

Republicans are going to
make a closing statement?

ATTORNEY LEWIS:

Yes, they will, Your
Honor.

JUDGE MCCULLOUGH:

Yes. Thank you,
Counsel.

ATTORNEY LEWIS:

Thank you, Your Honor.

ATTORNEY HOLTZMAN:

Good afternoon, Your

1 Honor. May it please the
2 Court. Thank you for your time
3 and your careful attention to
4 this matter over the last
5 couple of days. Again, my name
6 is. Again, my name is Anthony
7 Holtzman and I represent
8 Senator Jake Coreman, the
9 President Pro Tempore of the
10 Pennsylvania Senate, along with
11 Senator Kim Ward, the Majority
12 Leader of the Pennsylvania
13 Senate.

14 Your Honor, during this
15 hearing, we've heard a lot of
16 testimony about how it's not
17 possible to predict the further
18 in many ways. That proposition
19 I think is generally true, but
20 yesterday there was an
21 exception to this rule.

07:44:06

22 Yesterday during my
23 opening statement I said that
24 during this hearing you would
25 here a lot of technical and

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07:44:11 1 complex testimony from
07:44:13 2 political scientists and
07:44:16 3 mathematicians. That turned
07:44:18 4 out to be true. I said you
07:44:20 5 would hear testimony about
07:44:22 6 algorithms and various formulas
07:44:23 7 and analytics that can be used
07:44:24 8 to evaluate redistricting plans
07:44:25 9 in differing ways and that
07:44:26 10 turned out to be true as well.

07:44:27 11 But most importantly,
07:44:29 12 Your Honor, I said the evidence
07:44:30 13 at this hearing would show that
07:44:31 14 the Congressional redistricting
07:44:33 15 plan that's embodied in HB-2146
07:44:37 16 meets all the applicable
07:44:38 17 redistricting requirements
07:44:40 18 including the requirements
07:44:44 19 regarding the compactness and
07:44:44 20 contiguous territory,
07:44:46 21 population equality and respect
07:44:46 22 for boundaries of the political
07:44:48 23 subdivisions.

07:44:49 24 Importantly that
07:44:50 25 predictions turned out to be

07:44:52 1 true as well. The fact that
07:44:53 2 HB-2146 meets those
07:44:55 3 requirements was confirmed, not
07:44:56 4 only by Dr. Barber the expert
07:45:00 5 witness who testified on behalf
07:45:01 6 of the House Republican
07:45:02 7 Intervenors but also by the
07:45:03 8 expert witnesses who testified
07:45:04 9 on behalf of the Governor and
07:45:06 10 the witnesses for essentially
07:45:08 11 all other parties as well.

07:45:10 12 The evidence also did
07:45:11 13 not show that the HB-2146 plan
07:45:13 14 is otherwise unlawful or unfair
07:45:16 15 in some other way. Your Honor,
07:45:18 16 not that there is any sort of
07:45:19 17 judicially manageable standard
07:45:21 18 for determining whether a given
07:45:23 19 plan is not sufficiently fair
07:45:25 20 for the Court to adopt it.

07:45:27 21 As the expert testimony
07:45:28 22 in this hearing plainly
07:45:30 23 illustrated, whether something
07:45:31 24 is fair depends on how you
07:45:32 25 define fair, and there are many

07:45:34 1 ways to define it, most of
07:45:35 2 which involve making subjective
07:45:38 3 judgments and all of which are
07:45:39 4 imprecise to some degree.

07:45:40 5 From a partisan
07:45:41 6 prospective every map that was
07:45:44 7 submitted for this Court's
07:45:46 8 consideration was deemed to be
07:45:47 9 fair in one venture or another.
07:45:51 10 And that an idea of a computer
07:45:52 11 or an individual expert witness
07:45:54 12 can somehow create a map that
07:45:56 13 has no partisan consequences
07:45:56 14 or affects whatsoever
07:45:58 15 completely false if not
07:46:00 16 outright laughable.

07:46:02 17 The Supreme Court of the
07:46:03 18 United States in this regard
07:46:03 19 has wisely observed that,
07:46:04 20 quote, politics and political
07:46:08 21 considerations are inseparable
07:46:08 22 for redistricting and
07:46:10 23 apportioning, closed quote.
07:46:10 24 That's from the Gaffney versus
07:46:13 25 Cummings decision handed down

07:46:14 1 in 1973.

07:46:16 2 So against this backdrop

07:46:18 3 we return to the point where we

07:46:19 4 started. Under the United

07:46:20 5 States and Pennsylvania

07:46:22 6 Constitutions, the task of

07:46:22 7 redistricting the

07:46:24 8 Commonwealth's Congressional

07:46:25 9 districts is expressly

07:46:27 10 committed to the Pennsylvania

07:46:28 11 General Assembly. It's a

07:46:30 12 fundamentally legislative task

07:46:32 13 and HB-2146 reflects this

07:46:34 14 principle. It embodies a

07:46:38 15 congressional redistricting

07:46:39 16 plan that both the Pennsylvania

07:46:41 17 Senate and the House have

07:46:42 18 thoughtfully considered and

07:46:43 19 passed. It reflects a

07:46:47 20 deliberative open legislative

07:46:47 21 process which involve

07:46:49 22 testimony, negotiations

07:46:51 23 compromise and policy judgments

07:46:52 24 in which the peoples elected

07:46:54 25 representatives undertook in

07:46:55 1 order to memorialize and
07:46:56 2 implement state policy that
07:46:58 3 reflects the will of their
07:46:59 4 continuants.

07:47:01 5 No other party or no
07:47:03 6 other Amici has presented to
07:47:05 7 court with the proposed
07:47:06 8 redistricting plan that has
07:47:08 9 made its way through any part
07:47:09 10 of the legislative process, let
07:47:11 11 alone the senate and House have
07:47:13 12 passed, let alone the plan
07:47:15 13 that's undergone any sort of
07:47:15 14 public vetting process or
07:47:17 15 public hearing process or
07:47:18 16 public process at all. Only
07:47:19 17 HB-2146 has done so.

07:47:22 18 Against this backdrop
07:47:23 19 HB-2146, as a legislatively
07:47:27 20 approved plan that meets all of
07:47:29 21 the redistricting criteria,
07:47:31 22 which is essentially undisputed
07:47:35 23 in this case and as a plan that
07:47:35 24 nobody should be, quote,
07:47:35 25 unquote, unfair is entitled to

07:47:37 1 deference from the Court in
07:47:38 2 order to honor the General
07:47:38 3 Assembly's constitution
07:47:43 4 prerogative to engage in
07:47:43 5 redistricting.

07:47:45 6 And Your Honor there is
07:47:46 7 precedent for this approach,
07:47:46 8 which is the Donnelly versus
07:47:47 9 Meskill decision from
07:47:48 10 Connecticut, which we cite in
07:47:50 11 our briefs. There, the Court
07:47:52 12 was positioned just like this
07:47:53 13 one, the legislature had passed
07:47:55 14 a map and the Governor vetoed
07:47:57 15 it, and picking the map
07:48:02 16 referring to the legislature
07:48:03 17 system, quote, the plan has had
07:48:04 18 added advantage that it's
07:48:07 19 basically the plan adopted by
07:48:09 20 the legislature, closed quote.
07:48:10 21 The Court later went on to say,
07:48:10 22 quote, the legislative adoption
07:48:13 23 of Public Act 807 tips the
07:48:15 24 scales in favor of the plan in
07:48:17 25 Exhibit B-1, which provides

07:48:18 1 districts essentially, as
07:48:20 2 outlined by the legislature,
07:48:20 3 with adjustments only as
07:48:22 4 necessary to bring about
07:48:24 5 virtually complete population
07:48:25 6 equality, closed quote.

07:48:26 7 The Court should reach
07:48:28 8 the same result in this case,
07:48:28 9 Your Honor, for the reasons
07:48:30 10 that I just mentioned and I
07:48:31 11 mentioned in my opening
07:48:32 12 statement.

07:48:32 13 Thank you for your
07:48:33 14 consideration.

07:48:33 15 JUDGE MCCULLOUGH:

07:48:34 16 And can you also comment
07:48:34 17 on the election schedule,
07:48:38 18 please?

07:48:38 19 ATTORNEY HOLTZMAN:

07:48:39 20 Certainly, Your Honor.
07:48:39 21 We take the position that of
07:48:39 22 course this is a matter that
07:48:39 23 can be addressed by the General
07:48:41 24 Assembly, if necessary, but we
07:48:42 25 recognize that the Court has

07:48:43 1 changed these dates in the past
07:48:47 2 and they feel that conditions
07:48:50 3 are such that they must change
07:48:50 4 now because of the legal
07:48:51 5 posture of this matter. We
07:48:52 6 think changes should be limited
07:48:54 7 to only what's absolutely
07:48:57 8 necessary and don't support a
07:48:57 9 shortening of the petition
07:48:58 10 circulation and signature
07:48:58 11 gathering window, but we
07:48:58 12 otherwise don't have any
07:48:58 13 specific position on how it
07:49:05 14 affects the three primary dates
07:49:06 15 that exist on the calendar.

07:49:12 16 JUDGE MCCULLOUGH:

07:49:12 17 Thank you.

07:49:14 18 ATTORNEY HOLTZMAN:

07:49:14 19 Thank you very much.

07:49:22 20 JUDGE MCCULLOUGH:

07:49:22 21 And now we move to
07:49:25 22 Attorney Wiygul. And you're
07:49:25 23 presenting on behalf of both
07:49:25 24 Governor Wolf and Secretary
07:49:29 25 Chapman or just ---?

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ATTORNEY WIYGUL:

Why don't we start with Governor Wolf, if that's okay, Your Honor, since we're going in reverse order?

JUDGE MCCULLOUGH:

Do you want ---?

ATTORNEY WIYGUL:

I won't --- I'm sorry, I won't take --- but I promise I won't be greedy about the time. And before I start, I'd like the Court staff, if it's possible, I might like to use the projector. Thank you.

JUDGE MCCULLOUGH:

You may. Is there someone here that can still operate --- there you go.

ATTORNEY WIYGUL:

Thank you. I realize this is an unwelcomed task that has been called before the Court, but the Court and its staff have been very welcoming

07:50:10 1 to us and very accommodating,
07:50:10 2 and I'd like to thank the Court
07:50:10 3 and staff for that.

07:50:11 4 The question before the
07:50:12 5 Court as set forth in Mellow
07:50:14 6 versus Mitchell, which was the
07:50:16 7 last Congressional impasse
07:50:18 8 redistricting case in
07:50:22 9 Pennsylvania, and it says which
07:50:22 10 of the plans timely offered to
07:50:23 11 this Court comes closest to the
07:50:24 12 constitutional standards in all
07:50:26 13 pertinent respects. But as to
07:50:27 14 the question of what those
07:50:28 15 constitutional standards are,
07:50:30 16 the League of Women Voters case
07:50:32 17 is the leading and on-point
07:50:35 18 precedent. And it says that
07:50:39 19 the Free Equal Election Clause
07:50:39 20 governs all aspects of the
07:50:40 21 electoral process, including
07:50:40 22 the apportionment, and provides
07:50:42 23 the people of this Commonwealth
07:50:44 24 with equally effective power to
07:50:45 25 select the representative of

07:50:46 1 his or her choice and bars the
07:50:48 2 dilution of the people's power
07:50:50 3 to do so.

07:50:51 4 And the Court also went
07:50:53 5 on to tell us how a map should
07:50:56 6 be evaluated under this
07:50:58 7 constitutional standard. But
07:51:01 8 first we have to determine
07:51:02 9 whether the plan comports with
07:51:03 10 certain neutral floor criteria,
07:51:05 11 which the Court has heard an
07:51:07 12 awful lot about in the last two
07:51:09 13 days. But the second, it
07:51:10 14 should go on to ensure that
07:51:11 15 even if a plan meets these
07:51:14 16 criteria, it does not,
07:51:14 17 nevertheless, operate to
07:51:14 18 unfairly dilute the power of a
07:51:18 19 particular group's vote for a
07:51:19 20 Congressional Representative,
07:51:20 21 such as by entrenching the
07:51:23 22 structural partisan advantage.

07:51:25 23 And even though the
07:51:26 24 Court has heard a lot of
07:51:28 25 evidence from a lot of

07:51:29 1 different experts, I think the
07:51:30 2 picture is actually pretty
07:51:32 3 clear when you take a step
07:51:33 4 back. And I would refer to
07:51:36 5 some of the analyses that Dr.
07:51:40 6 Duchin did in this case that I
07:51:41 7 think helps to identify a lot
07:51:41 8 of what we seek to talk about.

07:51:44 9 And I don't know if I
07:51:45 10 need to put it up here, but
07:51:47 11 I'll just remind the Court that
07:51:47 12 Dr. Duchin gave a chart of the
07:51:49 13 performance of the various
07:51:51 14 plans of the traditional
07:51:52 15 criteria. That was page two,
07:51:54 16 Table 1, of her response
07:51:55 17 report. And we know that all
07:51:56 18 the plans are --- essentially
07:51:58 19 have equal population
07:51:59 20 distribution. All the plans
07:52:00 21 are contiguous. So the real
07:52:02 22 action here is on compactness
07:52:03 23 and on subdivision splits. And
07:52:07 24 the Court has heard --- I don't
07:52:10 25 think there is any serious

07:52:11 1 disagreement that there are
07:52:12 2 trade-offs between those two
07:52:13 3 metrics. It's not a matter of
07:52:14 4 trying to minimize one or the
07:52:15 5 other. I think there's broad
07:52:16 6 agreement on that front.

07:52:18 7 And what Dr. Duchin said
07:52:20 8 and I think the statistics bare
07:52:21 9 this out is that, in general, a
07:52:22 10 lot of the plans before this
07:52:23 11 Court do well on the
07:52:24 12 traditional criteria. They're
07:52:26 13 acceptable under the
07:52:27 14 traditional criteria, but there
07:52:29 15 are a few that do particularly
07:52:31 16 well, that achieve a standard
07:52:32 17 of excellence. And as Dr.
07:52:37 18 Duchin described, the
07:52:38 19 Governor's plan is among those.

07:52:44 20 So then where do we go?
07:52:46 21 Well, we have to go on to the
07:52:48 22 next phase of the analysis,
07:52:51 23 which is to look at partisan
07:52:51 24 fairness, to look at whether
07:52:51 25 despite meeting this

07:52:56 1 traditional criteria, there are
07:52:58 2 plans that do a better or worse
07:53:00 3 job of achieving partisan
07:53:01 4 fairness. And again, I think
07:53:03 5 if you look at the expert
07:53:04 6 testimony in this case you will
07:53:05 7 see broad agreement that
07:53:06 8 partisan fairness can be
07:53:08 9 meaningfully and helpfully
07:53:13 10 assessed and how to do that.

07:53:15 11 Now, to be sure there
07:53:16 12 are variations in the metrics
07:53:17 13 and we saw slightly different
07:53:19 14 scoring among the experts, and
07:53:21 15 the Court saw slightly
07:53:22 16 different scoring metrics
07:53:23 17 applied to partisan fairness.
07:53:28 18 But with rare exceptions, which
07:53:28 19 I suggest but won't get into,
07:53:28 20 were not articulated by the
07:53:33 21 expert, broad agreement that
07:53:33 22 you can measure partisan
07:53:35 23 fairness in several different
07:53:37 24 ways. And I would suggest the
07:53:40 25 notion that it's somehow so

07:53:40 1 subjective as to be
07:53:40 2 immeasurable. It's just not
07:53:45 3 credible and it doesn't comport
07:53:46 4 with the reality of our
07:53:47 5 politics, which is that
07:53:47 6 legislatures and politicians
07:53:51 7 have been using exactly those
07:53:52 8 criteria to gerrymander for
07:53:55 9 decades. They have been
07:53:56 10 looking on the wrong side of
07:53:58 11 those criteria. They've been
07:53:59 12 looking to use those criteria
07:53:59 13 to assess what map will give
07:54:01 14 their party an unfair,
07:54:05 15 entrenched structural
07:54:06 16 advantage.
07:54:07 17 And I think anyone who's been
07:54:08 18 living in American politics for
07:54:10 19 the last few decades knows
07:54:12 20 that's the case. So we're
07:54:13 21 saying let's use those metrics
07:54:15 22 for good instead of for
07:54:18 23 gerrymandering. Let's use them
07:54:23 24 to get to a system where we
07:54:23 25 don't have maps, where on a

07:54:25 1 systematic basis the party
07:54:26 2 winning less than 60 percent of
07:54:28 3 the votes gets more than
07:54:29 4 60 percent of the seats.
07:54:31 5 That's what it means at the end
07:54:33 6 of the day I think. And the
07:54:34 7 notion that I'm talking about
07:54:36 8 something that only applies to
07:54:37 9 parliamentary systems, that
07:54:39 10 just doesn't hold water, Your
07:54:40 11 Honor. I believe we can all
07:54:41 12 agree that we're in a small D
13 democracy. And one of the
14 fundamental principles in a
15 small D democracy is that the
16 majority should rule. We
17 shouldn't end up with a map, if
18 we can possibly avoid it, where
07:54:53 19 again on a regular basis less
07:54:54 20 than 50 percent of the votes
07:54:55 21 lead to more than 50 percent of
07:54:58 22 the seats. That is not small D
07:55:02 23 democratic.
07:55:02 24 So then what did we hear
07:55:03 25 from the advocates of such a

07:55:05 1 system? Well, they say it is
07:55:07 2 unavoidable we live in a state
07:55:09 3 with political geography and
07:55:11 4 that political geography is
07:55:15 5 predisposed towards structural
07:55:16 6 advantage for one of the
07:55:17 7 parties. But the evidence
07:55:18 8 shows that simply isn't true.
07:55:21 9 Yes, it may be true that if you
07:55:22 10 you generated random maps under
07:55:25 11 certain parameters that were
07:55:26 12 completely blind as to
07:55:27 13 fairness, more of those maps
07:55:29 14 would end up in a structural
07:55:31 15 advantage for one of the
07:55:32 16 parties, but the notion that
07:55:35 17 they want to give the Court,
07:55:36 18 which is that there is a choice
07:55:38 19 between meeting the traditional
07:55:40 20 criteria and partisan fairness,
07:55:41 21 is a false choice. And I think
07:55:43 22 the evidence unmistakably shows
07:55:46 23 that to be true. You can
07:55:47 24 absolutely satisfy, not only
07:55:51 25 satisfy the traditional

07:55:53 1 criteria, achieve excellence
07:55:57 2 under the traditional criteria
07:55:57 3 and also have partisan fairness
07:55:58 4 and also have a system where
07:56:00 5 you are honoring majority rule,
07:56:06 6 honoring close votes, close
07:56:06 7 seats, and therefore, having a
07:56:06 8 government that is properly
07:56:12 9 responsive and accountable to
07:56:13 10 the people of the Commonwealth.
07:56:14 11 And so what does that
07:56:15 12 mean at the end of the day?
07:56:16 13 Well, it means clearly you can
07:56:19 14 in Pennsylvania, unlike say in
07:56:21 15 Massachusetts, the example that
07:56:23 16 Dr. Duchin demonstrated, you
07:56:25 17 can have a map that meets the
07:56:27 18 traditional partisan criteria
07:56:27 19 and also achieves fairness.
07:56:27 20 And I would respectfully submit
07:56:27 21 to the Court that if you can
07:56:38 22 have such a map, then we must
07:56:38 23 have such a map, because I
07:56:40 24 think that is what the Free and
07:56:42 25 Equal Elections Clause, as

07:56:43 1 described by our Supreme Court,
07:56:44 2 means.

07:56:44 3 The Supreme Court says
07:56:46 4 that clause means that we have
07:56:47 5 to provide voters the
07:56:49 6 opportunity to the greatest
07:56:51 7 degree possible to participate
07:56:52 8 equally in all aspects of the
07:56:56 9 electoral process. And
07:56:58 10 redistricting is such an aspect
07:57:04 11 of the electoral process. And
07:57:05 12 so if we can't have a map that
07:57:08 13 meets the the traditional
07:57:08 14 criteria and excels under the
07:57:09 15 traditional criteria, and also
07:57:09 16 achieves partisan fairness,
07:57:13 17 then respectfully I suggest
07:57:14 18 that's the map the Court should
07:57:16 19 choose.

07:57:16 20 Now, is there only one
07:57:18 21 map that achieves that
07:57:20 22 standard? Not necessarily.
07:57:21 23 And I think Dr. Duchin said
07:57:23 24 very candidly that there is
07:57:25 25 more than one map in this case

07:57:26 1 that is reasonable. But she
07:57:28 2 also explained that when you
07:57:29 3 take the plans that excel on
07:57:32 4 the traditional criteria and
07:57:35 5 you also take the universe of
07:57:39 6 plans that achieve real
07:57:41 7 partisan fairness, there's one
07:57:42 8 plan that falls into both
07:57:44 9 circles. And that is the
07:57:46 10 Governor's plan. And that's
07:57:47 11 why we think this Court should
07:57:50 12 elect, should adopt that plan
07:57:52 13 in this case. Elect is not the
07:57:55 14 right word. Thank you.

07:57:57 15 I would just like to say
07:57:58 16 one more word. I won't belabor
07:58:00 17 this. We heard from the
07:58:02 18 legislative --- the House
07:58:05 19 Legislative and Senate
07:58:05 20 Legislative Intervenors that
07:58:08 21 really the Court to ignore all
07:58:10 22 of this analysis. All the
07:58:10 23 Court needs to look at is the
07:58:11 24 fact that the map at issue is
07:58:14 25 passed by the General Assembly.

07:58:15 1 We've explained the
07:58:15 2 non-responsive --- we've heard
07:58:15 3 I think very articulate
07:58:17 4 explanation from some of the
07:58:18 5 earlier counsel. That's simply
07:58:20 6 not the law. I would refer the
07:58:22 7 Court to the Decision of the
07:58:25 8 U.S. Supreme Court in Smiley v.
07:58:25 9 Holm, 285 US 355. That's a
07:58:30 10 1932 case.

07:58:30 11 JUDGE MCCULLOUGH:

07:58:30 12 Is it in your brief?

07:58:32 13 ATTORNEY WIYGUL:

07:58:32 14 It is in our brief, Your
07:58:34 15 Honor.

07:58:34 16 JUDGE MCCULLOUGH:

07:58:34 17 Okay.

07:58:35 18 ATTORNEY WIYGUL:

07:58:35 19 And it was recently
07:58:35 20 reaffirmed in the Arizona
07:58:36 21 redistricting case that earlier
07:58:39 22 counsel cited. And they sent
07:58:41 23 --- case from the district, the
07:58:43 24 House and Senate Republican
07:58:44 25 Intervenors. And if you want

07:58:45 1 to use the term outlier, Your
07:58:48 2 Honor, that case is an outlier.
07:58:48 3 We've cited case after case
07:58:50 4 after case in federal and in
07:58:51 5 probatively in State Supreme
07:58:53 6 Court that rejects the
07:58:55 7 principal that just because a
07:58:56 8 House map is passed by the
07:58:59 9 General Assembly it's entitled
07:59:01 10 to any sort of deference. It
07:59:02 11 has to be evaluated under the
07:59:05 12 same playing field under the
07:59:06 13 same standard as all the other
07:59:10 14 maps before the Court. Thank
07:59:10 15 you.

07:59:10 16 JUDGE MCCULLOUGH:

07:59:11 17 Are you going to speak
07:59:12 18 now for Secretary Chapman?

07:59:15 19 ATTORNEY WIYGUL:

07:59:15 20 Yes, I will, Your Honor.
07:59:16 21 As to the map, I mean, I think
07:59:18 22 we can largely rely on the
07:59:20 23 Affidavit that is at least
07:59:21 24 partially in evidence and
07:59:23 25 otherwise in the record. As we

07:59:25 1 explain in the affidavit, the
07:59:28 2 calendar situation at the
07:59:30 3 moment is --- rather
07:59:30 4 complicated may be an
07:59:32 5 understatement because we have
07:59:34 6 another process, the
07:59:35 7 legislative redistricting
07:59:38 8 process, which is at a
07:59:40 9 different phase and a slower
07:59:42 10 pace and more delayed. And we
07:59:45 11 feel very strongly that it is
07:59:47 12 not in the interest certainly
07:59:48 13 of election administration, on
07:59:53 14 the interest of the people of
07:59:53 15 Pennsylvania to have two
07:59:55 16 separate primary elections.

07:59:57 17 Now, having said that, I
07:59:58 18 understand that that
07:59:58 19 legislative redistricting
07:59:59 20 process is not before Your
08:00:05 21 Honor.

08:00:05 22 JUDGE MCCULLOUGH:

08:00:05 23 It is litigation in this
08:00:05 24 Court.

08:00:05 25 ATTORNEY WIYGUL:

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Correct. Correct. I appreciate that. And I think ultimately --- my sense is this ultimately will have to be resolved by the Supreme Court.

JUDGE MCCULLOUGH:

My question is if there were to be a change in the front-end of the schedule, what would the Secretary propose?

ATTORNEY WIYGUL:

Well, I think, Your Honor, the Secretary I think will not propose a change, but in terms of what would be realistic ---.

JUDGE MCCULLOUGH:

Three.

ATTORNEY WIYGUL:

I think what was in the Affidavit, Your Honor. Again, we're not talking about advocating for something but what is feasible, that it would be preferable to have three

08:00:40 1 weeks between the the time of
08:00:43 2 the final map, and really by
08:00:44 3 final map we mean including the
08:00:44 4 resolution and the appeal is
08:00:45 5 adopted and the first date in
08:00:50 6 the primary calendar. But the
08:00:52 7 Affidavit goes on to explain
08:00:54 8 that, you know, if we had to we
08:00:55 9 think we could probably do that
08:00:56 10 in two weeks if we could
08:00:57 11 transfer resources. And there
08:01:01 12 are other ways in which we
08:01:04 13 could condense the existing
08:01:07 14 calendar as well. And I won't
08:01:07 15 --- I won't try to reproduce
08:01:07 16 what was in the Affidavit for
08:01:08 17 fear of getting it wrong, but
08:01:08 18 those details are in there.

08:01:11 19 JUDGE MCCULLOUGH:

08:01:11 20 Yes, it's --- it's in
08:01:11 21 the record.

08:01:12 22 ATTORNEY WIYGUL:

08:01:12 23 Thank you, Your Honor.

08:01:12 24 JUDGE MCCULLOUGH:

08:01:13 25 Is that it, Mr. Wiygul?

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ATTORNEY WIYGUL:

Yes. But I would just say but at the end of the day we do feel and the Governor also feels very strongly we should not divide the primary and we should end up with a primary date ultimately that will accommodate both redistricting processes that are currently still proceeding.

JUDGE MCCULLOUGH:

Thank you, Mr. Wiygul.

ATTORNEY WIYGUL:

Thank you.

JUDGE MCCULLOUGH:

And now we will hear from counsel for Petitioner Gressman. I'm not sure who's arguing.

ATTORNEY RING-AMUNSON:

Thank you, Your Honor. Jessie Amunson for the Math and Science Petitioners. I want to begin by just thanking the

08:02:00 1 Court for its incredible
08:02:02 2 patience and diligence over the
08:02:04 3 past couple of days and also
08:02:06 4 thank the Court's staff for
08:02:07 5 making sure that all of this
08:02:09 6 ran so smoothly.

08:02:10 7 The Court has certainly
08:02:12 8 worked the parties hard this
08:02:14 9 week, but we know that now hard
08:02:15 10 work is now in front of the
08:02:16 11 Court. Because of the
08:02:17 12 breakdown of the political
08:02:18 13 process, the Court now has the
08:02:20 14 unwelcomed obligation, as the
08:02:23 15 Supreme Court has called it, of
08:02:25 16 choosing among the parties'
08:02:26 17 plans.

08:02:27 18 There has been a lot of
08:02:30 19 testimony about a lot of
08:02:32 20 numbers over the past couple of
08:02:33 21 days. And there's one number
08:02:36 22 that really matters and that's
08:02:39 23 one. One person, one vote.
08:02:43 24 That's the guarantee of the
08:02:44 25 United States Constitution and

08:02:48 1 the Pennsylvania Constitution.

08:02:49 2 Indeed, the Pennsylvania
08:02:51 3 Constitution provides
08:02:51 4 protections for that right over
08:02:53 5 and above those provided in the
08:02:55 6 federal Constitution. The Free
08:02:57 7 and Equal Elections Clause, as
08:03:00 8 interpreted by the Supreme
08:03:02 9 Court in the League of Women
08:03:05 10 Voters case says all voters
08:03:06 11 have an equal opportunity to
08:03:07 12 translate their votes into
08:03:09 13 representation.

08:03:11 14 And I think it's worth
08:03:13 15 remembering what happened after
08:03:16 16 the Supreme Court found a
08:03:18 17 violation of that right in the
08:03:21 18 League of Women Voters case.
08:03:23 19 The Court gave the General
08:03:25 20 Assembly an opportunity to come
08:03:26 21 up with a new map that the
08:03:29 22 Governor could sign. That
08:03:31 23 didn't happen. The General
08:03:34 24 Assembly proposed a map, the
08:03:37 25 Governor rejected the map.

08:03:39 1 Then as now both the General
08:03:41 2 Assembly and the Governor then
08:03:43 3 went to court and proposed
08:03:45 4 their remedial plans to the
08:03:48 5 Court.

08:03:48 6 The Court didn't choose
08:03:49 7 the legislature's plan and
08:03:53 8 thereby effectively override
08:03:55 9 the Governor's power to veto
08:03:55 10 the plan. The Court didn't
08:03:55 11 choose the Governor's plan and
08:03:55 12 thereby effectively override
08:03:55 13 the legislature's traditional
08:04:07 14 primacy in redistricting. The
08:04:08 15 Court looked to a scientist to
08:04:11 16 help it. The Court brought on
08:04:12 17 a scientist to help the Court
08:04:14 18 draw up a plan that would
08:04:16 19 scrupulously adhere to the
08:04:18 20 neutral criteria and give all
08:04:19 21 voters an equal opportunity to
08:04:21 22 translate their votes into
08:04:25 23 representation.

08:04:26 24 We, the Gressman Math
08:04:27 25 and Science Petitioners, are

08:04:29 1 likewise here to provide the
08:04:30 2 Court with a map that
08:04:32 3 scrupulously adheres to the
08:04:34 4 neutral criteria and is fair to
08:04:36 5 all voters.

08:04:38 6 The Court's heard a lot
08:04:39 7 of testimony over the past
08:04:40 8 couple of days about
08:04:42 9 trade-offs. You've heard, for
08:04:45 10 example, about how if you keep
08:04:47 11 Pittsburgh whole you will have
08:04:48 12 to take a hit on your
08:04:49 13 compactness scores. And
08:04:51 14 certainly there are a lot of
08:04:53 15 trade-offs in the redistricting
08:04:54 16 process. But I want to be
08:04:56 17 clear that there is one
08:04:57 18 trade-off that does not have to
08:04:59 19 be made. You do not have to
08:05:01 20 trade off compliance with the
08:05:03 21 traditional districting
08:05:04 22 criteria and partisan fairness.
08:05:07 23 You can achieve both. And the
08:05:10 24 best evidence of that is the
08:05:12 25 math that the Gressman Math and

08:05:19 1 Science Petitioners have
08:05:20 2 submitted to the Court.
08:05:21 3 Just to go through the
08:05:24 4 League of Women Voters criteria
08:05:24 5 that the Supreme Court
08:05:25 6 instructed, the map has perfect
08:05:29 7 population equality. You can't
08:05:31 8 do better. Every district is
08:05:33 9 contiguous. As to political
08:05:36 10 subdivisions, there are six
08:05:37 11 different categories of them
08:05:38 12 that are in the Constitution
08:05:40 13 and the Constitution says not
08:05:44 14 to divide unless absolutely
08:05:46 15 necessary for population
08:05:47 16 reasons. Counties, we're tied
08:05:51 17 with the Republican Legislative
08:05:54 18 map, HB-2146. Cities, we do
08:05:58 19 the best and it's
08:06:00 20 mathematically impossible to do
08:06:01 21 better. We split only one city
08:06:03 22 in the entire Commonwealth, the
08:06:06 23 City of Philadelphia. And we
08:06:07 24 split it three ways because it
08:06:08 25 has to be split three ways due

08:06:14 1 to its population. We keep
08:06:16 2 Pittsburgh intact.
08:06:17 3 The next category is
08:06:18 4 incorporated towns. There is
08:06:20 5 only one of these in the entire
08:06:21 6 Commonwealth and we keep it
08:06:23 7 whole, as do all the other
08:06:24 8 parties. Townships, there are
08:06:26 9 1,546 of these in the
08:06:31 10 Commonwealth. We split 15.
08:06:33 11 Boroughs, again, we are the
08:06:35 12 best. We break three and only
08:06:37 13 where there are already
08:06:39 14 following county lines. Wards,
08:06:43 15 most of the other parties have
08:06:44 16 just completely ignored wards,
08:06:47 17 line edited it out of the
08:06:49 18 Constitution. But wards matter
08:06:51 19 to the people of Philadelphia
08:06:53 20 in particular. We split 15 of
08:06:56 21 them compared to 21 to 25 in
08:07:01 22 most of the other plans. And
08:07:03 23 when you add up these six
08:07:04 24 enumerated political
08:07:07 25 subdivisions in the

08:07:11 1 Constitution, we're the very
08:07:11 2 best. We split the very fewest
08:07:20 3 among all of the parties.
08:07:22 4 The category
08:07:22 5 compactness, we're the top five
08:07:22 6 in every single measure across
08:07:23 7 the board. And that brings me
08:07:24 8 to partisan fairness. Here
08:07:28 9 it's undisputed that we are at
08:07:30 10 the top or tied for the top in
08:07:36 11 virtually every measure that
08:07:39 12 all the experts have testified
08:07:40 13 about today. The best
08:07:42 14 mean-median score in the most
08:07:46 15 recent elections, the best
08:07:46 16 anti-majoritarian outcome
08:07:50 17 score. In the top three in the
08:07:52 18 efficiency gap score. And you
08:07:53 19 don't have to just trust all of
08:07:56 20 the experts that were here.
08:07:58 21 Whatever Court --- whatever
08:07:59 22 plan the Court adopts, as you
08:08:03 23 heard today in the testimony of
08:08:04 24 Dr. Caughey, the public can run
08:08:04 25 it through Plan Score. And

08:08:04 1 when they do that, if they run
08:08:04 2 all of these plans that were
08:08:04 3 submitted to the Court through
08:08:16 4 that, guess what plan is going
08:08:17 5 to perform the best? Ours, the
08:08:19 6 Gressman Math and Science plan.
08:08:21 7 It will perform the best on all
08:08:23 8 of the metrics of partisan
08:08:24 9 fairness, metrics that the
08:08:26 10 Supreme Court considered in the
08:08:28 11 League of Women Voters case.
08:08:32 12 And we do all of this while
08:08:34 13 being the only map that does
08:08:37 14 not pair any of the City
08:08:43 15 members of Congress against one
08:08:44 16 another for re-election. No
08:08:47 17 incumbent pairings on our map.
08:08:49 18 We also do all this while being
08:08:50 19 the only plan that creates
08:08:52 20 three majority/minority
08:08:54 21 districts, reflecting
08:08:55 22 Pennsylvania's growingly
08:08:59 23 diverse population.

08:09:01 24 And I want to be clear
08:09:02 25 here. We have been completely

08:09:03 1 transparent with the Court. We
08:09:05 2 didn't cherry pick. We didn't
08:09:07 3 present you with just county
08:09:09 4 statistics or just municipality
08:09:13 5 statistics. You heard from Dr.
08:09:13 6 DeFord yesterday and you have
08:09:14 7 his report. It goes through
08:09:15 8 every single one of the
08:09:16 9 criteria that were considered
08:09:17 10 in the League of Women Voters
08:09:20 11 case. It applies those
08:09:21 12 criteria to every single plan
08:09:23 13 in the exact same way.

08:09:25 14 But to end where I
08:09:26 15 started, the number that really
08:09:28 16 matters here is one. One
08:09:30 17 person, one vote. The Court
08:09:33 18 now has the responsibility of
08:09:34 19 choosing the plan that best
08:09:35 20 fulfills that guarantee. We
08:09:38 21 hope that our rigorous,
08:09:40 22 non-partisan and scientific
08:09:42 23 approach has been of service to
08:09:46 24 the Court and we urge the Court
08:09:47 25 to choose the plan that

08:09:49 1 objectively performs the best
08:09:51 2 across the board, the Gressman
08:09:53 3 Math and Science plan.

08:09:55 4 To briefly address the
08:09:57 5 election calendar issue, Your
08:09:58 6 Honor, we do not believe it is
08:10:00 7 necessary at this point to move
08:10:01 8 the primary. The Court has
08:10:02 9 promised to rule expeditiously
08:10:05 10 and we trust that the Court
08:10:07 11 will do so.

08:10:07 12 As to the compression of
08:10:09 13 the preprimary dates, we would
08:10:12 14 defer to the election
08:10:13 15 administrators who are the
08:10:15 16 professionals in that space,
08:10:17 17 but we do recognize that there
08:10:19 18 can be some compression of the
08:10:21 19 preprimary schedule. Thank
08:10:21 20 you, Your Honor.

08:10:21 21 JUDGE MCCULLOUGH:

08:10:23 22 Thank you very much,
08:10:32 23 Counsel.

08:10:32 24 Okay.

08:10:33 25 Mr. Gordon for

P e t i t i o n e r s .

ATTORNEY GORDON:

Thank you, Your Honor.

And thanks you for the Court staff for putting this on short notice and doing a great job with setting up the courtroom keeping us all safe. On behalf of my clients, expressed sincere gratitude for that.

You just heard from seven or eight different parties advocating that they have the best map. The single congressional redistricting map that should be implemented for the next decade. And the justifications are varied and they are creative, and they relied variously on subjective determinations about excellence, arguments that they're entitled to deference, various variables that have multiple metrics, disputes

08:11:33 1 about the relative value of the
08:11:34 2 metrics and splitting hairs
08:11:35 3 about the importance of subtle
08:11:37 4 differences among the plans of
08:11:40 5 these metrics. Against this
08:11:43 6 muddled backdrop, the Carter
08:11:46 7 plan stands out as the superior
08:11:48 8 because it is undisputedly
08:11:50 9 superior on an objective
08:11:52 10 criterion of least change.

08:11:54 11 You don't have to take
08:11:55 12 my word for that or even Dr.
08:12:00 13 Rodden's word for that.
08:12:03 14 Multiple experts agree that the
08:12:05 15 Carter plan hues closest to the
08:12:07 16 2018 plan that was adopted by
08:12:10 17 the Pennsylvania Supreme Court,
08:12:11 18 and as such thus embodies the
08:12:11 19 ideals backed into that plan's
08:12:14 20 district by least disrupting
08:12:15 21 those districts.

08:12:19 22 You know, about the
08:12:20 23 traditional redistricting
08:12:21 24 criteria. Many of them are not
08:12:24 25 helpful in differentiating

08:12:26 1 among the plans here.

08:12:29 2 Contiguity and population

08:12:31 3 equity don't help to

08:12:31 4 distinguish among the plans.

08:12:31 5 Compactness and

08:12:33 6 political subdivision splits,

08:12:34 7 the Carter plan does very well

08:12:36 8 on those, but here's where you

08:12:38 9 get into the different measures

08:12:39 10 and the different rights per

08:12:41 11 measures and the subtle

08:12:42 12 differences. And as Dr.

08:12:45 13 Duchin, an opposing expert

08:12:46 14 testified, there's no bright

08:12:47 15 line threshold for compliance

08:12:49 16 with compactness or political

08:12:51 17 splits, political subdivision

08:12:53 18 splits. In fact, it appears

08:12:55 19 that the experts agree that the

08:12:58 20 plans are reasonably compact.

08:13:02 21 The Carter plan does

08:13:03 22 better on some measures and

08:13:04 23 relatively not as well on

08:13:06 24 others, in part that is why the

08:13:10 25 result of decision to keep

08:13:12 1 Pittsburgh whole, as you've
08:13:14 2 heard, if you do that, you
08:13:15 3 lower a plan's Polsby-Popper
08:13:18 4 compactness score, which
08:13:19 5 illustrates the trade-offs and
08:13:21 6 the difficulty in choosing
08:13:24 7 among the plans based on the
08:13:25 8 choices they made on those
08:13:25 9 trade-offs.

08:13:26 10 The Carter plan also
08:13:28 11 performs very well on political
08:13:29 12 subdivision splits, and here I
08:13:31 13 would note that the plans are
08:13:33 14 close and most, if not all
08:13:34 15 plans, did better than the 2018
08:13:36 16 plan. And the differences,
08:13:39 17 especially when you get into
08:13:42 18 the numbers like the municipal
08:13:43 19 splits are quite small relative
08:13:44 20 to the number of municipalities
08:13:45 21 in Pennsylvania.

08:13:45 22 The Carter plan is tied
08:13:48 23 for the lowest number of county
08:13:50 24 splits, depending on you count
08:13:51 25 this six-person segment of

08:13:53 1 Chester County. And Dr.
08:13:55 2 DeFord, another opposing expert
08:13:56 3 testified that counties were
08:13:58 4 the most important subdivision
08:13:59 5 to avoid splitting.

08:14:01 6 The Carter plan also
08:14:02 7 analyzed an additional metric,
08:14:05 8 the number of VTD splits. And
08:14:09 9 Doctor Rodden testified why
08:14:14 10 this was so important and why
08:14:17 11 it was important that the
08:14:17 12 Carter plan had the fewest
08:14:20 13 number of VTD splits. But
08:14:21 14 again, you don't have to take
08:14:22 15 his word for it. The Mellow
08:14:23 16 report said that a serious
08:14:24 17 election administration problem
08:14:24 18 arises from requiring voters in
08:14:26 19 a single precinct to look to
08:14:28 20 two different sets of
08:14:29 21 Congressional candidates,
08:14:31 22 emphasizing this not a minor
08:14:33 23 problem.

08:14:36 24 So we have to turn, I
08:14:39 25 think to other considerations

08:14:40 1 to really differentiate among
08:14:41 2 the plans. And the parties
08:14:46 3 provide some various reasons,
08:14:47 4 but I submit that none of them
08:14:48 5 are particularly helpful to
08:14:49 6 this Court. Because for
08:14:51 7 example, the Republican
08:14:51 8 legislatures --- legislative
08:14:53 9 intervenors that they should
08:14:54 10 adopt their plan, because it
08:14:55 11 deserves deference. But the
08:14:56 12 map was vetoed.

08:14:57 13 And giving a deference
08:14:59 14 would give the General Assembly
08:15:03 15 perverse incentives to
08:15:04 16 circumvent a legislative
08:15:05 17 process in the future and
08:15:06 18 circumvent the possibility of
08:15:07 19 compromising to win executive
08:15:10 20 branch approval. And it would
08:15:13 21 elevate one branch of
08:15:15 22 government over the other. And
08:15:16 23 it would also contradict the
08:15:18 24 guidance from the Mellow Court
08:15:19 25 that says all maps should be

08:15:21 1 considered on the same footing.

08:15:25 2 The Gressman Petitioners
08:15:27 3 would like you to adopt their
08:15:29 4 plan in part who they are and
08:15:31 5 how their map was drawn. But
08:15:32 6 I'd like to point out to the
08:15:36 7 Court that the Carter plan is
08:15:37 8 the only one who had an expert
08:15:39 9 here to testify about how the
08:15:41 10 plan was drawn and the fact
08:15:47 11 that partisan data was not
08:15:47 12 considered while drawing that
08:15:49 13 plan. And that is reflected in
08:15:49 14 the Carter plan's consistently
08:15:50 15 top performance in the various
08:15:52 16 evaluations of partisan
08:15:53 17 fairness.

08:15:56 18 On the county split
08:15:57 19 issues, I would just like to
08:15:59 20 point out to the Court that no
08:16:01 21 party proposed a map with the
08:16:02 22 minimum of three county splits.
08:16:05 23 All exceeded the minimum
08:16:07 24 possible. And the Supreme
08:16:09 25 Court adopted a plan in 2018

08:16:11 1 above the minimum possible
08:16:12 2 number of splits. The Governor
08:16:14 3 would like you to adopt this
08:16:16 4 plan, in part, because Dr.
08:16:20 5 Duchin says it's an excellent
08:16:22 6 plan, but she conceded that's
08:16:24 7 an objective determination.
08:16:24 8 And that, again, illustrates
08:16:27 9 the problems and subjective
08:16:27 10 judgments based on different
08:16:30 11 measures of subdivision splits
08:16:30 12 in compactness, et cetera.

08:16:32 13 We looked to the other
08:16:34 14 criteria then, the historical
08:16:36 15 criteria, the communities of
08:16:39 16 interest, that's a hard one to
08:16:41 17 gauge because different
08:16:42 18 experts, different parties talk
08:16:43 19 about different factors. But
08:16:44 20 the Carter plan does as well or
08:16:46 21 better than others. It keeps
08:16:48 22 Pittsburgh whole, it keeps
08:16:51 23 Harrisburg whole. It keeps
08:16:53 24 Bucks County together in one
08:16:53 25 district, which Dr. Naughton

08:16:55 1 testified was important.

08:16:59 2 It's the other two
08:17:01 3 factors where we start to see
08:17:03 4 some differentiation among the
08:17:04 5 Plan. Partisan fairness,
08:17:05 6 you've heard a lot about that,
08:17:06 7 and that is critical because
08:17:07 8 underlying the League of Women
08:17:10 9 Voters criteria and factors is
08:17:12 10 the underlying principal as the
08:17:15 11 Court said it's axiomatic that
08:17:18 12 a diluted vote is not an equal
08:17:20 13 vote, and that's what this case
08:17:22 14 is really about. And it's also
08:17:24 15 reflected in Mellow.

08:17:25 16 As I mentioned the
08:17:26 17 Carter plan performs
08:17:31 18 exceptionally well in this
08:17:32 19 measure, but not all did. As
08:17:32 20 multiple experts, including the
08:17:33 21 House Republican's own expert,
08:17:35 22 Dr. Barber, admitted on Cross
08:17:37 23 Examination under his analysis
08:17:39 24 of mean-median, HB-2146 and the
08:17:43 25 two Reschenthaler plans are the

08:17:44 1 most bias plans there are among
08:17:46 2 the group.

08:17:47 3 And we've heard some
08:17:48 4 justifications about relying on
08:17:50 5 political geography, but I
08:17:51 6 agree with Dr. Duchin. There's
08:17:54 7 no reason to let the chips fall
08:17:56 8 where they may when we can do
08:17:58 9 better. And preventing vote
08:18:01 10 dilution compels that we aim
08:18:04 11 higher.

08:18:04 12 Multiple experts agreed
08:18:06 13 that the Carter plan does very
08:18:07 14 well on the partisan fairness
08:18:09 15 metrics.

08:18:09 16 And that leaves the
08:18:10 17 final objective criteria where
08:18:13 18 it's undisputed that the Carter
08:18:16 19 plan does the best.

08:18:17 20 Preservation of the core of
08:18:18 21 districts, preservation of the
08:18:20 22 2018 plan. And that clenches
08:18:23 23 the analysis for the Carter
08:18:24 24 plan.

08:18:25 25 Least change is an

08:18:26 1 objective criteria that can be
08:18:28 2 measured. And it has been
08:18:29 3 measured here by Dr. Rodden and
08:18:34 4 Dr. Duchin who each got the
08:18:35 5 same numbers. And on that
08:18:38 6 criteria, as Dr. Duchin said
08:18:42 7 the Carter plan was superlative
08:18:43 8 and it lapped the field.

08:18:46 9 The Court has heard,
08:18:47 10 again, a lot of arguments and
08:18:49 11 testimony about this.
08:18:50 12 Ultimately as the Court stated
08:18:51 13 in Mellow, this Court must
08:18:53 14 consider each plan on the same
08:18:54 15 footing. And we submit that
08:18:56 16 when this Court does that in
08:18:58 17 applying the single objective
08:19:00 18 criterion on which there's no
08:19:02 19 dispute about which plan is
08:19:03 20 superior, the Carter plan
08:19:05 21 should be adopted.

08:19:06 22 Thank you, Your Honor.

08:19:10 23 JUDGE MCCULLOUGH:

08:19:11 24 Do you have a comment on
08:19:12 25 the election schedule?

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ATTORNEY GORDON:

Your Honor, we certainly don't dispute that if necessary the Court has the authority to change the deadlines, including the primary deadline. We don't think it will be necessary, given the time here. And we hope that it's not.

JUDGE MCCULLOUGH:

Thank you.

ATTORNEY GORDON:

Thank you.

JUDGE MCCULLOUGH:

All right.

The Court now would just note a few things for the record. That all maps, expert reports, including files uploaded to the Court in accord with the Court's Order in a timely fashion are already part of the record and are so admitted.

Doctor Burnell and

08:19:55 1 Doctor Meme's expert reports
08:19:55 2 will not be excluded on the
08:19:58 3 basis of hearsay, as we have
08:20:00 4 expert reports also that have
08:20:03 5 been submitted by the Amici in
08:20:09 6 the same fashion.

08:20:10 7 Regarding also,
08:20:11 8 specifically, the Lamb report
08:20:12 9 and other attachments of the
08:20:14 10 parties filings that were
08:20:15 11 timely filed with the Court,
08:20:18 12 they are already part of the
08:20:20 13 record and so admitted.

08:20:23 14 Counsel, we've already
08:20:24 15 discussed that you may submit
08:20:26 16 post-trial submissions, whether
08:20:28 17 that's a brief, a memorandum of
08:20:31 18 law, I'm leaving it up to you
08:20:33 19 how you want to craft it for
08:20:37 20 your client, and those are due
08:20:39 21 tomorrow, Saturday by
08:20:39 22 two o'clock.

08:20:44 23 And I want to thank the
08:20:45 24 parties and Amici for their
08:20:45 25 sincere interest in the

08:20:53 1 constitutionalit y of
08:20:53 2 Pennsylvania's congressional
08:20:55 3 districting process. I have
08:20:57 4 many thanks to the attorneys,
08:20:59 5 all of you that have been
08:21:00 6 involved, even those not in the
08:21:02 7 room, for your cooperation and
08:21:04 8 your professional decorum in
08:21:06 9 the courtroom. You have all
08:21:08 10 represented your clients'
08:21:09 11 interests very commendably.

08:21:12 12 And I thank the IT
08:21:14 13 staff, our Court Criers, our
08:21:17 14 ticket administrator,
08:21:19 15 Prothonotary's office and the
08:21:20 16 office of legal counsel and my
08:21:21 17 own staff for ensuring that we
08:21:24 18 could conduct this trial in
08:21:27 19 such an expedited schedule.
08:21:27 20 And there is, as many of you
08:21:27 21 have noted there is a lot of
08:21:27 22 technical and legal information
08:21:27 23 which the Court now needs to
08:21:41 24 review and assess and the court
08:21:41 25 will do so as stated before in

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as expedited manner as possible.
The Court --- I appreciate that this is a critical matter affecting the constitutional rights of the people of Pennsylvania. So I thank you all. I think we are finished. So thank you very much.

COURT CRIER HOLLAND:

The Commonwealth Court is now adjourned.

* * * * *

HEARING CONCLUDED

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CERTIFICATE

I hereby certify that the foregoing proceedings, hearing held before Judge McCullough, was reported by me on 1/28/2022 and that I, Nicole Montagano, read this transcript, and that I attest that this transcript is a true and accurate record of the proceeding.

Dated the 28th day of January, 2022



Nicole S. Montagano,
Court Reporter

Filed 02/07/2022 Commonwealth Court

IN THE COMMONWEALTH COURT OF PENNSYLVANIA

Carol Ann Carter, Monica Parrilla, :
Rebecca Poyourow, William Tung, :
Roseanne Milazzo, Burt Siegel, :
Susan Cassanelli, Lee Cassanelli, :
Lynn Wachman, Michael Guttman, :
Maya Fonkeu, Brady Hill, Mary Ellen :
Balchunis, Tom DeWall, :
Stephanie McNulty and Janet Temin, :
Petitioners :

CASES CONSOLIDATED

v. :

No. 464 M.D. 2021

Leigh M. Chapman, in her official :
capacity as the Acting Secretary of the :
Commonwealth of Pennsylvania; :
Jessica Mathis, in her official capacity :
as Director for the Pennsylvania Bureau :
of Election Services and Notaries, :
Respondents :

Philip T. Gressman; Ron Y. Donagi; :
Kristopher R. Tapp; Pamela Gorkin; :
David P. Marsh; James L. Rosenberger; :
Amy Myers; Eugene Boman; :
Gary Gordon; Liz McMahan; :
Timothy G. Feeman; and Garth Isaak, :
Petitioners :

v. :

No. 465 M.D. 2021

Leigh M. Chapman, in her official :
capacity as the Acting Secretary of the :
Commonwealth of Pennsylvania; :
Jessica Mathis, in her official capacity :
as Director for the Pennsylvania Bureau :
of Election Services and Notaries, :
Respondents :

**REPORT CONTAINING PROPOSED FINDINGS OF FACT AND
CONCLUSIONS OF LAW SUPPORTING RECOMMENDATION OF
CONGRESSIONAL REDISTRICTING PLAN AND PROPOSED REVISION
TO THE 2022 ELECTION CALENDAR/SCHEDULE**

By Judge Patricia A. McCullough
Commonwealth Court of Pennsylvania

Filed: February 7, 2022

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 4. Michael Barber, Ph.D. (Cutler & Benninghoff)
 5. Dr. Keith Naughton (Congressional Intervenors)
 6. Dr. Devin Caughey & Michael Lamb (Senate Dem. Caucus Intervenors)
 7. John M. Memmi, Ph.D. (Corman & Ward)
 8. Thomas L. Brunell (Congressional Intervenors)
 9. Sarah Andre (Khalif Ali et al.)
 10. Sean Trende (Voters of the Commonwealth)
 11. Justin Villere (Draw the Lines PA)
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- viii. Reschenthaler 1 Plan
- ix. Reschenthaler 2 Plan
- x. Draw the Lines PA
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- c. Governor's Plan
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- e. Senate Democratic Caucus Plan 1
- f. Senate Democratic Caucus Plan 2
- g. House Democratic Caucus Plan
- h. Reschenthaler 1 Plan
- i. Reschenthaler 2 Plan
- j. Draw the Lines PA Plan
- k. Ali Plan
- l. Citizen Voters Plan
- o. Voters of PA Plan

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PREFATORY STATEMENT

By definition, the act of “judging” entails a comparative evaluation of opposing viewpoints and a determination, based upon the particular role of the court, as to which view prevails in the legal sense. Under Pennsylvania law, there are, in general, unique responsibilities and roles that are bestowed upon a court given the manner in which the court entertains and rules upon a case. For example, there are varying legal duties for a “trial court” who disposes of pre-trial motions and other matters and is the recipient of evidence at a trial, an intermediate appellate court that reviews the trial court’s decision under the applicable standard of review, or a court exercising both roles simultaneously, as in the situations where statutes have vested the power in certain secretaries of administrative agencies or our Supreme Court in exercising its King’s Bench power.

That stated, this case involves some “feats of modern computer technology,” *Mellow v. Mitchell*, 607 A.2d 204, 211 (Pa. 1992), by which parties have attempted to constitutionally reapportion Pennsylvania’s 2020 population in their proposed plans. The Court is astounded by the parties’ fortitude, collegiality, vigorous advocacy, and the overall metrics and characteristics of the maps they provided in pursuing these cases, and it has no doubt that everyone involved is in genuine pursuit of the overarching goals and ideals that promote and uphold the sustainability and functionality of our glorious Constitutional Republic, “a government of the people, by the people, and for the people.”¹ At the end of the day, however, the Court, is faced with the challenging task of recommending one map to indicate the boundary lines for the Congressional seats that represent the great and colonial Commonwealth of Pennsylvania in the United States House of

¹ Abraham Lincoln, The Gettysburg Address (November 19, 1863)

Representatives. Pursuant to Pennsylvania law, the Court must articulate the reasons and rationale for making its credibility and weight determinations and explain how those determinations result in its penultimate conclusion and respectful recommendation to our Supreme Court as to which map is the most suitable and appropriate because it is most aligned with the text and spirit of the Pennsylvania Constitution and the precedent of the High Court of Pennsylvania.

In the report and recommendation that follows, the Court, after detailing the factual and procedure nature of the cases, provides those reasons, rationales, and explanations.

I. INTRODUCTION²

This case involves the redistricting³ of the Commonwealth of Pennsylvania's (Commonwealth) seats in the United States (U.S.) House of Representatives based on the 2020 Decennial Census (2020 Census). Article I, Section 2 of the U.S. Constitution⁴ dictates that congressional districts be redrawn every 10 years to ensure equal populations between districts. In 2020, the U.S. Census Bureau conducted, for the 24th time in this country's history, the decennial

² This Court has attempted to convert what was a 188-page trial court opinion, which it intended to file on February 3, 2022, into a Special Master's Report with findings of fact and conclusions of law to the extent that it was able given the time constraints. Throughout the Report, "FF" denotes a finding of fact and "CL" denotes a conclusion of law. "FFs" and "CLs" are numbered consecutively under each heading, where appropriate. The Stipulations of the Parties, which are part of this Court's record, are adopted as recommended findings of fact.

³ "Redistricting" is the process of drawing a new map following a reapportionment where a state gains or loses a seat in Congress. Hon. P. Kevin Brobson, *Of Free and Equal Elections and Fair Districts-How the Pennsylvania Supreme Court Slayed (or Hobbled?) the Partisan Gerrymander*, 30 Widener Commonwealth L. Rev. 53, n.11 (2020).

⁴ U.S. Const. art. I, §2 ("Representatives and direct Taxes shall be apportioned among the several States . . . according to their respective Numbers . . ."). The provision of Article I, Section 2 relating to the method of apportionment was amended by the Fourteenth Amendment to the U.S. Constitution. *See* U.S. Const. amend. XIV, §2.

census for the purpose of, *inter alia*, apportioning⁵ by population the 435 voting members of the U.S. House of Representatives among the several States. On August 12, 2021, the U.S. Secretary of Commerce delivered census-block results of the 2020 Census to the Governor and legislative leaders.⁶ Although the Commonwealth's population increased from the last decennial census, the 2020 Census shows that the Commonwealth will lose a seat in the U.S. House of Representatives. Thus, starting with the upcoming 2022 Primary Election the Commonwealth will have 17 representatives in the U.S. House of Representatives, 1 fewer than the current 18 representatives it was apportioned following the 2010 Census.⁷ The Commonwealth is therefore required to reapportion its current congressional district plan, *i.e.*, the 2018 Remedial Plan,⁸ which is now malapportioned and effectively obsolete, to account for the loss of a seat in the U.S. House of Representatives. Ordinarily, this task should be completed before the 2022 General Primary Election, which is scheduled to be held on May 17, 2022. Under the current Election Calendar, the first day for candidates to circulate nomination petitions and collect signatures to secure their placement on the ballot is February 15, 2022, and the final day to

⁵ Every 10 years, upon completion of the U.S. census, reapportionment occurs. "Apportionment" or "reapportionment" refers to the process by which seats in the United States House of Representatives are allocated among the several states.

⁶ According to the 2020 U.S. Census, Pennsylvania has a total population of 13,002,700. Thus, the ideal district population for each of the Commonwealth's 17 reapportioned congressional districts is approximately 764,864 or 764,865 persons.

⁷ Pennsylvania has steadily lost congressional seats through the decades. *See* Brobson, *supra* n.1, at 54-55.

⁸ The current 2018 Remedial Plan's configuration of Pennsylvania's congressional districts was drawn by our Supreme Court in 2018 in *League of Women Voters v. Commonwealth*, 181 A.3d 1083 (Pa. 2018) (*LWV III*), using data from the 2010 U.S. Census, after the General Assembly and Governor Wolf failed to reach an agreement for a revised reapportionment plan. Since its adoption, the 2018 Remedial Plan has been used in two previous congressional elections.

circulate and file nomination petitions is March 8, 2022.⁹ Further, those candidates seeking the nomination of political bodies may begin circulating nomination papers on March 9, 2022, and must file their papers by August 1, 2022. Campaigns must collect these signatures from voters in the districts in which they seek elected office, a task that is made impossible without established congressional district lines.

Petitions for Review

Given the Commonwealth's lack of a congressional districting plan due to the 2018 Remedial Plan's malapportionment and in anticipation that the General Assembly and Governor would fail to agree to a new congressional districting plan in time for the 2022 General Primary Election, on December 17, 2021, Petitioners Carol Ann Carter, Monica Parrilla, Rebecca Poyourow, William Tung, Roseanne Milazzo, Burt Siegel, Susan Cassanelli, Lee Cassanelli, Lynn Wachman, Michael Guttman, Maya Fonkeu, Brady Hill, Mary Ellen Balchunis, Tom DeWall, Stephanie McNulty and Janet Temin (collectively, Carter Petitioners)¹⁰ commenced this action (No. 464 M.D. 2021) by filing a Petition for Review addressed to this Court's

⁹ Candidates therefore have until March 9, 2022, to collect signatures and file and circulate nomination petitions.

¹⁰ Prior to filing this action, on April 26, 2021, the Carter Petitioners filed an action against the Respondents in this Court's original jurisdiction challenging the 2018 Remedial Plan based on the 2020 U.S. Census results. *See Carter v. DeGraffenreid* (Pa. Cmwlth., No. 132 M.D. 2021). By opinion and order dated September 2, 2021, a single judge of this Court permitted various high-ranking legislators of the Pennsylvania General Assembly to intervene in the matter and denied the applications to intervene filed by the Republican Party and Voters of the Commonwealth of Pennsylvania. *See Carter v. DeGraffenreid* (Pa. Cmwlth., No. 132 M.D. 2021, filed Sept. 2, 2021). Thereafter, by opinion and order dated October 8, 2021, a three-judge special election panel of this Court sustained preliminary objections challenging the Carter Petitioners' standing and the ripeness of their claims and dismissed their petition for review without prejudice. *See Carter v. DeGraffenreid* (Pa. Cmwlth., No. 132 M.D. 2021, filed Oct. 8, 2021).

original jurisdiction, challenging the Commonwealth's 2018 Remedial Plan as unconstitutional based on the 2020 Census. The Carter Petitioners filed their Petition against the Veronica Degraffenreid, in her official capacity as the Acting Secretary of the Commonwealth,¹¹ and Jessica Mathis, in her official capacity as Director for the Pennsylvania Bureau of Election Services and Notaries (collectively, Respondents).

The Carter Petitioners identify themselves as 16 U.S. citizens who are registered to vote in the Commonwealth in 11 different federal congressional districts.¹² (Carter Pet'rs' PFR ¶9.) They believe that the congressional districts in which they live are overpopulated relative to other districts in the Commonwealth and that, consequently, "they are deprived of the right to cast an equal vote, as guaranteed to them by the U.S. Constitution and the Pennsylvania Constitution." (Carter Pet'rs' PFR ¶10.)

In Count I of their Petition, the Carter Petitioners allege that the 2018 Remedial Plan violates the Free and Equal Elections Clause under article I, section 5 of the Pennsylvania Constitution, Pa. Const. art. I, §5.¹³ Relying largely on the above facts pertaining to the 2020 U.S. Census and Pennsylvania's reduced congressional delegation, the Carter Petitioners allege that "Pennsylvania's current congressional district plan places voters into districts with significantly disparate

¹¹ On January 20, 2022, Acting Secretary of the Commonwealth Leigh M. Chapman was substituted as a party for Acting Secretary Veronica Degraffenreid.

¹² Specifically, the Carter Petitioners reside in Bucks, Philadelphia, Montgomery, Delaware, Chester, Northampton, Dauphin, Cumberland, and Lancaster Counties and in congressional districts 1 through 7, 10, and 11. (Carter Pet'rs' PFR ¶9.)

¹³ The Free and Equal Elections Clause provides: "Elections shall be free and equal; and no power, civil or military, shall at any time interfere to prevent the free exercise of the right of suffrage." Pa. Const. art. I, §5.

populations, causing voters in underpopulated districts to have more ‘potent’ votes compared to voters, like Petitioners, who live in districts with comparatively larger populations.”¹⁴ (Carter Pet’rs’ PFR ¶53.) They further claim that “[a]ny future use of Pennsylvania’s current congressional district plan would violate Petitioners’ right to an undiluted vote under the Free and Equal Elections Clause.” (Carter Pet’rs’ PFR ¶54.) In Count II of their Petition, the Carter Petitioners allege that the Commonwealth’s current congressional district plan violates Article I, Section 2 of the U.S. Constitution, U.S. Const. art. I, §2.¹⁵ More specifically, they allege that our Supreme Court adopted the 2018 Remedial Plan, which was crafted so that “the population deviation among districts was no more than *one person*”; however, “[n]ow, the population deviation among Pennsylvania’s congressional districts is far higher, on the order of tens of thousands of people.” (Carter Pet’rs’ PFR ¶57.) The Carter Petitioners further contend that given “the significant population shifts that have occurred since the 2010 Census” and the recent 2020 U.S. Census results, the Commonwealth’s congressional districts, which were drawn based on the 2010 Census results, are “now unconstitutionally malapportioned” because they are based on outdated population data. (Carter Pet’rs’ PFR ¶58.) They also claim that any future use of the current congressional district plan would violate their constitutional right to cast an equal, undiluted vote under Article I, Section 2 of the U.S. Constitution. (Carter Pet’rs’ PFR ¶59.) Finally, in Count III of their Petition, the

¹⁴ They claim that districts 8, 9, 12 through 16, and 18 are significantly underpopulated, while districts 1 through 7, 10, 11, and 17 are significantly overpopulated. (Carter Pet’rs’ PFR ¶28.)

¹⁵ Article I, Section 2, Clauses 1 and 3 of the U.S. Constitution provides that the U.S. “House of Representatives shall be . . . chosen . . . by the People of the several States” and “apportioned among the several States . . . according to their respective Numbers.” U.S. Const. art. I, §2, cls. 1 and 3.

Carter Petitioners allege that the Commonwealth’s current congressional district plan containing 18 districts, when the state is now allotted only 17 seats, contravenes section 2c of Title 2 of the U.S. Code, 2 U.S.C. §2c.¹⁶ (Carter Pet’rs’ PFR ¶62.)

As relief, the Carter Petitioners seek, *inter alia*, a judicial declaration that “the current configuration of Pennsylvania’s congressional districts violates article I, section 5 of the Pennsylvania Constitution; [and] Article I, Section 2 of the U.S. Constitution”; “[e]njoin Respondents . . . from implementing, enforcing, or giving any effect to Pennsylvania’s current congressional district plan”; and “[a]dopt a new congressional district plan that complies with article I, section 5 of the Pennsylvania Constitution; Article I, Section 2 of the U.S. Constitution; and 2 U.S.C. §2.” (Carter Pet’rs’ PFR at 18-19, Prayer for Relief.)

Also on December 17, 2021, Petitioners Philip T. Gressman, Ron Y. Donagi, Kristopher R. Tapp, Pamela Gorkin, David P. Marsh, James L. Rosenberger, Amy Myers, Eugene Boman, Gary Gordon, Liz McMahon, Timothy G. Feeman, and Garth Isaak (collectively, Gressman Petitioners) separately commenced an action (No. 465 M.D. 2021) by filing a Petition for Review addressed

¹⁶ Title 2, section 2c of the U.S. Code provides:

In each State entitled in the Ninety-first Congress or in any subsequent Congress thereafter to more than one Representative under an apportionment made pursuant to the provisions of section 2a(a) of this title, there shall be established by law a number of districts equal to the number of Representatives to which such State is so entitled, and Representatives shall be elected only from districts so established, no district to elect more than one Representative (except that a State which is entitled to more than one Representative and which has in all previous elections elected its Representatives at Large may elect its Representatives at Large to the Ninety-first Congress).

2 U.S.C. §2c.

to this Court’s original jurisdiction, similarly claiming that the Commonwealth’s 2018 Remedial Plan is unconstitutionally malapportioned based on the 2020 Census results. Like the Carter Petitioners, the Gressman Petitioners filed their Petition against Respondents. The Gressman Petitioners identify themselves as 12 U.S. citizens and registered voters in the Commonwealth, who are also “leading professors of mathematics and science who reside in congressional districts that were most recently redrawn in 2018, using population data from the 2010 Census.”¹⁷ (Gressman Pet’rs’ PFR ¶10.)

For the most part, the Gressman Petitioners advance averments that duplicate, or at least mimic, those made by the Carter Petitioners. Notably, the Gressman Petitioners add that, “[a]ccording to the 2020 U.S. Census, Pennsylvania has 13,002,700 residents”; “the ideal district population is about 764,864 or 764,865 persons for each of Pennsylvania’s 17 congressional districts”; and “[b]ased on the 2020 Census Data, Pennsylvania’s congressional districts vary in population by as much as 95,000 residents, and none of the current districts has either 764,864 or 764,865 residents.” (Gressman Pet’rs’ PFR ¶27.)

Asserting that they all “reside and intend to vote in a congressional district that the 2020 U.S. Census Data identifies as significantly malapportioned[,]” *id.* ¶28, the Gressman Petitioners argue, in Count I of their Petition, that their “districts, and all other districts in the current plan, vary by as much as tens of thousands of persons relative to one another and to the ideal district population” as a result of “the political branches’ failure to act,” which violates the Free and Equal Elections Clause of the Pennsylvania Constitution. (Gressman Pet’rs’ PFR ¶¶38-

¹⁷ The Gressman Petitioners reside in Delaware, Montgomery, Union, Centre, Philadelphia, Dauphin, Northampton, and in congressional districts 3, 5, 7, 10, and 12. (Gressman Pet’rs’ PFR ¶¶11-22.)¹⁷

39.) In Count II of their Petition, the Gressman Petitioners contend that “[b]ecause the Commonwealth lacks a lawfully apportioned congressional plan, neither potential candidates for office in the 2022 primary and general elections, nor [the Gressman] Petitioners as voters in those elections, know where the boundaries of constitutional congressional districts lie[,]” and that “[p]otential candidates . . . do not know where they will be able to run and cannot identify their constituents.” (Gressman Pet’rs’ PFR ¶¶44-45.) The Gressman Petitioners thus allege that, in turn, they do “not know who will be running in their districts and cannot identify their fellow district residents[,]” thereby depriving the Gressman Petitioners of their “ability to associate with other voters who live in their lawful congressional districts, or to associate with those candidates who will run for office in their districts—again, for no reason other than the political branches’ failure to act[,]” in violation of article I, section 20 of the Pennsylvania Constitution, Pa. Const. art. I, § 20.¹⁸ *Id.* ¶¶45-46. Moreover, they contend that there is no legitimate or compelling state interest that would support burdening their constitutional right to associate. *Id.* ¶47. Finally, in Count III of their Petition, the Gressman Petitioners assert that the variances in population in their districts and other districts result in “the weight of a given Commonwealth citizen’s vote . . . var[ying] significantly based on where that citizen lives.” *Id.* ¶51. Therefore, they contend that current plan’s effective dilution of citizens’ votes based on where they live violates the equal protection guarantees

¹⁸ Pa. Const. art. I, §20 (“The citizens have a right in a peaceable manner to assemble together for their common good, and to apply to those invested with the powers of government for redress of grievances or other proper purposes, by petition, address or remonstrance.”).

afforded them under article I, sections 1 and 26 of the Pennsylvania Constitution, Pa. Const. art. I, §§ 1, 26.¹⁹

As relief, the Gressman Petitioners seek a judicial declaration that Pennsylvania’s current congressional districts are unconstitutional under the above provisions of the Pennsylvania Constitution; and an order enjoining Respondents from “implementing, enforcing, or giving any effect to Pennsylvania’s current congressional district plan in any future election[.]” (Gressman Pet’rs’ PFR at 14, Prayer for Relief.) The Gressman Petitioners also seek “implementation of a new congressional district map with the correct number of congressional districts that adheres to the one-person, one-vote standard and all other applicable constitutional and legal requirements.” (Gressman Pet’rs’ PFR ¶1.)

II. PROCEDURAL HISTORY

By order dated December 20, 2021, this Court consolidated these matters and designated the case at docket number 464 M.D. 2021 as the lead case. By separate order of the same date, this Court directed, in accordance with the process established in *Mellow*, that any applications to intervene shall be filed by December 31, 2021, and that any party to these proceedings could submit to the Court for consideration a proposed 17-district congressional reapportionment plan consistent with the results of the 2020 Census by a certain date. This Court’s order also provided notice that the Court would select a plan from those plans timely filed

¹⁹ Pa. Const. art. I, §1 (“All men are born equally free and independent, and have certain inherent and inalienable rights, among which are those of enjoying and defending life and liberty, of acquiring, possessing and protecting property and reputation, and of pursuing their own happiness.”); §26 (“Neither the Commonwealth nor any political subdivision thereof shall deny to any person the enjoyment of any civil right, nor discriminate against any person in the exercise of any civil right.”).

by the parties if the General Assembly and the Governor failed to enact a congressional reapportionment plan by January 30, 2022, with court proceedings to follow should the General Assembly and the Governor fail to act.

Ten applications to intervene were filed by: (i) the Speaker and Majority Leader of the Pennsylvania House of Representatives and the President Pro Tempore and Majority Leader of the Pennsylvania State Senate, (ii) Pennsylvania State Senators Maria Collett, Katie J. Muth, Sharif Street, and Anthony H. Williams; (iii) Tom Wolf, Governor of the Commonwealth of Pennsylvania; (iv) Senator Jay Costa and members of the Democratic Caucus of the Senate of Pennsylvania; (v) Representative Joanna E. McClinton, Leader of the Democratic Caucus of the Pennsylvania House of Representatives; and (vi) Congressman Guy Reschenthaler, Swatara Township Commissioner Jeffrey Varner, and former Congressmen Tom Marino, Ryan Costello, and Bud Shuster; (vii) Voters of the Commonwealth of Pennsylvania; (viii) Citizen-Voters; (ix) Draw the Lines PA; and (x) Khalif Ali et al.

On December 21, 2021, both sets of Petitioners filed applications for extraordinary relief, requesting that the Pennsylvania Supreme Court exercise its extraordinary jurisdiction and/or King's Bench power over these matters under Section 726 of the Judicial Code, 42 Pa.C.S. §726, and Pa.R.A.P. 3309. *See Carter v. Degraffenreid* (Pa., No. 141 MM 2021); *Gressman v. Degraffenreid* (Pa., No. 142 MM 2021).

While those applications were pending in the Supreme Court, on January 6, 2022, this Court held a hearing on the intervention applications, giving every applicant the opportunity to present argument and evidence as to whether they met the standards for intervention under Pennsylvania Rules of Civil Procedure 2327

and 2329, Pa.R.Civ.P. 2327, 2329, and to explain why intervention would not unduly delay and complicate this time-sensitive matter.

By separate orders issued on January 10, 2022, the Supreme Court denied the applications for extraordinary relief and declined to invoke its extraordinary jurisdiction and/or exercise its King's Bench power over these matters, without prejudice to Petitioners to either reapply for similar relief in that Court should future developments so warrant or to apply to this Court and request that the matter be accelerated.²⁰ *See Carter v. Degraffenreid* (Pa., No. 141 MM 2021, order filed Jan. 10, 2022); *Gressman v. Degraffenreid* (Pa., No. 142 MM 2021, order filed Jan. 10, 2022).

On January 14, 2022, this Court entered an order superseding the deadlines set by its original December 20, 2021 order, and granting the applications to intervene filed by: (i) the Speaker and Majority Leader of the Pennsylvania House of Representatives (House Republican Intervenors) and the President Pro Tempore and Majority Leader of the Pennsylvania State Senate (Senate Republican Intervenors) (collectively, Republican Legislative Intervenors), (ii) Pennsylvania State Senators Maria Collett, Katie J. Muth, Sharif Street, and Anthony H. Williams (Democratic Senator Intervenors, *see infra* note 20); (iii) Tom Wolf, Governor of the Commonwealth of Pennsylvania (Governor Wolf); (iv) Senator Jay Costa and members of the Democratic Caucus of the Senate of Pennsylvania (Senate Democratic Caucus Intervenors);²¹ (v) Representative Joanna E. McClinton, Leader

²⁰ Justice Wecht filed a dissenting statement, in which he expressed his disagreement with the Court's decision not to assume plenary jurisdiction over the matter under the power of extraordinary jurisdiction granted to the Court under 42 Pa.C.S. §726. Justice Donohue also noted her dissent.

²¹ Pursuant to the Notice of Amendment and Joinder from Senate Democratic Caucus Intervenors and Democratic Senator Intervenors, the Applications for Leave to Intervene of: (i)

of the Democratic Caucus of the Pennsylvania House of Representatives (House Democratic Caucus Intervenors); and (vi) Congressman Guy Reschenthaler, Swatara Township Commissioner Jeffrey Varner, and former Congressmen Tom Marino, Ryan Costello, and Bud Shuster (Congressional Intervenors).²² These Intervenors were allowed to participate as Parties in these consolidated matters, and were ordered to submit for the Court's consideration at least one but no more than two proposed 17-district congressional redistricting plans and a supporting brief and/or a supporting expert report by 5:00 p.m., on January 24, 2022. All Parties were further directed to file a responsive brief and/or a responsive expert report (from the same expert who prepared the January 24 report or any other expert), addressing the other Parties' January 24 submissions, by 5:00 p.m., on January 26, 2022.

The applications to intervene as parties filed by: (i) Voters of the Commonwealth of Pennsylvania (Voters of the Commonwealth); (ii) Citizen-Voters; (iii) Draw the Lines PA; and (iv) Khalif Ali et al., were denied. However,

Pennsylvania State Senators Maria Collett, Katie J. Muth, Sharif Street, and Anthony H. Williams; and (ii) Senator Jay Costa and members of the Democratic Caucus of the Senate of Pennsylvania were joined as a single party. They are thus collectively referred to throughout this Report as Senate Democratic Caucus Intervenors.

²² Consistent with this Court's January 14 and January 24, 2022 orders, the term "Parties," when used in this Report, refers to Petitioners, Respondents, and Intervenors, except when a particular Party is referenced individually.

Voters of the Commonwealth,²³ Citizen-Voters,²⁴ Draw the Lines PA, and Khalif Ali et al.²⁵ were permitted to participate in these matters as *amicus* participants (*Amicus* Participants), with their participation limited to submissions to the Court in writing. All *Amicus* Participants were permitted to submit for the Court's consideration one proposed 17-district congressional redistricting map/plan and a supporting brief and/or a supporting expert report, by 5:00 p.m., on January 24, 2022.

In this same order, the Court directed the Parties to file a joint stipulation of facts and moved the evidentiary hearing up to January 27, 2022, and January 28, 2022, participation in which was limited to the Parties. Each Party was limited to presenting one witness at the hearing, who would be subject to cross-examination by the other Parties. This Court's order also provided notice that the Court would proceed to issue an opinion based on the hearing and evidence presented by the Parties if the General Assembly failed to produce a new

²³ On January 24, 2022, Voters of the Commonwealth (Haroon Bashir et al.) filed a Notice of Appeal to the Supreme Court from this Court's January 14, 2022 order denying their intervention application. By order dated January 28, 2022, the Supreme affirmed this Court's order on the basis that Voters of Commonwealth waited 10 days to file a notice of appeal from this Court's January 14, 2022 order and at least one of the case deadlines established by that order had already passed. *See Carter/Gressman v. Chapman (Appeal of: Haroon Bashir et al.)* (Pa., Nos. 9 & 10 MAP 2022, orders filed Jan. 28, 2022).

²⁴ On January 26, 2022, Citizen Voters (Leslie Osche et al.) filed a Notice of Appeal to the Supreme Court from this Court's January 14, 2022 order denying their intervention application. By order dated February 2, 2022, the Supreme Court affirmed this Court's order on the basis that Citizen Voters waited 12 days to file a notice of appeal from this Court's January 14, 2022 order and the deadlines established by that order had already passed. *See Carter/Gressman v. Chapman (Appeal of: Leslie Osche et al.)* (Pa., Nos. 11 & 12 MAP 2022, orders filed Feb. 2, 2022).

²⁵ On January 20, 2022, Khalif Ali et al. filed a Notice of Appeal to the Supreme Court from this Court's January 14, 2022 order denying their intervention application. By order dated January 26, 2022, the Supreme affirmed this Court's order. *See Carter/Gressman v. Chapman (Appeal of: Khalif Ali et al.)* (Pa., Nos. 5 & 6 MAP 2022, orders filed Jan. 26, 2022).

congressional redistricting plan by January 30, 2022. As of January 30, 2022, the General Assembly and Governor had not adopted a new reapportionment plan.

On January 29, 2022, the Carter Petitioners filed a renewed Emergency Application for Extraordinary Relief under 42 Pa. C.S. § 726 and Pa.R.A.P. 3309 in the Supreme Court, asking that Court to immediately assume extraordinary jurisdiction over this redistricting litigation. On February 1, 2022, this Court filed a statement, “advising the Supreme Court that the undersigned jurist’s decision and opinion in the above-captioned matters would be ready to be filed in the Commonwealth Court by Thursday, February 3, 2022, and [in no] event later than Friday, February 4, 2022.” (Statement of the Court, dated Feb. 1, 2022.) On February 2, 2022, the Supreme Court issued an order granting the Carter Petitioners’ Application, designating the undersigned as Special Master, and directing that all proceedings in this Court prior to the issuance of the Supreme Court’s order, as well as the filings submitted to this Court at its direction, “shall be considered part of the Special Master’s record.” *See Carter v. Chapman* (Pa., No. 7 MM 2022, order filed Feb. 2, 2022), at 1-2 & ¶¶2-3. The Supreme Court further directed the Court to file with the Supreme Court a report containing proposed findings of fact and conclusions of law supporting its recommendation of a redistricting plan from those submitted to the Court, along with a proposed revision to the 2022 election schedule, by February 7, 2022. *Id.* ¶3.²⁶

²⁶ The Court notes that during the pendency of these matters, this Court was proceeding under the assumption that it had acquired the traditional role of a trial court, the “fact finder” in legalese and, therefore, that its primary responsibility after conducting the bench trial was to render credibility and weight determinations with respect to, and resolve conflicts within, the evidence, being specifically tasked with the obligation of choosing which piece or pieces of that evidence should be accepted, discredited, or otherwise provided with great, little, or no evidentiary value or significance. When this Court assumes such a role, typically and in general, its credibility and

III. THE CONTROLLING CONSTITUTIONAL AND LEGAL PRINCIPLES

It is well established that the primary duty of drawing federal congressional legislative district lines rests with state legislatures, which are vested with the power to determine, *inter alia*, “[t]he Times, Places and Manner of holding Elections for . . . Representatives,” subject to any rules that Congress may establish altering such power. Article I, Section 4 of the U.S. Constitution, U.S. Const. art. I, §4, cl. 1 (Elections Clause).²⁷ Thus, “[w]hile th[e] process is dictated by federal law, it is delegated to the states.” *League of Women Voters v. Commonwealth*, 178 A.3d 737, 742-43 (Pa. 2018) (*LWV II*). In Pennsylvania, congressional redistricting is handled as regular legislation, in that any congressional districting plan must pass both chambers of the General Assembly and be presented to the Governor for his approval or veto.²⁸ *LWV II*, 178 A.3d at 742; Pa. Const. art. IV, §15.²⁹ The “initial

weight determinations would have been virtually unassailable on appeal to the Supreme Court, and its rulings and other determinations would have been subjected to an abuse of discretion and/or an error of law standard. *See, e.g., In re R.J.T.*, 9 A.3d 1179, 1190 (Pa. 2010); *Commonwealth v. DeJesus*, 860 A.2d 102, 107 (Pa. 2004). However, considering that our Supreme Court has ably decided to exercise extraordinary jurisdiction pursuant to its King’s Bench power, and has officially appointed the undersigned to serve as a Special Master, this Court now proceeds on the assumption that its credibility and weight determinations and other rulings are not entitled to any form of deference by the Supreme Court, which may substitute its judgment for that of this Court at will. Accordingly, the Court would like to emphasize that its evidentiary and legal determinations are made simply as proposed recommendations to the Supreme Court and that the Court submits them respectfully.

²⁷ The Elections Clause provides: “The Times, Places and Manner of holding Elections for Senators and Representatives, shall be prescribed in each State by the Legislature thereof; but the Congress may at any time by Law make or alter such Regulations, except as to the Places of ch[oo]sing Senators.” U.S. Const. art. I, §4, cl. 1.

²⁸ “By contrast, the state legislative lines are drawn by a five-member commission pursuant to the Pennsylvania Constitution. *See* Pa. Const. art. II, § 17.” *LWV II*, 178 A.3d at 742, n.11.

²⁹ Article IV, section 15 of the Pennsylvania Constitution provides, in pertinent part, as follows:

and preferred path [regarding the drawing of congressional district maps is, undoubtedly, through] legislative and executive action.” *LWW II*, 178 A.3d at 821. However, where our state legislature is unable or chooses not to timely enact a congressional redistricting scheme, it falls upon the state judiciary to assume “the ‘unwelcome obligation’” and fashion, or in this case choose, an appropriate congressional redistricting plan. *See id.* at 822-23 (stating that “[w]hen . . . the legislature is unable to or chooses not to act, it becomes the judiciary’s role to determine the appropriate redistricting plan”); *see also Mellow*, 607 A.2d at 214 (recognizing that “[c]ongressional redistricting becomes a judicial responsibility only when . . . the state legislature has not acted after having had an adequate opportunity to do so”). Where the Pennsylvania judiciary is unwillingly called upon to assume the decidedly complex task of congressional redistricting due to the General Assembly’s inaction, as in this case, both federal and state constitutional principles are implicated.

A. **Brief History**

Since the earliest days of the republic, redrawing the boundaries of legislative and congressional districts after each decennial census has been primarily the responsibility of state legislatures. In general, following World War I, and the

Every bill which shall have passed both Houses shall be presented to the Governor; if he approves he shall sign it, but if he shall not approve he shall return it with his objections to the House in which it shall have originated, which House shall enter the objections at large upon their journal, and proceed to re-consider it. If after such re-consideration, two-thirds of all the members elected to that House shall agree to pass the bill, it shall be sent with the objections to the other House by which likewise it shall be re-considered, and if approved by two-thirds of all the members elected to that House it shall be a law

Pa. Const. art. IV, §15.

dramatic shifts in population from rural to urban areas that occurred thereafter, state legislatures failed to fulfill their constitutional responsibility to create redistricting plans. For decades, the U.S. Supreme Court declined repeated invitations to enter the “political thicket” of redistricting and refused to order the legislatures to carry out their duty. *Colegrove v. Green*, 328 U.S. 549, 556 (1946). *See Rucho v. Common Cause*, 139 S. Ct. 2484, 2493-96 (2019).

However, beginning in the 1960s, the U.S. Supreme Court changed course and issued a series of opinions concluding that cases based on malapportionment or a violation of the “one person, one vote” principle³⁰ were justiciable, particularly under the Equal Protection Clause of the Fourteenth Amendment.³¹ *See, e.g., Baker v. Carr*, 369 U.S. 186 (1962); *Wesberry v. Sanders*, 376 U.S. 1 (1964); *Reynolds v. Sims*, 377 U.S. 533 (1964); *Gaffney v. Cummings*, 412 U.S. 735 (1973); *Karcher v. Daggett*, 462 U.S. 725 (1983); *Evenwel v. Abbott*, 136 S. Ct. 1120 (2016). In the modern jurisprudence, the “one person, one vote” rule may be summarized as follows: “[W]hen drawing state and local legislative districts, jurisdictions are permitted to deviate somewhat from perfect population equality to accommodate traditional districting objectives, among them, preserving the integrity of political subdivisions, maintaining communities of interest, and creating geographic compactness,” but “[w]here the maximum population deviation between the largest and smallest district is less than 10%, [] a state or local legislative map presumptively complies with the one-person, one-vote rule”; otherwise,

³⁰ The “one person, one vote” principle is embodied in Article I, Section 2, Clauses 1 and 3 of the U.S. Constitution, which provides that United States “House of Representatives shall be . . . chosen . . . by the People of the several States” and “apportioned among the several States . . . according to their respective Numbers.” U.S. Const. art. I, §2, cls. 1 and 3.

³¹ It provides that: “[n]o State shall . . . deny to any person within its jurisdiction the equal protection of the laws.” U.S. Const. amend. XIV, §1.

“[m]aximum deviations above 10% are presumptively impermissible.” *Abbott*, 136 S. Ct. at 1124; *see Brobson, supra n.1*, at 56-61.

In the 1960s, the U.S. Supreme Court also began addressing as justiciable challenges to redistricting plans that were configured on the basis of race. Broadly speaking, “[r]acial, race-based, or ethnic gerrymandering occurs where legislative district boundaries are deliberately and arbitrarily distorted for racial purposes. Racial gerrymander challenges, either based on vote dilution (cracking) or vote concentration (packing), are justiciable, with the challenged legislation subject to strict scrutiny under the Equal Protection Clause and/or review for compliance with Section 2 of the Voting Rights Act of 1965 (VRA).^[32]” *Brobson, supra n.1*, at 63-64 (footnotes omitted). *See, e.g., Gomillion v. Lightfoot*, 364 U.S. 339 (1960); *Wright v. Rockefeller*, 376 U.S. 52 (1964); *Thornburg v. Gingles*, 478 U.S. 30 (1986); *Shaw v. Reno*, 509 U.S. 630 (1993); *Miller v. Johnson*, 515 U.S. 900 (1995); *Bush v. Vera*, 517 U.S. 952 (1996); *Alabama Legislative Black Caucus v. Alabama*, 575 U.S. 254, 270 (2015).

A third subset of claims in the districting/redistricting litigation arena concerns illegal partisan or political gerrymandering in the drawing of boundary lines. In terms of its accepted definition, “[p]artisan gerrymandering . . . is the process of manipulating the drawing of district boundaries to enhance the electoral chances of one political party above and beyond what would be expected based on statewide (or nationwide) partisan distribution of support.” *Brobson, supra n.1*, at 63-65. First addressing the issue in the 1970s, the United States Supreme Court, overall, and through time, has “struggled . . . to find a majority approach to dealing with challenges to legislative districts as ‘extreme’ partisan gerrymanders.” *Id.* at

³² 52 U.S.C. §§10101-10702.

67. See *Gaffney v. Cummings*, 412 U.S. 735 (1973); *Davis v. Bandemer*, 478 U.S. 109 (1986); *Vieth v. Jubelirer*, 541 U.S. 267 (2004); see also *Rucho*, 139 S. Ct. at 2497-99. In 2019, a majority of the U.S. Supreme Court in *Rucho* ultimately concluded that, under the U.S. Constitution, federal courts lack the competency to adjudicate partisan gerrymandering claims because such claims present nonjusticiable political questions. Nonetheless, the *Rucho* Court was careful to state that its “conclusion [did] not condone excessive partisan gerrymandering. Nor [did its] conclusion condemn complaints about districting to echo into a void.” *Rucho*, 139 S. Ct. at 2507. The Supreme Court noted that the States “[were] actively addressing the issue on a number of fronts,” and, as one of a few examples, cited a case from the Supreme Court of the State of Florida, which “struck down that State’s congressional districting plan as a violation of the Fair Districts Amendment to the Florida Constitution.” *Id.*

B. State Constitutional Principles

1. LWV (Free and Equal Elections Clause)

The Pennsylvania Supreme Court recently interpreted and applied the Free and Equal Elections Clause of article I, section 5 of the Pennsylvania Constitution, Pa. Const. art. I, §5, which provides that “[e]lections shall be free and equal; and no power, civil or military, shall at any time interfere to prevent the free exercise of the right of suffrage,” in *LWV II*, 178 A.3d 737, a case involving a partisan gerrymandering claim. By way of background, following the 2010 U.S. Census, Pennsylvania’s share of U.S. House members was reduced from 19 to 18 members, thus requiring the Commonwealth to reapportion its congressional district map. Legislation made its way through the legislative process, and the Republican-controlled General Assembly ultimately passed a proposed redistricting plan, which

then-Governor Corbett, also a Republican, signed into law as Act 131 of 2011 (2011 Plan). After having dodged any federal or state challenges for a total of three congressional election cycles, in June 2017, the petitioners, League of Women Voters, and 18 registered Democratic voters (1 from each of our congressional districts at the time), filed suit in this Court's original jurisdiction against, *inter alia*, current Governor Wolf and the General Assembly, alleging that the 2011 Plan violated numerous provisions of the Pennsylvania Constitution, including the Free and Equal Elections Clause, among others.³³ Specifically, the petitioners claimed that the 2011 Plan constituted an extreme case of partisan gerrymandering that diluted their votes and deprived them of an "equal" election in violation of the Free and Equal Elections Clause.

Subsequently, the petitioners requested that the Supreme Court exercise its extraordinary jurisdiction over the matter. The Supreme Court granted the request and assumed plenary jurisdiction over the matter, but ultimately remanded the case to this Court, directed that the case be assigned to a commissioned judge of this Court, and further directed the Court to conduct, on an expedited basis, discovery, and pretrial/trial proceedings necessary to create an evidentiary record on which the petitioners' claims could be decided. The Honorable P. Kevin Brobson of this Court³⁴ expeditiously conducted a nonjury trial in December 2017 and issued recommended findings of fact and conclusions of law two days prior to the Supreme Court's established deadline.

³³ The petitioners also alleged that the 2011 Plan violated their right to free expression and association under article I, sections 7 and 20 of the Pennsylvania Constitution, and their right to equal protection of the law under article I, sections 1 and 26 of the Pennsylvania Constitution. Pa. Const. art. I, §§1, 7, 20, 26.

³⁴ On January 3, 2022, the Honorable P. Kevin Brobson, former President Judge of this Court, was sworn in as Justice of the Pennsylvania Supreme Court.

Following expedited briefing and oral argument and based on Judge Brobson’s findings and conclusions, on January 22, 2018, by *per curiam* order, a majority of the Supreme Court declared as a matter of law that the 2011 Plan “clearly, plainly and palpably” violated the Pennsylvania Constitution, struck the Plan as unconstitutional, and enjoined its further use beginning with the Primary Election scheduled for May 15, 2018. *See League of Women Voters v. Commonwealth*, 175 A.3d 282, 289 (Pa. 2018) (*LWV I*); *see also LWV II*, 178 A.3d at 767-87 (lengthy discussion of the Commonwealth Court proceedings, the Court’s findings of fact based on the evidence presented, and the Court’s conclusions of law). The Court, however, gave the General Assembly additional time to formulate a remedial plan and submit it to Governor Wolf, and advised that the failure to enact a plan would result in the Supreme Court adopting a remedial plan based on the record and proposed plans submitted by the parties. *LWV I*, 175 A.3d at 290.

The Supreme Court thereafter issued an opinion in support of its order on February 7, 2018, in which it relied solely on the Free and Equal Elections Clause, which the Court noted “has no federal counterpart,” in disposing of the petitioners’ claims. *LWV II*, 178 A.3d 737, 803. After exhaustively summarizing the parties’, respondents’, intervenors’, and *amici*’s arguments, *see id.* at 787-801, the Court extensively examined the history of our Constitution, the plain language used in the various iterations of article I, section 5 throughout the years since its adoption, and our state’s jurisprudence interpreting the Free and Equal Elections Clause. *See id.* at 802-13. In doing so and recognizing that the term “free and equal” has historically been interpreted to have “a broad and wide sweep,” the Court interpreted the Free and Equal Elections Clause as prohibiting “any legislative scheme which has the effect of impermissibly diluting the potency of an individual’s vote for candidates

for elective office relative to that of other voters will violate the guarantee of ‘free and equal’ elections afforded by [a]rticle I, [s]ection 5.” *LWV II*, 178 A.3d at 809 (citing *City of Bethlehem v. Marcincin*, 515 A.2d 1320, 1323-24 (Pa. 1986)). Furthermore, as to the consequences of such an interpretation, the Court relevantly noted that “partisan gerrymandering dilutes the votes of those who in prior elections voted for the party not in power to give the party in power a lasting electoral advantage” and that “placing voters preferring one party’s candidate in districts where their votes are wasted on candidates likely to lose (cracking), or [] placing such voters in districts where their votes are cast for candidates destined to win (packing),” results in dilution of the non-favored, or minority, party’s votes. *LWV II*, 178 A.3d at 813-14. In light of the above, the Court determined that the Free and Equal Elections Clause deserves “the broadest interpretation, one which governs all aspects of the electoral process, and which provides the people of this Commonwealth an equally effective power to select the representative of his or her choice and bars the dilution of the people’s power to do so.” *Id.* at 814. Accordingly, article I, section 5 of the Pennsylvania Constitution prohibits “the creation of congressional districts which confer on any voter an unequal advantage by giving his or her vote greater weight in the selection of a congressional representative” than other voters. *Id.* at 816.

In terms of how to measure a redistricting plan’s compliance with article I, section 5, the Supreme Court pointed to article II, section 16,³⁵ which

³⁵ Article II, section 16 provides: “The Commonwealth shall be divided into fifty senatorial and two hundred three representative districts, which shall be composed of compact and contiguous territory as nearly equal in population as practicable. Each senatorial district shall elect one Senator, and each representative district one Representative. Unless absolutely necessary no county, city, incorporated town, borough, township or ward shall be divided in forming either a senatorial or representative district.” Pa. Const. art. II, §16.

provides certain “neutral benchmarks” that state legislative district maps must meet to prevent the dilution of individuals’ votes, and, noting the absence of any Pennsylvania constitutional provision governing the creation of congressional districts, adopted such “measures as appropriate in determining whether a congressional redistricting plan violates the Free and Equal Elections Clause of the Pennsylvania Constitution.” *LWW II*, 178 A.3d at 816. Accordingly, to pass constitutional muster under article I, section 5, congressional districts must be

composed of compact and contiguous territory; as nearly equal in population as practicable; and which do not divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population.

Id. at 816-17. The Court recognized that other considerations “have historically played a role in the drawing of legislative districts, including “the preservation of prior district lines, protection of incumbents, or the maintenance of the political balance which existed after the prior reapportionment[.]” and that such factors are not necessarily impermissible. *Id.* at 817. According to the Court, however, such factors are “wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts[.]” which criteria “provide a ‘floor’ of protection for an individual against the dilution of his or her vote in the creation of such districts.” *Id.* Moreover, when it is demonstrated that “these neutral criteria have been subordinated, in whole or in part, to extraneous considerations such as gerrymandering for unfair partisan political advantage, a congressional

redistricting plan violates [a]rticle I, [s]ection 5 of the Pennsylvania Constitution.”

*Id.*³⁶

Population Equality, Compactness, Contiguosness³⁷
& Political Subdivision Integrity

In applying the above factors to the 2011 Plan, the Court first considered compactness, which can be measured by a number of different mathematical compactness measurements/models. The Court in *LWV II* relied principally on the Reock Compactness Score³⁸ and the Polsby-Popper Compactness³⁹ Score, which seek to quantify compactness by assigning a score of 0

³⁶ By way of contrast, in *Rucho*, voters in two states challenged their states’ congressional districting maps as unconstitutional partisan gerrymandering. The U.S. Supreme Court held that, for purposes of the U.S. Constitution, these claims presented nonjusticiable political questions because “judges have no license to reallocate political power between the two major political parties,” with no constitutional grant of authority to do so and “no legal standards to limit and direct their decisions.” *Id.* at 2506-07. The Court explained that the “central problem” is determining when political gerrymandering “has gone too far,” a measurement too difficult to undertake in an adjudicative context. *Id.* at 2497 (citation omitted). However, U.S. Supreme Court stated that “[p]rovisions in state statutes and **state constitutions** can provide standards and guidance for state courts to apply.” *Id.* at 2507 (emphasis added). In Pennsylvania, that is exactly what our Supreme Court did in *LWV II* when it concluded that partisan gerrymandering claims were cognizable under the Free and Equal Elections Clause and the equal protection guarantee of the Pennsylvania Constitution. *See also supra* pp. 16-17.

³⁷ The *LWV II* Court did not extensively analyze the concept of “contiguity” in its decision; however, in the context of article II, section 16’s requirements that legislative districts be comprised of “contiguous territory,” the Supreme Court has previously defined “a contiguous district [a]s ‘one in which a person can go from any point within the district to any other point (within the district) without leaving the district, or one in which no part of the district is wholly physically separate from any other part.’” *Holt v. 2011 Legislative Reapportionment Commission (Holt I)*, 67 A.3d 1211, 1242 (Pa. 2013).

³⁸ One of the *LWV II* petitioners’ experts, Dr. Chen, defined a Reock Compactness Score as “a ratio of a particular district’s area to the area of the smallest bounding circle that can be drawn to completely contain the district—the higher the score, the more compact the district.” *LWV II*, 178 A.3d at 771.

³⁹ The same expert explained that a “Popper-Polsby Compactness Score is calculated by first measuring each district’s perimeter and comparing it to the area of a hypothetical circle with that same perimeter. The ratio of the particular district’s area to the area of the hypothetical circle

(least compact) to 1 (most compact). The Court noted that the 2011 Plan had Reock and Polsby-Popper Compactness Scores of 0.278 and 0.164, respectively. However, the Court explained that a computer simulation that applied only the traditional redistricting criteria, which had achieved population equality and contiguity, “had a range of Reock Compactness Scores from approximately .31 to .46, which was significantly more compact than the 2011 Plan’s score of .278; and had a range of Popper-Polsby Compactness Scores from approximately .29 to .35, which was significantly more compact than the 2011 Plan’s score of .164.” *LWV II*, 178 A.3d at 818. Additionally, the expert’s simulated plans “generally split between 12-14 counties and 40-58 municipalities, in sharp contrast to the 2011 Plan’s far greater 28 county splits and 68 municipality splits.” *Id.* at 818. Observing “that the 2011 Plan subordinated the goals of compactness and political[]subdivision integrity to other considerations[,]” the Court determined that the Plan “did not primarily consider, much less endeavor to satisfy, the traditional redistricting criteria.” *Id.* at 818-19. In so determining, the Court also relied on its “lay examination of the Plan,” which revealed “tortuously drawn districts that caused unnecessary political-subdivision splits, . . . oddly shaped, sprawling districts which wander seemingly arbitrarily across Pennsylvania,” and counties, political subdivisions, and wards unnecessarily divided amongst multiple congressional districts. *Id.* at 819.

Partisan Breakdown & Partisan Bias
(the mean-median gap and efficiency gap)

Although it was clear that the 2011 Plan failed to meet the traditional redistricting criteria as a statistical matter, which was “sufficient to establish that it

is its Popper-Polsby Compactness Score—the higher the score, the greater the geographic compactness.” *LWV II*, 178 A.3d at 771.

violate[d] the Free and Equal Elections Clause[.]" the Supreme Court nevertheless considered other factors, such as partisan bias, stating that the evidence of record established that the Plan's "deviation from these traditional requirements was in service of, and effectively work[ed] to, the unfair partisan advantage of Republican candidates in future congressional elections and, conversely, dilute[d the petitioners'] power to vote for congressional representatives who represent their views." *LWV II*, 178 A.3d at 820. In so stating, the Court relied on expert testimony regarding the partisan breakdown of the 2011 Plan, which was calculated using election data for the 2008 and 2010 statewide elections, as well as the Plan's partisan bias calculations based on mean-median gap⁴⁰ measurements. *Id.* at 772-73, 820. The Court observed that simulated plans using the traditional redistricting criteria "created a range of up to 10 safe Republican districts with a mean-median vote gap of 0 to 4%," whereas "the 2011 Plan create[d] 13 safe Republican districts with a mean-median vote gap of 5.9%." *Id.* at 820. The Court found the petitioners' expert's testimony credible "that the 2011 Plan's outlier status in this regard was [not] attributable to an attempt to account for Pennsylvania's political geography, to protect incumbent congresspersons, or to establish the 2011 Plan's majority African-American district[.]" but rather was a means of obtaining unfair partisan gain. *Id.* at 820. The Court also relied on testimony concerning the efficiency gap⁴¹ data in

⁴⁰ According to the petitioners' expert, the mean-median gap is a "common scientific measurement"; "To calculate the mean, one looks at the average voter share per party in a particular district. To calculate the median, one 'line[s] up' the districts from the lowest to the highest vote share; the 'middle best district' is the median. . . . The median district is the district that either party has to win in order to win the election." *LWV II*, 178 A.3d at 774.

⁴¹ The efficiency gap was defined as "a formula that measures the number of 'wasted votes' for one party against the number of 'wasted votes' for another party." *LWV II*, 178 A.3d at 777. To find the gap, one "calculates the ratio of a party's wasted votes over the total number of votes cast in the election, and subtracts one party's ratio from the other party. The larger the number, the greater the partisan bias." *Id.*

relation to the Plan, which established “a modest natural advantage, or vote efficiency gap, in favor of Republican congressional candidates relative the Republicans’ statewide vote share[.]” *Id.* at 820. Considering the above, along with other “geographic idiosyncrasies,” the Court concluded “that the 2011 Plan subordinate[d] the traditional redistricting criteria in service of achieving unfair partisan advantage, and, thus, violate[d] the Free and Equal Elections Clause of the Pennsylvania Constitution.” *Id.* at 821. The Court added that “[s]uch a plan, aimed at achieving unfair partisan gain, undermines voters’ ability to exercise their right to vote in free and ‘equal’ elections if the term is to be interpreted in any credible way.” *Id.*

In sum, the *LWV II* decision provides that any congressional redistricting plan must meet the above traditional redistricting criteria to establish compliance with the Free and Equal Elections Clause of the Pennsylvania Constitution. Our Supreme Court again reiterated this principle in its *per curiam* opinion and order in *League of Women Voters v. Commonwealth*, 181 A.3d 1083, 1085, 1087 (Pa. 2018) (*LWV III*), in which it adopted the 2018 Remedial Plan that it prepared based on the submissions of the parties, intervenors, and *amici*, and which it determined met all of the traditional redistricting criteria. All the Parties in the instant matter, as well as all *Amicus* Participants, generally agree that this Court’s consideration of the dozen or more maps submitted is governed, at least initially, by the traditional redistricting criteria espoused in *LWV II* and *III*.

This Court notes, however, that while the *LWV II* case dealt with a challenge under the Free and Equal Elections Clause of article I, section 5 of the Pennsylvania Constitution, Pa. Const. art. I, §5, with which any congressional districting plan must now comply, the challenge in that case was made in the context

of an already-enacted congressional redistricting plan (the 2011 Plan) that had been passed by the state legislature and signed into law by the governor and was predicated on claims that the plan was violative of article I, section 5 **because of partisan political gerrymandering** and the resultant deliberate dilution of individuals' votes. Such is not the case here. The Court again recognizes the Supreme Court's pronouncement in *LWV II* that an essential part of an inquiry into whether a congressional redistricting plan violates the Free and Equal Elections Clause requires an examination of whether the congressional districts created under a redistricting plan meet the "neutral benchmarks" of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts, and that other factors have historically been considered but are, generally, "wholly subordinate to the neutral criteria[.]" *LWV II*, 178 A.3d at 816-17. However, the *LWV II* Court had no occasion to consider other historical factors at length, such as communities of interest, as the constitutionality of the already-enacted map at issue in that case was "resolved solely on the basis of consideration of the degree to which neutral criteria were subordinated **to the pursuit of partisan political advantage[.]**" which was essentially apparent on the face of the 2011 Plan and supported by the evidence in that case, but which is not specifically at issue in the instant case. *Id.* at 817-18 (emphasis added). We also point out the *LWV II* Court's observation that advancements in map drawing technology and analytical software was possible and that such advancements could "potentially allow mapmakers, in the future, to engineer congressional districting maps, which although minimally comporting with these neutral 'floor' criteria, nevertheless operate to unfairly dilute the power of a particular group's vote for a congressional representative[.]" and that the Court

declined to address “the possibility of such future claims.” *Id.* at 817. Thus, although not explicitly stated, it appears the Court left the door open for consideration of other historically subordinate factors where the “neutral criteria” have in fact likely been met in the first instance with the help of map drawing technology and other analytical software, a situation that has now come to fruition in this case of apparent first impression.

In the instant matter, the General Assembly passed House Bill 2146, Printer’s Number 2541 (HB 2146) containing a reapportionment plan based on the 2020 Census results, which was approved by both the House and the Senate in due course. However, because Governor Wolf vetoed HB 2146, as will be discussed *infra*, HB 2146 was not adopted as an act with statewide support. *See* Pa. Const. art. IV, §15 (providing that “[e]very bill which shall have passed both Houses shall be presented to the Governor; if he approves he shall sign it, but if he shall not approve he shall return it with his objections to the House in which it shall have originated . . .”). Moreover, all Parties and *Amicus* Participants in this case agree that the existing 2018 Remedial Plan, drawn by the Supreme Court in 2018, no longer complies with the constitutional requirement of an equal number of citizens in each congressional district, due to the decrease in the number of Pennsylvania’s congressional districts from 18 to 17. Therefore, the Supreme Court is tasked not with considering an already-enacted congressional redistricting plan that is alleged to be the result of partisan political gerrymandering as in *LWV II*, but rather, with (1) declaring unconstitutional the existing and now, based on the 2020 U.S. Census, undisputedly malapportioned 2018 Remedial Plan drawn by our Supreme Court; (2) comparing and evaluating the dozen or more different plans timely submitted by the Parties and *Amicus* Participants; and, in accordance with the Supreme Court’s instruction, (3)

recommending a valid reapportionment plan that this Court believes comports with the federal and state constitutional requirements outlined above. This case is, therefore, more comparable to *Mellow*, 607 A.2d 204, which the Supreme Court mentioned only in passing in its *LWV II* decision. *See LWV II*, 178 A.3d at 822.

2. Mellow (one person, one vote; VRA; other considerations)

In *Mellow*, this Court was confronted with a similar scenario in which the results of 1990 U.S. Census reduced Pennsylvania's share of U.S. House members from 23 to 21 members, a net loss of two seats/districts, thus requiring the Commonwealth to reapportion its congressional district plan. Like in the instant matter, the General Assembly failed to enact a 21-district congressional reapportionment plan, which prompted eight Democratic State Senators to file suit against state election officials in this Court's original jurisdiction, requesting that the Court declare the existing congressional reapportionment law unconstitutional under Article I, Section 2 of the U.S. Constitution; enjoin implementation of the congressional election schedule until a valid plan could be adopted; and adopt a valid reapportionment plan if the General Assembly failed to enact one. This Court held a prompt hearing, after which a judge of this Court preliminarily enjoined implementation of the then-current election schedule on the basis that the existing 23-district apportionment plan was unconstitutional, directed all parties and intervenors to submit their proposed apportionment plans to this Court by a certain date, and advised that the Court would select a plan if one was not enacted.

The General Assembly failed to enact a plan. This Court therefore directed that final hearings be held for the purpose of receiving evidence and considering all timely submitted proposed plans. The Supreme Court assumed

plenary jurisdiction over the matter upon at the request of the plaintiffs, and designated President Judge Craig of this Court as Master to conduct hearings and create an evidentiary record and submit a recommended decision to the Supreme Court. Following three days of hearings before this Court, Judge Craig submitted his findings recommended decision approving one of the plans (Plaintiffs' No. 2) submitted by the eight Democratic State Senator plaintiffs. Ultimately, following the filing of exceptions to the recommended decision and argument thereon, the Supreme Court adopted Judge Craig's findings and recommended decision, along with his revised election calendar, and dismissed all exceptions.

For purposes of identifying a manageable standard by which this Court may judge the dozen or more maps timely submitted by the Parties and *Amicus* Participants in this matter and make a recommendation, Judge Craig's recommended decision, attached to the Supreme Court's decision as Appendix A, will first be discussed and then the Supreme Court's decision adopting Judge Craig's recommendation.

In his recommended decision, Judge Craig compared and evaluated the following six timely submitted reapportionment plans in his recommended decision:

- Plaintiffs' No. 1 and 2;
- O'Donnell A and O'Donnell B (submitted by the Speaker of the Pennsylvania House of Representatives and seven other Democratic House members);
- Murtha-McDade Plan (a bipartisan plan submitted by a United States Congressman and nine other incumbent members of Pennsylvania's congressional delegation); and

- Loeper 1 (submitted by the Pennsylvania State Senate Majority Leader and five other Republican State Senators).

Mellow, 607 A.2d at 206.

Prior to considering the proposed plans, Judge Craig laid out the controlling constitutional principles governing his analysis. Specifically, he discussed the federal constitutional “one person, one vote” principle embodied in Article I, Section 2, of the U.S. Constitution, which provides that U.S. “House of Representatives shall be . . . chosen . . . by the People of the several States” and “apportioned among the several States . . . according to their respective Numbers.” U.S. Const. art. I, §2, cls. 1 and 3. Judge Craig observed that, in applying Article I, Section 2, the U.S. Supreme Court has held “that the goal is to make ‘as nearly as practicable one man’s vote in a congressional election . . . worth as much as another’s[,]’” and that such “requirement is the ‘preeminent if not the sole, criterion’ for appraising the validity of redistricting plans.” *Mellow*, 607 A.2d at 214 (citing *Wesberry v. Sanders*, 376 U.S. 1 (1964), and *Chapman v. Meier*, 420 U.S. 1 (1964)). Judge Craig further recognized that “[t]he United States Supreme Court has declined to adopt any particular deviation figure as the maximum deviation per se allowable[,]” and that “[p]opulation variances among districts must be justified.” *Mellow*, 607 A.2d at 214 (citing *Kirkpatrick v. Preisler*, 394 U.S. 526 (1969)). As Judge Craig noted, “**a plan is not per se unconstitutional just because a smaller deviation could be achieved.**” *Mellow*, 607 A.2d at 214 (emphasis added) (citing *Karcher v. Daggett*, 462 U.S. 725 (1983)).

Judge Craig defined “maximum total deviation” as “the sum of the percentage by which . . . [the] most populous district . . . exceeds the ideal district population . . . and the percentage by which . . . the least populous . . . [is] below this

ideal[.]” and he noted various maximum deviations that had previously been accepted (0.149%, 0.2354%, 0.399%) or rejected (5.97% and 0.284%) in then-recent years. *Mellow*, 607 A.2d at 214-15 (quoting *Board of Estimate v. Morris*, 489 U.S. 688 (1989)). He observed that while the Murtha-McDade Plan achieved “the ultimate of equality with a maximum deviation of 0.0000017%, consisting of a difference of just one person out of 565,793[.] [d]epartures from such mathematical perfection, according to the federal courts, are justified only to advance the cause of equality realistically in the following respects:

- avoiding fragmentation of local government territories and splitting of election precincts;
- effectuating adequate representation of a minority community;
- creating districts which are compact and contiguous;
- maintaining relationships of shared community interests; and
- not unduly departing from the useful familiarity of existing districts[.]

Mellow, 607 A.2d at 215 (citations omitted).

Judge Craig then stated that he must consider all plans “on the same footing,” as we must do here. In doing so, he considered the following items, which the Court quotes in full:

Column 1—Identification of Plan: In addition to the record name for each plan, this column identifies the specific legislative bills, if any, which have substantially embodied the plan in the General Assembly. None of the listed bills was passed by both houses.

Column 2—Maximum Deviation: As defined above, this percentage figure is the sum of the percentage by which the most populous district exceeds the ideal equality number, plus the

percentage by which the least populous district falls below that ideal number.

Column 3—Average Deviation: The mean figure which reflects an average of the percentage deviations for all 21 districts in the respective plan.

Column 4—Split Municipalities: Remembering that the term “municipality” includes counties, as well as cities, boroughs and townships in Pennsylvania, 1 Pa.C.S. § 1991, this column gives a count of the municipalities to which more than one of the proposed districts of the plan applies. This column treats Philadelphia as a county rather than a city.

Column 5—Split Election Precincts: Although a voting unit in Pennsylvania is officially termed an “election district,” 25 P.S. § 2602(g), the table and the record here use, for the same concept, the term “precinct” in order to avoid confusion with the congressional “districts” which are the principal subject matter of this proceeding.

Columns 6, 7—African–American Population of District 1: These columns relate to the potentiality of a second congressional district with an African–American majority population, which would be in addition to Congressional District 2, which all plans recognize as presently being a majority African–American district in Philadelphia. Column 6 gives the African–American population percentage of the respective proposed district, and Column 7 gives the percentage of voting age African–American population in the proposed district.

Column 8—Regional Communities of Interest: This column indicates those plans which recognize the community-of-interest relationships established by the evidence (discussed below) as to (1) Lehigh Valley’s long-standing joinder of Lehigh and Northampton Counties in one congressional district, (2) Berks and Schuylkill Counties’ long-standing joinder in one congressional district, (3) keeping Bucks County in one congressional district, and (4) retention of Carlisle and adjacent municipalities such as North Middleton Township, in Cumberland County, within the 19th Congressional District.

Column 9—Estimates of Party Balance of Seats: Based solely on party registration statistics, this column gives the number of congressional seats thus projected for each party with respect to each plan across the state.

Because the criterion of compactness and contiguity involves visual inspection of a graphic presentation of the shape of a congressional district, that factor cannot be reflected by means of the tabulation in Finding No. 16, but must be considered separately.

Id. at 215-16.

In comparing and contrasting the plans, Judge Craig first considered the mathematical exactitude of the Murtha-McDade Plan in terms of the equal population requirement, with a maximum deviation of 0.0000017%, but rejected it given its split of 22 election precincts and 27 local governments, noting that “a serious election administration problem arises from requiring the voters in a single precinct to look to two different sets of congressional candidates.” *Id.* at 218. He then determined that all of the proposed plans were acceptable in terms of population equality, and that he would have to consider other criteria in evaluating the plans further.

In particular, Judge Craig noted that, “[w]hen possible, an increase in the number of minority-in-the-majority districts is constitutionally required.” *Id.* at 219 (citing *Gingles*, 478 U.S. 30, and other cases). “Minority voting should be maximized as much as possible.” *Mellow*, 607 A.2d at 219 (citing *Jeffers v. Clinton*, 730 F. Supp. 196 (1989)). Given the 9% African-American population of Pennsylvania at the time, Judge Craig noted that there was “a potential for two African-American majority districts.” *Mellow*, 607 A.2d at 219. In so noting, Judge Craig specifically considered Philadelphia, which he observed was, at the time, one of the three Pennsylvania counties large enough to be split into more than one

congressional district, and also the only majority African-American congressional district (District 2), with about 81% African-American population. *Id.* He then considered the “key question” of whether another African-American majority congressional district could be mapped out of the then-adjointing District 1 by including it in the adjoining City of Chester (which was then the only city in Pennsylvania with an African-American majority of citizens), and in some small part of the already-existing super-majority in District 1. *Id.* Determining that it could, the issue in the case became one of what percentage of African-American population was appropriate in each of the districts. *Id.* In placing considerable emphasis on the percentages of African-Americans in each district, Judge Craig considered which of the plans before him created a second African-American minority-majority district (*i.e.*, District 1), while also simultaneously maintaining a substantial majority population of African-Americans in District 2. *Id.* at 219-20. Ultimately, Judge Craig found that Plaintiffs’ Plans Nos. 1 and 2 came closest to achieving as much, with 52.4% African-American population in District 1 and 62.242% in District 2, both above 50%, while all of the other plans kept District 2’s percentage higher at the cost of achieving a lower African-American population in District 1 and thus risking the District 1 minority group’s effectiveness. *Id.* Despite arguments made to the contrary, and given the absence of any supporting evidence, Judge Craig rejected the notion that a particular percentage of a minority was required in a minority-majority district in order to preserve that group’s effectiveness. *Id.* at 220.

“On the basis of deviations from equality minimized as much as possible, with a lessened administrative problem as a result of minimal precinct splitting, and embodiment of a potential for two African-American majority districts,” Judge Craig characterized Plaintiffs’ Plan No. 2 “as the leading prospect

for approval[,]” and advised that the next step in the inquiry must be “salient regional concerns, as voiced in th[e] record[.]” *Id.* at 220. In so doing, Judge Craig observed the following concerns established by the undisputed testimony and other evidence before him: a certain township’s desire that it be kept entirely within its county in a particular congressional district; certain counties have been together within a single district since 1972, and share a valley, circulation arteries, common news media, and organizational and cultural ties, which have a unifying influence on the valley area; two counties share community of interest in a common economic base, circulation arteries, and schools of higher education, among other things; an affinity of two townships in a county with other communities in one district as opposed to another; and the City of Pittsburgh having more commonality with certain suburbs as opposed to others. *Id.* at 220-24. Judge Craig concluded that Plaintiffs’ Plans Nos. 1 and 2 were the only plans that substantially satisfied the regional concerns identified by the evidence.

Having considered the above factors, Judge Craig ultimately recommended Plaintiffs’ Plan No. 2, which had a greater maximum deviation than the mathematically exact Murtha-McDade Plan, because the proponents of the plan showed that the variance between the districts was necessary to achieve the legitimate goals of minimally splitting precincts, achieving an enlarged number of two congressional districts with a majority of African-American population, and implementing the community-of-interest factors in those regions across the state that had identified them. *Id.* at 224.

In its opinion adopting Judge Craig’s recommendation, the Supreme Court observed that Judge Craig properly considered the federal law requiring that congressional districts be equal in population to the greatest practical extent, and that

slight departures from mathematical perfection have been justified by federal courts only to advance the cause of equality in terms of “avoiding fragmentation of local government territories and the splitting of election precincts; effectuating adequate representation of a minority group; creating compact and contiguous districts; maintaining relationships of shared community interests; and not unduly departing from the useful familiarity of existing districts.” *Id.* at 206.

In addressing, and rejecting, a challenge to Judge Craig’s selection of Plaintiffs’ Plan No. 2 based on its higher maximum total deviation than other plans, the Supreme Court observed that the U.S. Constitution requires only that “districts be apportioned to achieve population equality ‘as nearly as is practical.’” *Id.* at 207. The Court identified a two-part test for determining whether the maximum total deviation of a plan satisfies the “one person, one vote” principle: “First, the party challenging a redistricting plan must show that ‘the population differences among districts could have been reduced or eliminated altogether by a good-faith effort to draw districts of equal population.’”; However, “‘a plan is not per se unconstitutional just because a smaller population deviation could be achieved.’” *Id.* The Court then observed that “the existence of plans with smaller deviations simply obligates a court to apply the second part of the test, *i.e.*, to ask whether the proponent of the plan can show that ‘each significant variance between districts was necessary to achieve some legitimate goal.’” *Id.* The Court also identified state objectives found to be legitimate, including making districts compact, **respecting municipal boundaries, preserving cores of prior districts**, and avoiding contests between incumbent representatives. *Id.* (citing various cases). Moreover, the Court observed that Judge Craig properly held that extremely small deviations in district populations may be justified by, *inter alia*: **a desire to avoid splitting of political subdivisions** and

precincts, **to provide adequate representation to a minority group, and/or to preserve communities of interest.** *Id.* at 208.

The Supreme Court also agreed with Judge Craig that Plaintiffs' Plan No. 2 best protected minority voting rights. In so doing, it observed that "[t]he primary tool for preventing minority voting dilution is Section 2 of the [VRA, 52 U.S.C. §10301, *formerly* 42 U.S.C. §1973]," which prohibits the state from denying or abridging individuals' right to vote based on race. *Mellow*, 607 A.2d at 208-09. The Court noted that "there is no legal requirement either in the courts of the Commonwealth or the federal courts," that a redistricting plan have a specific percentage of African-American total population to satisfy Section 2, and rejected any arguments to the contrary. *Id.* at 210. Further, citing *Gingles*, the Court noted that many of the plans diluted the voting strength of African-American voters by concentrating those voters into one African-American district at the expense of voters in another African-American district. The Court then noted that while incumbency protection can be considered, "it may not be accomplished at the expense of minority voting potential." *Mellow*, 607 A.2d at 210. Finally, the Court identified two other factors for consideration: political fairness, in terms of achieving a politically fair balance in Pennsylvania's delegation and dividing the loss of two seats evenly; and minimizing municipality and precinct splitting. *Id.* Because Plaintiffs' Plan No. 2 met these requirements, the Court adopted Judge Craig's recommendation.

Turning to the instant matter, the question, as this Court understands it, is what Judge Craig aptly identified in *Mellow* as which of the dozen or so proposed plans timely submitted to this Court for consideration comes closest to meeting all of the pertinent constitutional standards, outlined above, including those

“subordinate” standards identified by *LWV II*, which this Court must now apparently consider given that most plans appear to at least minimally meet the “traditional redistricting criteria” on account of advances in map drawing technology and other analytical software.

C. Other Considerations

A. Voting Rights Act

As noted in *Mellow*, Pennsylvania is subject to section 2 of the VRA, 52 U.S.C. §10301. *See Mellow*, 607 A.2d at 208-10. Subsection 2(a) of the VRA prohibits any state law “which results in a denial or abridgement of the right of any citizen of the United States to vote on account of race or color” 52 U.S.C. §10301(a). Subsection 2(b) provides that a violation of subsection (a) is established, based upon the totality of the circumstances, if “it is shown that the political processes leading to nomination or election in the State or political subdivision are not equally open to participation by members of a class of citizens” referred to in subsection (a), “in that its members have less opportunity than other members of the electorate to participate in the political process and to elect representatives of their choice.” 52 U.S.C. §10301(b).

As it concerns the redistricting process, the U.S. Supreme Court has recently explained:

A State violates [section] 2 [of the VRA] if its districting plan provides “less opportunity” for racial minorities “to elect representatives of their choice.” *League of United Latin American Citizens v. Perry*, 548 U.S. 399, 425 . . . (2006) (*LULAC*). In a series of cases tracing back to . . . *Gingles*, 478 U.S. 30 . . . , we have interpreted this standard to mean that, under certain circumstance, States must draw “opportunity” districts in which minority

groups form “effective majorit[ies],” *LULAC*, *supra*, at 426

Abbott v. Perez, 138 S. Ct. 2305, 2315 (2018).

The circumstance in which a state must draw such opportunity districts, the Supreme Court has explained, is established by three findings derived from the Court’s opinion in *Gingles*. The so-called “*Gingles* requirements” are: (1) a racial minority group that is “sufficiently large and geographically compact to constitute a majority in a single-member district”; (2) that the racial group is “politically cohesive”; and (3) that “the white majority votes sufficiently as a bloc to enable it . . . usually to defeat the minority’s preferred candidate.” *Gingles*, 478 U.S. at 50-51; *see also LULAC*, 548 U.S. at 425.

2. Deference to Legislature

The plan submitted by the Republican Legislative Intervenors is actually HB 2146. The Republican Legislative Intervenors asked this Court to give their proposed plan special deference because that plan was passed in the General Assembly on January 24, 2022. As such, the Republican Legislative Intervenors correctly note it went through the standard requirements for the making of any map. As stated earlier, it is the legislature who has the responsibility to draw a map. The plan was drawn by a well-known nonpartisan citizen, Amanda Holt, and it was vetted by the public in due course of its consideration before being adopted, with minor changes by the House and Senate. The Bill was then vetoed by the Governor.

Some state and federal courts have declined to accord deference to a map that made it only partway through the legislative process but failed to become law. *See, e.g., O’Sullivan v. Brier*, 540 F. Supp. 1200, 1202 (D. Kan. 1982) (three-judge court) (“[W]e are not required to defer to any plan that has not survived the full legislative process to become law.”); *Carstens v. Lamm*, 543 F. Supp. 68, 79 (D.

Colo. 1982) (three-judge court) (explaining that a vetoed legislative plan “cannot represent current state policy any more than the Governor’s proposal”); *Hippert v. Ritchie*, 813 N.W.2d 379, 380 n.6 (Minn. 2012) (“[B]ecause the Minnesota Legislature’s redistricting plan was never enacted into law, it is not entitled to . . . deference.”); *Wisconsin State AFL-CIO v. Elections Board*, 543 F. Supp. 630, 632 (E.D. Wis. 1982) (three-judge court). Other courts, however, have given deference to plans enacted by the legislature even though they were vetoed by the governor. See *Donnelly v. Meskill*, 345 F. Supp. 962 (D. Conn. 1972) (adopting the legislature’s proposed plan, explaining that “[t]he legislative adoption of [redistricting plan] tips the scales in favor of the plan . . . which provides districts essentially as outlined by the legislature . . .” and observing that the plan had “the added advantage that it is basically the plan adopted by the legislature”). The U.S. Supreme Court has also opined on this issue holding that a federal district court erred by displacing “legitimate state policy judgments with the courts own preference” by neglecting a recently enacted, but not precleared plan by the Department of Justice, legislative redistricting plan. *Perry v. Perez*, 132 S. Ct. 934, 941 (2012). In *Upham v. Seamon*, 456 U.S. 37 (1982) (*per curiam*), the U.S. Supreme Court held that district courts are not free to disregard the political program of state legislatures when fashioning reapportionment plans.

At this juncture, the Court will review HB 2146 along with the other plans submitted to the Court to assess its compliance with the constitutional traditional criterial factors adopted in *LWV II*, as well as other non-constitutional factors.

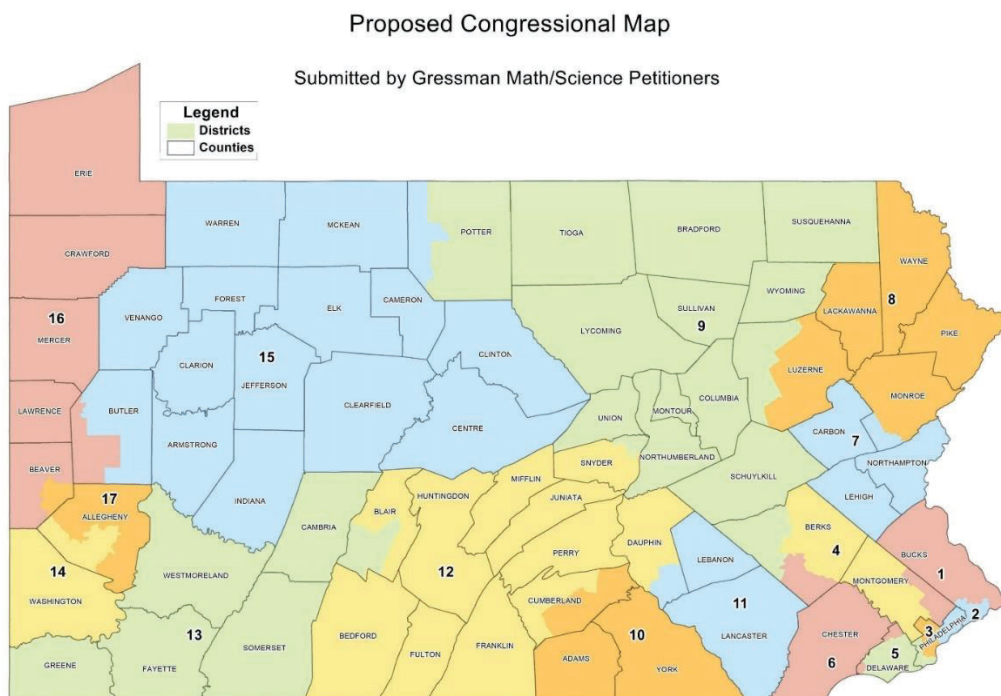
IV. COMMONWEALTH COURT PROCEEDINGS AND RECOMMENDED FINDINGS OF FACTS AND CONCLUSIONS OF LAW

A. The Plans Presented by the Parties and Amicus Participants

FF1. The following plan was submitted by the Carter Petitioners. *See* Carter Petitioners' Brief (Br.) in Support of Proposed Congressional Redistricting Plan, Exhibit (Ex.) 2.

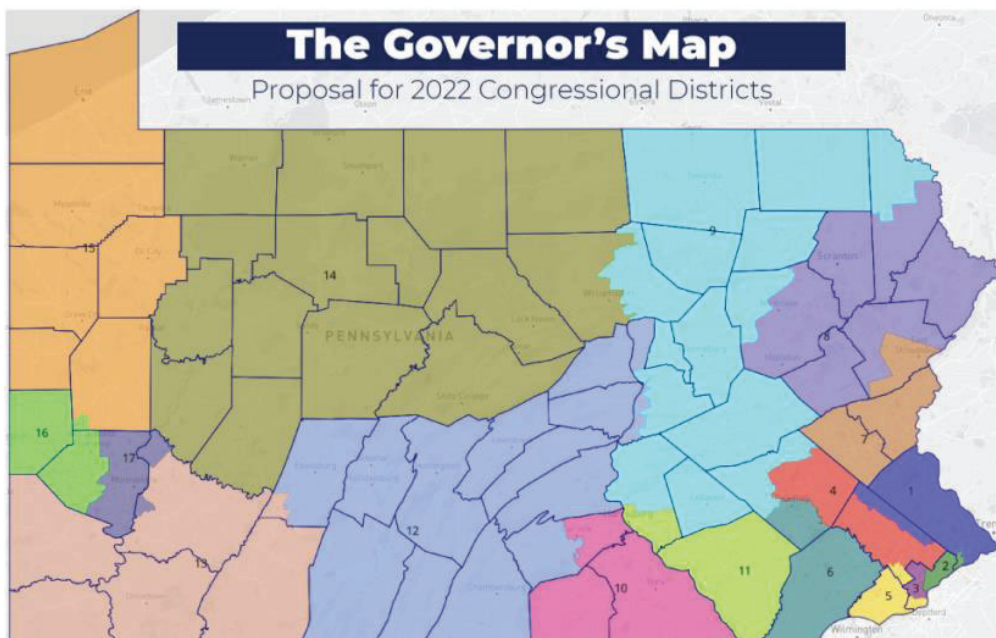


FF2. The following map, self-described as the “Math/Science Map,” was submitted by the Gressman Petitioners. See Br. in Support of *Gressman Math/Science Petitioners’ Congressional Plan*, Ex. 2, at 1.

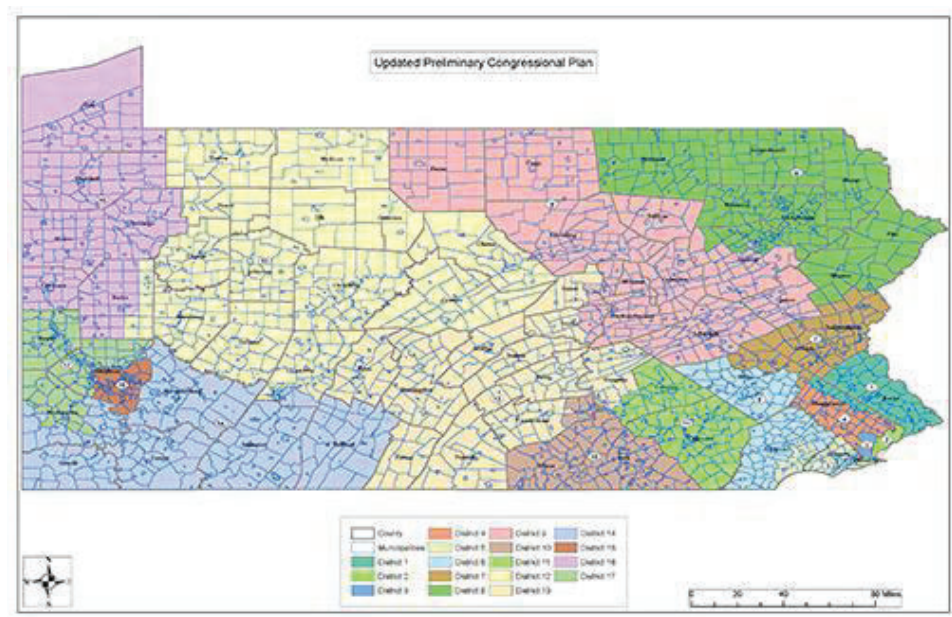


Carter v. Chapman, No. 464 M.D. 2021, and Gressman v. Chapman, No. 465 M.D. 2021.

FF3. The following plan, developed by the Governor's Office, was submitted by Governor Wolf. See <https://www.governor.pa.gov/congressional-districts-map-proposals>.



FF4. The following plan, which is embodied in HB 2146, was submitted by the Republican Legislative Intervenors (House and Senate). *See* Pre-Hearing Opening Br. of Senate Republican Intervenors, at PDF p. 181, Appendix (App.) C to John M. Memmi, Ph.D. Expert Report (Memmi Report); Corrected Opening Br. of House Republican Intervenors in Support of Proposed Congressional Redistricting Map, Ex. I, Ex. 1.



FF5. On December 8, 2021, House Bill 2146, Printer's Number 2491 was introduced and referred to the House State Government Committee. *See* Bill History.⁴²

FF6. House Bill 2146, Printer's Number 2491 embodied a 17-district congressional redistricting plan that a citizen and good-government advocate, Amanda Holt, had created on her own. Corrected Opening Brief of House

⁴² *See* Bill History for HB 2416, available at https://www.legis.state.pa.us/cfdocs/billinfo/bill_history.cfm?year=2021&ind=0&body=H&type=B&bn=2146 (last visited Feb. 1, 2022).

Republican Intervenors, Ex. A, Grove Letter (Jan. 6, 2022) (Grove Letter); Ex. I, Affidavit of Bill Schaller.

FF7. On December 15, 2021, the Bill was reported out of the House State Government Committee, as amended, as HB 2146, Printer's Number 2541 (HB 2146), and was brought up for first consideration on the same date. *See Bill History.*

FF8. HB 2146 was made available for public comment, engendering a total of 399 comments. *See Grove Letter.*

FF9. Those comments led to some additional changes to the bill that were designed to increase the compactness of certain districts and ensure that certain communities of interest were preserved. *Id.*

FF10. The Bill was brought up for second consideration on January 11, 2022, and, on January 12, 2022, the Pennsylvania House of Representatives passed HB 2146 by a 110-91 vote and referred it to the Senate State Government Committee for consideration. *See Bill History.*

FF11. HB 2146 was reported out of the Senate State Government Committee on January 18, 2022, and was brought up for first consideration on that same date. *See Bill History.*

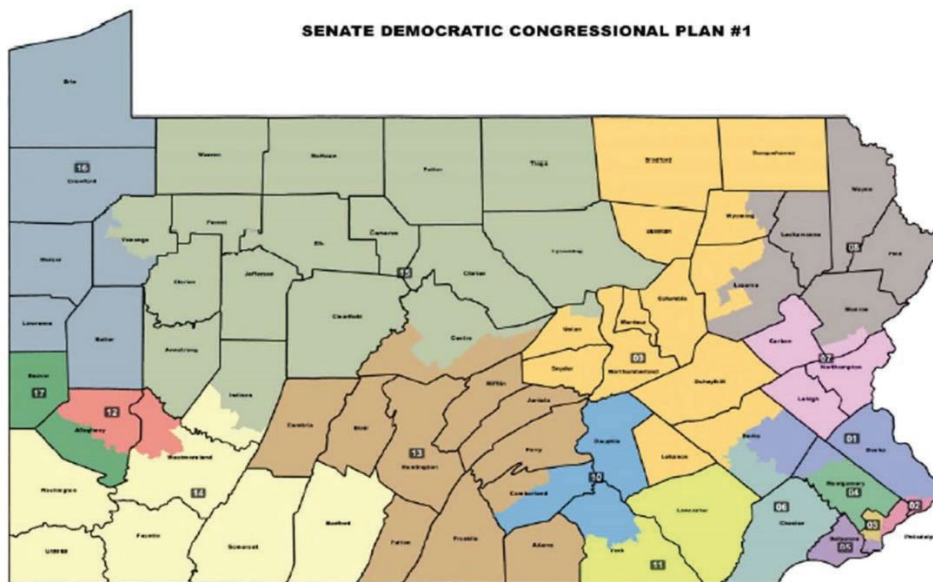
FF12. HB 2146 was brought up for second consideration by the full Senate on January 19, 2022. *Id.*

FF13. On January 24, 2022, HB 2146 was referred to the Senate Appropriations Committee, reported out of the committee, brought up for third consideration, and passed in a 29-20 vote. *Id.*

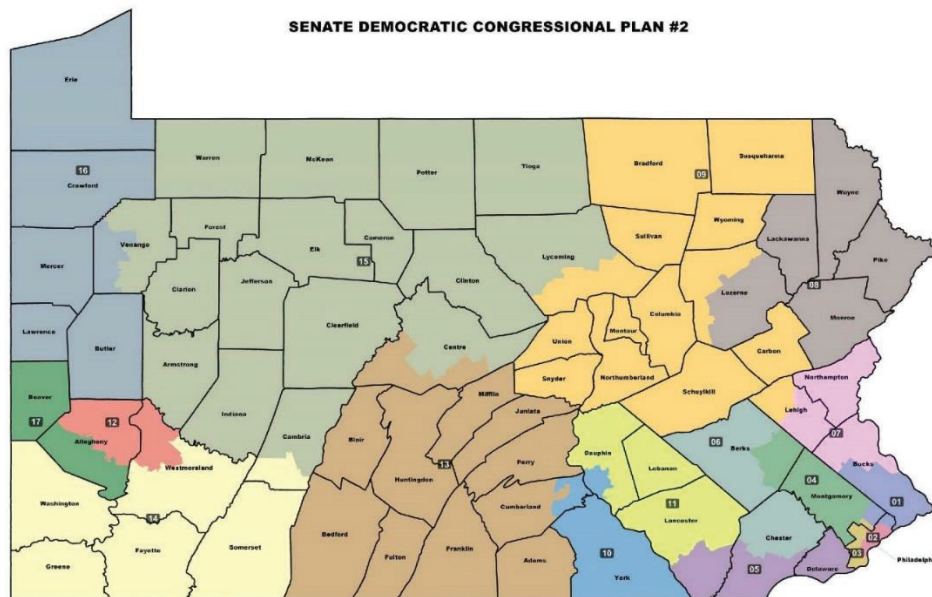
FF14. Also on January 24, 2022, HB 2146 was presented to Governor Wolf, who subsequently vetoed the bill on January 26, 2022. *See Bill History.*

FF15. Two following plans were submitted by the Senate Democratic Caucus Intervenor. See Senate Democratic Caucus’ Br. in Support of Senate Democrats’ Caucus’ Proposed Redistricting Plan, Ex. A (Map 1) and (Map 2).

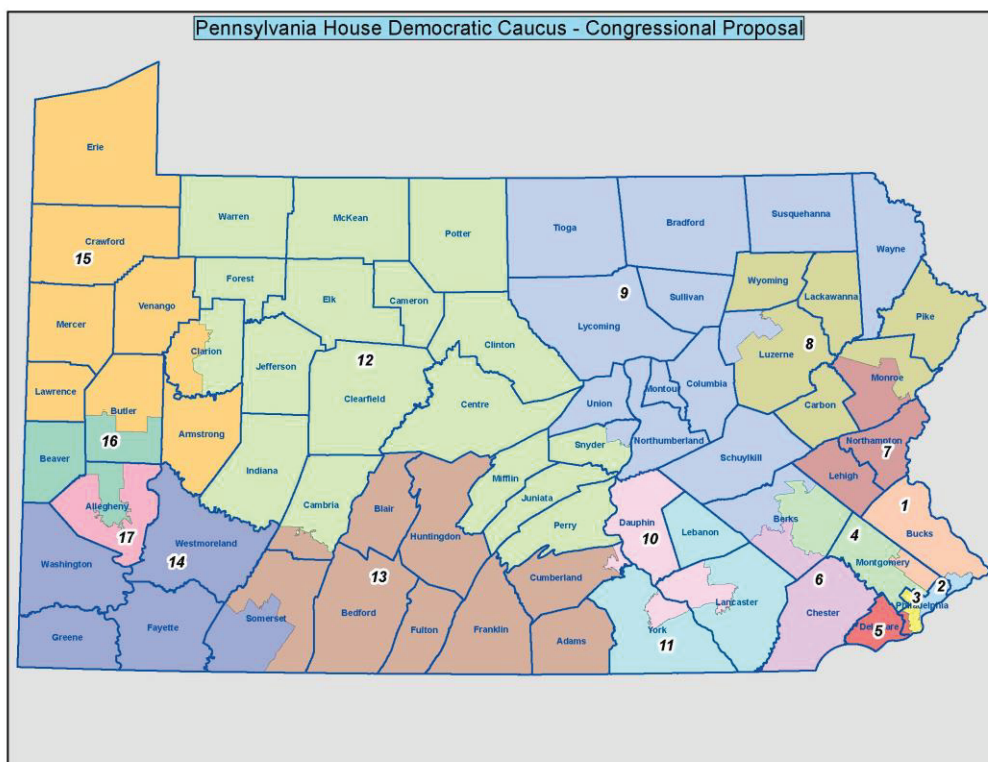
(a) Senate Map 1



(b) Senate Map 2

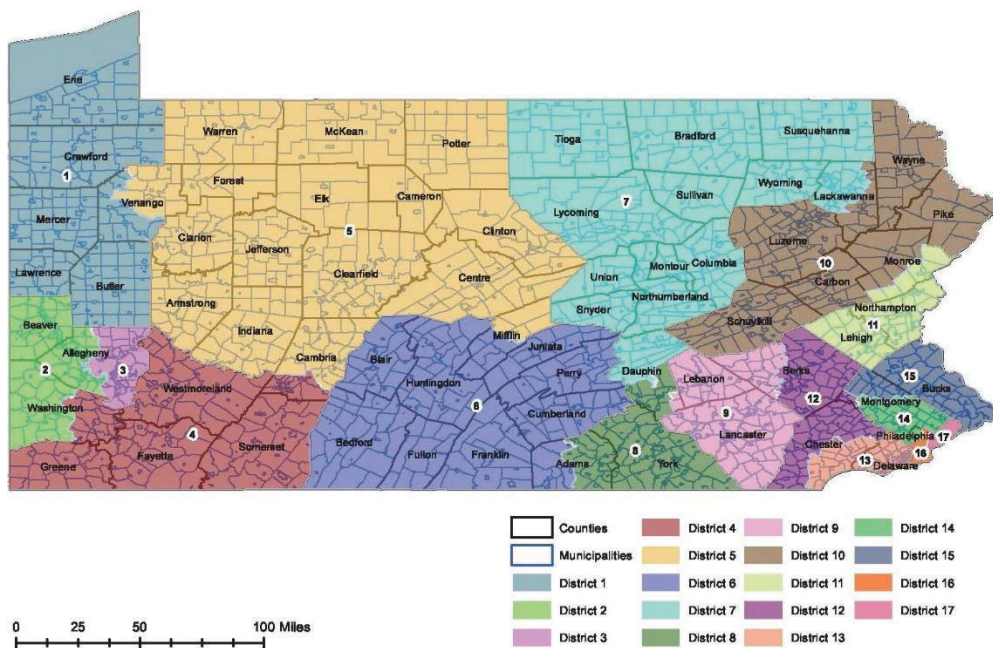


FF16. The following Plan was submitted by House Democratic Caucus Intervenor McClinton. See Br. of House Democratic Caucus Intervenor McClinton in Support of Proposed Congressional Redistricting Plan, uploaded to SharePoint as Ex. (unnumbered).

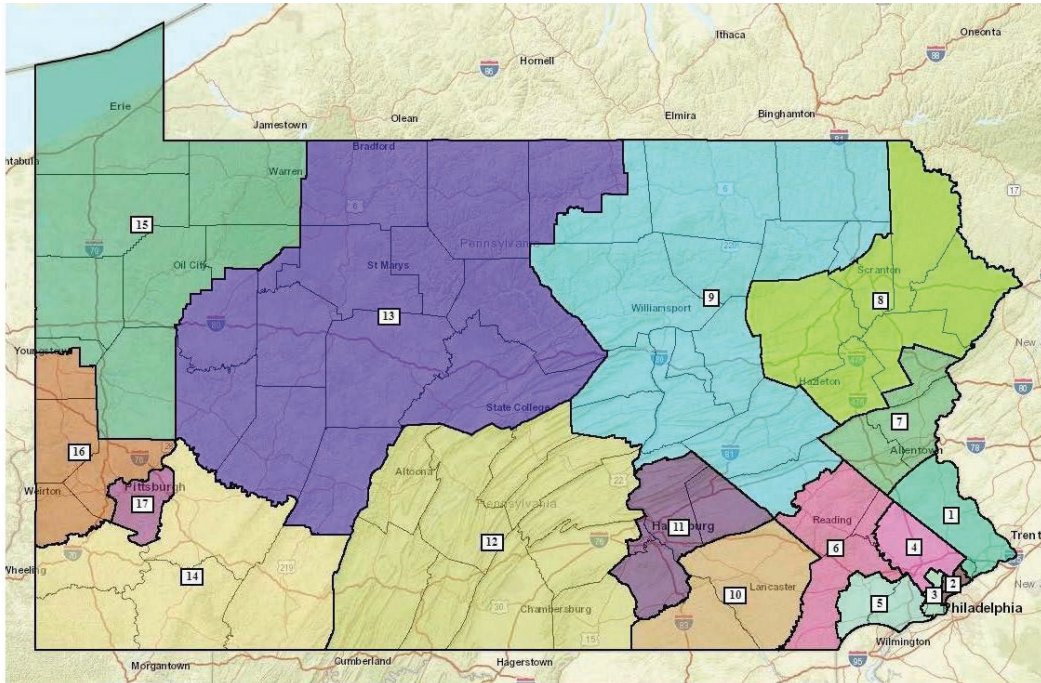


2. Resenthaler 2

Resenthaler 2 Congressional Map

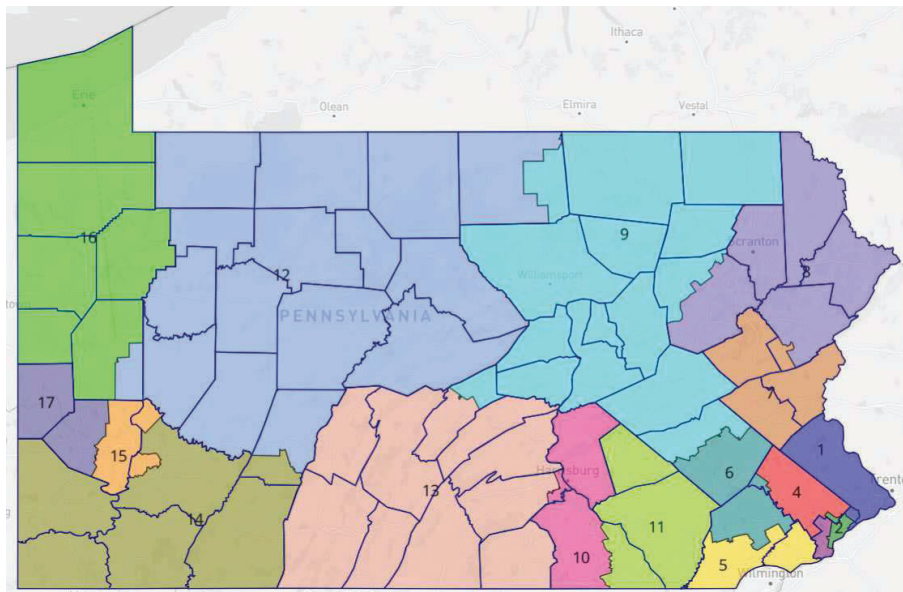


FF18. The following plan was submitted by *Amici Voters* of the Commonwealth (Voters of PA). See Br. of *Amici Curiae* Voters of the Commonwealth in Support of Their Proposed Plan, Ex. A, Sean Trende Expert Report (Trende Report), App. 2.



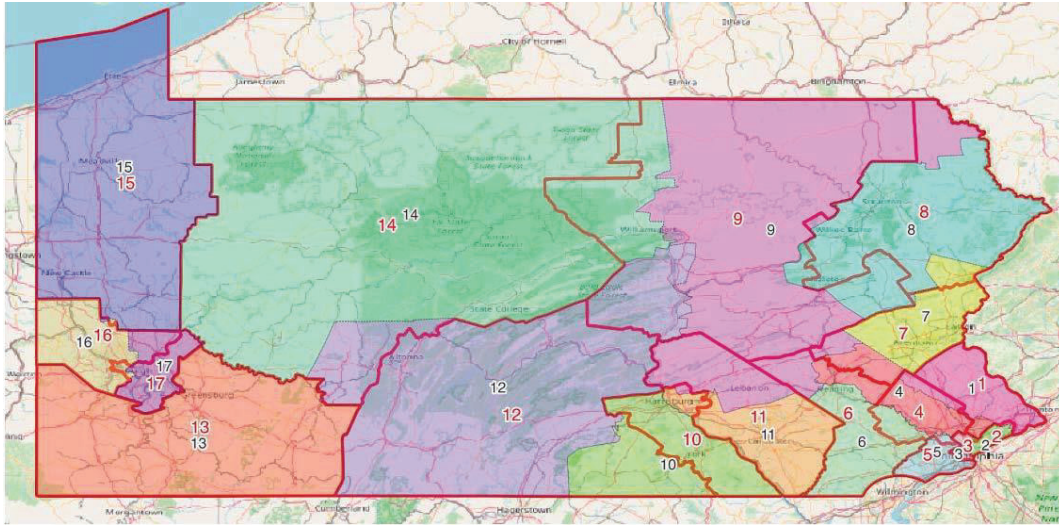
FF19. The Voters of PA are a group of Pennsylvania voters who specify that they intend to advocate and vote for Republican candidates in upcoming elections and view themselves as a “mirror image” of the Carter Petitioners. See Voters of PA Br. at 1.

FF20. The following Plan was submitted by *Amici Draw the Lines PA*. See Proposed Redistricting Plan and Supporting Statement of Amici Curiae Draw the Lines PA Participants (*Draw the Lines PA Br.*), Ex. A, at 1.



FF21. Draw the Lines PA is a nonpartisan education and engagement initiative of the Committee of Seventy, a nonpartisan civic leadership organization, which has organized district mapping competitions among Pennsylvania’s citizens. See *Draw the Lines PA Br.*, at 3.

FF22. The following plan was submitted by Khalif Ali *et al.* See Br. of *Amici* Khalif Ali *et al.* (Ali Br.), Sarah Andre Expert Report (Andre Report), Ex. 2, at 1.

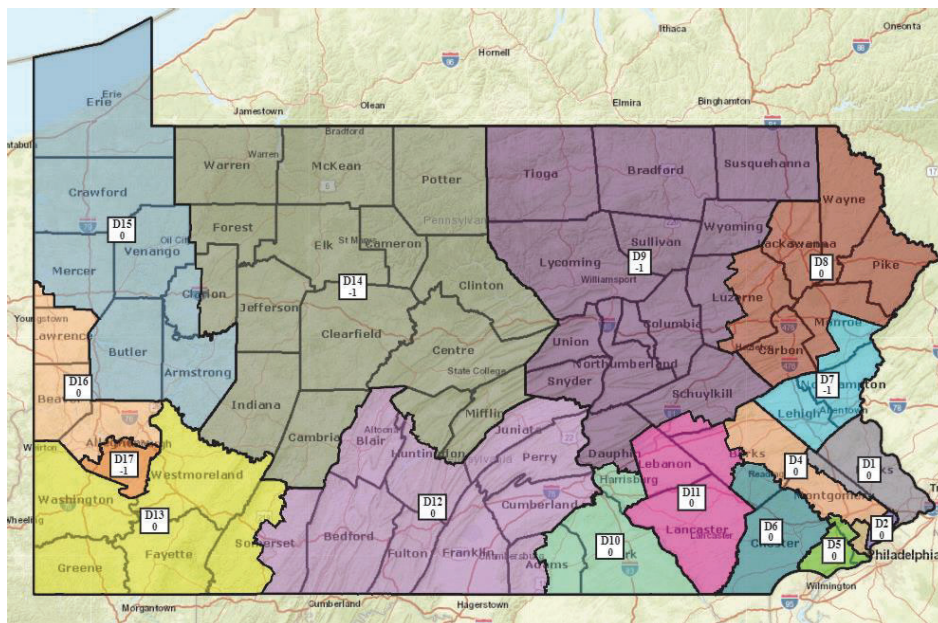


FF23. *Amicus* Participants Khalif Ali *et al.* (Ali *Amici*), used Governor Wolf’s plan as a starting point. (Ali Br. at 1 n.1.)

FF24. The Ali *Amici* are individual voters who are members of various advocacy groups, such as Common Cause Pennsylvania, the Voter Empowerment Education and Enrichment Movement, Fair Districts PA, and chapters of the League of Women Voters. (Ali Br. at 3-9.)

FF25. The Ali *Amici* advocate for the use of population data (Data Set #2), which has been adjusted to use the home addresses of state prisoners, so as to avoid the practice of “prison-based gerrymandering.” (Ali Br. at 9.)

FF26. The following plan was submitted by *Amici* Citizen Voters. See *Amicus* Participants’ (“Citizen-Voters”) Proposed Remedial Map of Congressional Districts (Citizen Voters Br.), Ex. A.



B. Evidentiary Hearing

Hearings were conducted on January 27 and 28, 2022. Six experts offered expert testimony and were subjected to cross-examination by every other Party. Each of the Parties was given one hour to conduct a direct examination of their expert witness. Cross-examination was limited to 15 minutes per Party, per expert. The Court permitted each Party to make a 15-minute opening and a 15-20 minute closing statement and to submit post-trial submissions.

C. Expert Reports and Testimony

1. Johnathan Rodden, Ph.D. (Carter Petitioners)

FF.1 In support of their redistricting plan, the Carter Petitioners presented the expert opinion of Jonathan Rodden, Ph.D.

FF2. Dr. Rodden is a professor of political science at Stanford University, who specializes in research on the patterns of political representation, geographic location of demographic and partisan groups, and the drawing of electoral districts. (Rodden Report at 1-2.)

FF3. Dr. Rodden has authored numerous academic papers concerning the assessment of partisan gerrymandering, has authored a book on political districts and representation, has testified as an expert witness in six previous election law and redistricting cases across the country, and is currently working as a consultant for the Maryland Redistricting Commission. (Rodden Report at 2.)

FF4. Dr. Rodden prepared the Carter Petitioners' proposed plan.

FF5. Pursuant to the Carter Petitioners' request, Dr. Rodden prioritized, to the extent possible, the preservation of the cores and boundaries of the existing 18-district plan enacted in 2018. (Rodden Report at 1; N.T. at 84.)

FF6. Because Dr. Rodden prioritized this consideration more than other parties, he was able to create a plan in which 86.6% of Pennsylvania's population would remain within the same district as under the existing plan—a higher percentage than any other plan submitted to the Court. (Rodden Resp. Report at 2; N.T. at 115-17.)

FF7. With regard to the maintenance of the cores of the prior districts, and with regard to the districting process generally, Dr. Rodden observed that an important consideration is the population and demographic shifts that have occurred in Pennsylvania over the past decade.

FF8. During this time, the population of denser areas has increased, and the population of more sparse areas has decreased—rendering population-dense, metropolitan areas of southeast and southwest Pennsylvania even more dense, and making less-dense rural areas even more sparse. (Rodden Report at 6-8; N.T. at 85-87.)

FF9. Dr. Rodden further noted that these population shifts are highly correlated with political party, as the growing, population-dense areas tend to contain voters who favor the Democratic party, and the rural areas that are losing population tend to contain voters who favor the Republican party. (Rodden Report at 9.)

FF10. Dr. Rodden drew the Carter Petitioners' plan to create 17 districts that are as close to equal in population as possible—deviating in population by no more than one person. (Rodden Report at 21; N.T. at 98-100.)

FF11. All of the other plans that Dr. Rodden reviewed also achieved equal population. (N.T. at 100.)

FF12. The Carter Petitioners' plan, along with all of the others, satisfied the contiguity requirement. (Rodden Report at 21; N.T. at 91.)

FF13. As for compactness, Dr. Rodden focused upon two metrics that received attention in the *LWV* decision—the Reock score and the Polsby-Popper score.

FF14. However, Dr. Rodden stressed that there is no single “best” compactness measurement, as each captures slightly different aspects of a compact district.

FF15. The Polsby-Popper score, for instance, “rewards districts with smooth perimeters and penalizes those with more contorted borders” that may nonetheless follow municipalities or geographic features, and the Reock score “can be sensitive to the orientations of a district’s extremities.” (Rodden Resp. Report at 3.)

FF16. Dr. Rodden calculated that the Carter Petitioners' plan has an average Reock score of 0.46 and an average Polsby-Popper score of 0.32. (Rodden Report at 22.)

FF17. Dr. Rodden further reported a Schwartzberg compactness score of 1.7, a Population Polygon score of 0.73, and a Convex Hull score of 0.78; however, neither Dr. Rodden’s report nor his testimony detailed the method by which these scores are computed, or their relative merits. (Rodden Report at 22.)

FF18. Although Dr. Rodden evaluated the other parties’ plans for compactness, he did not report the precise scores that he determined for each plan; rather, he concluded that all of the plans fell within a fairly “narrow range” of acceptable compactness scores. (Rodden Resp. Report at 3; N.T. at 93-94.)

FF19. With regard to political subdivision splits, Dr. Rodden drew the Carter Petitioners' plan so as to split 14 counties a total of 17 times, which he opined as performing well in comparison with other plans. (Rodden Resp. Report at 4; N.T. at 97.)

FF20. With regard to other political subdivisions, Dr. Rodden reports that the Carter Petitioners' plan splits 20 a total of 23 times, which he opined was in the middle of the distribution across the submitted plans. (Rodden Resp. Report at 4.)

FF21. Although he did not report on the division of wards, Dr. Rodden placed a unique focus on preferring not to split Voter Tabulation Districts (VTDs), which are the geographic entity in which elections are administered on the local level. (N.T. at 95-96.)

FF22. The Carter Petitioners' plan splits 14 VTDs. (Rodden Resp. Report at 6.)

FF23. In discussing his splitting of districts, Dr. Rodden stated generally, without much elaboration, that the Carter plan resolved problems that were apparent in the 2018 Remedial Plan with regard to splits of State College.

FF24. When asked how the Carter plan respects communities of interest, Dr. Rodden stated it was similar to minimizing jurisdictional splits, that it would make sense to keep certain areas together, like Harrisburg, the Lehigh Valley, and State College, and that he "attempted to avoid splitting apart those types of communities." (N.T. at 111-14.)

FF25. Further, when asked about his overall conclusions about how the Carter plan compares to the 2018 Remedial Plan, Dr. Rodden did not give a straight answer, but testified that "the maps were very similar." (N.T. at 114-15.)

FF26. Dr. Rodden explained that he did not expressly consider any partisan or racial data when preparing the Carter Petitioners' plan. (Rodden Report at 23; N.T. at 117-18.)

FF27. He testified that, after completing the plan, he evaluated its partisan performance using various metrics.

FF28. Principally, Dr. Rodden used precinct-level data from previous statewide elections in 2016, 2018, and 2020 to establish the statewide vote share for candidates from both the Democratic and Republican parties, and then used these data to estimate the partisan outcomes that might be expected in the various districts in the Carter Petitioners' plan. (Rodden Report at 23-24; N.T. at 119.)

FF29. Dr. Rodden concluded that these data suggest that the Carter Petitioners' plan produces 8 districts in which Democrats may be expected to win, but one of which would likely be highly competitive; 8 districts in which Republicans may be expected to win, but two of which would be potentially competitive; and 1 district that was effectively a "toss-up." (Rodden Report at 25.)

FF30. In his response report and his testimony, Dr. Rodden elaborated upon this analysis, opining that, although 10 of the districts facially lean Democratic based upon the statewide vote share data, two of them are very close, but none of the Republican-leaning districts were as close to "toss-ups"—meaning that the plan "could easily lead to a 9-8 Republican majority." (Rodden Resp. Report at 9; N.T. at 121-28.)

FF31. Dr. Rodden stressed that this sort of analysis does not allow predictions to be made with certainty, particularly because it does not consider the advantage often enjoyed by incumbents. (Rodden Resp. Report at 9-10; N.T. at 124-28.)

FF32. With as many competitive districts as are exemplified by the Carter Petitioners' plan, Dr. Rodden opined, "a very small change . . . can turn what appears to be a 10 to 7 District [one] way into very easily a 10 to 7 District the other way." (N.T. at 128.)

FF33. Comparing the other proposed plans submitted to the Court, Dr. Rodden opined that several appeared to be outliers in terms of their potential seat distribution.

FF34. Dr. Rodden believed that HB 2146, the Voters of PA Plan, and the Reschenthaler 1 and 2 Plans produced lower numbers of Democratic-leaning seats than the other plans. (Rodden Resp. Report at 10; N.T. at 131-32.)

FF35. By contrast, he believed the House Democratic Caucus' Plan was an outlier in the other direction—producing more Democratic-leaning districts than the others. *Id.*

FF36. Dr. Rodden conducted one final measurement of the partisan performance of the various plans—the mean-median difference.

FF37. Dr. Rodden calculated the mean-median difference of the Carter Petitioners' plan to be 0.005. (Rodden Resp. Report at 11.)

FF38. He observed that most of the plans exhibit very small mean-median differences—close to zero—which indicates that most of the plans would not be likely to produce "an unusual number of comfortable victories" for either party. (N.T. at 134.)

FF39. However, Dr. Rodden concluded that certain plans contained a median district that is more Republican than the average: HB2146, the Voters of PA Plan, the Citizen-Voters plan, and both Reschenthaler plans. (Rodden Resp. Report at 10-11; N.T. at 135-36.)

FF40. On cross-examination, Dr. Rodden conceded that he did not count splits of the six political subdivisions enumerated in the Pennsylvania Constitution in his analysis, including wards, but did consider the division of VTDs, which is not a factor in the Pennsylvania Constitution. (N.T. at 141-43.)

FF41. Dr. Rodden further clarified that his calculation of mean-median values was based upon data that were averaged across multiple elections, as opposed to data that were drawn from individual election results. (N.T. at 144-45.)

FF42. With respect to HB 2146 and the total county splits, Dr. Rodden initially testified that HB 2146 was “one of the plans with one of the higher numbers”; however, when it comes to VTD splits, he explained, “it is relatively low” in comparison to the Carter plan. (N.T. at 148.)

FF43. Dr. Rodden subsequently admitted, however, that he answered the question incorrectly that HB 2146 had a high number of total county splits, and corrected himself by stating that HB 2146’s number of counties split was “relatively low” in comparison to the Carter plan. (N.T. at 149-50; *see also* Rodden Resp. Report at 4, Table 2.)

FF44. Dr. Rodden also appeared to admit that there may be a slight discrepancy in his calculation of HB 2146’s total county subdivision splits (25 total county subdivision splits) as compared to the Legislative Data Processing Center’s tabulation of HB 2146’s total subdivision splits (18 total splits of the 16 political subdivisions), but that such discrepancy was “probably due to something like” the specific category and/or municipality terminology used. (N.T. at 151-53; *see also* Rodden Resp. Report at 5, Table 3.)

FF45. Further, Dr. Rodden affirmed, according to his analysis, that the Carter Plan had two “coin toss” districts, and that no other plan garnered more than three “coin toss” districts. (N.T. at 155-57.)

FF46. Dr. Rodden also admitted that, despite having written extensively about simulation analysis methodologies to measure partisan fairness in the past, he did not conduct a simulation analysis in this case, although he was capable of doing so, because “it didn’t occur to [him] that drawing a [sic] 100,000 other plans was something that [he] should do.” (N.T. at 157-59, 172.)

FF47. When asked about his assessment that HB 2146 was an outlier (*i.e.*, not aligned with the statewide vote share) because it generated 8 expected Democratic seats, and further, why the Carter Plan could not also be characterized as an outlier in that it garnered 10 Democratic seats, Dr. Rodden explained that he only based his assessment on a comparison to the other proposed plans in this case and not the neutral simulations. (N.T. at 158-60.)

FF48. Dr. Rodden additionally agreed that Reschenthaler Plans 1 and 2 meet the equal population requirement, are contiguous, are relatively compact, and contain the least amount of split counties, among other splits. (N.T. at 164-70.)

FF49. Further, Dr. Rodden confirmed that he only consider partisan fairness broadly in his analysis, and did not consider vote dilution or disenfranchisement. (N.T. at 183-84.)

FF50. Dr. Rodden again acknowledged that he did not consider racial data in his analysis, but stated that “it would make sense after drawing a plan to then assess its compliance with the Voting Rights Act”; however, he explained he drew the Carter Plan based on the 2018 Remedial Map and that “the districts in the

surroundings of minority communities changed hardly at all in [his] plan[, which] was the extent of his consideration of Voting Rights Act claims.” (N.T. at 190-91.)

FF51. Finally, Dr. Rodden noted that “a good share of . . . simulations end up in a range . . . that produces . . . partisan fairness . . . [, s]o it is not the case that the human geography in Pennsylvania requires us to draw unfair districts.” (N.T. at 192.)

2. Professor Daryl DeFord (Gressman Petitioners)

FF52. In support of their plan, the Gressman Petitioners offered the expert opinion of Daryl R. DeFord, Ph.D.

FF53. Dr. DeFord is an assistant professor of data analytics in the Department of Mathematics and Statistics at Washington State University. (DeFord Report at 1.)

FF54. Dr. DeFord’s work focuses upon the application of combinatorial and algebraic techniques to the analysis of social data, particularly political redistricting.

FF55. Dr. DeFord’s work on redistricting has been published in numerous academic journals.

FF56. Dr. DeFord has provided expert reports in connection with other redistricting litigation, and he has contributed analysis to the Colorado Independent Legislative Redistricting Commission. *Id.* at 1-2.

FF57. Dr. DeFord assessed the Gressman Petitioners’ plan for compliance with the traditional districting criteria, and analyzed how it and the other plans performed on those and numerous other metrics.

FF58. Dr. DeFord evaluated the plans for population equality, respect for the boundaries of political subdivisions, compactness, contiguity, partisan fairness, and the presence of minority opportunity districts. (DeFord Report at 5-6; N.T. at 202.)

FF59. With respect to population equality, Dr. DeFord determined that the Gressman Petitioners' plan achieved the best possible outcome, with a difference of no more than one person between the largest and smallest districts in the plan. (DeFord Report at 6-7; N.T. at 203-04.)

FF60. Unlike some of the other experts, Dr. DeFord identified a minor population discrepancy in two of the other plans—the Carter Petitioners' plan and the House Democratic Caucus' Plan, both of which exhibited a maximum population deviation of two persons, rather than one. (DeFord Resp. Report at 4; N.T. at 204.) Dr. DeFord confirmed that all of the proposed plans satisfy the contiguity requirement. (DeFord Resp. Report at 9.)

FF61. With regard to the splitting of political subdivisions, Dr. DeFord focused upon all six such subdivisions expressly listed in the Pennsylvania Constitution and the *League of Women Voters* decision—counties, cities, incorporated towns, boroughs, townships, and wards. (DeFord Report at 7; N.T. at 205.)

FF62. Dr. DeFord evaluates this factor by considering both the number of subdivisions that are split and the number of times that each subdivision is split into “pieces.”

FF63. For instance, a county that is split once will consist of two pieces, while a county that is split twice will consist of three pieces. (DeFord Report at 8; N.T. at 212.)

FF64. In performing his comparison of the plans, Dr. DeFord counted “pieces” that are above the minimum number, *i.e.*, not counting a whole county as one piece, and excluded municipality pieces that are necessarily created by county lines. (DeFord Resp. Report at 8.)

FF65. According to Dr. DeFord, the Gressman Petitioners’ plan splits a total of 15 counties into 17 pieces, which was less than all of the other plans except the Reschenthaler plans, both of which split 13 counties into 16 pieces, and the Draw the Lines Plan, which splits 14 counties into 16 pieces. (DeFord Resp. Report at 8, 27-28.)

FF66. Concerning municipalities—cities, incorporated towns, boroughs, and townships—Dr. DeFord counted the total number of splits, but excluded the municipality pieces that are created by county lines. (DeFord Resp. Report at 8.)

FF67. The Gressman Petitioners’ plan splits a total of 19 municipalities into 17 such pieces, which was less than all other proposed plans except the Citizen-Voters plan, to which it is equal on this measure. (DeFord Resp. Report at 8.)

FF68. The Gressman Petitioners’ plan split 15 wards into 15 pieces, which was also less than all other proposed plans except the Senate Democratic Caucus’ Plan 2, which split 14 wards into 14 pieces. (DeFord Resp. Report at 8.)

FF69. According to Dr. DeFord, adding together the total number of split counties, cities, incorporated towns, boroughs, townships and wards for each plan reveals that the Gressman Petitioners’ plan splits the fewest of all proposed plans—49. (DeFord Resp. Report at 8.)

FF70. Similarly, totaling all of the pieces that Dr. DeFord reported for each political subdivision similarly reveals that the Gressman Petitioners’ plan splits the fewest—also at 49. (DeFord Resp. Report at 8.)

FF71. This latter number is equaled by the Draw the Lines Plan. (DeFord Resp. Report at 28; N.T. 213.)

FF72. With regard to compactness, Dr. DeFord evaluated the Gressman Petitioners’ plan and all other proposed plans with four metrics—the Reock score, the Polsby-Popper score, the Convex Hull Ratio, and the Cut Edges measure. (N.T. at 215.)

FF73. Dr. DeFord explained that the Convex Hull Ratio “measures what proportion of the area of the smallest convex shape containing the district is filled by the district.” (DeFord Report at 17.)

FF74. Like the Reock and Polsby-Popper scores, a higher Convex Hull Ratio indicates a greater degree of compactness. (DeFord Report at 17.)

FF75. Dr. DeFord explained that the Cut Edges measure “represents the count of the number of adjacent units like wards or blocks that are not placed in the same district.” (DeFord Report at 20.)

FF76. Unlike the Reock score Polsby-Popper score, and Convex Hull ratio, a lower Cut Edges measure indicates a greater degree of compactness. (DeFord Report at 20.)

FF77. Dr. DeFord testified that under the convex hull ratio, the map proposed by the Governor and the first Reschenthaler map scored the best. (N.T. at 264.)

FF78. Dr. DeFord also testified that these same two maps scored the best under the cut edges metric. (N.T. at 264.)

FF79. Like Dr. Rodden, Dr. DeFord emphasized that each compactness measure captures a different facet of the regularity of a shape or the notion of “compactness,” so it is important to look at a variety of measures. (N.T. at 214.)

FF80. For instance, the Polsby-Popper score “tends to prefer plans with smooth-looking boundaries,” the Reock score “tends to prefer those that are more circular in overall shape,” and the Convex Hull Ratio “prefers districts that do not contain significant indentations or tendrils.” (DeFord Report at 18.)

FF81. Dr. DeFord further explained that high compactness can result in trade-offs with other important criteria, particularly maintaining political subdivisions. (N.T. at 215-16.)

FF82. For instance, Dr. DeFord highlighted that the decision to keep all of the irregularly-shaped City of Pittsburgh within one district—which the Gressman Petitioners’ plan does—will result in a lower Polsby-Popper score than a plan that divides Pittsburgh and thereby creates smoother district boundaries that are preferred by that metric. (DeFord Report at 20-21; N.T. at 216-17.)

FF83. Notwithstanding its decision to keep Pittsburgh whole, Dr. DeFord opined that the Gressman Petitioners’ plan performed well on compactness and that its scores were quite good. (N.T. at 218.)

FF84. Dr. DeFord calculated an average Polsby-Popper score of 0.333, an average Reock Score of 0.395, an average Convex Hull Ratio of 0.799, and a Cut Edges measure of 5,546 for the Gressman Petitioners’ Plan. (DeFord Report at 9.)

FF85. Dr. DeFord further evaluated all of the proposed maps for indications of partisan fairness.

FF86. He explained that the measures used for this analysis are efforts to model how a plan treats voters from the two major parties, and whether they are

being treated equally; however, as with the other metrics, there is no single number that reveals this. (N.T. at 218-19.)

FF87. For all of these calculations, Dr. DeFord used election results from 18 statewide general elections from 2012 to 2020 in order to obtain an array of information about political geography and voter behavior. (DeFord Report at 22; N.T. at 219-21.)

FF88. Dr. DeFord first used a “majority responsiveness” metric, which asks whether, for any given election, the party that won the majority of the statewide vote share would also have been likely to win a majority of the congressional seats under a given proposed districting plan. (DeFord Report at 24-25; N.T. at 223-24.)

FF89. For the 18 elections considered, the Gressman Petitioners’ plan produced 15 majoritarian outcomes, and out of the three that did not, two of those outcomes favored Republicans and one favored Democrats. (DeFord Report at 29-30; N.T. at 226.)

FF90. This, in Dr. DeFord’s opinion, is a good indication that the Gressman Petitioners’ plan treated Republican and Democratic voters equally. (N.T. at 226.)

FF91. Dr. DeFord opined that both Reschenthaler plans and HB 2146 both performed relatively worse on this metric, as they all produced five or more counter majoritarian outcomes—all of which favored Republicans. (DeFord Resp. Report at 11-12; N.T. at 226-27.)

FF92. Like Dr. Rodden, Dr. DeFord also calculated the mean-median difference for the proposed plans; however, Dr. DeFord did so using each of the 18 elections considered, rather than using average election data, which was employed in *LWV II*.

FF93. Across all 18 elections, the Gressman Petitioners' plan produced mean-median values that remained close to zero, stayed within a small range, favored both parties. (DeFord Resp. Report at 13; N.T. at 230-31.)

FF94. By comparison, Dr. DeFord concluded that both Reschenthaler plans, and HB 2146 scored lower on the mean-median metric, in that they had larger values and produced only Republican-favoring results. (DeFord Resp. Report at 13; N.T. at 231.)

FF95. Like the mean-median values, the efficiency gap for the Gressman Petitioners' plan across the 18 elections remained low, and had results that favored both parties depending on the election considered. (DeFord Resp. Report at 14; N.T. at 234-35.)

FF96. Dr. DeFord also ran all of the proposed plans through the PlanScore website,⁴³ which is a website available to the public which provides analysis and statistics of proposed districting plans, including partisan fairness metrics such as the efficiency gap. (N.T. at 235-26.)

FF97. According to Dr. DeFord on all of the metrics reported on PlanScore, the Gressman Petitioners' plan performed the best of all of the proposed plans except for one measure—the Gressman Petitioners' plan has an average efficiency gap of 1.4% favoring Republicans, and the House Democratic Caucus' Plan has a slightly smaller efficiency gap of 1.2% favoring Republicans. (DeFord Resp. Report, App. D; N.T. at 236.)

FF98. In light of all of these measures, Dr. DeFord opined that the Gressman Petitioners' plan performed the best of all proposed plans in terms of partisan fairness. (N.T. at 238.)

⁴³ <https://planscore.campaignlegal.org/#!2020-ushouse> (last visited 2/6/22)

FF99. Dr. DeFord further evaluated the plans for compliance with the VRA, and concluded that the Gressman Petitioners' plan created three minority opportunity districts. (DeFord Report at 41-56; N.T. at 242-43.)

FF100. Dr. DeFord also determined that the Gressman Petitioners' plan was the best possible in terms of avoiding incumbent pairings. (N.T. at 240.)

FF101. On cross-examination, Dr. DeFord stated that, in his opinion, a county is a more fundamental political unit than a borough, and it is therefore more important to avoid a county split than a borough split. (N.T. at 250-51.)

FF102. He acknowledged that he was not purporting to offer an opinion on the *Gingles* factors under the VRA, and the statistics that he provided concerning candidate win rates in Philadelphia suggested that minority-preferred candidates are not usually defeated by white bloc voting. (N.T. at 283.)

FF103. He further admitted that, although he considered the impact of splitting Pittsburgh upon certain metrics, he did not consider the existence of any communities of interest in the surrounding region. (N.T. at 314-15.)

FF104. He testified that a districting plan can comply with neutral, traditional districting factors but still be optimized for partisan advantage. (N.T. at 319.)

FF105. Dr. DeFord agreed that House Bill 2146 splits the third least pieces of any of the plans he studied. (N.T. at 269.)

FF106. Dr. DeFord agreed that it is not absolutely necessary to split the City of Pittsburgh in a plan. (N.T. at 270.)

FF107. Dr. DeFord testified on cross examination that, applying the majority responsiveness metric he used to measure partisan fairness, he would consider a district potentially responsive if it elected at least one Republican and one

Democrat, and that on that measure, House Bill 2146 has the most responsive districts of the three that he studied. (N.T. at 271.)

FF108. Dr. DeFord also agreed that the Governor's Plan had the highest number of "safe Democratic" districts of the three that he looked at. (N.T. at 271.)

FF109. Dr. DeFord also admitted that, while he criticized House Bill 2146 for having, anti-majoritarian outcomes on direct examination, virtually every plan produces an anti-majoritarian outcome under the 2012 auditor election and the 2016 auditor election. (N.T. at 272.)

FF110. Dr. DeFord agreed that there is a partisan advantage to Republicans based on the political geography of the state, and that it was not necessarily a surprise to see a slight tilt favoring Republicans present in the fairness metrics. (N.T. at 291.)

FF111. Dr. DeFord admitted that he did not take into consideration any communities of interest in his evaluation of the Gressman Plan or any other plan. (N.T. at 314-15.)

3. Dr. Moon Duchin (Governor Wolf)

FF112. In support of his plan, Governor Wolf presented the expert opinions of Dr. Moon Duchin, who is a Professor of Mathematics and a Senior Fellow in the Jonathan M. Tisch College of Civic Life at Tufts University. (Notes of Testimony (N.T.) 1/27/2022, at 325; Moon Duchin Expert Report (Duchin Report), attached as Exhibit A of Governor Wolf's Brief in Support of Proposed 17-District Congressional Redistricting Plan, at 1.)

FF113. Dr. Duchin was a Guggenheim Fellow and the Evelyn Green Davis Fellow, Radcliffe Institute for Advanced Study in 2018-19, and has published numerous scholarly works about redistricting. (Duchin CV at 1, attached to Duchin Report.)

FF114. Dr. Duchin is also the principal investigator of an interdisciplinary research lab focused on geometric and computational and analytical aspects of redistricting, as well as assessing characteristics of district maps. (N.T. at 325-26; Duchin Report at 1.)

FF115. Dr. Duchin described her work, just in this election cycle, with “various line-drawing bodies such as redistricting commissions, independent and bipartisan commissions around the country which have brought [her] into call balls and strikes as [she] see[s] it and try to put plans in the context in terms of metrics trying to understand the alternatives and the political geography.” (N.T. at 325-26.)

FF116. Dr. Duchin was retained by Governor Wolf to “evaluate several maps that have been proposed as alternatives for Congressional redistricting in Pennsylvania, and particularly to compare them in terms of traditional districting principles and partisan fairness.” (Duchin Report at 1.)

FF117. Dr. Duchin evaluated the Governor’s Plan and all of the other 12 plans submitted to the Court to determine which plans satisfied an “excellence standard” with regard to the traditional redistricting criteria of *LWV II*; however, the focus of her report was on the Governor’s plan, House Bill 2146, and what she termed the Citizens’ Plan (i.e., the Draw the Lines PA *Amicus* Participants’ plan). (N.T. at 326, 329; Duchin Report at 1-2; Duchin Resp. Report at 2.)

FF118. Dr. Duchin also included the Reschenthaler and Voters of PA Plans in the various charts she created. (*See generally* Duchin Report; Response Report at 2-3.)

FF119. Dr. Duchin also performed an “ensemble analysis,” which consisted of comparing 100,000 alternative plans that followed “the rules and priorities of Pennsylvania redistricting[.]” (N.T. at 326-27; Duchin Report at 2.)

FF120. Dr. Duchin used numerous data sets, including the raw decennial census data release, and two data sets released by the Commonwealth’s Legislative Redistricting Commission. (N.T. at 331-32; Duchin Report at 1.)

FF121. Dr. Duchin explained that she examined the maps under the “big six” traditional or neutral redistricting principles, including population equality under one person, one vote, minority opportunity to elect under the VRA, the Constitution, compactness, contiguity, and respect for political boundaries and communities of interest. (N.T. at 327-29; Duchin Report at 4-6.)

FF122. Dr. Duchin also identified least change, incumbency considerations, and partisan fairness/vote dilution. (N.T. at 328; Duchin Report at 6-7.)

FF123. Dr. Duchin opined that all submitted plans “form quite well across [the] range of different metrics” she considered, but that distinctions could be made with respect to considering “tiers of adherence to the traditional principles.” (N.T. at 330-31.)

FF124. With respect to **population balance under the one person, one vote principle, and contiguity**, Dr. Duchin testified that “[a]ll 13 plans are contiguous, and all 13 plans are closely population-balanced for either Census PL population[*i.e.*, the decennial census release,] or prisoner-adjusted population.”

(Duchin Resp. Report at 2; N.T. at 331, 333; Report at 8 (noting that each plan has a “top-to-bottom” population deviation of 1).)

FF125. Dr. Duchin described contiguity as follows: “[c]ontiguity requires that, for each district, it is possible to transit from any part of the district to any other part, staying inside the district. That is, contiguity is the requirement that each district be composed of a single connected piece.” (Duchin Report at 5.)

FF126. Dr. Duchin explained, “the neutral criteria most relevant for distinguishing the plans are **compactness** and **respect for counties and municipalities**.” (Duchin Resp. Report at 2) (emphasis added).

FF127. Dr. Duchin explained that a plan’s **compactness** can be measured in several ways, including the most commonly used metrics of the Polsby-Popper score, which compares a region’s area to its perimeter via a mathematical formula, and the Reock score, which she defined as “a different measurement of how much a shape differs from a circle: it is computed as the ratio of a region’s area to that of its circumcircle, defined as the smallest circle in which the region can be circumscribed.” (Duchin Report at 5.)

FF128. Dr. Duchin explained that higher scores for both types of scores are better and are optimized at 1. *Id.* She also noted three additional metrics from *LWV II*, including *Schwartzberg*, *Convex Hull*, and *Population Polygon*. (Duchin Report at 5.)

FF129. Dr. Duchin explained that “Schwartzberg is $P/2\sqrt{\pi A}$. Convex Hull is the ratio of the district’s area to that of its convex hull, or ‘rubber-band enclosure.’ and Population Polygon is the ratio of the district’s population to the state’s population within the convex hull.” (Duchin Report at 5 n.3.)

FF130. As for **respect for political boundaries**, Dr. Duchin described the principle as requiring that “counties, cities, and other relevant political and administrative geographies should be kept intact in districts as much as practicable.” (Duchin Report at 6; N.T. at 336.)

FF131. Dr. Duchin explained that, particularly when comparing the closely related principles of compactness and political subdivision splits, “there are trade-offs, and that perhaps if you split one more county you can get a better compactness score and so on. So these all reflect decisions about those tradeoffs.” (N.T. at 338.)

FF132. With respect to compactness, and considering the above metrics, Dr. Duchin opined that the Governor’s Plan is the most compact in five of the metrics, in that it has the second best Polsby-Popper score (0.3808), the second best mean Schwartzberg score (1.6534), the best mean Convex Hull score (0.8257), the best mean Population Polygon score (0.7834), and the fourth best cut edges score (5,185). (Duchin Report at 9; Resp. Report at 2, Table 1.; N.T. at 334-35.)

FF133. The cut edges score “counts how many adjacent pairs of geographical units receive different district assignments.” (Duchin Report at 6.)

FF134. Dr. Duchin then opined that with respect for maintaining political boundaries, all plans are within a range of 13 to 17 split counties, meaning no plan averaged more than 1 county split per congressional district. (Resp. Report at 2, Table 1.)

FF135. Dr. Duchin further explained that any plan with fewer than 17 county splits is “really considered excellent” given that all are drawing 17 congressional districts, and that all plans are within a range of 16-20 split

municipalities—out of more than 2,000 total municipalities in the Commonwealth. (N.T. at 337, 493.)

FF136. Dr. Duchin compared the Governor’s Plan to House Bill 2146, which she opined consistently scores in the bottom four plans for compactness, as its mean Polsby Popper score is 11th out of 13, its mean Schwartz score is 12th out of 13, its mean Reock score is 13th out of 13, its mean Convex Hull score is 10th out of 13, its mean Population Polygon score is 9th of 13, and its cut edges score is 10th of 13, and thus is one of the least compact plans. (See N.T. at 335; Duchin Resp. Report at 2, Table 1.)

FF137. Ultimately, with respect to compactness of all the plans, Dr. Duchin opined that “the maps [submitted to the Court] are quite good across the board, but that you can still see some that are better.” (N.T. at 334.) She explained that:

By far the two most compact plans, considering these metrics overall, are VotersOfPA and GovPlan. The next two, some ways behind the leaders, are Reschenthaler1 and CitizensPlan.

When it comes to splits, I judge all of the plans to be excellent, with the possible exception of *Carter* and *SenateDemCaucus1*. All eleven others have 13-16 county splits and 16-18 municipality splits, which may be close to optimal for reasonable 17-district plans in Pennsylvania (though it is computationally intractable to prove this rigorously).

(Duchin Resp. Report at 2.)

FF138. To summarize her quantitative analysis, Dr. Duchin identified two “tiers” of excellence to grade the plans’ adherence to the traditional criteria as follows. First, she identified four plans that meet a high excellence standard for

traditional criteria: GovPlan, VotersOfPA, Reschenthaler 1, and CitizensPlan. (Duchin Resp. Report at 3.)

FF139. Dr. Duchin identified a second tier consisting of two plans that meet an excellence standard: KhalifAli and Reshcenthaler2. *Id.*

FF140. With respect to the principle of least change, Dr. Duchin compared the Governor's Plan, House Bill 2146, and the CitizensPlan (*i.e.*, Draw the Lines PA's plan), to the 2018 Remedial Plan.

FF141. Dr. Duchin explained that the doctrine "and associated metrics look to measure the degree of a plan's resemblance to another plan" and that, in her comparison of the Governor's Plan to the 2018 Remedial Plan, she explained, "[i]f you believe that the old plan is a good one, if you believe that the old plan has shown itself to perform in ways that are fair, if you believe that the old plan represents the principles that you're trying to embody, then it does make some sense that you try to look a lot like it." (N.T. at 345-47.)

FF142. Dr. Duchin concluded that the Governor's Plan "keeps the districts intact to the greatest extent of these three alternatives." (Duchin Report at 10, Table 4.)

FF143. Dr. Duchin addressed protection of incumbents, which she explained means, where possible, "double-bunking" two incumbent members of Congress in the same district should be avoided. (N.T. at 347-8.)

FF144. Dr. Duchin determined that the Governor's Plan, CitizensPlan, and House Bill 2146 each create two districts with two incumbent members of Congress and one district with no incumbent. (Duchin Report at 10, Table 5.)

FF145. Dr. Duchin also testified that it was her understanding "that District 5 and the Governor's plan [pairs] two Democratic incumbents. Just for the

record, in my view, when I'm trying to assess whether a plan is a gerrymander for one party, I think it would avoid pairing incumbents of that party. So to me, this is a sign that this is not a Democratic gerrymander plan.” (N.T. at 349; *see also* Duchin Report at 10, Table 5.)

FF146. Dr. Duchin next described, with respect to communities of interest, that the fundamental concept is that there is value to maintaining “geographical areas where the residents have shared interests that are relevant to their representation. . . . [T]his could be shared history, shared economics, shared culture, many other examples.” (N.T. at 342-43.)

FF147. Dr. Duchin clarified, however, that the principle “doesn't always mean a community should be held whole. Sometimes it's more effectively split. But they should be kind of top of mind for the line drawers, as they draw.” (N.T. at 343.) In her report, Dr. Duchin noted that communities of interest were a top priority consideration in the Governor's plan, and that it was “drawn after a robust public input process and in view of hundreds of collected comments and suggestions.” (Duchin Report at 11-12.)

FF148. Dr. Duchin opined that the Governor's Plan is “really an excellent plan on the grounds of the traditional principles. It's one of the very best. In my view it's extremely compact. It is economical in terms of political boundary splits and the splits that it is . . . have a good story. I find it to do well by the likes of incumbent pairing and least change across the board. It's an excellent plan on traditional districting principles.” (N.T. at 349-50.)

FF149. In determining whether any maps exhibited partisan fairness and accountability and responsiveness to voters, Dr. Duchin used numerical measures that “address how a certain quantitative share of the vote should be

translated to a quantitative share of the seats in a state legislature or Congressional delegation.” (Duchin Report at 13.)

FF150. Dr. Duchin described partisan fairness and accountability to voters in terms of two core principles: (1) a political party winning the majority of votes ought, as a general matter, to win a majority of congressional seats (the “Majority-Rule Principle”); and (2) elections with close vote margins ought generally to result in a close split in the number of seats won (the “Close-Votes-Close-Seats Principle”), which she explained is close to the principle of Majority Rule, *i.e.*, that “a party or group with more than half of the votes should be able to secure more than half of the seats.” (Duchin Report at 13.)

FF151. Using the same election information for the three plans, and with the help of figures and graphics in her initial Report, Dr. Duchin established that the Governor’s Plan and the Draw the Lines PA’s (CitizensPlan) “are far superior at leveling the partisan playing field,” whereas she characterized House Bill 2146’s performance as “consistently converting close elections to heavy Republican representational advantages.” (N.T. at 364-65; Duchin Report at 14-16.)

FF152. Dr. Duchin considered the partisan fairness of the Governor’s Plan and all of the other maps using her “ensemble” of 100,000 randomly drawn districting plans to see how they would perform across recent elections in terms of partisan fairness.

FF153. In considering partisan fairness, Dr. Duchin used the following metrics: the efficiency gap, the Eguia artificial partisan advantage, the mean-median score, and the partisan bias score. (Duchin Report at 17.)

FF154. Dr. Duchin defined “efficiency gap” as being “based on the idea of wasted votes, defined as any winning votes in excess of 50%, or any losing votes at all.” (Duchin Report at 17.)

FF155. Dr. Duchin explained that a plan’s “Eguia artificial partisan advantage compares the outcomes under districted plurality elections to the outcomes under ostensibly neutral political subdivisions, such as counties.” (Duchin Report at 17.)

FF156. Dr. Duchin explained that the “mean-median score” indicates “how much of the vote in a state is needed to capture half of the representation.” (Duchin Report at 17.)

FF157. Dr. Duchin explained that a “partisan bias score” captures “how much of the representation would be captured by each party if the election underwent a uniform partisan swing to a 50-50 share.” (Duchin Report at 17.)

FF158. Dr. Duchin’s results appear in Table 3 of her Responsive Report, as to which she explained: “one thing that stands out is that the Governor’s plan is excellent across the board, that in all four of these metrics it gives scores that are either the closest or nearly the closest to zero.” (N.T. at 372.)

FF159. Dr. Duchin further concluded that of all the other plans considered, “the Governor’s Plan dominates[, meaning it is equal or better in every metric,] 10 and is in a trade-off position with the other two (Carter and HouseDemCaucus).” (Duchin Resp. Report at 4.)

FF160. On cross-examination, Dr. Duchin conceded that “the Gressman [Petitioners’] plan is an excellent plan.” (N.T. at 433.)

FF161. Dr. Duchin admitted to opining in her report that HB 2146 is population balanced and contiguous, shows strong respect for political boundaries, and is reasonably compact. (N.T. at 434-35.)

FF162. Dr. Duchin admitted, in relation to HB 2146, that “[o]n splits it’s better” than the Governor’s plan, and that the Governor’s plan is only better on the compactness criteria. (N.T. at 435-36.)

FF163. When asked whether Governor’s plan’s splitting of the City of Pittsburgh allowed for the creation of two Democratic leaning seats as opposed to one, Dr. Duchin relayed that she would “have to look at the seats surrounding it in plans that keep it whole . . . that’s not an [sic] specific analysis that I’ve done to say that it’s two instead of one” and that she “didn’t look at whether the district surrounding the one that contains Pittsburgh specifically would be Democratic leaning.” (N.T. at 436.)

FF164. Dr. Duchin further disclosed to the Court on cross-examination that in generating 100,000 random plans (*i.e.*, maps) with a computer, which was programmed only to honor Pennsylvania’s minimum constitutional requirements, the “[r]andom plans tend to exhibit pronounced advantage to Republicans across this full suite of elections.” (Duchin Jan. 24, 2022 Report at 18.)

FF165. On the next page of her report, still analyzing the 100,000 plans drawn by a non-partisan, non-biased computer, Dr. Duchin once again concluded that “random plans favor Republicans[.]” (Duchin Jan. 24, 2022 Report at 19.)

FF166. Dr. Duchin, far from backing away from this analysis, agreed that these 100,000 plans produced a “pronounced advantage to Republicans,” N.T. 1/27/22 at 449:1-12.3, and that the most “typical outcome” for any randomly drawn, constitutionally compliant plan, which takes no account for impermissible partisan

considerations, is one that will produce a Republican “tilt” based on election projections. N.T. 1/27/22 at 450:10-16; *see also* Duchin Jan. 24, 2022 Report at 17 (“In this section, I present a series of images that reinforce the theme elaborated above: the political geography of Pennsylvania creates a districting landscape that is tilted toward Republican advantage.”).

FF167. In this regard, Dr. Duchin testified as follows:

Q. But the most typical outcome is plans with a Republican tilt. Fair?

A. Absolutely. And I’m not aware of any rule that requires that we pick the most typical. I think we’re trying to choose an excellent plan.

(N.T. at 450) (testimony of Dr. Duchin).

FF168. Upon questioning by Congressional Intervenors’ counsel, Dr. Duchin conceded that Reschenthaler 1 and Reschenthaler 2 are both contiguous, closely balanced in terms of population, and “reasonably compact.” (N.T. at 458.)

FF169. With respect to county splits, Dr. Duchin affirmed that Reschenthaler 1 and Reschenthaler 2 split 13 counties, which, she admitted, is the lowest county split of all the maps she reviewed and are examples of “aggressive pursuit of county integrity.” (N.T. at 458-59.)

FF170. Dr. Duchin admitted that the Reschenthaler maps had the lowest “county pieces” (29) and municipal splits (16), and that it was tied for the lowest with respect to “municipal pieces” (33). (N.T. at 459.)

4. **Michael Barber, Ph.D. (House Republican Intervenors Cutler & Benninghoff)**

FF171. The House Republican Intervenors presented the opinions and expert report of Dr. Michael Barber, who is an associate professor of political science at Brigham Young University and faculty fellow at the Center for the Study of Elections and Democracy in Provo, Utah. (Barber Report at 1.)

FF172. Dr. Barber received his Ph.D. in political science from Princeton University in 2014 with emphases in American politics and quantitative methods/statistical analyses. *Id.*

FF173. Dr. Barber teaches a number of undergraduate courses in American politics and quantitative research methods, including classes about political representation Congressional elections, statistical methods, and research design. *Id.*

FF174. The House Republican Intervenors asked Dr. Barber to review HB 2146.

FF175. Dr. Barber first examined the political geography of Pennsylvania and concluded that partisan tendencies are not evenly distributed throughout the Commonwealth, as “Democratic majorities are geographically clustered in the largest cities of the state while Republican voters dominate the suburban and rural portions of the state[,]” which puts “the Democratic Party at a natural disadvantage when single-member districts are drawn.” (*See* Barber Rep. at 5, 8, Figure 1.; N.T. at 506-10.)

FF176. Dr. Barber opined that “districts drawn to be contiguous, compact, and contain minimal county and municipal splits will naturally create several districts in the Philadelphia and Pittsburgh areas that contain substantial Democratic majorities with many ‘wasted votes.’” (Barber Report at 5, 9.)

FF177. Dr. Barber stated that because Philadelphia is large enough to constitute roughly 2.1 congressional districts, any plan that attempts to avoid splitting counties would draw two districts entirely within the City of Philadelphia and will be overwhelmingly Democratic and have thousands of wasted votes. (Barber Report at 9.)

FF178. Dr. Barber opined that because Pittsburgh is not large enough to contain a single congressional district, any plan that draws geographically compact districts that avoid splitting counties and cities will contain a district within Allegheny County that also contains the City of Pittsburgh, and it will be extremely Democratic as a result of strong Democratic support in Pittsburgh and its immediate suburbs. (Barber Report at 9; *see also* Barber Rebuttal Report at 9.)

FF179. Dr. Barber explained his methodology in determining whether HB 2146 was a partisan gerrymander. (Barber Report at 11.)

FF180. Specifically, Dr. Barber prepared a set of 50,000 simulated maps using only the traditional redistricting criteria of equal population, compactness, contiguity, and minimizing political subdivision splits. (Barber Report at 13-14; N.T. at 518.)

FF181. Dr. Barber did not consider partisanship, race, the location of incumbent legislators, or other political factors in his analysis, but he found this set of simulated plans was helpful because it provides a set of maps to compare to HB 2146 that also accounts for geographic distribution of voters. (Barber Report at 11; N.T. at 515.)

FF182. Dr. Barber explained that by comparing HB 2146 to the simulated districts, “we are comparing the proposal to a set of alternative maps that

we know to be unbiased that holds constant with the political geography of the state.” (Barber Report at 11; N.T. at 515-17.)

FF183. Alternatively, Dr. Barber explained, if HB 2146 “significantly diverges from the set of simulated maps, it suggests that some other criteria that were not used in drawing the comparison set of maps may have guided the decisions made in drawing the proposed map.” *Id.*

FF184. With regard to population, boundary splits, and compactness, Dr. Barber opined that HB 2146, which splits 15 counties, is within the range of county splits in the simulations. (Barber Report at 16; Barber Rebuttal Report at 8, Table 1.)

FF185. Dr. Barber testified that HB 4126 only divides 16 municipalities, one of which is Philadelphia, which has to be divided because the city population is more than a single district. *Id.*

FF186. Dr. Barber testified that HB 2146 has only nine precinct splits; thus, overall, the plan performs very well regarding political subdivision splits. *Id.*

FF187. As for compactness, Dr. Barber opined that HB 2146’s average district compactness score (Popper-Polsby) of 0.32 closely aligns with the results of the simulations, which garnered a 0.28 score. (Barber Report at 16.)

FF188. Dr. Barber considered partisan lean of districts, analyzing a set of all statewide elections from 2012-2020, which resulted in 9 Democratic-leaning seats and 8 Republican-leaning seats, whereas the current delegation is represented by 9 Democrats and 9 Republicans, and further determined the most likely outcome in his 50,000 simulated maps, created without using partisan data, is 8 Democratic-leaning seats and 9 Republican-leaning seats. (Barber Report at 23, Figure 3; N.T.

at 518-20, 532-33.) He further opined that HB 2146 creates a significant number of competitive districts. (Barber Report at 19.)

FF189. Specifically, in analyzing districts that have a Democratic vote share of 0.48 to 0.52, a common range when analyzing competitive elections, HB 2146 creates five competitive seats, four of which lean Democratic, which is more competitive districts than any other plan. (Barber Report at 13, 19, 21, Figure 2; N.T. at 529.)

FF190. Dr. Barber testified that at a district-by-district level, HB 2146 reflects partisan fairness consistent with the range of outcomes seen in simulated plans. (Barber Report at 22-23.)

FF191. Dr. Barber testified that for each district, HB 2146 sits in the middle of the distribution of the simulations. (Barber Report at 23-24, Figure 4.)

FF192. On other partisan fairness metrics, including mean-median, efficiency gap, and a uniform swing analysis, Dr. Barber opined that HB 2146 is demonstrated to be very nearly unbiased, with a mean-median of -0.015, which is very close to zero and which demonstrates that HB 2146 is more favorable to Democrats than 85% of the simulation results. (Barber Report at 27-28, Figure 5, 30-31; Barber Rebuttal Report at 21-22.)

FF193. Dr. Barber testified that this further demonstrates that HB 2146 is fair. (Barber Rep. at 27-34, Figures 5-7.)

FF194. With regard to the efficiency gap for HB 2146, which is -0.02, and very close to zero, Dr. Barber testified that it shows that Democratic votes are not much more likely than Republican votes to be “wasted” across districts. (Barber Report at 31.)

FF195. Dr. Barber testified that HB 2146's mean median score and efficiency gap score are within the range, in that they have similar scores compared to the other plans; the difference in scores for the other plans, however, can be accounted for based on the particular elections used for the calculations. (N.T. at 543-50.)

FF196. Dr. Barber opined further that for the other plans that garnered 10 Democratic-leaning seats with an efficiency gap of 0.034, it shows those plans are favorable to Democrats, as "positive numbers indicate bias for Democrats, [and] negative numbers indicate bias for Republicans." (Barber Rebuttal Report at 22.)

FF197. Dr. Barber said there are differences, which can be accounted for based on the particular elections that are used for the calculations. (N.T. at 550.)

FF198. Dr. Barber performed a uniform swing analysis, which considers how a plan performs under a variety of different electoral environments by randomly adding certain percentages from previous elections uniformly to each district in the plan. (Barber Report at 33-34.)

FF199. Like the other metrics, Dr. Barber's uniform swing analysis demonstrated that the HB 2146 is fair, as it is nearly exactly in the middle of the distribution, meaning roughly half of the simulations are worse for Democrats and nearly half are better. (Barber Report at 34, Figure 7.)

FF200. Dr. Barber additionally noted in his Rebuttal Report that the uniform swing measure varies across the all plans considered from 7.9 to 10.1 expected Democratic-leaning districts; however, HB 2146 is in the middle of the simulation results. (Barber Rebuttal Report at 22.)

FF201. Dr. Barber also conducted a district-by-district racial composition of HB 2146, examining 1,852 simulated plans from his race-blind

sample that likewise created 2 majority-minority districts including 1 majority Black district. (Barber Rep. at 35-36; N.T. at 515-16.)

FF202. Dr. Barber generated another set of 5,000 simulated race conscious maps where he instructs the model to ensure that every simulated plan had at least 3 districts that have at least 35% non-white voting age population. (Barber Report at 36; N.T. at 518.)

FF203. From this, Dr. Barber determined that even when using “race conscious” simulations, a map with 9 Democratic-leaning seats, *i.e.*, the same as HB 2146, remains the most common outcome, occurring in 70.6% of the simulations. (Barber Report at 35-36.)

FF204. When asked whether he thought House Bill 2146 was the best plan, Dr. Barber stated “I think that that is not for me to decide. I think that is the unenviable task of this Court.” (N.T. at 559.)

FF205. With respect to Dr. Barber’s opinions as to the other plans, Dr. Barber testified that looked specifically at how the other plans treated Pittsburgh because of the fact that Pittsburgh is not large enough such that it has to be split, and that all the other plans, including the Governor’s, Senate D1 & D2, Draw the Lines PA, and Khalif Ali, stand out as examples of plan “possibly violating the neutral districting criteria” in an attempt “to avoid municipal splits unnecessarily by intentionally dividing Pittsburgh for partisan gain.” (N.T. at 524-25; Barber Rebuttal Report at 8, Table 1., 23.)

FF206. On that topic, Dr. Barber believed “it calls for additional inquiry as to why that might be the case.” *Id.*

FF207. With regard to the House Democrats’ plan specifically, which combines Pittsburgh with rural, heavily Republican voters in Beaver and Butler

Counties to create 2 Democratic-leaning districts rather than 1 heavily Democratic district in Allegheny County, and which is poised to create 11 Democratic leaning districts, Dr. Barber characterized the House Democrats' plan as "an extreme outlier," as none of the simulations generated that outcome. (N.T. at 534; Barber Rebuttal Report at 15.)

FF208. Dr. Barber also noted that HB 2146, Senate D1 Plan, Voters of PA plan, and both Reschenthaler Plans generate 9 Democratic-leaning districts, which "are in line with the modal outcome in the race-conscious simulations and are within the central part of the distribution in the race-blind simulations. (Barber Rebuttal Report at 15-16.)

FF209. When compared to the non-partisan simulations conducted, Dr. Barber concluded that nine of the other plans are Democratic partisan outliers, including the Governor, Carter, Gressman, House D, Senate D1 & D2, Citizen Voters, and Draw the Lines PA plans. (Barber Rebuttal Report at 23.)

FF210. On other measure of partisan bias, Dr. Barber concluded that there are variations amongst the plans, but that "all share the common feature of being generally more favorable to Democrats than the non-partisan simulations." (Barber Rebuttal Report at 23.)

FF211. On cross-examination, Dr Barber conceded that every other plan except for the two Reschenthaler plans have mean-median scores closer to zero, meaning they are less biased than HB 2146. (N.T. at 575-78.)

FF212. Dr Barber agreed that, in conducting his analysis, he did not consider all elections that took place for every office, incumbent pairings, if every plan had two or three majority-minority voting age populations, voter registration information (in terms of votes cast or the partisan registration of individual voters),

equal population (as he had a variance of 30), the splitting of wards, or communities of interest concerns. (N.T. at 586-91, 593-94, 628-29, 646, 649-54.)

FF213. When asked whether assigning the City of Pittsburgh to one congressional district would be considered packing, Dr. Barber explained, “So I think this is an excellent example because sometimes what might be called intentional partisan gerrymandering might actually be the result of the combination of the geography of the state and neutral redistricting criteria. . . . on prospective would look at [the splitting of Pittsburgh] and say that’s packing, that’s clearly gerrymandering. And the other person might say oh no, that’s not packing at all. That’s just following the neutral redistricting criteria [stating not to split Pittsburgh].” (N.T. at 627-28.)

5. Dr. Keith Naughton (Congressional Intervenors)

FF214. The expert testimony of Keith Naughton, Ph.D., an expert in public policy and political science, was offered by the Congressional Intervenors for the purpose of demonstrating that they drew their lines with the goal of keeping communities of interest intact and to dispel any notions that the lines they drew were for partisan purposes.

FF215. Dr. Naughton began by acknowledging that he not a mathematician and he has “no particular experience in redistricting,” and has never served as an expert in redistricting litigation before. (N.T. at 668-69, 777.)

FF216. Dr. Naughton spent 15 years working in Pennsylvania campaign politics at all levels. (N.T. at 687.)

FF217. Dr. Naughton’s areas of expertise include congressional politics, about how constituents interact with their members, and the theoretical basis of representation. (N.T. at 687-90.)

FF218. Dr. Naughton explained that “much of [his] professional career has been dedicated to helping Republican candidates in Pennsylvania win their seats.” *Id.* at 769-70. However, he believed his opinions apply equally whether someone is a Republican or Democrat. *Id.*

FF219. Dr. Naughton agreed that his report “does not identify any particular methodology” that he used to arrive at his conclusions, and does not “cite any authority or particular evidence for [his] opinions.” N.T. at 779; *see also id.* at 813. Rather, his expert opinions were based on his work experience.

FF220. Dr. Naughton conceded that he provided no quantitative analysis of how any of the proposed plans perform on the neutral redistricting criteria. *Id.* at 792.

FF221. The testimony of Dr. Naughton was unique in this regard as no other expert was offered to opine on the community interests undergirding the Free and Equal Elections Clause.

FF222. The Court is not particularly persuaded by the argument that we should not credit Dr. Naughton’s testimony because he has a history of working for candidates seeking political and judicial office for the Republican Party.

FF223. Suffice it to say, given the nature of this litigation, most of the litigants and their experts have histories of representing one party or the other.

FF224. The Court has no intention of crediting one party or expert over the other based on that proclivity.

FF225. Despite the fact that Dr. Naughton had never testified before as an expert in redistricting litigation, the Court nevertheless finds his testimony helpful, especially his opinions on the issues of the importance of keeping communities of interest intact, how that relates to a congressional representative's ability of to respond to the unique and varied inquiries of his or her constituents and the reasons why the lines on Reschenthaler Plan 1 and 2 were drawn where they were.

FF226. Dr. Naughton testified that keeping people with common interests together allows for better representation of those interests. (N.T. at 697-98.)

FF227. Dr. Naughton testified in this regard as follows:

Q. So if you were going to design, for instance, a district in a region that had a significant elderly population, you would want to know that. Right?

A. Yes.

Q. Why?

A. Well because they have common interests. And you know, grouping with people with common interests is very important because, besides this R versus D issue, they have specific needs. They need Social Security protected. They need money for Access, you know, for public transit. They - - you know, they need just a whole variety of issues. You know, people who are aged require healthcare and so forth. Well, if you have them sort of split up chock-a-block in different districts, what kind of representation are they going to get?

Id.

FF228. Regarding the decision to maintain the City of Pittsburgh in one district in Reschenthaler maps 1 and 2, Dr. Naughton testified Pittsburgh's

communities of interests are best represented by keeping the City within the same district. (N.T. at 712-15.)

FF229. Dr. Naughton thought splitting Pittsburgh into two districts was a “terrible idea.” *Id.* at 713. He explained:

1. Because the City is its [own] political unit and the City is a diverse city, there’s a lot of different interests. But the fact that it’s together unites people’s interests for resources. They vote, you know, for the same elected officials. I mean, just the fact that they are within this municipal unit gives them a serious of common interests. And I think splitting them up, I think, that’s a mistake. I think it dilutes their advocacy.

Id.

FF230. Regarding the decision to connect Philadelphia with Delaware County in District 16 in Reschenthaler maps 1 and 2, Dr. Naughton testified that Delaware County and Philadelphia County share similar communities of interest along their border, and that a map connecting them was ideal. (N.T. at 786; 840-41)

FF231. With respect to the decision to place Scranton and Wilkes-Barre in different districts in Reschenthaler maps 1 and 2, Dr. Naughton testified that Scranton and Wilkes-Barre, in the past, were in separate districts and that those communities prefer being in separate districts. (N.T. at 734-36.)

FF232. With regard to partisan fairness and the effect of political geography, Dr. Naughton testified that nonpolitical issues cause voters and nonvoters to coalesce in certain parts of the state. (N.T. at 696.)

FF233. In Dr. Naughton’s view, scientific models predicting future elections cannot account for the various factors that contribute to winning an

election, including the party of the current president, whether it is a mid-term election, the state of the economy, and campaign fundraising. (N.T. at 700-04.)

FF234. Dr. Naughton agrees that scientific models used by Dr. Rodden, Dr. DeFord, and Dr. Duchin do not account for these extraneous factors that contribute to winning an election. (N.T. at 703.)

FF235. According to Dr. Naughton, running congressional races in Pennsylvania is “very geographical,” and certain mapping choices, such as splitting the City of Pittsburgh or splitting Bucks County and Philadelphia can result in losing representation. (N.T. at 713-15.)

FF236. In Dr. Naughton’s expert opinion, there is no perfect variable to put in the equation to create a perfect map because there is going to be subjectivity. (N.T. at 766.)

6. **Dr. Devin Caughey & Michael Lamb (Senate Democratic Caucus Intervenors)**

FF237. In support of its two plans, Senate Map 1 and Senate Map 2, the Senate Democratic Caucus offered the expert report and testimony of Dr. Devin Caughey, an Associate Professor in Political Science at the Massachusetts Institute of Technology.

FF238. Dr. Caughey’s academic specialty involves the interaction between American politics and statistical methods, focusing primarily on public opinion, election, and representation. (N.T. at 894.)

FF239. Dr. Caughey has published numerous academic articles, particularly with regard to partisan gerrymandering at the state level and how it relates to the representational process, and has previously testified as an expert

witness, offering his opinion as to the partisan bias of a districting map in the State of Oregon. *Id.* at 895.

FF240. In conducting his current analysis, Dr. Caughey, focusing only on partisan bias factors, reviewed the Supreme Court’s 2018 Map, Governor Wolf’s plan/map, the House Republican Caucus plan/map, and the Reschenthaler 2 map. *Id.* at 896-98.

FF241. Dr. Caughey then compared those plans/maps with Senate Map 1 and Senate Map 2 to evaluate partisan fairness based on four commonly accepted measurement models, namely (1) partisan symmetry/partisan bias, (2) the efficiency gap, (3) the mean-median difference, and (4) declination.

FF242. At the hearing, Dr. Caughey explained that an assessment of partisan symmetry/partisan bias “is based on the concept of what’s called the seats votes curve [and] the seats votes function, which is basically just the relationship between a party’s vote share and their expected seat share.” *Id.* at 900-01.

FF243. As an example, Dr. Caughey stated that it is “sort of easy to think about when we just consider what happens if both parties get 50 percent of the vote[.] If they both get 50 percent of the vote, they tie, right. But if they win 50 percent of the vote and one party gets 55 percent of the seats, that indicates a bias of five percentage points in favor of the party that got more seats[.] So that is what we call partisan bias.” *Id.* at 903.

FF244. Concerning the efficiency gap, Dr. Caughey testified that it is “another way of operationalizing [the] notion of a partisan fairness,” *i.e.*, “that a map should treat the parties equally or mutually,” stating that “instead of focusing directly on the seats votes curve, it focuses on [the] notion of wasted votes.” *Id.* at 905.

FF245. According to Dr. Caughey “the efficiency gap is based on the idea that the number of wasted votes or the share of wasted votes for each party should be equal,” elaborating that a “wasted vote” is “a vote cast for a losing

candidate or a vote cast for a winning candidate beyond the minimum necessary to ensure that that candidate won, beyond 50 percent plus one.” *Id.*

FF246. Dr. Caughey stated that “when one party wastes more votes than the other party, then their votes, in sum and substance, count for less,” because “[m]ore of their votes don’t make a difference in terms of who wins seats” and, thus, the votes are “diluted relative to the other party.” *Id.* at 905-06.

FF247. In discussing the mean-median factor, Dr. Caughey testified that “the mean-median difference . . . is [] the difference [between] the average vote share amongst districts, which if [it] turn[s] out equal is [] a statewide share that a party earns, and the difference in the median district.” *Id.* at 909.

FF248. Dr. Caughey explained that “mean-median [] picks up on the asymmetry of the distribution of district partisanship, the skewness . . . of the distribution of partisanship.” *Id.*

FF249. Concerning the measure of declination, Dr. Caughey testified that this measurement “is a little bit more technical and recently developed measure,” adding that “[i]t was originally formulated in thinking about how the angles, if you line up all the districts and the Democratic districts are over here and the Republican districts [are] over here, the angle—how the angle changes where partisanship shifts,” and “where party control shifts.” *Id.* at 910.

FF250. In his expert report, Dr. Caughey calculated the figures for the various plans as follows. First, the Supreme Court’s 2018 Map had a partisan bias of 2.1%; an efficiency gap of 2.9%; a mean-median of 0.8 %; and a declination of 0.08%. Second, Governor Wolf’s plan had a partisan bias of 2.9%; an efficiency gap of 3.5%; a mean-median of 1.0%; and a declination of 0.10%. Third, the House Republican Caucus plan/map had a partisan bias of 6.3%; an efficiency gap of 6.6%; a mean-median of 2.3%; and a declination of 0.19%. Fourth, Senate Map 1 had a partisan bias of 1.8%; an efficiency gap of 2.3%; a mean-median of 0.7%; and a

declination of 0.06%. Fifth, Senate Map 2 had a partisan bias of 1.5%; an efficiency gap of 2.4%; a mean-median of 0.5%; and a declination of 0.07%. (Caughey Report at 18.) In his supplemental report, Dr. Caughey calculated the Reschenthaler 2 map as possessing these values: a partisan bias of 5.9%; an efficiency gap of 6.3%; a mean-median of 2.4%; and a declination of 0.18%. (Caughey Suppl. Report at 24.)

FF251. At the hearing, Dr. Caughey discussed the Plans Score website, which analyzes map plans for partisan fairness and/or gerrymandering.

FF252. Dr. Caughey testified that the website is open to the public, is non-profit and non-partisan, and is completely transparent about the methodology it utilizes to arrive at its predictions. (N.T. at 914-17.)

FF253. In employing the Plans Score website, Dr. Caughey stated that he uploaded the various maps to the website and downloaded the predications, was “projecting what would happen [] if no incumbents were running,” and that, based on the results, districts 1, 7, 10, and 17 identified in the Senate Maps were competitive districts where “there’s substantial uncertainty about where they will land.” *Id.* at 923, 925.

FF254. In his expert report, Dr. Caughey reiterated the findings he obtained with regard to the various plans from using the Plans Score website as follows. First, the Supreme Court’s 2018 Map had a partisan bias of 23%; an efficiency gap of 32%; a mean-median of 13%; a declination of 35%; and a final average of 26%. Second, Governor Wolf’s plan had a partisan bias of 27%; an efficiency gap of 41%; a mean-median of 14%; a declination of 37%; and a final average of 30%. Third, the House Republican Caucus plan/map had a partisan bias of 55%; an efficiency gap of 64%; a mean-median of 36%; a declination of 60%; and a final average of 54%. Fourth, Senate Map 1 had a partisan bias of 16%; an efficiency gap of 26%; a mean-median of 9%; a declination of 27%; and a final average of 20%. Fifth, Senate Map 2 had a partisan bias of 13%; an efficiency gap

of 26%; a mean-median of 7%; a declination of 27%; and a final average of 18%. (Caughey Report at 18.) Ultimately, based on the above numbers, Dr. Caughey opined that Senate Maps 1 and 2 are superior to the other maps that he compared them with.

FF255. On cross-examination, Dr. Caughey admitted that he did not analyze the Carter Petitioners' proposed plan/map prepared by Dr. Rodden or the Gressman Petitioners' proposed plan/map prepared by Dr. DeFord. (N.T. at 956, 965-66.)

FF256. Dr. Caughey conceded that the plans/maps submitted by both the Carter Petitioners and Gressman Petitioners had better results in terms of partisan fairness than the plans/maps that he reviewed and compared in his expert and supplemental expert reports. (N.T. at 966-72.)

FF257. Dr. Caughey conceded that his analytical methods did not account for political geography. (N.T. at 999.)

FF258. Notably, Dr. Caughey could not conclude that HB 2146 was unfair. (N.T. at 992.)

FF259. As noted above, the Senate Democratic Caucus also submitted a Declaration by Shoenberg, detailing the number of splits in Senate Map 1 and Senate Map 2, and an Analysis by Michael Lamb, Pittsburgh City Controller, pertaining to the split of the City of Pittsburgh in both of the proposed Senate Maps.

7. John M. Memmi, Ph.D. (Corman & Ward)

FF260. Senate Republican Legislative Intervenors Corman and Ward submitted the expert report of John M. Memmi, Ph.D., who is a consultant in the field of redistricting and has more than 20 years of experience in the process of drawing redistricting maps.

FF261. Dr. Memmi's report states that he evaluated HB 2146 in relation to traditional and applicable criteria for compactness, contiguity, population equality, and maintenance of political subdivisions.

FF262. In conducting his evaluation, Dr. Memmi explained that he used generally accepted methodologies in the field of drawing and evaluating congressional redistricting maps and relied on numerous sources of information.

FF263. Dr. Memmi opined, to a reasonable degree of scientific certainty, that House Bill 2146 meets the four traditional criteria for redistricting.

FF264. Dr. Memmi first noted that the two most common ways to measure compactness are the Polsby-Popper and Reock scores.

FF265. Dr. Memmi explained that Polsby-Popper evaluates irregularity in the perimeter of a district, and Reock examines district area. Both scores range from 0 to 1.

FF266. Dr. Memmi stated that "the more compact the district the greater the score." (*See* John M. Memmi Expert Report, attached to Pre-Hearing Opening Br. of Senate Republican Intervenors Corman and Ward, at 1-2.)

FF267. Dr. Memmi stated that the Polsby-Popper scores of HB 2146 range from 0.19 to 0.49, and the Reock scores range from 0.30 to 0.62, revealing that no district has an extreme, or low, score. *Id.* at 2-3; Memmi Expert Report, Figure 1.

FF268. Dr. Memmi defined "contiguity" using the National Conference of State Legislature definition: "as the condition in which 'all parts of a district are connected geographically at some point with the rest of the district.'" *Id.* at 2.

FF269. Dr. Memmi opined that HB 2146 is comprised of 17 contiguous districts, as verified by *autoBoundEDGE* redistricting software published by Citygate GIS even despite the non-contiguous municipalities and precincts existing in Pennsylvania. *Id.*

FF270. Dr. Memmi further opined that Pennsylvania must have 12 districts with total populations of 764,865 and 5 districts with total populations of 764,864, for a grand total of 13,002,700 people, and that HB 2146 meets this criterion. *Id.* at 2-3; *see also* Memmi Expert Report, Table 1.

FF271. Dr. Memmi observed that “[c]ounty and municipal governments function more efficiently when their jurisdictions are within one district[,]” and that splits are only necessary when the total population of a district is greater than one district. *Id.* at 3.

FF272. Utilizing a chart showing the split political subdivisions in congressional districts under House Bill 2146, Dr. Memmi opined that House Bill 2146 splits only 0.3% of the of Pennsylvania 16,127 political subdivisions (i.e., counties, municipalities, wards, precincts). *Id.*; *see also* Memmi Expert Report, Figure 2.

8. Thomas L. Brunell (Congressional Intervenors)

FF273. The Congressional Intervenors also presented the expert opinion of Thomas L. Brunell, Ph.D., a Professor of Political Science and program head for the Political Science program at the University of Texas at Dallas.

FF274. In 2021, Dr. Brunell was appointed by the Director of the U.S. Census Bureau to serve a three-year term on the Census Scientific Advisory Committee.

FF275. Dr. Brunell published a book on redistricting and dozens of peer-reviewed articles in the top journals in the fields of redistricting, the Voting Rights Act, elections, and representation. He served as an expert witness in redistricting related litigation often over the last 20 years, testifying in state and federal courts around the country.

FF276. Dr. Brunell was asked by the Congressional Intervenors to evaluate their two proposed congressional maps, Reschenthaler 1 and Reschenthaler 2, using the 2018 Remedial Plan as a benchmark, to examine equal population, compactness, contiguity, preserving communities of interest, and compliance with the VRA.

FF277. Dr. Brunell was also asked to analyze the underlying partisanship of the two maps.

FF278. After concluding that the 2 Reschenthaler maps are correctly populated, contiguous and reasonably compact, Dr. Brunell analyzed the political subdivision splits and concluded that the 2 Congressional Intervenors maps have the same number of county splits as the current map. (Brunell Report at 4-9.)

FF279. In terms of cities and townships, the Reschenthaler maps both split fewer municipalities and have fewer segments than the 2018 Remedial Plan.

FF280. Dr. Brunell examined several measures of partisan advantage including, the efficiency gap, partisan voter index (the “PVI”), and the mean-median vote gap.

FF281. In calculating PVI, Dr. Brunell used the results of the 2016 and 2020 presidential elections as the basis for determining the likely partisanship of each district because they were both high profile elections with well-funded

candidates, both elections were relatively close, and the Republican carried Pennsylvania in 2016 and the Democrat carried the state in 2020. *Id.* at 9.

FF282. Dr. Brunell averaged the vote percentage for the Democrat for each district across these two elections and then subtracted 50% from each one.

FF283. Based on PVI, Dr. Brunell opined that the Reschenthaler 1 and Reschenthaler 2 maps create enough competitive districts such that “the majority of the state’s congressional delegation may be decide by the political tides and the quality of the candidates and campaigns in each election.” *Id.* at 8 (Ex. C).

FF284. According to Dr. Brunell’s PVI analysis, the Reschenthaler 1 and Reschenthaler 2 maps are substantially similar to the competitiveness of the 2018 Remedial Plan, each creating eight republican, five democrat, and 4 toss-up districts, as compared to the 2018 Remedial Plan’s seven-six-five breakdown. *Id.* at 10.

FF285. Regarding the mean-median differences, Dr. Brunell explained that this “method takes the mean (average) vote percentage for one party across all the districts and compares it to the median of the same set of vote percentages.” *Id.*

FF286. For example, Dr. Brunell explained that “[i]f the Democratic average votes percentage is 55 percent and the Democratic median vote percentage in the same election is 50 percent, there is a 5 percent difference that favors Republicans.” *Id.*

FF287. Dr. Brunell explained that this metric is based on logic that if “one party is ‘packed’ into a handful of districts they are at a disadvantage and this will inflate the average vote percentage for that party, while the median of a distribution will be unaffected.” *Id.*

FF288. For his analysis, Dr. Brunell calculated the mean-median differences for the 2018 Remedial Plan and the Reschenthaler 1 and Reschenthaler 2 maps across all of the presidential, senatorial, and gubernatorial elections in Pennsylvania for the last decade.

FF289. Dr. Brunell also added the three other statewide elections from 2020 because “Pennsylvania made two important changes to their elections beginning in 2020—[it] eliminated straight-party voting and instituted no excuse vote-by-mail.” *Id.*

FF290. Dr. Brunell found the Reschenthaler 1 and 2 maps had mean-median averages of 1.86% and 1.89%, respectively, which were indicative of a sufficiently competitive map. *Id.* at 9 (Table 10).

9. **Sarah Andre (Khalif Ali et al.)**

FF291. Khalif Ali submitted the expert report of Sarah Andre, who works as a Redistricting Demography/Mapping Specialist for Common Cause and is responsible for conducting spatial and demographic analyses of local, state, and federal district boundaries and providing support to Common Cause state offices in the form of district map analysis trainings. (Sarah Andre Report (Andre Report) at 1.)

FF292. Ms. Andre has a Master of Public Policy from the UCLA Luskin School of Public Affairs and a Bachelor of Arts in Human Development from California State University, Long Beach. *Id.*

FF293. Ms. Andre was asked by Khalif Ali et al. to use the proposed congressional plan that Governor Wolf publicly released on January 15, 2022, as a starting point and to adjust for “underlying Census data to count incarcerated

individuals in their homes rather than their cells,” and “to improve a small number of areas where the Governor’s Plan, as adjusted for prisoners’ home addresses, could more effectively preserve communities of interest.” *Id.*

FF294. She was also asked to ensure that the Ali Plan complied with the traditional neutral redistricting criteria, specifically equal population, contiguity, compactness, and minimizing splits of political subdivisions. *Id.*

FF295. Ms. Andre did not consider any partisan data or incumbent or challenger home addresses in her analysis. *Id.*

FF296. Ms. Andre used the adjusted Data Set # 2 (with prisoner reallocation) adopted and used by the Pennsylvania Legislative Reapportionment Commission in drafting legislative plans. *Id.*

FF297. Ms. Andre further explained that she “identified and attempted to improve a small number of areas where the Governor’s Plan did not sufficiently account for protecting communities of interest, and specifically, she focused on the Pittsburgh area (Districts 16 and 17), the Capital Region (Districts 10 and 11), and minor adjustments in Philadelphia, as well as other areas, relying on publicly available testimony and public comment from a variety of sources. (Andre Report at 4-13.)

FF298. In Ms. Andre’s opinion, the Governor’s Plan and the Ali Plan are “as nearly as equal in population as practicable,” as they only have a one-person variance, with 4 districts with 764,864 residents, and 8 with 764,864 residents. *Id.* at 13.

FF299. Ms. Andre opines that the Governor’s Plan and the Ali Plan are contiguous, in that “[a]ll districts are composed exclusively of contiguous territory and no district is contiguous only by a single point.” *Id.* at 13-14.

FF300. Ms. Andre opines that the Governor's Plan and the Ali Plan are compact on the widely used measures of compactness, the Reock scale and Popper-Polsby test, and are comparable to the 2018 Remedial Plan.

FF301. Noting that "[t]he closer the number is to 1, the more compact the plan is," Ms. Andre observed that the Ali Plan has a Reock score of 0.4070 and a Polsby-Popper score of 0.3418, while the current plan has a Reock score of 0.4278 and a Polsby-Popper score of 0.3675, and the Governor's Plan has a Reock score of 0.4012 and a Polsby-Popper of 0.369. (Andre Report at 14.)

FF302. In comparing the plans, Ms. Andre opined that the Ali Plan compares favorably to both the Governor's Plan and the 2018 Remedial Plan. *Id.*

FF303. Ms. Andre opined that the Governor's Plan and the Ali Plan are comparable in minimizing splits. *Id.*

FF304. Ms. Andre testified that the Governor's Plan has 19 county splits and 178 municipality splits, whereas the Ali Plan has 19 split and the 177 municipality splits. *Id.*

FF305. Thus, according to Ms. Andre, the Ali Plan preserves population equality among congressional districts, is contiguous, compact, and aimed to reduce county, municipal, and voting precinct splits. *Id.* at 13-15.

FF306. Ms. Andre testified that neither the Governor's Plan nor the Ali Plan sets out to avoid pitting incumbents against one another, as both plans have two pairs of districts that group together incumbents. *Id.* at 14-15.

10. Sean Trende (Voters of the Commonwealth)

FF307. Sean Trende authored a report that analyzed the map submitted by the Voters of PA *Amici*.

FF308. Mr. Trende is currently a doctoral candidate in political science at Ohio State University, working on a dissertation that focuses on applications of spatial statistics to political questions, and he has obtained a master's degree in applied statistics from Ohio State University and a law degree from Duke University.

FF309. After practicing law for 8 years, Mr. Trende joined RealClearPolitics in January of 2009 and is presently a Senior Elections Analyst.

FF310. Mr. Trende has provided expert reports in numerous cases throughout the country concerning election laws, voting rights, and redistricting.

FF311. In his report, Mr. Trende states that he utilized a statistical and graphics programming language called "R" and made a block assignment file to match the shapefile of the blocks to their respective districts to ultimately create a shapefile of the districts in the map for the Voters of PA Plan.

FF312. Mr. Trende opined that the proposed map consists of 17 contiguous districts, which vary in population by no more than one person.

FF313. In terms of the compactness of the districts, Mr. Trende stated he employed three commonly used metrics: Reock, Polsby-Popper and Schwartzberg. While noting "the importance of looking at multiple standards of compactness," Mr. Trende explained that "[t]he Reock score looks at the ratio of the area of the district to the area of the smallest circle that would enclose the district (also known as a 'minimum bounding circle')" and "[a] 'perfect' Reock score is 1, while a zero reflects a theoretical perfectly non-compact district." (Trende Report at 10.)

FF314. Mr. Trende explained that "[t]he Polsby-Popper score looks at the ratio of the area of a district to the area of a circle that has the same perimeter as

the district,” “[a] ‘perfect’ Polsby-Popper score is 1,” and “a theoretical perfectly non-compact district would score a zero.” *Id.*

FF315. Mr. Trende stated that “[t]he Schwartzberg score takes the perimeter of the district and compares it to the perimeter (circumference) of a circle that has the same area as the district” and that “the scores are . . . scaled from 0 to 1, with 1 representing a perfectly compact district.” *Id.* at 10-11.

FF316. After providing the Reock, Polsby-Popper and Schwartzberg scores for each individual district in the proposed map, Mr. Trende noted that “[o]ne drawback of these measures is that there is no clear definition of when a district becomes non-compact, and scores for districts that most lay observers would consider quite compact can nevertheless deviate significantly from a ‘perfect’ district.” *Id.* at 11.

FF317. Mr. Trende calculated a comparison of the proposed map with the Supreme Court’s 2018 Map (*i.e.*, the existing map) and arrived at the following figures: (1) the mean, median, and minimum Reock scores for the proposed map were 0.4419%, 0.4335%, and 0.3432%, respectively, and 0.4280%, 0.4101%, and 0.3243% for the 2018 Map, respectively; (2) the mean, median, and minimum Polsby-Popper scores for the proposed map were 0.3951%, 0.3791%, and 0.2289%, respectively, and 0.3356%, 0.3244%, and 0.1808% for the 2018 Map, respectively; and (3) the mean, median, and minimum Schwartzberg scores for the proposed map were 0.6256%, 0.6157%, and 0.4784%, respectively, and 0.5754%, 0.5695%, and 0.4252% for the 2018 Map, respectively.

FF318. Mr. Trende analyzed the splits in the proposed map, determining that the proposed “map splits only 15 counties between the 17 districts” and does so “in a manner consistent with the way counties have historically been

split in the Commonwealth,” especially considering that “[t]here are three counties in Pennsylvania that must be split due to their population: Philadelphia, Montgomery and Allegheny” and “[o]utside of these mandatory splits, the splits in the [p]roposed [m]ap impact just 25.1% of the population.” *Id.* at 12-13, 15.

FF319. According to Mr. Trende, the proposed map “also splits relatively few municipal divisions,” a total of 17, and that, notably, “the only large city the [p]roposed [m]ap splits is Philadelphia (which must be split due to its population),” while “[l]arge cities such as Pittsburgh, Allentown, Erie, and Reading are kept intact.” *Id.* at 15-16.

FF320. Concerning the VRA, Mr. Trende “does not purport to conduct a racially polarized voting analysis, and thus does not make claims as to whether a district is required by the VRA,” but notes “that, as with the current plan, there is at least one district that is consistent with the VRA.” *Id.* at 17.

FF321. In this regard, Mr. Trende states that “[b]lack voters comprise a majority of the Voting Age Population (“VAP”) in Congressional District 3” and, further, that “Black voters would be well-positioned to elect the candidate of their choice in Congressional District 2, where minority groups together comprise almost 65% of the VAP, but where Black voters comprise a plurality of the non-white VAP.” *Id.*

FF322. Mr. Trende testified that incumbents are paired together in two districts. *Id.* at 16-17.

FF323. On the issue of partisanship, Mr. Trende provided the mean-median and efficiency gap scores for both proposed map and the 2018 Map for three different periods/election races, “Trump-Biden only,” the “2020 Elections,” and the “2016-2020 Elections.” *Id.* at 21.

FF324. Mr. Trende calculated the efficiency gap for the proposed map during these periods/election races as 0.036%, 0.030%, and 0.056%, respectively, and -0.010%, -0.016%, and -0.041% for the 2018 Map, respectively.

FF325. Mr. Trende also calculated the mean-median for the proposed map during these periods/election races as 0.030%, 0.020%, and 0.022%, respectively, and 0.007%, -0.004%, and 0.002% for the 2018 Map, respectively.

FF326. Mr. Trende provided figures for the Governor's map/plan and concluded that "the Governor's Map is less compact across virtually every measure than the [p]roposed [m]ap and is less compact than the existing map in multiple instances." *Id.* at 22.

11. Justin Villere (Draw the Lines PA)

FF327. The Draw the Lines *Amici* submitted a statement from Justin Villere, Managing Director of Draw the Lines PA, to support what the amici refer to as the "Pennsylvania Citizens' Map" or the "Citizens' Map."

FF328. In the words of Mr. Villere,

The Citizens' Map, in effect, represents the values of everyday Pennsylvania mappers more than any other map that has been published or considered. Further, by using direct hands-on public involvement to draw the original map, publishing the map, asking for feedback, and then revising it, Draw the Lines has modeled a transparent and accountable public process. The Citizens' Map is not a perfect map but it represents what our thousands of mappers and a clear majority of public commenters would want to see in their congressional maps.

(Villere Report at 2.)

FF329. As explained by Mr. Villere, the Citizens' Map contains 17 districts that are contiguous and deviate in population by no more than one person.

FF330. In terms of compactness scores, Mr. Villere states that the map has a Reock score of 0.451, a Polsby-Popper score of 0.376, a Schwartzberg score of 1.67, a Pop-Polygon score of 0.77, and Convex Hull score of 0.81. *Id.* at 4.

FF331. Mr. Villere notes that “limiting jurisdictional splits was not a top-3 priority for our mappers,” but nonetheless explains that the Citizens’ Map “splits 14 counties a total of 16 times, equal to the 14/16 split by the 2018 map” and, also, “splits 16 municipalities,” which is “an improvement on the 19 splits in the 2018 map.” *Id.* at 4.

FF332. According to Mr. Villere, “[s]ome municipal splits are unavoidable due to size (like Philadelphia), or due to the zero[-]population deviation requirement. Other splits (like Pittsburgh) were the result of trade-offs to maximize other values (like communities of interest, compactness, and political competitiveness).” *Id.*

FF333. Mr. Villere states that, in the Citizens’ Map, “[t]o adhere to the Voting Rights Act, Districts 2 and 3 are majority-minority districts. District 2 is a coalition district (29% Black, 22% Hispanic, 10% Asian), while District 3 is majority Black (55%).” *Id.*

FF334. On the issue of competitive districts, Mr. Villere submits that “[t]he Citizens’ Map, using 2016-2020 composite election data, would yield five strongly Democratic and six strongly Republican districts” and “[s]ix districts would produce competitive elections (major party candidates within 10% of each other).” *Id.*

FF335. Mr. Villere adds that using PlansScore, which evaluates maps for partisan fairness, the Citizens’ Map, when not factoring in the status of

incumbents, “has an efficiency gap of 3.5% in favor of Republicans,” which “means Republicans would win an extra 3.5% of 17 seats, or an extra half-seat.

FF336. According to Mr. Villere, when factoring incumbency, there is a 0.2% gap in favor of Republicans.” *Id.* at 5.

FF337. Mr. Villere provides a detailed description of the geographical contours for each district and brief statements as to why the composed districts preserve the relevant community interests.

FF338. The Court finds that all experts presented were qualified to offer expert opinions on the subjects of their testimony.

FF339. Citizen Voters *Amici* did not submit an expert report.

D. Evidentiary Objections

During trial, the Governor objected to the admission of Dr. Memmi’s and Dr. Brunell’s reports on the grounds that the reports are inadmissible hearsay, and allowing the reports into evidence would bestow an unfair advantage on the parties proffering them. The Governor also argued that the reports submitted by the *Amici*’s experts should be weighed in a manner that appropriately reflects their lack of exposure to cross-examination. The Governor readily acknowledged the Court’s rationale for allowing those *Amicus* Participants to submit expert reports and that the Court was attempting to balance consideration of those Participants’ views and proposed maps, on the one hand, with the need to ensure that the evidentiary hearing, in which the *Amicus* Participants were not permitted to participate, was manageable on the other hand. It is also important to note that the Governor’s expert report included analysis of all of the *Amicus* Participants’ reports based on a request by the Governor to do so. The Governor nonetheless argued that the *Amicus* Participants’

expert reports were not subject to the kind of rigorous adversarial testing applied to the reports submitted by the experts who testified at the hearing. Therefore, he requested that the Court's assessment of the *Amicus* Participants' reports take account of that difference.

The Court submits that it did not abuse its discretion in overruling the objection. Due to the expedited nature of the proceedings, the Parties were permitted to present one to two plans and corresponding expert reports but were only permitted to have one expert testify at the trial. The *Amicus* Participants were permitted to present one plan and one expert report, and were not permitted to participate in trial. All Parties were given the opportunity to file counter expert reports to respond to any of the expert reports of the other Parties and the *Amicus* Participants. Because the expert reports submitted by the *Amicus* Participants were subject to adversarial testing, and the Parties and the *Amicus* Participants all had the opportunity to point out to the Court the shortcomings of the other expert reports, everyone was in equal circumstances. It is also noteworthy to add that none of the Parties objected to the admission of the Declarations moved into evidence by the Senate Democratic Caucus Intervenors or the Statement by Michael Lamb on the basis of hearsay. In fact, a number of parties and applicants during the intervenor hearing stated that the Court could just request maps and reports and decide without a hearing. Hence, the Court believes it was correct to overrule the objection.

Moreover, in its January 26, 2022 order denying Khalif Ali's appeal, the Supreme Court seemingly countenanced this Court's strategy of limiting the *Amicus* Participants' participation in this matter to the submission of an expert report and plan in writing. Doubtless, if the Supreme Court had not approved, it would

have clarified that before the Court and Parties expended time and resources by proceeding in this manner.

The Governor also objected to admission of Dr. Memmi's and Dr. Brunell's reports based on fairness. It argued that Dr. Memmi's report addressed the same map as does the report of the Republican Legislative Intervenors' testifying witness, Dr. Barber. And, although the Congressional Intervenors submitted two maps, they had Dr. Brunell address one map, while their testifying expert, Dr. Naughton, addressed the other. Both experts' reports were proffered in support of both maps. The other Parties at the hearing all offered expert reports by one witness, namely, the witness who testified at the hearing and was subject to cross-examination. The Governor argued that to safeguard the truth-seeking process and place the parties on a level playing field, the expert reports of Dr. Memmi and Dr. Brunell should not be admitted into evidence.

The Court further points out that the Speaker and Majority Leader of the Pennsylvania House of Representative and the President Pro Tempore and Majority Leader of the Pennsylvania voluntarily offered to join together as one party in a good faith attempt to streamline the proceedings and avoid the duplication of efforts at trial. The House Democratic Caucus Intervenors and Senate Democratic Caucus Intervenors did not join as intervenors and were permitted to file 1-2 reports each. By allowing Democratic House and Senate Intervenors the opportunity to provide two reports and maps each just because they did not join as intervenors, but precluding Republican House and Senate Intervenors from doing so because they joined as intervenors would be prejudicial. Recognizing each would have been entitled to submit up to two plans and two expert reports had they not joined together, the Court did not perceive any unfair advantage to the Governor or any other party.

The Court also did not believe it was fair to penalize those parties for making an effort to accelerate the proceedings in light of the exigent timeline. Moreover, as the Court explained to counsel, the object of soliciting expert reports and proposed plans from the parties, intervenors and *amici* was to educate the Court and provide an array of options for the Court. The Court submits that it did not abuse its discretion in overruling the objection.

Exhibits introduced in trial and attached to briefs were admitted into evidence. All exhibits are part of the record in this matter.

E. Parties' and Amicus Participants' Arguments

The Court will now summarize the parties' and *Amici* Participants' arguments.

1. Carter Petitioners

The Carter Petitioners first assert that their proposed plan meets or exceeds the 2018 Remedial Plan's performance on the traditional redistricting criteria that our Supreme Court set forth in *LWV II*, and additionally reflects the partisan preferences of Pennsylvania voters. (Carter Pet'rs' Br. in Support, at 1.) The Carter Petitioners point out that their Plan "implements a least-change approach," in that they used the "superior or comparable" Supreme Court 2018 Remedial Plan as a starting point, which they claim is "a common strategy courts deploy when, as here, the existing map is rendered obsolete by population changes." *Id.* at 4-5. With respect to taking a least-change approach, the Carter Petitioners assert that their Plan "preserves district cores, creates continuity in representation, and respects communities of interest[,]" and satisfies the *LWV II* criteria and other redistricting principles previously relied upon by our Supreme Court. *Id.* at 4.

Specifically, the Carter Petitioners assert that they “were able to preserve the core of the 2018 Remedial Plan’s districts and create continuity for the overwhelming majority of Pennsylvania residents.” *Id.* at 6 (citing *Karcher v. Daggett*, 462 U.S. 725, 740 (1983), and *Reynolds v. Sims*, 377 U.S. 533, 578-79 (1964)). They point out that their Plan allows 87% of Pennsylvania’s population to remain in their respect districts under the 2018 Remedial Plan. *Id.*

In terms of the traditional redistricting criteria, the Carter Petitioners assert that their Plan meets the equal population requirement of *LWV II*, because it “includes 4 districts with the ideal population and 13 districts with a deviation of plus or minus one person[,]” which “level of population deviation readily satisfies constitutional requirements.” *Id.* at 7. The Carter Petitioners next contend that their Plan is similar in compactness to the 2018 Remedial Plan. *Id.* In this regard, they point out that they have complied with *LWV II* by providing the Plan’s Reock, Schwartzberg, Polsby-Popper, Population Polygon, and Area/Convex Hull measures of compactness for each district. *Id.* at 8. They further point out that their Plan’s Reock score matches the 2018 Remedial Plan’s score, and that the Plan nearly matches (each by 0.01) the 2018 Remedial Plan’s scores on the other measures. *Id.* The Carter Petitioners explain that some decreases in compactness measures was caused by their attempt to maintain population equality in Districts 4 and 5. Moreover, they explain that population deviations in the counties comprising those districts (Bucks and Delaware Counties) required them “to reach outside of those subdivisions for additional population.” *Id.* at 9. The Carter Petitioners also assert that their Plan meets the contiguity requirement. *Id.* Finally, the Carter Petitioners argue that their Plan “maintains and builds upon the 2018 Remedial Plan’s respect

for the integrity of political subdivisions[,]” in that it “has the same or fewer county, county subdivision, and vote tabulation district splits.” *Id.*

In terms of other redistricting principles, the Carter Petitioners first claim that their Plan preserves minority voting rights as reflected in the 2018 Remedial Plan. The Carter Petitioners maintain that their Plan complies with *Mellow* and the VRA, because “[i]t closely follows the boundaries of the 2018 Remedial Plan with regard to those areas of the state with sizeable minority populations, thus preserving [the 2018] minority opportunity districts” *Id.* at 10-11. They also point out that their expert, Dr. Rodden, did not take racial data into account when making adjustments for population changes. *Id.* at 11. The Carter Petitioners next assert that their Plan “creates districts that represent the natural and well-defined communities of interest” and, where changes were required, “follows natural and political subdivision boundaries with a focus on keeping communities together.” *Id.* at 12 (noting District 7 needed more population, so Carbon County added to unify the Allentown-Bethlehem-Easton metropolitan area consisting of entirety of Northampton, Lehigh, and Carbon Counties; and new District 15 that avoids split of Centre County that previously separated State College from some suburbs, resulting from loss of District 12). Finally, the Carter Petitioners assert that their Plan reflects Pennsylvania voters’ partisan preferences because it essentially matches the 2018 Remedial Plan, while also containing “truly competitive districts.” *Id.* at 13-14.

In their response brief, the Carter Petitioners add that the Court should not select a plan that overly favors one party or another and/or that splits communities of interest, including the plans of the House and Senate Republican Intervenors and the Republican Congressional Intervenors, and *Amici* Participants

Voters of the Commonwealth and Citizen Voters. (Resp. Br. in Support of Carter Plan at 6-11.) Last, the Carter Petitioners contend that this Court owes no deference to any of the submitted plans, including that of the House and Senate Republican Intervenors. *Id.* at 12-17.

2. Gressman Petitioners

In their supporting brief, the Gressman Petitioners, who characterize themselves “[a]s the only nonpartisan party before this Court,” first explain the guiding legal principles that this Court must consider in reviewing the various plans submitted to the Court for consideration, which include the neutral criteria of *LWV II*, article II, section 16 of the Pennsylvania Constitution, and the VRA. (Br. in Support of Gressman Pet’rs’ Plan at 2, 12-14.) The Gressman Petitioners also note that there are other permissible factors the Court may consider, such as metrics, which include a plan’s maximum population deviation and compactness measures. *Id.* at 14. The Gressman Petitioners assert that their proposed Plan is superior because it “achieves or approaches the best metrics that can be attained on all of Pennsylvania’s legal requirements, while appropriately considering the additional permissible redistricting factors.” *Id.*

Specifically, the Gressman Petitioners assert that their Plan, which has 5 districts with 764,864 residents and 12 districts with 764,865 residents, has the best population equality compared to the other proposed plans. *Id.* at 15-16. The Gressman Petitioners also claim that their Plan outperforms the 2018 Remedial Plan, the House Republican Intervenors’ Plan, and the Governor’s Plan in terms of splitting political subdivisions, as it splits only 15 counties, 19 municipalities, 1 city, 3 boroughs, 15 townships, and 15 wards. *Id.* at 17-24. The Gressman Petitioners also claim their Plan is contiguous in accordance with *LWV II*. *Id.* at 24. The

Gressman Petitioners further assert that their Plan is compact, and they focus on their Plan's mean scores for Polsby-Popper (0.33), Reock (0.40), and Convex Hull (0.80), as well as the Plan's cut edges score (5,546). *Id.* at 25-29. In doing so, the Gressman Petitioners contend that their Plan substantially outperforms the House Republican Intervenors' Plan on compactness, the 2018 Remedial Plan on three of the four measure, and is equal to or comparable to the Governor's Plan. *Id.* at 27.

The Gressman Petitioners further assert that their plan exhibits partisan fairness under the Free and Equal Elections Clause, which is measured by a number of metrics including direct majority responsiveness (resulting in larger vote share being rewarded with larger seat share), the efficiency gap (achieving a gap near zero for each election analyzed), and the mean-median score (scoring very close to zero). *Id.* at 29-40. The Gressman Petitioners also argue that their Plan complies with the Fourteenth Amendment to the United States Constitution and section 2 of the VRA, because it contains three districts in the Philadelphia area in which minority-group members constitute 51%, 52%, and 57% of the voting age population. (Br. in Support of Gressman Pet'rs' Plan at 40-46.) Moreover, the Gressman Petitioners point out, their Plan would, for the first time, create a Latino majority-minority district. *Id.* at 43-46. The Gressman Petitioners also claim their Plan is superior based upon on other factors, such as pairing zero incumbents in the same districts and maintaining respect for communities of interest, as recognized in *Mellow*. *Id.* at 47-48; *see also id.* at 49-63 (demonstrating preserved communities of interest). For all of the above reasons, the Gressman Petitioners urge this Court to adopt their proposed Plan.

In their responsive brief, the Gressman Petitioners largely repeat the above arguments, but add that they take no position with respect to making changes to the 2022 Primary Election calendar. (Gressman Pet'rs' Resp. Br. at 24.)

3. Governor Wolf Intervenor

In his Brief in Support, Governor Wolf Intervenor asserts that he “is the only party to this litigation who has a constituency of, and thus represents the interests of, *all* Pennsylvania voters.” (Governor Wolf Intervenor Br. in Support of Plan at 1.) Acknowledging that the Free and Equal Elections Clause of the Pennsylvania Constitution (article I, section 5), the principles announced in the Supreme Court’s *LWV II* decision, the Supreme Court’s and this Court’s prior decisions in *Mellow*, and Article I, Section 2 of the U.S. Constitution (one person, one vote) govern this Court’s analysis, Governor Wolf argues that his Plan complies with all of the above requirements. (Governor Wolf Intervenor Br. in Support of Plan at 7-11.)

Specifically, Governor Wolf asserts that his Plan contains districts that are essentially equal in population, as “no district has more than 764,865 persons and no district has fewer than 764,864 persons” *Id.* at 18. Further, he claims that the compactness of his Plan is shown by its Polsby-Popper (0.381), Reock (0.431), and voting district cut edges (5185) scores, which demonstrate that his Plan is more compact than other proposed plans, such as HB 2146. *Id.* at 19-20. Governor Wolf additionally asserts that his plan is contiguous, similar to the 2018 Remedial Plan. *Id.* at 20. Regarding splits, Governor Wolf points out this his plan splits only 16 counties, which is comparable to the 2018 Remedial Plan’s 13 split counties and the 19 split counties in *Mellow*. *Id.* He claims that the splits were

necessary in both Philadelphia and Allegheny Counties because their “populations [are] too large to subsume in a single congressional district.” *Id.* Governor Wolf further asserts that his Plan is superior because it “carefully considered decisions to ensure that cohesive communities of interest are preserved” based on feedback he received “via the Governor’s Public Comment Portal[,]” “testimony received in listening sessions held by the Governor’s Redistricting Advisory Council[,]” and the nearly 500 submissions to the Redistricting Public Comment Portal. *Id.* at 20-21. As examples, Governor Wolf points to numerous comments received requesting that the City of Reading and Centre County be kept whole, which requests the Plan honored. *Id.* at 22.

Governor Wolf next contends that his plan is superior because it does not entrench a structural partisan advantage and promotes accountability and responsiveness to voters, which is shown by his expert Dr. Duchin’s overlay method analysis. *Id.* Governor Wolf asserts that Dr. Duchin’s analysis shows that his Plan results in a “level ‘partisan playing field,’ while the House Map ‘entrenches a Republican advantage.’” *Id.* at 24-25. Therefore, according to Governor Wolf, his Plan provides voters of this Commonwealth with an equally effective power to select the representatives of their choice. *Id.* at 25. Governor Wolf further contends that Dr. Duchin’s ensemble analysis of randomly drawn plans compared to his Plan, as well as her use of the efficiency gap (+0.10), Eguia artificial partisan advantage (-0.05), the mean-median score (-0.01), and the partisan bias score (-0.018) as measurements, confirms that Governor Wolf’s Plan does not create any systematic partisan advantage, but rather “creates a level electoral playing field and promotes accountability and responsiveness to voters” and “districts [that] are responsive to Pennsylvania political trends and prevailing voter preference.” *Id.* at 26-27. Overall,

the Governor contends, using both methods reflects that his Plan: “reflects the Majority Rule Principle, as the political party winning the majority of votes statewide is predicted, as a general matter, to win a majority of congressional seats”; “adheres to the Close-Votes-Close-Seats Principle, meaning an electoral climate with a roughly 50-50 split in partisan preference should produce a roughly 50-50 representational split”; and “preserves ‘swing’ districts that can be won by members of either major political party under recent voting patterns.” *Id.* at 27. Accordingly, Governor Wolf requests that this Court choose his proposed Plan, as it comports with redistricting principles of *LWV II*. *Id.* at 28.

In his responsive brief, Governor Wolf repeats his arguments, summarized above, and additionally observes that this case is more similar to *Mellow* than *LWV II*, and, as such, “goes beyond simply asking whether each plan satisfies the requirements of” *LWV II*. (Governor Wolf’s Resp. Br. at 3.) Further, Governor Wolf responds to the Senate and House Republican Legislative Intervenors’ argument that HB 2146 is entitled to special deference, asserting that no special deference is due. *Id.* at 6-11.

4. Republican Legislative Intervenors (Senate and House Leaders)

a. Senate Republican Intervenors (Corman & Ward)

Senate Republican Intervenors Corman and Ward acknowledge in their opening brief that the traditional, constitutionally-derived redistricting principles set forth in *LWV II* govern this matter. (Pre-hearing Opening Br. of Senate Republican Intervenors at 1-5.) They also contend that additional principles and factors must be considered, including the VRA (citing *Gingles*, 478 U.S. at 71), the Fourteenth Amendment to the United States Constitution (citing *Shaw v. Reno*, 509 U.S. 630,

641 (1993)), and other political factors, such as protection of incumbents and the maintenance of political balance that existed after the prior reapportionment. (Pre-hearing Opening Br. of Senate Republican Intervenors at 5-8.) Senate Republican Intervenors further point out that, while the *LWV II* Court stated, in *dicta*, that subordinate factors utilized as part of creating a redistricting plan “may not ‘unfairly dilute the power of a particular group’s vote for a . . . representative[,]’” “[i]t did not attempt to define the contours of ‘unfair’ vote[]dilution.” (Pre-hearing Opening Br. of Senate Republican Intervenors at 8.) Senate Republican Intervenors then recognize the principle that a court is permitted to intervene when the General Assembly and Governor reach an impasse in enacting a restricting scheme. *Id.* at 10. However, given that “there is no doubt that redistricting remains a fundamentally legislative act[,]” Senate Republican Intervenors contend that their proposed Plan, *i.e.*, HB 2146, is “entitled to deference and special weight as a reflection of the legislative process (given that the House has passed it and it is making its way through the Senate) and the will of the people’s elected representatives.” *Id.* at 10-12 (citing numerous federal and U.S. Supreme Court cases). On this basis, Senate Republican Intervenors request that this Court choose their proposed Plan, HB 2146, “in order to honor the General Assembly’s constitutional prerogative to engage in redistricting.” *Id.* at 12.

b. House Republican Intervenors (Cutler & Benninghoff)

House Republican Intervenors Cutler and Benninghoff, who have submitted the same plan as the Senate Republican Intervenors, assert that the traditional redistricting principles of *LWV II* should guide this Court in selecting an appropriate congressional districting plan. (House Republican Intervenors

Corrected Opening Br. at 5.) The House Republican Intervenors contend that HB 2146 was passed by the House following “the most open and transparent Congressional redistricting process in recent history” and “is nearly identical to the map drawn by a citizen and good government advocate[,]” Amanda Holt. *Id.* The House Republican Intervenors point out that Ms. Holt’s proposal was selected because “it was drawn without political influence, met constitutional standards, limited the splits of townships and other municipalities, and offered districts that were company and contiguous.” *Id.* at 6. They note that the proposal was amended to its current form, and subsequently amended based upon 399 comments from citizens. *Id.* at 6-7.

Acknowledging that congressional redistricting is unquestionably the prerogative of the General Assembly, the House Republican Intervenors observe that nearly all impasse cases generally involve a disagreement between the legislature and the governor on an appropriate redistricting plan. *Id.* at 10. However, the House Republican Intervenors contend that “impasse does not mean that the General Assembly’s plan—despite the failure to the Governor to sign it into law—is entitled to no special consideration when the judiciary must take up the unwelcome obligation of redistricting the Commonwealth.” *Id.* Stated otherwise, the House Republican Intervenors urge this Court to give HB 2146 special consideration, notwithstanding the Governor’s veto thereof, “because it best reflects state policies and the people’s preferences.” *Id.* at 11.

Moreover, the House Republican Intervenors contend that HB 2146 closely adheres to, and does exceptionally well on, traditional redistricting principles and was drawn without any partisan data. *Id.* at 12-13. In this regard, the House Republican Intervenors highlight that HB 2146 has a population deviation of plus or

minus one, which is the best that can be achieved, and it is also contiguous and compact. *Id.* at 13. Specifically, HB 2146 achieved a 0.324 Polsby-Popper score, which is similar to the 2018 Remedial Plan’s 0.327 and, thus, comparable to that plan in terms of compactness. *Id.* at 13-14. The House Republican Intervenors further highlight that HB 2146 only splits 15 counties with 18 total splits, which is also very similar to the 2018 Remedial Plan that split 14 counties 19 times. *Id.* at 14. Further, HB 2146 splits only 16 municipalities with a total of only 18 splits, while the 2018 Remedial Plan split 18 municipalities a total of 19 times. *Id.* The House Republican Intervenors additionally highlight that HB 2146 creates two districts with a minority voting age population greater than 50%, including one with a black voting age population over 50%. *Id.* at 15.

The House Republican Intervenors next assert that, although not required by the Constitution, HB 2146 “is demonstrably fair under numerous partisan fairness measures.” *Id.* Specifically, the House Republican Intervenors contend that HB 2146’s partisan fairness was established via its expert’s, Dr. Barber’s, comparison of the bill to a set of simulated maps following only the traditional criteria, which not only accounts for partisan fairness but also the geographic distribution of voters across the Commonwealth. *Id.* at 15-16. The House Republican Intervenors further highlight the results of Dr. Barber’s analysis, which “demonstrate that the House Plan follows the[] traditional redistricting criteria similar to that of the simulated plans” and “that, if anything, the House Plan is more favorable to Democrats.” *Id.* at 16. In particular, they point out that HB 2146 “is predicted to result in 9 Democratic-leaning seats and 8 Republican-leaning seats using an index of statewide elections from 2012 to 2020”; “[t]he most common outcome, however, is 9 Republican-leaning seats and 8 Democratic-leaning seats.”

Id. at 16-17. This, the House Republican Intervenors contend, shows how HB 2146 “is fair and can flip seats depending on different election outcomes.” *Id.* at 17.

The House Republican Intervenors further highlight HB 2146’s mean-mean score of -0.015, which is close to zero, its efficiency gap of -0.02, which is also close to zero, and its uniform string analysis, all of which revealed that HB 2146 is fair. *Id.* at 17-18. The House Republicans also point out that HB 2146 creates five competitive districts, four of which are Democratic-leaning, and, in using race-conscious simulations, a map with 9 Democratic-leaning seats is the most common outcome. *Id.* at 20-21. Finally, the House Republican Intervenors suggest that this Court should reject any maps that subordinate traditional redistricting criteria in favor of a map that seeks proportional representation. *Id.* at 21-24. For the above reasons, the House Republican Intervenors request that this Court adopt HB 2146.

5. Congressional Intervenors

Congressional Intervenors argue that this Court’s decision in this matter is guided by the same constitutional requirements as the General Assembly. (Brief of Congressional Intervenors at 9.) In particular, Congressional Intervenors contend that their two plans, Reschenthaler 1 or Reschenthaler 2, submitted to this Court for consideration, both meet the U.S. Constitution’s one person, one vote requirement, comply with the VRA, and comport with the Free and Equal Elections Clause of the Pennsylvania Constitution. *Id.*

Citing *Mellow*, Congressional Intervenors first assert that both of their plans have a maximum total deviation of one voter, and thus, they meet the equal population requirement. *Id.* at 10. Further, Congressional Intervenors’ plans both comply with the VRA “because sufficiently polarized voting does not exist and, thus,

the VRA is simply not implicated.” *Id.* at 12. Citing the three *Gingles* factors, which are threshold conditions for demonstrating vote dilution under section 2 of the VRA, Congressional Intervenors explain that only “[i]f the *Gingles* factors are met[is] there [] good reason to believe that Section 2 of the VRA mandates the creation of a minority-majority district, but, as succinctly put by the [United States] Supreme Court, ‘if not, then not.’” (Br. of Congressional Intervenors at 12-13.) They further explain that if one of the factors, such as white bloc voting, cannot be established, “then the requisite good reason for drawing a minority-majority district does not exist.” *Id.* at 13. As applied to their two plans, Congressional Intervenors contend that the data analyzed by their expert, Dr. Brunell, does not indicate racially polarized voting, which would necessitate the creation of a minority-majority district. *Id.* at 14-15. Therefore, Congressional Intervenors assert that in the absence of the third *Gingles* factors showing racially polarized voting that would preclude a minority from electing the candidate of their choice, the VRA is not implicated. *Id.* at 15-16.

Congressional Intervenors next contend that their plans satisfy the traditional redistricting criteria of *LWV II*. *Id.* at 17. Specifically, the plans amply satisfy the compactness requirements, with Reschenthaler 1’s Reock score of 0.435 and Polsby-Popper score of 0.363, which exceeds the 2018 Remedial Plan’s score by 0.28 units. *Id.* at 19. Further, Reschenthaler 2’s yields similar scores, with a Reock score of 0.424, and a Polsby-Popper score of 0.352, both of which are better than the 2018 Remedial Plan. *Id.* Congressional Intervenors also contend that their plans are contiguous. *Id.* at 19-20. Further, according to Congressional Intervenors, their plans maintain the integrity of municipalities because they only split 13 counties into fewer than 29 segments and 16 municipal splits into 33 segments,

compared to the 2018 Remedial Plan, which contains 13 split counties into 30 segments and 19 municipal splits into 39 segments. *Id.* at 21.

Congressional Intervenors focus, at length, on how their plans properly account for communities of interest under the Free and Equal Elections Clause. While acknowledging this concept “often proves difficult to measure,” Congressional Intervenors contend that “perhaps most relevant with respect to the Court’s compactness and political subdivision split analysis because a fair map will, at times, sacrifice mathematical exactitude to maintain contiguity of communities that share similar interests.” *Id.* at 23-24. According to Congressional Intervenors, the term encompasses “school districts, religious communities, ethnic communities, geographic communities which share common bonds due to locations of rivers, mountains and highways,” “a community’s circulation arteries, its common news media . . . , its organization and cultural ties, its common economic base, and the relationship among schools of higher education as well as others.” *Id.* at 24-25 (citing *Mellow* and *Holt I*). Congressional Intervenors contend that the Court should consider this and any evidence, objective and subjective, consistent with the Commonwealth’s precedent. *Id.* at 27. Notably, they point out that their plan keeps Pittsburgh intact, it keeps certain areas intact based on transportation corridors; shared school districts; shared commercial commuter connections; shared manufacturing interests, a public transit authority, and a regional health system; commuter suburbs, universities and hospital networks, and a camp and resort region; commercial centers and communities; shared commercial, cultural, and transportation connections; a manufacturing sector versus a more rural area without manufacturing. *Id.* at 29-33. Congressional Intervenors contend that mathematical

“compactness scores will not fully that Reschenthaler 1 and 2 attempt to keep political subdivisions whole—consistent with communities of interests.” *Id.* at 33.

Finally, Congressional Intervenors acknowledge the Court’s ability to consider other subordinate factors, including competitiveness, incumbency protection, and partisan fairness. In this regard, they contend, Reschenthaler 1 and 2 are substantially similar to the 2018 Remedial Plan, in that each Reschenthaler map creates eight Republican, five Democrat, and four toss-up districts, compared to the 2018 Plan’s seven-six-five breakdown. *Id.* at 38. Moreover, Congressional Intervenors note, the mean-median index across different elections ranges from 0 to 3.8, while the average mean-median indexes are 1.85 and 1.89, showing the plans are sufficiently competitive. *Id.* at 39-40. Congressional Intervenors further claim the map creates a fair partisan balance. *Id.* at 41-42. On these bases, Congressional Intervenors request that this Court adopt either Reschenthaler 1 or Reschenthaler 2.

Finally, Congressional Intervenors assert that “Petitioners have attempted to create a number of false ‘deadlines’ by which . . . this Court must purportedly act to either enact or select a congressional reapportionment plan before the date of the 2022 General Primary Election. *Id.* at 43. In doing so, Congressional Intervenors suggest that the Court has until at least February 22, 2022, to review, consider, and select an appropriate congressional reapportionment plan before the 2022 General Primary Election would be impacted, which is similar to what occurred in *LWV II*. *Id.* at 43-45.

6. House Democratic Caucus Intervenor (McClinton)

House Democratic Caucus Intervenor McClinton asserts that the House Democratic Caucus Plan should be accepted by the Court because it meets the

constitutional requirements governing congressional redistricting, as set forth by the Supreme Court in *LWW II*. (House Democratic Caucus Intervenor Br. in Support at 5.) House Democratic Caucus Intervenor McClinton specifically asserts that, under the Caucus’s Plan, “populations between districts are as equal as practicable and reflect population shifts in the 2020 Census[,]” noting that they reflect “a population deviation of only two people between the largest and smallest districts.” *Id.* at 7-8. House Democratic Caucus Intervenor McClinton also maintains that the Caucus’s Plan is compact, with a Reock score of 0.43 and a Polsby-Popper score of 0.28, which scores are in line with the 2018 Remedial Plan, and contiguous. *Id.* at 8. Further, the Plan minimizes splits of political boundaries, with 16 counties, 18 municipalities, and 16 voting precincts that are divided. *Id.* at 9. For these reasons, House Democratic Caucus Intervenor McClinton requests that this Court accept the House Democratic Caucus’s Plan.

7. Senate Democratic Caucus Intervenors (Costa et al.)

The Senate Democratic Caucus Intervenors, like other Parties and *Amicus* Participants, acknowledge that the traditional redistricting criteria of *LWW II*, the Free and Equal Elections Clause, and the VRA guide this Court’s analysis in choosing a map. (Senate Democratic Caucus’s Br. in Support at 8-14.) The Senate Democratic Caucus contends that its Proposed Plan 1 complies with the above requirements because it creates districts of equal population, maintains a majority-minority district, and employs the traditional redistricting criteria to avoid vote dilution. *Id.* at 14-18. Specifically, the Senate Democratic Caucus’s Proposed Plan 1 achieves equal population, with 12 districts with 764,865 residents, and 5 districts with 764,864 residents; provides minorities with equal opportunity to elect the

candidate of their choice under the VRA and create a number of potential coalition district to increase the voices of minorities; is compact, contiguous, and does not split any political subdivisions unnecessarily; and avoids partisan vote dilution, as evidenced by its partisan bias metric score, efficiency gap metric score, the mean-median difference metric, and a declination metric, and the number of competitive districts in the Plan. *Id.* at 14-16; *see* Senate Democratic Caucus’s Expert’s Report at 11-18. While the Plan, and Proposed Plan 2, splits the City of Pittsburgh, the Senate Democratic Caucus contends it does so in a way so as to preserve communities of interest. *Id.* at 16. As for its Proposed Plan 2, the Senate Democratic Caucus informs that the primary difference between Plan 1 and Plan 2 is that Plan 2 creates an expanded minority coalition in District 2 in Philadelphia. *Id.* at 19-20. Accordingly, the Senate Democratic Caucus requests that this Court adopt one its redistricting plans.

In its response brief, the Senate Democratic Caucus responds to the Senate and House Republican Leaders’ argument that HB 2146 is entitled to deference, finding such argument to be without merit. (Senate Democratic Caucus Resp. Br. at 9-12.) Further, with respect to the various arguments set forth about changing the 2022 Primary Election calendar, the Senate Democratic Caucus indicates it would defer to the executive branch ability to determine its needs in terms of administering the election laws. *Id.* at 13.

8. Khalif Ali et al.

Amicus Participants Khalif Ali et al. assert that any new redistricting plan must make use of the Legislative Reapportionment Commission’s (LRC) adjustments to the United States Census Bureau’s data, which “returns nearly 30,000

state prisoners to their home addresses from their [prison] cell addresses.” (Br. of *Amici* Khalif Ali et al. at 9-10.) Accordingly, Ali et al. inform that their proposed Plan is drawn based on the prisoner-adjusted data used by the LRC. *Id.* at 10. Ali et al. claim that counting prisoners in their cells unfairly distorts districts in violation of the Pennsylvania Election Code⁴⁴ and the Free and Equal Elections Clause of the Pennsylvania Constitution. *Id.* at 10-13. Moreover, Ali et al. claim that districting plans can be based on adjusted census data because there is nothing in federal or state law that prohibits the Commonwealth from doing so. *Id.* at 14-16. Although Ali et al. used the prisoner-adjusted data in creating their Plan, they agree that any redistricting plan should preserve, and in fact give precedence to, communities of interest in accordance with *Mellow*. (Br. of *Amici* Khalif Ali et al. at 16-23.) Ali et al. further agree with the other Parties and *Amicus* Participants that the neutral redistricting criteria are paramount, not impermissible partisan or political criteria. *Id.* at 24-27. Finally, Ali et al. assert that their Plan meets the threshold neutral redistricting criteria and is comparable to the Governor’s Plan. *Id.* at 28-29. For these reasons, Ali et al. suggest that the Court should choose their Plan.

9. Voters of the Commonwealth

Voters of the Commonwealth assert that their Plan is contiguous, because “[e]ach precinct within each district borders at least one other precinct within that same district; no part of any district is wholly physically separate from any other part.” (Br. of *Amici Curiae* Voters of the Commonwealth in Support of Plan at 11-12.) Further, Voters of the Commonwealth state that their Plan achieves equal population amongst districts, in that 5 districts contain 764,864 residents and

⁴⁴ Act of June 3, 1937, P.L. 1333, *as amended*, 25 P.S. §§ 2600-3591.

the other 12 districts contain 764,865. *Id.* at 13. Regarding compactness, Voters of the Commonwealth claim that their Plan has higher mean, median, and minimum Reock, Polsby-Popper, and Schwartzberg measure scores than the 2018 Remedial Plan, and also compares favorably to the Governor’s Proposed Plan. *Id.* at 13-16 (see Tables 3 and 8). Voters of the Commonwealth further assert that their Plan minimizes splits of political subdivisions, with only 15 county splits, and keeps intact both Bucks County and Montgomery County each in one congressional district, as has historically been the norm. *Id.* at 16-17. Further, Voters of the Commonwealth point out that their Plan splits only 17 municipalities, while keeping intact the state’s largest cities including Pittsburgh, Allentown, Reading, and Erie. *Id.* at 19.

Voters of the Commonwealth additionally argue that their Plan accounts for VRA principles, in that the Plan “creates at least one district in which Black voters comprise a majority of the Voting Age Population[, which] is the same number of such districts in the existing plan.” *Id.* at 21-22. They also highlight that “minority groups comprise almost 65% of the Voting Age Population in another district” *Id.* at 22. Voters of the Commonwealth further assert that their Plan places most incumbents in districts by themselves, which assures that neither political party is adversely affected. Finally, noting that the Supreme Court in *LWW II* did not adopt a particular measure to determine the extent to which partisan considerations may be taken into account but that numerous measures have since been used therefor, Voters of the Commonwealth contend that their Plan’s mean-median gap of between 2% and 3% is within the normal range, as is their Plan’s efficiency gap of between 3% and 5.6%, which is comparable to the 2018 Remedial

Plan. *Id.* at 24-25. Accordingly, *Amicus* Participants Voters of the Commonwealth would like this Court to consider their proposed Plan.

10. Draw the Lines PA

In its Statement submitted in support of its proposed 17-district congressional district map submitted to this Court for consideration, *Amicus* Participant Draw the Lines PA informs that its Plan is a “nonpartisan Citizens’ Map . . . that aggregates what over 7,200 Pennsylvanians, representing 40 of Pennsylvania’s 67 counties, collectively mapped” via a group of citizen mappers from throughout the Commonwealth, which group was formed following Draw the Lines PA’s public mapping competition. (Proposed Redistricting Plan and Supporting Statement of *Amici Curiae* Draw the Lines PA Participants at 2.) Draw the Lines PA asserts that its Plan is superior in terms of the traditional redistricting criteria of *LWV II*, and further complies with the VRA, “and other metrics important to Pennsylvanians, including competitiveness, partisan fairness, and representation of communities of interest.” *Id.* Draw the Lines PA informs that it presented its Plan to leaders of the General Assembly, “as a potential starting point[,]” and they claim that Governor Wolf has also “touted the Citizens’ Map as meeting the principles proposed by his Pennsylvania Redistricting Advisory Council[.]” *Id.* at 2-3. On these bases, Draw the Lines PA would like for this Court to consider their proposed Plan.

11. Citizen Voters

Amicus Participants Citizen Voters have submitted a proposed 17-district congressional district plan for this Court’s consideration. (Citizen Voters’ Proposed Map of Congressional Districts at 1.) Citizen Voters contend that their

proposed Plan “restores the following counties which were split by Pennsylvania’s 2018 Congressional District Map: Washington, Cambria, Butler, and Centre.” *Id.* Citizen Voters maintain that their proposed Plan “endeavors to maintain communities of interest in one congressional district[,]” and, as an example, they point to their Plan’s inclusion of “the City of Pittsburgh and the South Hills of Allegheny County in one district in District 17.” *Id.* Citizen Voters further asserts that their proposed Plan splits less municipalities than the 2018 Remedial Plan with fewer than 16 municipality splits, as compared to the 19 municipality splits in the 2018 Remedial Plan. *Id.* at 1-2. Citizen Voters also note that their Plan splits only 14 counties, with 3 counties splitting into 3 congressional districts and 11 counties split into 2 congressional districts. *Id.* at 2. On these bases, Citizen Voters would like for this Court to consider their proposed Plan.

V. ANALYSIS AND FINDINGS OF FACT AND CONCLUSIONS OF LAW⁴⁵

A. Traditional Neutral Criteria

1. Contiguity

CL1. All plans presented to the Court met the contiguous requirement. All plans proposed districts of contiguous territory. *See* Duchin Expert Rebuttal 2; *see also* DeFord Expert Rebuttal 9.

CL2. No part of any district in any plan was wholly separated from any other part and the configuration of the districts in all plans allows travel from any point within the district to another point without leaving the district.

⁴⁵ The Concerned Citizens for Democracy’s proposed redistricting plan was filed late, the group was thus denied amicus status, and its proposed plan therefore will receive no consideration.

CL3. Accordingly, all 13 plans presented to the Court satisfy the contiguity requirements.

2. Population Equality

CL1. Each and every proposed plan in this case satisfies the command in the Free and Equal Elections Clause that congressional districts be created “as nearly equal in population as practicable.” *See* Pa. Const. art. II, § 16 (stating that “representative districts . . . shall be composed of compact and continuous territory as nearly equal in population as practicable . . .”).

CL2. Every plan contains districts that have a maximum population deviation of one person, with the exception of the Carter Plan and the House Democratic Plan, which both yield districts that have a two-person deviation.

FF1. It has been argued by the Congressional Intervenors and others that a two-person deviation renders the above plans flawed.

CL3. The “one person, one vote” principle is not literal, and the U.S. Supreme Court has held that where the maximum population deviation between the largest and smallest district is less than 10%, a state or local legislative map presumptively complies with the one person, one vote rule. *See Abbott*, 136 S. Ct. at 1124; *see also Mellow*, 607 A.2d at 207.

FF2. All the experts agree that the ideal district population for each of the Commonwealth’s 17 reapportioned congressional districts is approximately 764,864 or 764,865 persons.

CL4. While a two-person district might in itself be statistically insignificant and was apparently the byproduct of legitimate efforts to limit the number of municipal splits, most of the maps were able to achieve a one-person

deviation. *See Mellow*, 607 A.2d at 207; *Larios v. Cox*, 300 F. Supp. 2d 1320, 1338 (N.D. Ga.) (three-judge court), *aff'd mem.*, 542 U.S. 947 (2004).

FF3. The Court finds that because all parties, but two, were able to produce maps with a one-person deviation, the maps that were unable to do so will be given less weight.

FF4. With the exception of one *Amicus* Participant, Ali, all Parties and *Amici* relied on Pennsylvania's Legislative Reapportionment Commission (LRC) Data Set #1, which takes the 2020 Census Redistricting Data (Public Law 94-171) Summary File for Pennsylvania and adjusts it "to contain the most recent voting precinct boundaries in Pennsylvania, reflecting any boundary changes that occurred after the data was last submitted to the Census Bureau." Pennsylvania Redistricting: Maps, <https://www.redistricting.state.pa.us/maps/#congressional-districts>. (last visited Jan. 30, 2022.) *See* Dr. Duchin N.T., 1/27/22 Tr. 331:25-332:17.

FF5. The Ali Plan instead relied on the LRC's Data Set #2, which "contains the same updated geography as Data Set #1, but also contains population adjustments to account for the reallocation of most prisoners to their last known addresses prior to incarceration." Legislative Reapportionment Comm'n, Pennsylvania Redistricting: Maps, <https://www.redistricting.state.pa.us/maps/#congressional-districts>. (last visited Jan. 30, 2022); *see also* Dr. Duchin N.T., 1/27/22 Tr. 332:10-13, 332:17-20.

CL5. Consistent with the Supreme Court's approach in *LWV III*, 181 A.3d at 583, n.8, and in *Mellow*, 607 A.2d at 218-19, the Court believes that, on comparison, the most appropriate map for this case would rely on Data Set #1.

CL6. In seeking to alter the presumptive norm and traditional and commonly accepted practice of relying on LRC's Data Set #2, Ali is essentially

asking the Court to make a determination that prisoners have a constitutional, statutory, or common law right to have their home residential addresses considered as the place for calculating the geographical breakdowns in population. These issues are not properly before the Court.

CL7. While we appreciate the goals and concerns expressed by Ali, absent legislation or a constitutional requirement to the contrary, the Court cannot find that Data Set #2 should be used at this time for congressional districting. *See* Pa. House Res. 165 (requiring the use of Data Set #1 in any congressional redistricting legislation before the 2030 Census).

CL8. The Ali Plan's adjustments in population, relocating prisoners to their residential addresses, would result in a population deviation of 8,676 people. *See, e.g.*, Gressman Post-Trial Submission at Ex. A, p.3.

CL9. Given that the Ali Plan relies on Data Set #2, while all the other plans utilize Data Set #1, this Court ultimately places little to no weight on the Ali plan or map and, based on its other credibility and evidentiary weight determinations, discussed below, finds that the Ali plan or map cannot appropriately be compared to other maps.

CL10. Applying the traditional neutral criteria, the Court concludes that the remaining 12 plans are contiguous, and all 12 plans are closely population-balanced for the 2020 Census population.

CL11. Accordingly, in agreement with the expert for the Governor, the neutral criteria most relevant for distinguishing the remaining 12 plans are compactness and respect for counties and municipalities.

3. Comparison of Remaining 12 Maps under Traditional Neutral Criteria

FF1. Dr. Duchin examined the Governor’s Plan and the other twelve plans submitted to the Court to determine which plans satisfy an “excellent standard” regarding the traditional criteria, *i.e.*, the *LWV II* neutral benchmarks. *See* Duchin Report at 2; Amended Post Hearing Submission of Intervenor-Respondent Gov Tom Wolf (Wolf Post Hearing Submission) ¶40.

FF2. Applying the traditional criteria, Dr. Duchin concluded that “[a]ll 13 plans are contiguous, and all 13 plans are closely population-balanced for either Census PL population or prisoner-adjusted population.” (Duchin Resp. Report at 2; Wolf Post Hearing Submission ¶47.)

FF3. Dr. Duchin stated that, “the neutral criteria most relevant for distinguishing the plans are **compactness** and **respect for counties and municipalities.**” *Id.* (emphasis in original); Wolf Post Hearing Submission ¶48.

FF4. Dr. Duchin included the following chart showing a comparison of compactness and splitting metrics for each of the plans submitted to the Court.

Table 1: Comparison of compactness and splitting metrics.

name	mean Polsby	mean Schwartz	mean Reock	mean ConvHull	mean PopPoly	cut edges	split counties	county pieces	split munis	muni pieces
GovPlan	0.3808	1.6534	0.4313	0.8257	0.7834	5185	16	35	18	37
CitizensPlan	0.3785	1.6625	0.4512	0.8120	0.7725	5237	14	30	16	33
HB-2146	0.3212	1.8197	0.4087	0.7987	0.7524	5907	15	33	16	34
Carter	0.3214	1.8103	0.4499	0.7922	0.7416	5926	14	31	20	41
Gressman/GMS	0.3478	1.7351	0.4261	0.8176	0.7582	5582	15	32	16	33
HouseDemCaucus	0.2787	1.9693	0.4286	0.7717	0.7205	6853	16	34	18	37
SenateDemCaucus1	0.3147	1.8144	0.4137	0.7918	0.7519	6047	17	36	19	39
SenateDemCaucus2	0.3346	1.7478	0.4146	0.8153	0.7601	5505	16	34	16	33
Resenthaler1	0.3629	1.6859	0.4347	0.8238	0.7737	5090	13	29	16	33
Resenthaler2	0.3524	1.7127	0.4231	0.8161	0.7658	5237	13	29	16	33
CitizenVoters	0.3490	1.7133	0.4412	0.8082	0.7575	5173	14	31	16	33
VotersOfPA	0.3965	1.6069	0.4697	0.8209	0.7681	5052	15	31	18	37
KhalifAli	0.3523	1.7204	0.4448	0.8111	0.7456	5266	16	35	18	37

4. Political Subdivision Splits

CL1. As noted repeatedly throughout this opinion, a central consideration is the degree to which a proposed districting plan respects the boundaries of political subdivisions.

CL2. According to *LWV II*, when applying the Pennsylvania Constitution to a congressional districting plan, courts must look to article II, section 16, which provides that, unless necessary to ensure equality of population, the plan must not divide any “county, city, incorporated town, borough, township or ward.” Pa. Const. art. II, §16.

FF1. Although many of the experts who provided analysis of the proposed plans identified the number of political subdivision splits present in each plan, it is noteworthy that the numbers that these experts reported do not always agree.

FF2. By and large, the Parties also did not offer much in the way of evidence challenging the numbers of political subdivision splits that each Party reported with respect to its own plan, or the methodology by which the experts counted such splits.

CL3. Accordingly, in this Court’s view, the fairest way to assess the number of political subdivision splits in the proposed plans is to generally accept the figures offered by each Party’s expert with respect to that Party’s plan.

FF3. There are two caveats to this approach. First, the Court notes that the political subdivision numbers reported by Dr. Duchin and Dr. Barber are highly consistent, and have only a few small differences. (*See* Duchin Resp. Report at 2; Barber Resp. Report at 8.)

FF4. Accordingly, where a Party or *Amicus* Participant fails to identify a relevant figure, or a number is such an outlier that it strains credulity, the Court

will look to Dr. Duchin and Dr. Barber's charts and, if consistent, accept that number.

FF5. Second, numerous Parties and *Amicus* Participants did not identify the number of divided wards in their plans, or did not compare the other proposed plans on that point. Dr. DeFord, however, provided a comprehensive assessment of the ward splits in all of the proposed plans. (*See* DeFord Resp. Report at 8, 27.)

FF6. Accordingly, where a Party or *Amicus* Participant fails to identify the number of divided wards in its proposed plan, or the reported number is a significant outlier, the Court will accept the number reported by Dr. DeFord.

a. Carter Plan

FF7. The Carter Plan divides 13 counties.

FF8. It divides 19 municipalities. (Rodden Report at 21-22.)

FF9. The Carter Petitioners do not identify the number of ward divisions, but Dr. DeFord reports that the Carter Plan splits 25 wards. (DeFord Resp. Report at 8.)

b. Gressman Plan

FF10. The Gressman Plan divides 15 counties, 19 municipalities, and 15 wards. (DeFord Report at 9, 13-15, 16-17.)

c. Governor's Plan

FF11. The Governor's Plan divides 16 counties.

FF12. It further divides 18 municipalities. (Duchin Report at 8.)

FF13. The Governor does not identify the number of ward divisions, but Dr. DeFord reports that the Governor's Plan splits 25 wards. (DeFord Resp. Report at 8.)

d. HB 2146

FF14. HB 2146 divides 15 counties.

FF15. Dr. Memmi reports that HB 2146 divides 19 municipalities, but Dr. Barber reports that it divides 16. (Memmi Report at 5; Barber Report at 16.)

FF16. Dr. Duchin also reports that it divides 16 municipalities, which agrees with Dr. Barber, and this number is therefore accepted. (Duchin Resp. Report at 2.)

FF17. Dr. Memmi reports that HB 2146 divides 9 wards, but this number is a significant outlier in comparison to all other proposed plans. (Memmi Report at 5.) Dr. DeFord reports that HB 2146 divides 18 wards. (Dr. DeFord Resp. Report at 8.)

e. Senate Democratic Caucus Plan 1

FF18. The Senate Democratic Caucus 1 Plan divides 17 counties, 19 municipalities, and 18 wards. (Schoenberg Decl. ¶¶38-40.)

f. Senate Democratic Caucus Plan 2

FF19. The Senate Democratic Caucus 2 Plan divides 16 counties, 16 municipalities, and 14 wards. (Schoenberg Decl. ¶¶48-50.)

g. House Democratic Caucus Plan

FF20. The House Democratic Caucus Plan divides 16 counties, 18 municipalities, and 22 wards. (House Democratic Caucus Br., App. B (Legislative Data Processing Center Report).)

h. Resenthaler 1 Plan

FF21. The Resenthaler 1 Plan divides 13 counties, 16 municipalities, and 25 wards. (Brunell Report at 4-6.)

i. Resenthaler 2 Plan

FF22. The Resenthaler 2 Plan also divides 13 counties and 16 municipalities, but divides 24 wards. (Brunell Report at 4-6.)

j. Draw the Lines PA Plan

FF23. The Draw the Lines Plan divides 14 counties and 16 municipalities. (Villere Statement at 4.)

FF24. The Draw the Lines *Amici* do not identify the number of ward divisions, but Dr. DeFord reports that the Draw the Lines Plan splits 16 wards. (DeFord Response Report at 27.)

k. Ali Plan

FF25. The Ali *Amici*'s expert did not expressly identify the number of political subdivision splits in the Ali Plan.

FF26. The Ali *Amici*'s report 19 total splits of counties, but do not specify the number of counties that are split. (Ali Br. at 28.)

FF27. They report a remarkably high 177 municipality splits, but this is an extreme outlier. *Id.*

FF28. Dr. Duchin and Dr. Barber both report that the Ali Plan divides 16 counties and 18 municipalities, so the Court accepts these numbers instead. (Duchin Resp. Report at 2; Barber Resp. Report at 8.)

FF29. The Ali *Amici* also do not identify the number of ward divisions, but Dr. DeFord reports that the Ali Plan splits 33 wards. (DeFord Resp. Report at 27.)

l. Citizen-Voters Plan

FF30. The Citizen-Voters Plan divides 14 counties and 16 municipalities. (Citizen-Voters Br. at 2.)

FF31. The Citizen-Voters *Amici* did not include any expert report in support of their proposal; however, Dr. Duchin and Dr. Barber both report identical numbers, so they are accepted as accurate.

FF32. The Citizen-Voters *Amici* do not identify the number of ward divisions, but Dr. DeFord reports that that the Citizen-Voters Plan splits 21 wards. (DeFord Resp. Report at 27.)

m. Voters of PA Plan

FF33. The Voters of PA Plan divides 15 counties and 17 municipalities. (Trende Report at 13, 16.)

FF34. The Voters of PA *Amici* do not identify the number of ward divisions, but Dr. DeFord reports that the Voters of PA Plan splits 41 wards. (DeFord Resp. Report at 27.)

n. Summary

FF35. With these figures collected, we can begin to draw some conclusions about which proposed plans perform the best on this criterion.

FF36. The plans that split the fewest counties are: both Reschenthaler Plans, and the Carter Plan, all of which divide 13 counties; followed by the Draw the Lines Plan, which splits 14 counties.

FF37. The plans that split the fewest municipalities are: HB 2146, both Reschenthaler Plans, the Senate Democratic Caucus 2 Plan, the Draw the Lines Plan, and the Citizen-Voters Plan, all of which divide 16 municipalities.

FF38. The plans that split the fewest wards are: the Senate Democratic Caucus 2 Plan, which divides 14 wards; the Gressman Plan, which divides 15 wards, the Draw the Lines Plan, which divides 16 wards, and HB 2146, which divides 18 wards.

FF39. In total, then, the plans which divide the fewest counties, cities, incorporated towns, boroughs, townships, and wards are: the Senate Democratic Caucus 2 Plan, which divides 46; HB 2146 and the Gressman Plan, which both divide 49; the Citizen-Voters Plan, which divides 51; and the Reschenthaler 1 and 2 Plans, which divide 53 and 54, respectively.

FF40. Quite apparently, most of these plans perform quite well in terms of maintaining the boundaries of political subdivisions.

FF41. It is worth emphasizing, however, that of all the plans proposed, only the Reschenthaler Plans were able to divide only 13 counties and 16 municipalities—the lowest number in both categories.

FF42. Indeed, a number of experts testified that it is possible to create a 17-district plan that splits only 13 counties and 16 municipalities. (N.T. at 170 (testimony of Dr. Rodden), 287 (testimony of Dr. DeFord), 461 (testimony of Dr. Duchin).)

FF43. This is precisely what both Reschenthaler plans managed to do.

5. Compactness

FF1. Dr. Duchin concluded that, with respect to compactness, “the maps [submitted to the Court] are quite good across the board, but that you can still see some that are better.” (N.T. at 334:15-21.)

FF2. Dr. Duchin explained:

By far the two most compact plans, considering these metrics overall, are VotersOfPA and GovPlan. The next two, some ways behind the leaders, are Reschenthaler1 and CitizensPlan.

(Duchin Resp. Report at 2.)

FF3. We find Dr. Duchin’s opinion in this regard to be credible.

FF4. Dr. Duchin testified that Governor Wolf’s proposal to split Pittsburgh into two congressional districts actually allowed his plan to achieve higher compactness scores, specifically on the Polsby-Popper measure. (N.T. at 216-17 (testimony of Dr. DeFord), 436 (testimony of Dr. Duchin); Villere Report at 4.)

CL. This effect on compactness compromises Governor Wolf’s compactness scores and renders them not comparable to other maps which did not split Pittsburgh into two congressional districts.

6. Splitting of Pittsburgh Into Two Congressional Districts

FF1. Among the considerations addressed by the parties relating to the splitting of political subdivisions, and an important one in this Court’s view, is whether a proposed plan divides the City of Pittsburgh into multiple districts.

FF2. By all accounts, the City of Pittsburgh has remained within a single congressional district in all previous districting plans, including the existing plan enacted in 2018.

CL1. It cannot be gainsaid that, under the standards listed in the Pennsylvania Constitution and applied to congressional redistricting by our Supreme Court, boundaries such as those of City of Pittsburgh should not be divided across multiple districts unless it is *absolutely necessary* to achieve population equality. *See* Pa. Const. art. II, §16 (“Unless absolutely necessary no county, city, incorporated town, borough, township or ward shall be divided”); *LWV II*, 178 A.3d at 816-17 (congressional districts shall not “divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population”).

FF3. As Pennsylvania's second largest city, Pittsburgh is certainly an important political unit.

FF4. Despite its size, however, it is undisputed that Pittsburgh's population is not so great that it is *necessary* to divide the city into multiple congressional districts, as is the case with Philadelphia.

FF5. Philadelphia is the only municipality in the Commonwealth that is larger than a population of a single congressional district.

FF6. Thus, Philadelphia must be split into districts. *See, e.g.*, N.T. at 270 (testimony of Dr. DeFord), 524 (testimony of Dr. Barber).

FF7. The splitting of Pittsburgh, then, may achieve certain other ends, but population equality is not one. For instance, due to its irregular border, the decision to split Pittsburgh into two districts allows a plan to achieve higher compactness scores, specifically on the Polsby-Popper measure. (N.T. at 216-17 (testimony of Dr. DeFord), 436 (testimony of Dr. Duchin).)

FF8. Another end that can be achieved by splitting Pittsburgh is that it may allow a plan to use Pittsburgh's Democratic-leaning population to create two districts in the immediately surrounding area that are likely Democratic-leaning, instead of only one. (N.T. at 526-27 (testimony of Dr. Barber).)

CL2. An effort to achieve a partisan advantage through the splitting of a city is, of course, suspect. *See* Barber Report at 28 ("the true purpose served by splitting Pittsburgh in half is likely the achievement of partisan ends").

FF9. The Court further heard credible evidence which supports the conclusion that the City of Pittsburgh in many ways constitutes a community of interest, such that its division would not be in the best interest of its residents.

FF10. Dr. Naughton testified that Pittsburgh voters tend to particularly favor local candidates in statewide elections. (N.T. at 695-96.) The Court finds this testimony credible as no other party put forth any evidence that refuted the veracity of his opinion.

FF11. Moreover, City of Pittsburgh residents share common interests in a representative's advocacy for the acquisition of federal funds and the obtaining of constituent services. (N.T. at 836-37 (testimony of Dr. Naughton).) The Court finds this testimony credible as no other party put forth any evidence that refuted the veracity of his opinion.

FF12. In addition, splitting the City of Pittsburgh into two districts would create two districts in which portions of the City would be grouped with surrounding suburban areas. This could incentivize candidates and representatives to favor either parts of the City or parts of the suburbs depending upon where they believe they can get more votes, and thereby place less representational focus on the disfavored areas. (N.T. at 713-15 (testimony of Dr. Naughton).) The Court finds this testimony credible as no other party put forth any evidence that refuted the veracity of his opinion.

FF13. To the extent that the Declaration of Michael Lamb advocates for the splitting of the City of Pittsburgh into two congressional districts, this Court finds the declaration unpersuasive because it is based on Mr. Lamb's life and subjective **personal** experiences, which the Court does not find particularly useful or credible. Moreover, Mr. Lamb's was not presented as an expert and his declaration does not address why it is absolutely necessary to split the City of Pittsburgh to achieve population equality in any congressional district.

FF14. It is also notable that in *Mellow*, the City of Pittsburgh had been and was proposed by all to remain entirely within one district. *Mellow*, 607 A.2d at 223.

CL3. In light of all of these considerations, this Court concludes that the maintenance of the City of Pittsburgh within one district is an important factor, which is entitled to weight in the ultimate analysis.

FF15. The Governor's Plan, the Senate Democratic Caucus Plan 1 and Plan 2, the Draw the Lines PA Plan, and the plan submitted by Khalif Ali propose to divide the City of Pittsburgh.

FF16. None of the parties who split the City of Pittsburgh, including the Governor, presented any credible evidence as to why it was "absolutely necessary" to split the second largest city in Pennsylvania, in order to achieve equal population.

FF17. Dr. Naughton emphasized the community of interest factor and opined the City of Pittsburgh should absolutely not be split. The Court finds this testimony credible as no other party put forth any evidence that refuted the veracity of his opinion.

FF18. Without evidence substantiating the absolute necessity to split the City of Pittsburgh, the Court finds that the end that was to be achieved by doing so was to divide the City of Pittsburgh's Democratic leaning population to create two districts in the immediately surrounding area that are Democratic leaning, instead of one. *See* N.T. at 524-25 (Barber); Barber Rebuttal Report at 8, Table 1, 23.

FF19. The five plans that split the City of Pittsburgh into two congressional districts, *i.e.*, the Governor's Plan, the Senate Democratic Caucus Plan

1 and Plan 2, the Draw the Lines PA Plan, and the plan submitted by Khalif Ali, will be given less weight than the plans which did not split the City of Pittsburgh.

FF20. Although the House Democratic Caucus’s Plan keeps the City of Pittsburgh whole, it instead draws a Freddy Krueger-like claw district in Allegheny County to “grab” Pittsburgh to combine it with small Republican-leaning areas to the north.

7. Communities of Interest

The discussion of splitting Pittsburgh is an appropriate segue into the importance of considering communities of interest relationships in redistricting efforts. As the Supreme Court has recognized, “redistricting efforts may properly seek to preserve communities of interest which may not dovetail precisely with the static lines of political subdivisions.” *Holt*, 67 A.3d at 1241.

A common thread running through the Supreme Court’s opinion in *LWW II* is that, to the greatest degree practicable, a congressional redistricting plan should avoid dividing a community with shared interests and concerns.⁴⁶ In adopting these “neutral criteria,” the Supreme Court reasoned that “[t]hese standards place the greatest emphasis on creating representational districts that both maintain the

⁴⁶ Notably, *LWW II* repeatedly references the significance of communities in its analysis. 178 A.3d at 816 (“When an individual is grouped with other members of his or her community in a congressional district for purposes of voting, the commonality of the interests shared with the other voters in the community increases **the ability of the individual to elect a congressional representative for the district who reflects his or her personal preferences.**”). Moreover, in evaluating the historic underpinnings that lead to the development of the neutral criteria it prescribed, the Court emphasized that the Free and Equal Elections Clause, in its original form, provided that “all elections ought to be free; and that all free men **having a sufficient evident common interest with, and attachment to the community**, have a right to elect officers, or to be elected into office.” *Id.* (quoting Pa. Const. of 1776, art. I, § VII) (emphasis added).

geographical and social cohesion of the communities in which people live and conduct the majority of their day-to-day affairs[.]” *LWW II*, 178 A.3d at 814.

Accordingly, although compactness, contiguity, and respect for municipal boundaries are undoubtedly the primary tool for evaluating the constitutionality of a redistricting plan, we understand these principles serve to advance the Free and Equal Elections Clause’s overarching goal of protecting the interest of communities. In many ways, redistricting’s most basic objective is to provide communities with adequate representation. As Dr. Naughton credibly testified, this is accomplished by joining communities that share one or more substantial interests that may be the subject of state legislative action. **Indeed, “[t]o be an effective representative, a legislator must represent a district that has a reasonable homogeneity of needs and interests; otherwise the policies he supports will not represent the preferences of most of his constituents.”** *Prosser v. Elections Board*, 793 F. Supp. 859, 863 (W.D. Wis. 1992) (emphasis added); *see also Hall v. Moreno*, 270 P.3d 961, 971 (Colo. 2012) (“**if an important issue is divided across multiple districts, it is likely to receive diffuse and unfocused attention from the multiple representatives it affects, as each is pulled in other directions by the many other issues confronting their districts. However, if a discrete and unique issue is placed in one district, that representative may familiarize herself with the complexities of the issue and the stakeholders it affects.**”).

The term “communities of interest” encompasses “school districts, religious communities, ethnic communities, geographic communities which share common bonds due to locations of rivers, mountains and highways[.]” *Holt I*, 38 A.3d at 746. In *Mellow*, the Court considered a community’s “circulation arteries,

its common news media . . . , its organization and cultural ties[,]” its “common economic base[,]” and the relationship among “schools of higher education as well as others.” 607 A.2d at 220-21. “The matching of interests and representation allows voters with shared interests to have a voice in the legislature that is roughly correlated to their numbers.” Stephen J. Malone, *Recognizing Communities of Interest in a Legislative Apportionment Plan*, 83 VA.L.REV. 461, 465-66 (1997). *See also* Michael Li, Yuriy Rudensky, *Rethinking the Redistricting Toolbox*, 62 How. L.J. 713, 732 (2019) (a communities of interest analysis when, “[w]ielded well,” can be “powerful in enhancing representation”).

FF1. Not all Parties provided the Court with evidence or expert opinion on how their plans maintain the contiguity of communities that share similar interests.

FF2. The Congressional Intervenors have provided the Court with an expert opinion of Dr. Naughton about how the Reschenthaler 1 and 2 Plans endeavored to keep people with common interests together when considering where to draw the congressional district lines.

FF3. The Court finds Dr. Naughton’s testimony, as it pertains to the importance of keeping of community interests together is based on his professional and personal experience, to be credible as no other party put forth any evidence or expert opinion that refuted the veracity of Dr. Naughton’s opinion.

FF4. Dr. Naughton’s opinions reflect his established and comprehensive knowledge of the communities of interest factor, as it pertains to the political and geographic population and voting tendencies of the people of the Commonwealth upon which he opined, and no other party put forth any evidence or

expert opinion that refuted the veracity of Dr. Naughton's opinions and they are consistent with the opinions of Dr. Duchin.

FF5. Dr. Naughton testified that the City of Pittsburgh, and its various communities, are best served by keeping the City within one congressional district. (N.T. at 712-15.) The Court finds this testimony credible as no other party put forth any evidence or expert opinion that refuted the veracity of Dr. Naughton's opinion.

FF6. Like Dr. Naughton, Dr. Duchin recognized the significance of communities in her redistricting analysis. Dr. Duchin credibly described, with respect to communities of interest, that the fundamental concept is that there is value to maintaining "geographical areas where the residents **have shared interests that are relevant to their representation**. . . . [T]his could be shared history, shared economics, shared culture, many other examples." (N.T. at 342-43) (emphasis added).

FF7. We find Dr. Duchin's testimony about the importance of considering Pennsylvania's communities when redistricting to be credible as it is consistent with Dr. Naughton's opinions and no other party refuted or challenged the veracity of Dr. Duchin's opinion.

FF8. In the Court's careful review of the evidence presented, the Gressman Petitioners did not establish that they considered community interests when deciding to erect boundary lines across the Commonwealth, which is an important factor in the Court's assessment of the evidence.

FF9. Having heard and reviewed the various experts' testimony and reports in this case, the Court has credited the generally accepted proposition that the division of counties and municipalities is not simply a metric that depends solely on mathematical calculation and a numerical result, because many variables are at

play and can be altered or otherwise manipulated in the overall calculus, individually or collectively.

FF10. At the hearing, the Gressman Petitioners' expert, Dr. DeFord, confirmed that he did not consider communities of interest when splitting counties and municipalities to compose the map's districts, and he specifically admitted that he did not conduct "any analysis with respect to the communities of interest related to the City of Pittsburgh." (N.T. at 314-315, 318-22.) In this regard, the Court finds Dr. DeFord's methodology should be given less weight.

FF11. The Citizen Voters did not provide an expert report to support their map. Consequently, the Court received no expert testimonial or written explanation concerning why the map drew the lines in the particular manner that it did and, perhaps, more importantly, to demonstrate why the divides in the maps were absolutely necessary to achieve population equality as opposed to some other secondary or impermissible goal. There was no discussion or evidence whatsoever presented by Citizen Voters that their district lines preserved communities of interests. Left with this evidentiary mode of speculation, the Court provides little to no weight to the map submitted by the Citizen Voters.

FF12. With regard to the Carter Petitioners, their expert, Dr. Rodden, although utilizing a "least change" approach to redistricting, which is discussed more fully below, did not explicitly examine or appear to have considered the specific considerations that need to be taken into account when establishing that splits maintain the surrounding communities of interest.

FF13. To the extent the Carter Petitioners try to equate a "least change" analysis to a community of interest analysis, *see* Carter's Br. at 12, the Court disagrees, because the "least change" method focuses on the preexisting status of a

map's boundary lines, and Dr. Rodden admitted in his report and testimony that, in the past 10 years, there has been dramatic population shifts in Pennsylvania and fluctuating levels of density in specific areas throughout the Commonwealth, which presumably would have resulted in differing communities of interest. *See* Rodden Report at 6-10; N.T. at 85-87, 115-17. *See also* discussion *infra* on the “least change” doctrine.

FF14. In his map details online, the Governor included a statement of the communities of interest he considered when considering where to draw the congressional district lines. *See* <https://www.governor.pa.gov/congressional-districts-map-proposals>.

FF15. Dr. Naughton testified that Bucks County should not be split into districts but should be entirely within one district and that Bucks County has been wholly contained within a single district for decades. (N.T. at 715-16; Dr. Naughton Report at 7) (opining that “[t]he right Bucks County district would have Bucks in its entirety.”). The Court finds this testimony credible as no other party put forth any evidence or expert opinion that refuted the veracity of his opinion.

FF16. Regarding whether to combine Philadelphia's surplus population with Bucks County, Dr. Naughton testified that the communities in Bucks County are more similar to those in Montgomery County, and thus Bucks County should add population by extending the district line into Montgomery County, rather than Philadelphia County. *Id.* Dr. Naughton testified in this regard as follows:

Q. Next split, Philadelphia and Bucks County. Talk to us about what you think should be done in Philadelphia and Bucks County.

A. Bucks County should absolutely not be combined with the city. **The right Bucks County district would have Bucks in its entirety and then move into Montgomery County, as they've done for decades as they're used to, as they have common interests.** I mean, **that border between Bensalem and Philadelphia**, you know, you don't know if you haven't been there. If you -- - you know, **if you walk across that line, you know you're in Bucks County. You know it. It is --- those are two different places.** And Bucks, even though it is a diverse place and there's diversity between lower Bucks and upper Bucks, it's used to being together. They work together. They like being a unit. They don't want to be part of the city. I guarantee you that.

(N.T. at 715-16) (emphasis). The Court finds this testimony credible as no other party put forth any evidence or expert opinion that refuted the veracity of Dr. Naughton's opinion.

FF17. In his expert report, Dr. Naughton further opines with respect to Bucks County and Philadelphia's surplus population:

Historically, municipalities in eastern Montgomery County have been attached to Bucks. These are highly similar communities to their Bucks neighbors in demography, economics and land use. Commercial and commuting flow easily across this boundary. Both Counties have robust open space programs.

Attaching the lower Bucks communities to Philadelphia would render these communities "orphans" from an interest and advocacy standpoint. I would go as far to say they could essentially lose representation. And I repeat, the separation of Bensalem and, in one map adjacent lower Bucks municipalities, is entirely unnecessary. Note that equally unfair is a map that is based in Bucks and draws in a portion of northeast Philadelphia – which would, in my

opinion, “orphan” the residents of the city and dilute the city’s political influence.

(Dr. Naughton Report at 7-8.) The Court finds this testimony credible as no other party put forth any evidence or expert opinion that refuted the veracity of his opinion.

FF18. Dr. Naughton opined that Philadelphia’s surplus population would be best combined with a district with maximum commonality – that is, with common interests with Philadelphia, such as use of public transit, recipient of federal transfer payments and common commercial and industrial interests. It for that reason, Dr. Naughton concluded that the most sensible plan would attach surplus Philadelphia residences to Delaware County. (Dr. Naughton Report at 7.) The Court finds this testimony credible as no other party put forth any evidence that refuted the veracity of his opinion.

FF19. Dr. Naughton testified that Delaware County and Philadelphia County share similar communities of interest along their border, and that a map connecting them was ideal. (N.T. at 786, 840-41.) The Court finds this testimony credible as no other party put forth any evidence or expert opinion that refuted the veracity of Dr. Naughton’s opinion.

FF20. Dr. Naughton explained credibly that Philadelphia County should extend into Delaware County to obtain additional population because the communities along the Philadelphia and Delaware County borders have similar needs. (N.T. at 786, 840.)

FF21. This Court finds this is important because, as Dr. Naughton credibly explained, a great deal of federal funding flows through county government. (N.T. at 783-84.)

FF22. Contrary to Dr. Naughton's recommendation, Governor Wolf's Plan splits Bucks County. *See* <https://www.governor.pa.gov/congressional-districts-map-proposals>.

FF23. Consistent with Dr. Naughton's recommendation, HB2146 does not split Bucks County. *See* <https://www.legis.state.pa.us/CFDOCS/Legis/PN/Public/btCheck.cfm?txtType=PDF&sessYr=2021&sessInd=0&billBody=H&billTyp=B&billNbr=2146&pn=2541>.

FF24. Contrary to the recommendation of Dr. Naughton, the Governor's Plan connects Philadelphia's surplus population to the southern Bucks County/Bensalem area. *See* <https://www.governor.pa.gov/congressional-districts-map-proposals>.

FF25. Consistent with Dr. Naughton's' recommendation, HB 2146 does not connect Philadelphia's surplus population to Bucks County. <https://www.legis.state.pa.us/CFDOCS/Legis/PN/Public/btCheck.cfm?txtType=PDF&sessYr=2021&sessInd=0&billBody=H&billTyp=B&billNbr=2146&pn=2541>.

FF26. Consistent with Dr. Naughton's recommendation, HB 4126 connects Philadelphia's surplus population with Delaware County. <https://www.legis.state.pa.us/CFDOCS/Legis/PN/Public/btCheck.cfm?txtType=PDF&sessYr=2021&sessInd=0&billBody=H&billTyp=B&billNbr=2146&pn=2541>.

FF27. The Court finds Dr. Naughton's testimony, as it pertains to the splitting of City of Pittsburgh and Bucks County, the treatment of the surplus of population from Philadelphia, and the importance of protecting communities of interest, to be credible based on his professional and personal experience.

FF28. Dr. Naughton's opinions in this regard reflect his established and credible knowledge of the communities of interest factor, as it pertains to the

political and geographic population and voting tendencies of the people of the Commonwealth upon which he opined and no other party put forth any evidence or expert opinion that refuted the veracity of Dr. Naughton's opinions.

B. Extra-Constitutional Considerations

There was considerable evidence presented regarding the “competitiveness” or “partisan fairness” of the plans. Our inquiry into these subordinate considerations is strictly circumscribed. Specifically, while the Supreme Court in *LWV II* “recognize[d] that other factors have historically played a role in the drawing of legislative districts, such as the preservation of prior district lines, protection of incumbents, or the maintenance of the political balance which existed after the prior reapportionment[,]” it cautioned that it “view[s] these factors to be wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts.” 178 A.3d at 817.

As the Supreme Court stated in *LWV II*, meeting the floor of the Free and Equal Elections Clause traditional criteria, “is not the exclusive means by which a violation of article I, section 5 may be established.” *Id.* The Court repeatedly emphasized that the overarching objective of this provision of our constitution “is to prevent dilution of an individual’s vote by mandating that the power of his or her vote in the selection of representatives be equalized to the greatest degree possible with all other Pennsylvania citizens.” *Id.* In *LWV II*, the Supreme Court noted that there exists the possibility that advances in map drawing technology and analytical software can potentially allow mapmakers to engineer congressional districting maps, which although minimally comporting with this neutral “floor” criteria

nonetheless unfairly dilute the power of a particular group's vote for a congressional representative. *Id.*

1. Partisan Fairness

a. Political Geography

In *LWV II*, Dr. Chen addressed the impact of the structural or political geography of Pennsylvania upon the measures of partisan bias and considered the impact of Pennsylvania's political geography on the 2011 Plan. Dr. Chen explained that he measured the partisan bias of the 2011 Plan by utilizing a common scientific measurement referred to as the mean-median gap. *LWV II*, 178 A.3d at 774. As the Supreme Court stated, "Dr. Chen recognized that 'Republicans clearly enjoy a small natural geographic advantage in Pennsylvania because of the way that Democratic voters are clustered and Republican voters are a bit more spread out across different geographies of Pennsylvania.'" *Id.* at 774.

FF1. Democratic voters in Pennsylvania are clustered in cities and urban areas, but Republican voters are more evenly distributed in rural areas.

FF2. Based upon the evidence credited, the Court finds that Pennsylvania's unique "political geography" affects the analysis of partisan advantage in any proposed map.

FF3. In a 2013 article authored by Dr. Rodden regarding unintentional gerrymandering, his results "illustrate[d] a strong relationship between the geographic concentration of Democratic voters and electoral bias favoring Republicans." (N.T. at 178-80.) The Court finds the article be credible as no other party put forth any evidence that refuted the veracity of his opinions therein.

FF4. To overcome this natural geographic disadvantage, "Democrats would need a redistricting process that intentionally carved up large cities like pizza

slices or spokes of a wheel, so as to combine some very Democratic urban neighborhoods with some Republican exurbs in an effort to spread Democrats more efficiently across districts.” (House Republican Intervenors’ Br. at 23, n.20 (quoting Barber Report at 10 (quoting Jonathan A. Rodden, *Why Cities Lose: The Deep Roots of the Urban-Rural Political Divide*, at 155 (Basic Books 2019))).)

FF5. Dr. Rodden also concluded in this article that “proving such intent in court will be difficult in states where equally egregious electoral bias can emerge purely from human geography.” (N.T. at 181.)

FF6. Dr. Rodden believes these statements to be true today about Pennsylvania. (N.T. at 181.) The Court finds this opinion to be credible as no other party put forth any evidence that refuted the veracity of his opinion.

FF7. The Gressman Petitioners’ expert, Dr. DeFord, credibly concurred, opining that there is a “partisan advantage to Republicans based on the political geography of the state[,]” so it is “not necessarily a surprise to see a slight tilt favoring Republicans” on the metrics he used. (Dr. DeFord Report ¶104; N.T. at 291.) The Court finds this opinion to be credible as no other party put forth any evidence that refuted the veracity of his opinion, and in fact all parties agreed that the political geography of Pennsylvania favors Republicans.

FF8. Analyzing the 2020 presidential election, Dr. DeFord credibly found that “there is not a part of the state where Republican voters are as heavily concentrated as Democratic voters are in the Philadelphia and Pittsburgh areas.” (Dr. DeFord Report ¶104; N.T. at 291-92.) The Court finds this opinion to be credible as no other party put forth any evidence or expert opinion that refuted the veracity of his opinion.

FF9. The Court finds that Dr. Duchin’s report compellingly demonstrates the partisan political geography of the Commonwealth.

FF10. In her expert report, Dr. Duchin credibly found that 100,000 randomly drawn districting plans “tend[ed] to exhibit pronounced advantage to Republicans across this full suite of recent elections.” (Duchin Report at 18.) Dr. Duchin further found in metrics from the partisan symmetry family, including the mean-median score, “random plans favor Republicans,” while the Governor’s Plan “temper[s] that tendency.” (Duchin Report at 19.)

b. Simulations

FF1. One way to evaluate partisan fairness of a map is by comparing it to a set of simulated maps that follow only traditional criteria. *See generally LWW II.*

FF2. This set of simulated districts is helpful because it provides a set of maps to which one can compare the proposed map that also accounts for the geographic distribution of voters in the state.

FF3. Because voters are not distributed evenly across Pennsylvania, one cannot evaluate the fairness of a proposed plan with an apples-to-apples comparison. In other words, if a plan is not evaluated against a non-partisan set of maps, the potential issues or red flags in the maps may not at all be due to partisan gerrymandering, but rather the geographic distribution of the voters in the state. (Barber Report at 11.)

FF4. Dr. Barber conducted a simulation analysis that compared proposed maps with a set of 50,000 simulated maps, a common practice in redistricting and redistricting litigation. (Barber Report at 11-12; N.T. at 352.)

FF5. Dr. Barber identified the methodology for the algorithmic creation of simulated maps in his reports. (N.T. at 350-52.)

FF6. The parameters of the simulation analysis conducted by Dr. Barber included only the traditional redistricting criteria, not partisan data. (N.T. at 350.)

FF7. The simulation analysis performed by Dr. Barber demonstrates that HB 2146 is predicted to result in nine Democratic-leaning seats and eight Republican-leaning seats using an index of statewide elections from 2012-2020, whereas the most likely outcome in his 50,000 simulated maps, created without using partisan data, is eight Democratic-leaning seats and nine Republican-leaning seats.

FF8. The Court credits the opinions and methodology of Dr. Barber, an associate professor of political science at Brigham Young University and faculty fellow at the Center for the Study of Elections and Democracy in Provo, Utah, who received his PhD in political science from Princeton University in 2014 with emphasis in American politics and quantitative methods/statistical analyses.

FF9. Dr. Barber's dissertation was awarded the 2014 Carl Albert Award for best dissertation in the area of American Politics by the American Political science Association.

FF10. Dr. Barber teaches a number of undergraduate courses in American politics and quantitative research methods, including political representation, Congressional elections, statistical methods and research design.

FF11. Dr. Barber served as an expert in a number of cases relating to redistricting and election issues where he was asked to analyze and evaluate various political and elections related data and statistical methods.

FF12. Dr. Barber has conducted research on a variety of election and voting related topics, including advanced statistical methods for the analysis of quantitative data.

FF13. Dr. Barber has published nearly 20 peer-reviewed articles, including in the *American Political Science Review*.

c. Mean-Median Scores

In *LWV II*, Dr. Chen observed that the range of the mean/median gaps created in any of the Simulated Set 1 plans was between “a little over 0 percent to the vast majority of them being under 3 percent,” with a maximum of 4 percent. *Id.* at 262-63. Dr. Chen further explained that this a “normal range,” and that a 6% gap “is a statistically extreme outcome that cannot be explained by voter geography or traditional redistricting principles alone.” *LWV Trial*, 12/11/17, at 263-64, N.T.

FF1. In computing mean-median values, the experts provide varying numbers, although most are within the variation that Dr. Chen described as normal in *LWV II*. *See LWV II*, 178 A.3d at 774 (Dr. Chen noting that the normal range of the mean-median gap is 0-4%, or 0.04).

FF2. Not all of the experts state which election data they used to compute their partisan metrics, such as mean-median scores and efficiency gaps. However, even where the experts do so specify, the expert data used varies significantly from expert to expert.

FF3. Dr. Rodden (for the Carter Petitioners) used only certain years and select races identified as the 2012 Presidential, Senate, Attorney General, Auditor General, and Treasurer races; the 2014 Governor race; the 2016 Presidential, Senate, Attorney General, Auditor General, and Treasurer races; the 2018 Senate

and Governor races; and the 2020 Presidential, Attorney General, 2020 Auditor General, and Treasurer races. (Rodden Report at 3-4.)

FF4. Dr. DeFord (for the Gressman Petitioners) used statewide election data from all races, including Lieutenant Governor and Supreme Court, from 2012-2020. However, for one of his measures that he calls majority-responsiveness, Dr. DeFord does not include Lieutenant Governor information. (DeFord Response Report, Appendix B.)

FF5. Dr. Duchin (for the Governor) does not specify precisely what elections she used; however, it appears from the charts in her report that she potentially used the 2014 Governor race; the 2016 Presidential, Senate, Attorney General, Auditor, and Treasurer races; the 2018 Governor and Senate races; and the 2020 Presidential, Attorney General, Auditor General, and Treasurer races. (Duchin Report at 18-19.)

FF6. Dr. Barber (for the Republican Legislators) used 50,000 simulated models to compare data and used data from statewide races from 2012-2020. (Barber Report at 6.)

FF7. Dr. Caughey (for the Senate Democratic Caucus) used the partisan bias factors and data from the PlanScore website, which he describes as using the 2020 Presidential election as a baseline. (Caughey Report at 2.) Additional details concerning PlanScore's methodology may be found at <https://planscore.campaignlegal.org/models/data/2020/> (last visited February 4, 2020).

FF8. Dr. Brunell (for Congressional Intervenors) used all Presidential, Senate, and Governor races from 2012-2020. (Brunell Report at 9.)

FF9. Sean Trende states that he used data obtained from Redistricting Data Hub, but he does not specify the years or elections used. (Trende Report at 7-8.)

FF10. The following figures are taken from the expert reports of Dr. Rodden, Dr. DeFord, Dr. Duchin, Dr. Barber, Dr. Caughey, Dr. Brunell, and Sean Trende. (See Rodden Resp. Report at 11; DeFord Resp. Report at 15, 33; Duchin Resp. Report at 4; Barber Resp. Report at 21; Caughey Resp. Report at 22; Brunell Report at 9; Trende Report at 24.)

i. Carter Plan

FF11. For the Carter Plan, Dr. Barber reports a mean-median difference of -0.006 (-0.6%), favoring Republicans. Dr. DeFord reports -0.016 (1.6%), favoring Republicans. Dr. Rodden reports 0.005 (0.5%) (party advantage unspecified). Dr. Duchin reports -0.113 (-11.3%), favoring Republicans.

ii. Gressman Plan

FF12. For the Gressman Plan, Dr. Barber reports a mean-median difference of 0.014 (1.4%), favoring Democrats. Dr. DeFord reports -0.008 (-0.08%), favoring Republicans. Dr. Rodden reports 0.005 (0.5%) (party advantage unspecified). Dr. Duchin reports -0.0385 (-3.85%), favoring Republicans.

iii. Governor's Plan

FF13. For the Governor's Plan, Dr. Barber reports a mean-median difference of -0.0004 (-0.04%), favoring Republicans. Dr. DeFord reports -0.010 (-1%), favoring Republicans. Dr. Rodden reports 0.006 (0.6%) (party advantage unspecified). Dr. Duchin reports -0.0077 (0.77%), favoring Republicans. Dr. Caughey reports 0.01 (1%), favoring Republicans. Mr. Trende reports -0.011 (-

1.1%) based on 2020 elections, and 0.003 (0.3%) based on 2016-2020 elections (party advantage unspecified).

iv. HB 2146

FF14. For HB2146, Dr. Barber reports a mean-median difference of -0.015 (-1.5%), favoring Republicans, which he explains “is more favorable to Democrats than 85% of the plans in his simulations.” *See* Barber Report at 21. Dr. DeFord reports -0.029 (-2.9%), favoring Republicans. Dr. Rodden reports 0.024 (2.4%). Dr. Rodden specified that this figure favors Republicans. (Rodden Resp. Report at 10.) Dr. Duchin reports -0.2927 (-29.27%), favoring Republicans. Dr. Caughey reports 0.023% (2.3%), favoring Republicans.

v. Senate Democratic Caucus 1 Plan

FF15. For the Senate Democratic Caucus 1 Plan, Dr. Barber reports a mean-median difference of -0.005 (-0.5%), favoring Republicans. Dr. DeFord reports -0.019 (-1.9%), favoring Republicans. Dr. Rodden reports 0.007 (0.7%) (party advantage unspecified). Dr. Duchin reports -0.1382 (-13.82%), favoring Republicans. Dr. Caughey reports 0.007 (0.7%), favoring Republicans.

vi. Senate Democratic Caucus 2 Plan

FF16. For the Senate Democratic Caucus 2 Plan, Dr. Barber reports a mean-median difference of -0.0003 (-0.03%), favoring Republicans. Dr. DeFord reports -0.003 (-0.3%), favoring Republicans. Dr. Rodden reports 0.007 (0.7%) (party advantage unspecified). Dr. Duchin reports 0.0106 (1.06%), favoring Democrats.

Dr. Caughey reports 0.005 (0.5%), favoring Republicans.

vii. House Democratic Caucus Plan

FF17. For the House Democratic Caucus Plan, Dr. Barber reports a mean-median difference of 0.007 (0.7%), favoring Democrats. Dr. DeFord reports -0.009 (-0.9%), favoring Republicans. Dr. Rodden reports 0.004 (0.4%) (party advantage unspecified). Dr. Duchin reports -0.0071 (-0.71%), favoring Republicans.

viii. Resenthaler 1 Plan

FF18. For the Resenthaler 1 Plan, Dr. Barber reports a mean-median difference of -0.021 (-2.1%), favoring Republicans. Dr. DeFord reports -0.027 (-2.7%), favoring Republicans. Dr. Rodden reports 0.01 (1%). Dr. Rodden specified that this figure favors Republicans. (Rodden Resp. Report at 10.) Dr. Duchin reports -0.2524 (-25.24%), favoring Republicans. Dr. Brunell reports 0.0186 (1.6%), favoring Republicans.

ix. Resenthaler 2 Plan

FF19. For the Resenthaler 2 Plan, Dr. Barber reports a mean-median difference of -0.022 (-2.2%), favoring Republicans. Dr. DeFord reports -0.026 (-2.6%), favoring Republicans. Dr. Rodden reports 0.01 (1%). Dr. Rodden specified that this figure favors Republicans. (Rodden Resp. Report at 10.) Dr. Duchin reports -0.2534 (-25.34%), favoring Republicans. Dr. Caughey reports 0.024 (2.4%), favoring Republicans. Dr. Caughey noted that he reviewed the Resenthaler 2 Plan, rather than the Resenthaler 1 Plan, because it was the only one that was provided to him. (N.T. at 897-98.) Dr. Brunell reports 0.0189 (1.89%), favoring Republicans.

x. Draw the Lines Plan

FF20. For the Draw the Lines Plan, Dr. Barber reports a mean-median difference of -0.006 (-0.6%), favoring Republicans. Dr. DeFord reports -0.012 (-

1.2%), favoring Republicans. Dr. Rodden reports 0.006 (0.6%) (party advantage unspecified). Dr. Duchin reports -0.1042 (-10.42%), favoring Republicans.

xi. Ali Plan

FF21. For the Ali Plan, Dr. Barber reports a mean-median difference of -0.012 (-1.2%), favoring Republicans. Dr. DeFord reports -0.018 (-1.8%), favoring Republicans. Dr. Rodden reports 0.004 (0.4%) (party advantage unspecified). Dr. Duchin reports -0.1209 (-12.09%), favoring Republicans.

xii. Citizen-Voters Plan

FF22. For the Citizen-Voters Plan, Dr. Barber reports a mean-median difference of -0.013 (-1.3%), favoring Republicans. Dr. DeFord reports -0.02 (-2%), favoring Republicans. Dr. Rodden reports 0.014 (1.4%) (party advantage unspecified). Dr. Duchin reports -0.1847 (-18.47%), favoring Republicans.

xiii. Voters of PA Plan

FF23. For the Voters of PA Plan, Dr. Barber reports a mean-median difference of -0.012 (-1.2%), favoring Republicans. Dr. DeFord reports -0.027 (-2.7%), favoring Republicans. Dr. Rodden reports 0.026 (2.6%). Dr. Rodden specified that this figure favors Republicans. (Rodden Resp. Report at 10.) Dr. Duchin reports -0.2734 (-27.34%), favoring Republicans. Mr. Trende reports 0.020 (2%) based on all statewide 2020 elections, and 0.022 (2.2%) based on all statewide 2016-2020 elections (party advantage unspecified).

FF24. As Dr. Chen stated in *LWW II*, mean-median values should fall within 0-3% due to the political geography of the Commonwealth favoring Republicans. All of the maps do so here.

FF25. The slight deviations from map to map, all within a few percentage points is not significant to disregard any particular map because it has an overly partisan mean-median calculation.

FF26. Dr. Duchin's mean-median numbers for HB 2146, Reschenthaler Plan 1, Reschenthaler Plan 2, Citizen Voters Plan, Voters of PA Plan, and Senate Democratic Caucus Plan 1 are such extreme outliers that the Court finds them to be not credible. As such none of Dr. Duchin's numbers in the mean-median metric can be considered.

2. Efficiency Gap

FF1. Like the mean-median values, the experts provide a range of numbers relating to the efficiency gap for the various plans, although most likewise fall within the variation that Dr. Warshaw described as normal in *LWV II*. See *LWV II*, 178 A.3d at 777 (Dr. Warshaw noting that the range of efficiency gaps is between -20% and +20% over 96% of the time, and between -10% and +10% approximately 75% of the time).

FF2. The data sets identified above with respect to mean-median values are the same data sets the experts used in reporting efficiency gap figures.

FF3. The following figures are taken from the expert reports of Dr. DeFord, Dr. Duchin, Dr. Barber, Dr. Caughey, and Sean Trende. (See DeFord Resp. Report at 15, 34; Duchin Response Report at 4; Barber Response Report at 21; Caughey Resp. Report at 22; Trende Report at 24.)

a. Carter Plan

FF4. For the Carter Plan, Dr. Barber reports an efficiency gap of 0.034 (3.4%), favoring Democrats. Dr. DeFord reports -0.004 (-0.4%), favoring Republicans. Dr. Duchin reports -0.0058 (-0.58%), favoring Republicans.

b. Gressman Plan

FF5. For the Gressman Plan, Dr. Barber reports an efficiency gap of 0.034 (3.4%), favoring Democrats. Dr. DeFord reports 0.008 (0.8%), favoring Democrats. Dr. Duchin reports 0.1394 (13.94%), favoring Democrats.

c. Governor's Plan

FF6. For the Governor's Plan, Dr. Barber reports an efficiency gap of 0.034 (3.4%) favoring Democrats. Dr. DeFord reports 0.006 (0.6%), favoring Democrats. Dr. Duchin reports 0.1007 (10.07%), favoring Democrats. Dr. Caughey reports 0.035, (3.5%), favoring Republicans. Mr. Trende reports -0.035 (-3.5%) based on all statewide 2020 elections, and -0.010 (-1.0%) based on all statewide 2016-2020 elections (party advantage unspecified).

d. HB 2146

FF7. For HB 2146, Dr. Barber reports an efficiency gap of -0.025 (-2.5%), favoring Republicans. Dr. DeFord reports -0.063 (-6.3%), favoring Republicans. Dr. Duchin reports -0.8336 (-83.36%), favoring Republicans. Dr. Caughey reports 0.066 (6.6%), favoring Republicans.

e. Senate Democratic Caucus 1 Plan

FF8. For the Senate Democratic Caucus 1 Plan, Dr. Barber reports an efficiency gap of -0.025 (-2.5%), favoring Republicans. Dr. DeFord reports -0.025 (-2.5%), favoring Republicans. Dr. Duchin reports -0.2601 (-26.01%), favoring Republicans. Dr. Caughey reports 0.023 (2.3%), favoring Republicans.

f. Senate Democratic Caucus 2 Plan

FF9. For the Senate Democratic Caucus 2 Plan, Dr. Barber reports an efficiency gap of 0.034 (3.4%), favoring Democrats. Dr. DeFord reports 0.010

(1%), favoring Democrats. Dr. Duchin reports 0.1221 (12.21%), favoring Democrats. Dr. Caughey reports 0.024 (2.4%), favoring Republicans.

g. House Democratic Caucus Plan

FF10. For the House Democratic Caucus Plan, Dr. Barber reports an efficiency gap of 0.093 (9.3%), favoring Democrats. Dr. DeFord reports 0.033 (3.3%), favoring Democrats. Dr. Duchin reports 0.1814 (18.14%), favoring Democrats.

h. Resenthaler 1 Plan

FF11. For the Resenthaler 1 Plan, Dr. Barber reports an efficiency gap of -0.025 (-2.5%), favoring Republicans. Dr. DeFord reports -0.078 (-7.8%), favoring Republicans. Dr. Duchin reports -1.1024 (-110.24%), favoring Republicans.

i. Resenthaler 2 Plan

FF12. For the Resenthaler 2 Plan, Dr. Barber reports an efficiency gap of -0.025 (-2.5%), favoring Republicans. Dr. DeFord reports -0.078 (-7.8%), favoring Republicans. Dr. Duchin reports -1.1042 (-110.42%), favoring Republicans. Dr. Caughey reports 0.063 (6.3%), favoring Republicans. Dr. Caughey noted that he reviewed the Resenthaler 2 Plan, rather than the Resenthaler 1 Plan, because it was the only one that was provided to him. (N.T. at 897-98.)

j. Draw the Lines Plan

FF13. For the Draw the Lines Plan, Dr. Barber reports an efficiency gap of 0.034 (3.4%), favoring Democrats. Dr. DeFord reports -0.016 (-1.6%), favoring Republicans. Dr. Duchin reports -0.1678 (-16.78%), favoring Republicans.

k. Ali Plan

FF14. For the Ali Plan, Dr. Barber reports an efficiency gap of 0.034 (3.4%), favoring Democrats. Dr. DeFord reports -0.027 (-2.7%), favoring Republicans. Dr. Duchin reports -0.3166 (-31.66%), favoring Republicans.

l. Citizen-Voters Plan

FF15. For the Citizen-Voters Plan, Dr. Barber reports an efficiency gap of 0.034 (3.4%), favoring Democrats. Dr. DeFord reports -0.026 (-2.6%), favoring Republicans. Dr. Duchin reports -0.4074 (-40.74%), favoring Republicans.

m. Voters of PA Plan

FF16. For the Voters of PA Plan, Dr. Barber reports an efficiency gap of -0.025 (-2.5%), favoring Republicans. Dr. DeFord reports -0.048 (-4.8%), favoring Republicans. Dr. Duchin reports -0.5658 (-56.58%), favoring Republicans. Mr. Trende reports 0.030 (3%) based on all statewide 2020 elections, and 0.056 (5.6%) based on all statewide 2016-2020 elections (party advantage unspecified).

FF17. Although the majority of these figures are within a relatively consistent range, the Court notes that Dr. Duchin's reported efficiency gap numbers are extreme outliers, and so far exceed the figures reported by all other experts that the Court does not find them credible and, therefore, the Court cannot consider any of the numbers she submitted in this metric.

FF18. Dr. Warshaw noted in *LWV II* that 75% of the time, efficiency gap falls between -10% and 10%. Dr. Warshaw stated that the efficiency gap should be fairly close to zero. *LWV II*, 178 A.3d at 777. No map has an efficiency gap over 10%.

FF19. Therefore, all of the maps are within a reasonable and acceptable range.

FF20. We also consider Dr. Barber's calculation in determining what is a fair map.

FF21. Dr. Barber compared his calculations in percentiles for where these maps were in relation to his 50,000 simulated maps.

FF22. All of the maps, according to Dr. Barber, are at least 54% more favorable to Democrats than the simulated maps he calculated. (Barber Report at 21.) The Court finds this opinion credible because we find he used commonly used measures of redistricting fairness.

FF23. According to Dr. Barber, the map proposed by the House Democratic Caucus has a more favorable efficiency gap outcome for Democrats than 100% of his simulated maps. (Barber Report at 21.) The Court finds this opinion credible because Dr. Barber used commonly used measures of measuring redistricting fairness.

3. **Other Partisan Considerations**

a. **Proportionality Is Not a Requirement or Goal of Redistricting**

As clearly stated by the Pennsylvania Supreme Court, in analyzing constitutional criteria for legislative redistricting, “[t]he constitutional reapportionment scheme does not impose a requirement of balancing the representation of the political parties; it does not protect the ‘integrity’ of any party’s political expectations. Rather, the construct speaks of the ‘integrity’ of political subdivisions, which bespeaks history and geography, not party affiliation or expectations.” *Holt I*, 67 A.3d at 1235-36.

Neutral criteria explicitly provided for by the Constitution cannot be subordinated to partisan concerns or considerations. *See Holt I*, 67 A.3d at 1239; *see also LWV II*, 178 A.3d at 816-17. A plan which prioritizes the neutral criteria incorporated by *LWV II* from the Pennsylvania Constitution—equal population, compactness, and avoidance of county, municipality, and ward splits unless absolutely necessary—might not result in a proportional congressional delegation due to the spatial dispersion of the political groups throughout the state. (Rodden Report at 9; Barber Report at 5-8, N.T. at 506-10, 627-28; Duchin testimony, N.T. at 441-42 (“in Pennsylvania, there is a structural advantage towards Republicans and getting to better partisan fairness does require you to overcome that”).

If a plan prioritizes proportional election outcomes, like negating a natural geographic disadvantage to achieve proportionality at the expense of traditional redistricting criteria, such map will violate the Pennsylvania Constitution’s Free and Equal Elections Clause. The U.S. Supreme Court in *Vieth*, a Pennsylvania redistricting case, stated that “[t]he Constitution provides no right to proportional representation.” 541 U.S. at 268, 288 (emphasis added). “It guarantees equal protection of the law to persons, not equal representation . . . to equivalently sized groups. It nowhere says that farmers or urban dwellers, Christian fundamentalists or Jews, Republicans or Democrats, must be accorded political strength proportionate to their numbers.” *Id.* at 288 (emphasis added).

Dr. Wasserman, a renowned nonpartisan redistricting expert, noted developing a congressional map that provides proportional election outcomes, in Pennsylvania at least, “requires conscious pro-Dem[ocrat] mapping choices.”

(House Republican Intervenors’ Br. at 22 (citing <https://twitter.com/redistrict/status/965719652188991488> (tweet dated 2/29/2018))).

CL1. In light of this, the Court recognizes that proportionality is not a requirement or a goal of redistricting under federal or state law.

FF1. Thus, any plan that attempts to achieve proportionality and does not comply with traditional redistricting criteria must be disregarded.

FF2 The Gressman Plan was purposefully created using an algorithm that sought to optimize on partisan fairness. *See* Gressman Pet’rs’ Br. at 14.

FF3 The Draw the Lines Plan **admittedly** split Pittsburgh into two congressional districts to maximize political competitiveness. (Villere Report at 4.)

b. Protection of Incumbents

CL1. Although it is not a constitutionally required, or necessarily dispositive consideration, among the factors that a court may consider in evaluating a redistricting plan is the extent to which it protects incumbents from competing against each other. *See LWW II*, 178 A.3d at 817 (listing “protection of incumbents” among the factors that “historically played a role in the drawing of legislative districts” which may be considered but are “wholly subordinate” to the neutral factors of compactness, contiguity, population equality, and minimization of the division of political subdivisions); *Mellow*, 607 A.2d at 207 (listing the avoidance of contests between incumbents as a legitimate objective in districting).

FF1. Notably, because Pennsylvania has lost one seat in the U.S. House of Representatives, one set of incumbents necessarily must be paired in a single district. (N.T. at 240 (testimony of Dr. DeFord), 348-49 (testimony of Dr. Duchin).)

FF2. The decision of where to create an incumbent pairing, however, can be relevant in assessing whether a proposed plan favors one political party over another. Pairing incumbents necessarily forces them to compete for a single seat. (N.T. at 348 (testimony of Dr. Duchin).)

FF3. It follows that a proposed plan may be able to favor one party by pairing incumbents from the other party, effectively eliminating one of them. (N.T. at 240 (testimony of Dr. DeFord), 349 (testimony of Dr. Duchin).)

FF4. In practice, however, an important consideration in the present proposals is that two of Pennsylvania's current Representatives are not seeking reelection. Representative Conor Lamb (D), of the current 17th District, is running for a seat in the U.S. Senate, and is therefore not running for reelection. Representative Michael Doyle (D), of the current 18th District, is retiring and not seeking reelection.

FF5. Accordingly, proposed plans that pair one of those incumbents with another, or with each other, are less indicative of any unfair distribution of the burden of incumbent pairing.

FF6. Not all of the Parties and *Amici* have discussed incumbent pairing in their submissions or supporting expert reports.

FF7. Dr. DeFord, however, compared all of the proposed plans to evaluate the number of incumbent pairings in each. (DeFord Resp. Report at 21, 39.) Thus, to the extent that a Party does not identify incumbent pairings, the Court will consider Dr. DeFord's report.

FF8. The Gressman Plan includes no significant incumbent pairings. Although its single necessary pairing places Representative Conor Lamb (D) into a

district with Representative Guy Reschenthaler (R), Representative Lamb is not seeking reelection, rendering this pairing insignificant. (DeFord Resp. Report at 21.)

FF9. The Carter Plan, HB 2146, the Senate Democratic Caucus 1 Plan, and the Reschenthaler 2 Plan all have one significant pairing.

FF10. The Carter Plan places Representatives Fred Keller (R) and Glenn Thompson (R) within a single district. (Rodden Report at 23.)

FF11. Although the Carter Plan also places Representatives Lamb and Doyle in the same district, neither are seeking reelection. (DeFord Resp. Report at 21.)

FF12. HB 2146 pairs Representatives Daniel Meuser (R) and Matthew Cartwright (D) into a single district.

FF13. Although HB 2146 places Representatives Lamb and Doyle in a single district, neither are seeking reelection. (DeFord Resp. Report at 21.)

FF14. The Senate Democratic Caucus 1 Plan places Representatives Meuser (R) and Keller (R) into a single district. (DeFord Resp. Report at 21.)

FF15. The Reschenthaler 2 Plan places Representatives Keller (R) and Cartwright (D) into in a single district. (DeFord Resp. Report at 21.)

FF16. The remaining plans all have two significant pairings.

FF17. However, among those plans, several stand out as pairing more incumbents from one party than another.

FF18. The Senate Democratic Caucus Plan 2 pairs Representatives Brian Fitzpatrick (R) and Brendan Boyle (D) in a single district, along with Representatives Meuser (R) and Keller (R). (DeFord Resp. Report at 21.)

FF19. Dr. DeFord cited the Senate Democratic Caucus Plan 2 as an example of one that particularly favors Democrats, as three Republican incumbents

are paired with another incumbent, but only one Democrat is so paired. (N.T. at 241.)

FF20. The Reschenthaler 1 Plan pairs Representatives Keller (R) and Cartwright (D) into a single district, along with Representatives Mary Scanlon (D) and Chrissy Houlahan (D). (DeFord Resp. Report at 21.)

FF21. Dr. DeFord cited the Reschenthaler 1 Plan as an example of one that particularly favors Republicans, as it pairs three Democratic incumbents, but only one Republican. (N.T. at 241.)

FF22. The same imbalance appears in the House Democratic Caucus's two Plans, which pair Representatives Meuser (R) and Cartwright (D), along with Representatives Scott Perry (R) and Lloyd Smucker (R). (DeFord Resp. Report at 21.)

FF23. This is another example of a plan that favors Democrats by pairing three Republican incumbents, but only one Democrat incumbent.

FF24. Likewise, the Draw the Lines Plan pairs Representatives Fitzpatrick (R) and Boyle (D), along with Representatives Meuser (R) and Keller (R). (DeFord Resp. Report at 39.)

FF25. This plan, thus, also favors Democrats by pairing three Republican incumbents but only one Democrat.

FF26. By contrast, the Citizen-Voters Plan favors Republicans by pairing Representatives Scanlon (D) and Dean (D), along with Representatives Meuser (R) and Cartwright (D)—three Democratic incumbents but only one Republican incumbent. (DeFord Response Report at 39.)

FF27. In sum, as it concerns incumbent protection, the Gressman Plan appears to have zero significant pairings, followed by HB 2146, the Reschenthaler

2 Plan, the Carter Plan, and the Senate Democratic Caucus 1 Plan, all of which include one significant pairing.

FF28. The remaining plans are largely on equal footing, but the Senate Democratic Caucus 2 Plan, the House Democratic Caucus Plan, the Draw the Lines Plan, the Reschenthaler 1 Plan, and the Citizen-Voters Plan have three incumbent pairings and as such will be given less weight in this regard.

c. VRA Considerations

FF1. Many Parties specify the number of districts in their proposed plans in which racial or language minority make up a majority of the voting-age population, so as to guard against potential liability under section 2 of the VRA.

FF2. Although not all of the Parties and *Amici* specifically identify the number of majority-minority districts created by their proposed plans, Dr. DeFord analyzed each proposal to identify the number of districts in which a majority of the voting-age population would constitute a minority. (DeFord Resp. Report at 20, 38.)

FF3. The 2018 Remedial Plan contained two majority-minority districts—one majority-Black district and one in which multiple minorities together formed a majority. (Duchin Report at 5.)

FF4. The Gressman Plan is the only plan that creates three majority-minority districts. Its proposed Districts 2, 3, and 5 have minority group populations of 52%, 57%, and 51%, respectively. (DeFord Report at 44.) In one of those districts, Latinos would be the largest minority group, which differs from previous districting plans. (DeFord Report at 56-57.)

FF5. All of the remaining proposed plans would create two majority-minority districts. (DeFord Resp. Report at 20, 38.)

FF6. All of the remaining proposed plans are therefore comparable with the 2018 Remedial Plan with respect to the creation of majority-minority districts.

CL1. As noted above, Pennsylvania is subject to section 2 of the VRA. However, the Parties have not presented evidence or expert opinions specifically directed toward the establishment of the *Gingles* requirements with respect to any particular minority population in Pennsylvania. Moreover, this is not a situation in which a party has lodged a challenge to an existing districting plan under section 2 of the VRA.

CL2. The Court is thus unable to determine that any specific number of majority-minority districts is strictly necessary in any particular location in Pennsylvania.

CL3. The Court accordingly cannot conclude that any plan would be likely to violate section 2 of the VRA or any other requirements of federal law.

d. The Carter Plan's Least Change Approach

CL1. The preservation of prior district lines, or “least change,” is another “subordinate” factor the Court may consider in determining which plan to adopt. *LWV II*, 178 A.3d at 817.

CL2. In *LWV II*, the Pennsylvania Supreme Court held that “the preservation of prior district lines” is a consideration that is “wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts. *LWV II*, 178 A.3d at 817.

FF1. In his report and testimony, Dr. Rodden, the expert witness for the Carter Petitioners, prioritized, to a remarkable extent, the preservation of the cores and boundaries of the 2018 Remedial Plan. (Rodden Report at 1; N.T. at 84.)

CL3. The Court finds that using least-change metrics here is of limited utility because an 18-district plan is being replaced by a 17-district plan.

CL4. The Court concludes that evaluating redistricting plans against the traditional criteria, instead of similarity to a previous court-drawn plan, protects the integrity of the redistricting process by ensuring that the new plan is scrutinized every redistricting cycle against the applicable constitutional and statutory standards, and with reference to population and other changes.

FF2. Dr. Rodden states that the Carter Petitioners' "Least Change" Plan deviates the least amount from the 2018 Remedial Plan adopted by the Supreme Court in *LWV III*. (Rodden Resp. Report at 2.)

FF3. According to Dr. Rodden, the Carter Plan retains 86.6% of the population share as compared to the Supreme Court-drawn 2018 Remedial Plan. He also provides calculations on the other submitted maps in Table 1 of his Response Report:

1: Retained Population Share in 14 Submitted PA Congressional Plans

Plan	Retained Population Share
Carter	86.6
CCFD	76.1
Citizen Voters	82.4
HB2146	78.5
Draw the Lines PA	78.8
GMS	72.8
Governor Wolf	81.2

Ali	81.5
PA House Dem. Caucus	73.3
Reschenthaler 1	76.5
Reschenthaler 2	76.5
Senate Dem. Plan 1	72.5
Senate Dem. Plan 2	72.5
<u>Voters of PA</u>	<u>80.6</u>

(Rodden Resp. Report at 2.)

FF4. Dr. Rodden calculated the average retained population share across all of the districts (in percentages) in each of the other plans, and reported a single percentage figure for each of the plans, as opposed to a breakdown by district for each plan like he did with the Carter Plan. (Rodden Resp. Report at 1-2, Table 1.)

FF5. Based on his review of the other plans' numbers, Dr. Rodden opined that the Carter Plan retained more of the districts' former population (86.6%) compared to the other 13 plans (which ranged from 72.5% to 82.4%). (Rodden Resp. Report at 2, Table 1.)

FF6. Dr. Rodden further opined that the Senate Democratic Caucus's Plans 1 and 2 (72.5% for both), the Gressman Petitioners' Plan (72.8%), and the House Democratic Caucus's Plan (73.3%) made the largest boundary changes, and thus had the lowest percentages, with respect to maintaining districts' population as compared to the 2018 Remedial Plan. (Rodden Resp. Report at 2, Table 1.)

FF7. Dr. Rodden does not explain the extent to which the percentages of retained population share is either acceptable or so disparate so as to justify the elimination of any of the other plans or conversely to prioritize the Carter Plan based on this criterion. Consequently, this Court is left with attempting to decipher enigmatic data.

CL5. The Court concludes that choosing a plan based on its similarity to a previously court-drawn redistricting plan is not constitutionally sound.

CL6. The 2018 Remedial Plan adopted by the Supreme Court in *LWV III* was based on 2010 Census data.

CL7. The Court concludes that the 2020 U.S. Census results have made the current plan, *i.e.*, the 2018 Remedial Plan, unusable and violative of voters' rights due to population reductions and shifts resulting in unequal districts.

FF8. The Carter Plan's decrease along some compactness measures results from efforts to deviate the least amount from the 2018 Remedial Plan. *See* Rodden Report at 22.

FF9. The Carter Plan opted to draw less compact districts instead of disrupting the Supreme Court's 2018 Remedial Plan. *Id.* at 8.

CL8. The Court concludes that nothing in *LWV* or the Constitution states that adherence to a previous **court-drawn** plan outweighs compactness.

CL9. The "Least Change" doctrine was set forth by the U.S. Supreme Court in *Perry v. Perez*, 565 U.S. 388, 392-397 (2012), suggesting judges should use maps drawn **by legislators** as strong indicators of **legislative intent** and should strive to alter them as little as possible.

CL10. Specifically, the U.S. Supreme Court held that it was error for a district court to displace "legitimate state policy judgments with the court's own preference" by neglecting a recently enacted, but not Department of Justice-precleared, legislative redistricting plan. 565 U.S. at 396. In so holding, the U.S. Supreme Court stated that "a district court should take guidance from the state's recently enacted plan" when drafting its own plan, since the state's plan "provides important guidance that helps ensure that the district court appropriately confined

itself to drawing interim maps that comply with the Constitution and the Voting Rights Act, without displacing legitimate state policy judgments with the court’s own preferences.” 565 U.S. at 394.

CL11. This Court concludes that the “Least Change” doctrine does not require, or sanction, a court to defer to **its own** prior redistricting map in drafting the new plan.

CL12. The U.S. Supreme Court has held that districts should reflect legislative intent to the highest degree which is statutorily and constitutionally permitted. Nothing in *Perry* suggests that a court, when drafting its own plan, should adhere to a plan **it** previously drew.

CL13. The Pennsylvania Supreme Court rejected a similar Least Change argument in legislative reapportionment litigation in *Holt I*, reiterating that “the governing ‘law’ for redistricting” is “applicable constitutional and statutory provision and on-point decisional law,” not “the specifics of a prior reapportionment plan ‘approved’ by the Court.” *Holt I*, 28 A.3d at 735.

CL14. In *Holt I*, the Pennsylvania Supreme Court again criticized arguments about the “supposed constitutionalization of prior redistricting plans” and emphasized the “limited constitutional relevance” of maintaining the outcomes of previous plans. *Holt I*, 67 A.3d at 1236.

FF10. The Court finds that the Carter Petitioners, in essence, have attempted to elevate a subordinate factor into a dominate one and therefore their plan and map violate the Free and Equal Elections Clause as a matter of law.

CL15. The Court concludes that the Carter Petitioners have misconstrued and misapplied the “Least Change” doctrine, which does not apply in this circumstance.

FF11. This Court is deeply troubled by the prospect of any court, let alone a court of this Commonwealth, applying the “Least Change” doctrine, where the existing plan was drafted by that court itself, because that court could theoretically continuously adopt features of its prior plans, effectively rendering impossible any future challenge to the plan.

FF12. The Court concludes that any number of **the court’s** choices from its prior plan would be frozen into future plans, which has nothing to do with applying constitutional redistricting principles to ever changing population changes.

CL16. This Court concludes that by applying the “least change” approach in these circumstances, a court would be prioritizing the court’s own 2018 Remedial Plan, which was adopted four years ago, which was based on the 2010 U.S. Census data.

CL17. For these reasons, this Court recommends that the Supreme Court not adopt the Carter Petitioners’ “Least Change” Plan on the basis that, comparatively, it is most similar to the 2018 Remedial Plan’s boundary lines for the congressional districts in the Commonwealth.

VI. RECOMMENDATION

A. Proposed Findings of Fact, Conclusions of Law, and Adoption of Map Recommendation

To start, the Court incorporates through reference its proposed findings of fact and conclusions of law as made previously and reflected above. In an attempt to synthesis and consolidate those determinations and, in support of its proposed report and recommendation to the Supreme Court, the Court, having conducted a bench trial in which it received evidence from the parties, has rendered credibility

and weight determinations with respect to and in light of its previously suggested findings of fact and conclusions of law.⁴⁷ Based on those credibility and weight determinations, as more fully explained below, the Court recommends that the Supreme Court ultimately adopt the following findings of fact, conclusions of law, and/or mixed findings of fact and conclusions of law:⁴⁸

1. The Petitions for Review filed in this consolidated case by the Carter Petitioners and the Gressman Petitioners generally allege that the Supreme Court's 2018 Remedial Plan is unconstitutional as a result of the recent 2020 Census because the 2018 Remedial Plan was based on data collected from the 2010 Census.

2. More specifically, the Petitions for Review correctly aver that the Commonwealth of Pennsylvania is currently allotted 17 seats in the House of Representative, while under the 2010 Census, it was bestowed with 18 seats and, therefore, the 2018 Remedial Plan is presently unconstitutional in that it fails to reflect the Commonwealth's population loss and/or boundary lines that account for the lost seat.

3. As a matter of fact and law, the Court concludes that the 2018 Remedial Plan is constitutionally deficient and cannot be implemented to represent the

⁴⁷ Generally speaking, in making credibility and weight determinations, a tribunal resolves conflicts in the evidence and may accept or reject the testimony of any witness, including an expert witness, in whole or in part, and is free to reject even uncontradicted testimony as not being credible. *See, e.g., A & J Builders, Inc. v. Workers' Compensation Appeal Board (Verdi)*, 78 A.3d 1233, 1238 (Pa. Cmwlth. 2013); *Kelly v. Unemployment Compensation Board of Review*, 776 A.2d 331, 336 (Pa. Cmwlth. 2001); *Teitell v. Unemployment Compensation Board of Review*, 546 A.2d 706, 711 (Pa. Cmwlth. 1988); *see also supra* note 25 (explaining the standard of review and the posture of this case as it pertains to the functional role that it is typically associated with a fact finder).

⁴⁸ The United States Supreme Court has described a mixed question of law and fact as one in which the facts are established, the law is determined, but the issue involves whether the facts were correctly applied to the law. *Pullman-Standard v. Swint*, 456 U.S. 273, n.19 (1982).

congressional districts for the Commonwealth from this moment forward because it created boundary lines for 18 congressional districts and seats, and the Commonwealth now has only 17 available seats.

4. Given the procedural history and posture of this case, including interim orders from our Supreme Court, it is apparently an unremarkable and undisputed proposition that the 2018 Remedial Plan violates at least one of various constitutional provisions and, as such, the creation and adoption of a new congressional redistricting map is an absolute imperative as a matter of state law.

5. Under Pennsylvania law, and the Constitutions of the United States and Pennsylvania, it is the responsibility of the Pennsylvania legislature to duly enact a law incorporating a map that indicates the specific boundary lines for each respective congressional district that the Commonwealth has been afforded according to the most recent Census, subject to approval by the governor.

6. Here, the Governor took initiative, apart from the statutory and constitutional procedure for enacting a law. *See* Article IV, section 15 of the Pennsylvania Constitution, Pa. Const. art. IV, §15 (“Every bill which shall have passed both Houses shall be presented to the Governor; if he approves he shall sign it, but if he shall not approve he shall return it with his objections to the House in which it shall have originated . . .”).

7. In September 2021, the Governor issued an Executive Order creating the Pennsylvania Redistricting Advisory Council (Advisory Council), a six-member council comprised of redistricting experts formed to provide guidance to the Governor and assist his review of any congressional redistricting plan passed by the General Assembly. (Governor Opening Brief at 4.)

8. The Governor’s Advisory Council drafted a set of so-called “Redistricting Principles.” See Pennsylvania Redistricting Advisory Council, Redistricting Principles,

<https://www.governor.pa.gov/wp-content/uploads/2021/11/Redistricting-Advisory-CouncilFinal-Principles.pdf>

9. On January 15, 2022, the Governor published on his website “the Governor’s Map” proposing new congressional district boundaries, which he claimed were consistent with the United States and Pennsylvania Constitutions and with the redistricting principles recommended by the Redistricting Advisory Council.

<https://www.governor.pa.gov/congressional-districts-map-proposals>

10. Although both the Pennsylvania State House of Representatives and Senate (collectively, the General Assembly), the policy-making branch of our government, devised, considered, and passed a bill, HB 2146, that accomplished this goal, the Governor vetoed it on January 26, 2022.

11. The Governor vetoed HB 2146 because, in his view, “it fundamentally fails to meet the test of fairness set forth by the Pennsylvania Supreme Court in *League of Women Voters I* and does not comply with the Redistricting Principles outlined by the Redistricting Advisory Council.” (Governor Wolf Opening Brief at 6.)

12. Upon review of the evidence of record, the Court has already concluded that HB 2146 does not contravene, and in fact sufficiently satisfies, the standards of the Free and Equal Election Clause of the Pennsylvania Constitution, the other criteria discussed by our Supreme Court in *LWV*, and further, reflects a non-partisan tilt in favor of Democrats.

13. As of the filing date of this report and recommendation, February 7, 2022, the Generally Assembly and the Governor have not agreed upon a congressional redistricting plan-to replace the 2018 Remedial Plan.

14. Ergo, this Court, as part of the judicial branch of government, and pursuant to the directives of our Supreme Court, has collected evidence and held a hearing in order to recommend a plan and/or map to serve as a substitute for the breakdown in the political process.

15. In the context of this consolidated case, there were 13 maps submitted by the parties and *amici* for the Court's review and consideration.

16. On their face, and as supported by the evidence of record, all the maps in the proposed plans contain districts that are comprised within a contiguous territory and comply with the "contiguity" requirement of the Pennsylvania Constitution.

17. Each and every proposed plan satisfies the command in the Free and Equal Elections Clause that congressional districts be created "as nearly equal in population as practicable." Pa Const. art. II, §16.

18. However, unlike the other plans that have a maximum population deviation of one person, the Carter Plan and the House Democratic Plan both result in districts that have a two-person deviation.

19. The Ali Plan, unlike all of the other maps submitted, and contrary to Pa. House Res. 165, relied on the LRC's Data Set #2 and, for the reasons, findings, and conclusions stated above and below, the Court must recommend that the Ali Plan is thus entitled to little or no evidentiary weight and does not proffer a map that is suitable for redistricting, or for comparison with the other submitted maps.

20. Given the credible testimony of all the experts who testified or tendered reports regarding this aspect of the Ali Plan, the Court finds that the plan most likely alters population density and raises a host of subsidiary issues that should be resolved by the federal or state legislature and hence cannot be utilized for comparison of the other parties and *amici* maps submitted in this case.

21. The Court notes that the Ali Plan was the only plan whose map's entire construction depended upon the population figures as set forth in Data Set #2 and seeks to alter the requirement in a resolution, Pa. House Res. 165, stating that Data Set #1 be used in any congressional redistricting legislation before the 2030 Census. All the other parties and *amici* utilized and relied upon LRC's Data Set #1 in accord with the commonly accepted practice in the expert field of redistricting and, in essence, Ali is asking the Court to make a determination regarding geographical breakdowns in population which is not properly before the Court.

22. Based on the credible testimony and charts provided by Governor Wolf's expert, Dr. Duchin, regarding the metrics used to evaluate compactness, as corroborated by various other experts in their testimony and submissions, the Court finds that the following plans and maps fulfill the constitutional requirement that a map be composed of compact territory: the Republican Legislative Intervenors' Plan (HB-2146), both of the Congressional Intervenors' maps (Reschenthaler 1 and 2), the Carter Petitioners' Plan, the Gressman Petitioners' Plan, Governor Wolf's Plan, both of the Senate Democratic Caucus Plans (Maps 1 and 2), and the maps submitted by the Voters of PA *Amici*, Draw the Lines *Amici*, and the Citizen-Voters *Amici*.

23. Overall, the plans which divide the fewest counties, cities, incorporated towns, boroughs, townships, and wards are the Senate Democratic Caucus Map 2 (46 splits total), the Republican Legislative Intervenors' Map (HB 2146) and the Gressman Plan, (each with 49 splits total), the Reschenthaler 2 Plan (53 splits), and the Reschenthaler 1 Plan (54 splits).

24. The Reschenthaler Plans remarkably divide only 13 counties and 16 municipalities, which is the lowest numbers in both categories.

25. In reviewing the number of splits, the Court is mindful that is not simply a numbers game and that a boundary divide, first and foremost, must be done to guarantee equality in population, second (and most relatedly), should preserve the commonality of the interests of the communities and, third, should not be done to achieve an ulterior motive, such as racial discrimination or unlawful partisan gerrymandering.

26. That said, the following plans propose to split the City of Pittsburgh into two districts, apparently for the first time in history of the Commonwealth: the Governor's Plan, the Senate Democratic Caucus Plan 1 and Plan 2, the Draw the Lines PA Plan, and the plan submitted by Khalif Ali.

27. However, upon review of the record, the Court determines that these parties have failed to present any credible evidence as to why it was "necessary" to split the second largest city in Pennsylvania in order to achieve equal population, especially considering that such an approach is seemingly a novel proposition, and experts credibly testified that there was no legitimate rationale or reason to apportion the city into two separate segments.

28. Given the weight it has afforded the evidence, the Court expresses grave concerns that the maps dividing the City of Pittsburgh do so with the objective of obtaining an impermissible partisan advantage, by effectively attempting to create *two* Democratic districts out of *one* traditionally and historically Democratic district.

29. The Court further finds, based on the credible evidence of record that, by dividing the City of Pittsburgh into two districts, the above-mentioned maps have failed preserve the shared interest of the communities in the Pittsburgh area and the distinctive cultural fabric that has been shaped and formed within the city's limits.

30. Therefore, the Court respectfully recommends that the above-mentioned maps are not, as a matter of comparative evidentiary weight, an appropriate choice to represent Pennsylvania's congressional districts in upcoming elections because they divide the City of Pittsburgh.

31. The Court further respectfully recommends that any map that divides Bucks County for the first time since the 1860s, including Governor Wolf's map, is not an appropriate choice to represent Pennsylvania's congressional districts in upcoming elections. In so determining, the Court credits and provides great weight to the unrefuted testimony of Dr. Naughton who, as explained more fully below, opined that Bucks County should not be split into two congressional districts.

32. Regarding the issue of incumbent pairings, the Court finds and places persuasive weight on the fact that, contrary to every other map submitted, the Senate Democratic Caucus 1 Plan and the Carter Plan include two Republican incumbents in one congressional district, which effectively eliminates a Republican from continued representation in the United States House of Representatives.

33. As such, although Pennsylvania has already lost one congressional seat as a result of decreased population, the Senate Democratic Caucus 1 Plan and the Carter Plan, in effect, seek to preemptively purge a Republican Congressman from the 17 seats that are remain available for office.

34. Viewing the record as a whole, the Court finds that the plan submitted by the Carter Petitioners is given less weight in that it utilizes the "least change" analysis, and the underlying methodology and methods employed by Dr. Rodden to construct the proposed maps based on the 2018 map which was based on an entirely different census population and 18 versus 17 districts, and contrary to Pennsylvania and United States Supreme Court precedent.

35. Consequently, any figures, features, or characteristics in the Carter Petitioners' plan and map that could possibly be deemed to support the validity of that plan and map have been developed in contravention of controlling precedent.

36. Based on the current record, and caselaw and when considered alongside and constructively with the other maps, the Court simply cannot conclude that the Carter Petitioners' map is otherwise entitled to a degree of evidentiary weight such that it outweighs, by a preponderance, the evidentiary value of the other, proposed maps. As such, for this reason and those stated within, the Court must recommend that the Carter Petitioners' map be given less evidentiary weight in its global assessment of all the plans and proposals.

37. Upon review, the Court finds credible and extremely persuasive the various experts' testimonies and reports explaining that there is a strong relationship between the geographic concentration of Democratic voters and electoral bias in favor of Republicans.

38. Particularly, Dr. Duchin, Governor Wolf's expert, confirmed that the political geography of Pennsylvania is partisan by its very nature. Dr. Duchin testified, credibly, that in generating 100,000 random plans with a computer programmed that was designed only to honor Pennsylvania's minimum constitutional requirements, the random plans tended to exhibit a pronounced advantage to Republicans across the full suite of elections, throughout the Commonwealth as a whole, and that random plans must naturally and necessarily favor Republicans.

39. Indeed, in terms of the metrics used to gauge partisan fairness, the mean-median scores provided by each and every expert with respect to each and every single district of the various maps confirms that an overwhelming supermajority of the maps possess a notable difference that favor Republicans and, thus, confirms the

natural state of political voting behavior and tendencies in the entirety of the Commonwealth with respect to congressional districting.

40. On record as presented, the Court finds that when lines are purposely drawn to negate a natural and undisputed Republican tilt that results from the objective, traditional, and historical practice whereby Democratic voters are clustered in dense and urban areas, such activity is tantamount to intentionally configuring lines to benefit one political party over another. The Court considers this to be a subspecies of unfair partisan gerrymandering and is legally obligated, pursuant to *LWV II*, to look up such a practice with suspicious eyes.

41. That said, on a comparative scale, the Court gives less weight to the maps that, due to their credited mean-median scores, yield a partisan advantage to the Democratic Party, namely the Gressman Plan and the House Democratic Caucus Plan.

42. Similarly, on a comparative scale, the Court provides less weight to the maps that, due to their credited efficiency gap scores, yield a partisan advantage to the Democratic Party, namely the Carter Plan, the Gressman Plan, the Governor's Plan, the Senate Democratic Caucus 2 Plan, the House Democratic Caucus Plan, and the Draw the Lines Plan.

43. Regardless of whether there was sufficient, credible evidence to establish that any of the other proffered plans violate the Free and Equal Elections clause because they subordinate the neutral factors pronounced in *LWV II* and place unlawful, paramount emphasis on gerrymandering for unfair partisan political advantage, the Court considers the degree of partisan fairness reflected within the maps as a substantial factor that is entitled to appreciable weight in the final calculus.

44. In so doing, the Court notes, as previously explained, one of the overriding constitutional precepts applied in redistricting cases is that any map that prioritizes proportional election outcomes, for example, by negating the natural geographic disadvantage to achieve proportionality at the expense of traditional redistricting criteria, violates the Pennsylvania Constitution’s Free and Equal Elections Clause. As the United States Supreme Court stated in *Vieth v. Jubelirer*, concerning a Pennsylvania redistricting plan, “[t]he Constitution provides no right to proportional representation.” 541 U.S. at 268. Instead, the Constitution “guarantees equal protection of the law to persons, not equal representation . . . to equivalently sized groups. It nowhere says that farmer or urban dwellers, Christian fundamentalists or Jews, Republicans or Democrats, must be accorded political strength proportionate to their numbers.” *Id.* at 288

45. There was insufficient evidence of record to establish that any of the proposed maps violated the Voting Rights Amendment or the “one person, one vote” principle in the Equal Protection clause of the United States Constitution. While voicing no opinion as to the future prospect of such claims, the Court notes that they were not sufficiently developed or argued during the proceedings below.

46. Having received and considered the evidence in the manner of a trial court, the Court has fully vetted the plans and maps to assess their compliance with the neutral criteria of the Free and Equal Elections Clause of the Pennsylvania Constitution, as interpreted and applied in *LWV II*.

47. From this perspective, the Court discounts the plans that it already determined failed to adequately satisfy those criteria, otherwise jeopardized the purposes and goals inherent in the “floor” standard adopted by our Supreme Court, and/or contain

characteristics that render them patently not credible or comparatively deserving of lesser weight.

48. Particularly, the Court submits the following recommendations as to which plans should not be adopted by the Supreme Court and, for support, supplies the accompanying reasons for its specific recommendations:

Ali Plan

Based on all of the foregoing, the Court does not recommend adopting the Ali Plan for the congressional districts in the Commonwealth of Pennsylvania because:

- 1) it relied on the LRC's Data Set #2, which contains population adjustments to account for the reallocation of most prisoners to their last known addresses prior to incarceration, is not based on the figures in Data set #1, and is not in accord with Pa. House Res. 165;
- 2) the Court finds that Data Set #2 should not be used at this time for congressional districting;
- 3) the Plan's adjustments in population, relocating prisoners to their residential addresses, would result in a population deviation of 8,676 people;
- 4) it splits the City of Pittsburgh into two congressional districts for the first time without any convincing or credible expert explanation as to why this was absolutely necessary to achieve population equality or to refute other expert opinions that the City of Pittsburgh does not need to be split in order to achieve population equality between districts;

- 5) the City of Pittsburgh in many ways constitutes a community of interest, such that its division would not be in the best interest of its residents.

Governor Wolf's Plan

Based on all of the foregoing, the Court does not recommend adopting the Governor's map for the congressional districts in the Commonwealth of Pennsylvania because:

- 1) it splits the City of Pittsburgh into two congressional districts for the first time without any convincing or credible expert explanation as to why this was absolutely necessary to achieve population equality or to refute other expert opinions that the City of Pittsburgh does not need to be split in order to achieve population equality between districts;
- 2) the Governor's map also for the first time in 150 years, splits Bucks County, and joins Philadelphia's surplus population with Bucks County. Again, the Governor has not provided any convincing or credible expert explanation as to why this is absolutely necessary to achieve population equality between districts;
- 3) the Governor's Plan splits the City of Pittsburgh in order to create another Democratic congressional district solely for partisan gain by creating another Democratic district;
- 4) the City of Pittsburgh in many ways constitutes a community of interest, such that its division would not be in the best interest of its residents and has never before been split;

- 5) based on its credited efficiency gap score, it provides a partisan advantage to the Democratic party in contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania.

The Draw the Lines Plan

Based on all of the foregoing, the Court does not recommend adopting the Draw the Lines Plan for the congressional districts in the Commonwealth of Pennsylvania because:

- 1) like the Governor's Plan, it splits the City of Pittsburgh across two congressional districts for the first time without any convincing or credible expert explanation as to why this was absolutely necessary to achieve population equality or to refute other expert opinions that the City of Pittsburgh does not need to be split in order to achieve population equality between districts;
- 2) the City of Pittsburgh in many ways constitutes a community of interest, such that its division would not be in the best interest of its residents;
- 3) Draw the Lines admittedly split Pittsburgh into two to maximize political competitiveness. *See Villere Report at 4;*
- 4) based on its credited efficiency gap score, it provides a partisan advantage to the Democratic party in contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania.

Senate Democratic Caucus Plans 1 or 2

Based on all of the foregoing, the Court does not recommend adopting either Senate Democratic Caucus Plan for the congressional districts in the Commonwealth of Pennsylvania because:

- 1) both Plans split the City of Pittsburgh across two congressional districts for the first time without any convincing or credible expert explanation as to why this was absolutely necessary to achieve population equality or to refute other expert opinions that the City of Pittsburgh does not need to be split in order to achieve population equality between districts;
- 2) the City of Pittsburgh in many ways constitutes a community of interest, such that its division would not be in the best interest of its residents;
- 3) the Senate Democratic Caucus' Plans split Pittsburgh in order to create another Democratic congressional district which appears to be solely for partisan gain by creating another Democratic district;
- 4) without any explicit or apparent justification, it pairs two Republican incumbents in one congressional district and effectively eliminates a Republican from continued representation in the United States House of Representatives;
- 5) based on its credited efficiency gap score, it provides a partisan advantage to the Democratic party in contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania

House Democratic Caucus Plan

Based on all of the foregoing, the Court does not recommend adopting the House Democratic Caucus' Plan for the congressional districts in the Commonwealth of Pennsylvania because:

- 1) it was not accompanied by an expert report or testimony consequently, the Court received no testimonial or written explanation concerning why the map drew the lines in the particular manner that it did and to demonstrate why the divides in the maps were absolutely necessary to achieve population equality as opposed to some other secondary or impermissible goal;
- 2) while keeping Pittsburgh whole, as asserted by one of the parties, it draws an oddly shaped "Freddy-Krueger like claw" district in Allegheny County to "grab" Pittsburgh to combine it with Republican areas leaning to the North without any explanation of the reasons for doing so;
- 3) it has a two-person difference in population from the largest to their smallest districts, while the majority of other plans were able to achieve a one person deviation;
- 4) based on both its credited efficiency gap score and credited mean-median score, it provides a partisan advantage to the Democratic party in contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania.

The Citizen Voters Plan

Based on all of the foregoing, the Court does not recommend adopting the Citizen Voters' Plan for the congressional districts in the Commonwealth of Pennsylvania because:

- 1) it was not accompanied by an expert report or testimony consequently, the Court received no testimonial or written explanation concerning why the map drew the lines in the particular manner that it did and to demonstrate why the divides in the maps were absolutely necessary to achieve population equality as opposed to some other secondary or impermissible goal;
- 2) it has a two-person difference in population from the largest to their smallest districts, while the majority of other plans were able to achieve a one person deviation.

The Carter Plan

Based on all of the foregoing, this Court does not recommend adopting the Carter Plan for the congressional districts in the Commonwealth of Pennsylvania because:

- 1) it has a two-person difference in population from the largest to their smallest districts, while the majority of other plans were able to achieve a one person deviation;
- 2) it utilized the "least-change" approach, and lacked any analysis of the percentage differences as discussed more fully herein;
- 3) without any explicit or apparent justification, it pairs two Republican incumbents in one congressional district and effectively eliminates a

Republican from continued representation in the United States House of Representatives;

- 4) based on its credited efficiency gap score, it provides a partisan advantage to the Democratic party in contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania.

The Gressman Plan

Based on all of the foregoing, this Court does not recommend adopting the Gressman Plan for the congressional districts in the Commonwealth of Pennsylvania because:

- 1) the algorithm used to prepare the Gressman Plan was specifically looking to optimize on partisan fairness, which as explained above, is not one of the traditional neutral criteria of redistricting and because the constitutional reapportionment scheme does not impose a requirement of balancing the representation of the political parties;
- 2) the Gressman Petitioners did not adequately establish that they considered community interests when deciding to erect boundary lines across the Commonwealth;
- 3) based on both its credited efficiency gap score and credited mean-median score, it provides a partisan advantage to the Democratic party in contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania.

49. Although the Court could conceivably find that quite a few, if not all, of the remaining maps, are entirely consistent with the Free and Equal Elections Clause, it faces the task of having to choose and recommend only one map to our Supreme Court and effectively usurp the role and function of the law-making bodies of this Commonwealth.

50. In navigating this “rough terrain” and undertaking this “unwelcomed obligation,” which is “a notoriously political endeavor,” *Carter v. Chapman* (Pa., No. 7 MM 2022, order filed Feb. 2, 2022), __ A.3d __, at __ (Dougherty, J., concurring statement at 3-5) (internal citations omitted), the Court specifically credits the evidence of Governor Wolf’s expert, Dr. Duchin, in part, and in the following regards.

51. The Court accepts as credible Dr. Duchin’s opinion to the extent she concluded that, among other submissions, the map of the Voters of PA *Amici* and Reschenthaler 1 both evince a “first tier” standard of excellence and easily satisfy the baseline “floor” standard or neutral criteria under *LWV II*.

52. The Court accepts as credible Dr. Duchin’s opinion insofar as she opined that Reschenthaler 2 falls within a “second tier” standard of excellence and also satisfies the baseline “floor” standard or neutral criteria under *LWV II*.

53. The Court further accepts as credible Dr. Duchin’s testimony and statements in her report that HB 2146 is population balanced and contiguous, shows strong respect for political boundaries, is reasonably compact, and has better “splits” than Governor Wolf’s plan.

54. Regarding Reschenthaler 1 and Reschenthaler 2, the Court accepts as credible Dr. Duchin’s admissions and concessions that the Reschenthaler maps had the

lowest “county pieces” (29) and municipal splits (16), and were tied for the lowest with respect to “municipal pieces” (33).

55. Additionally, the Court credits Dr. Rodden’s testimony explaining that his analysis of the partisan nature of the proposed maps showed that the estimated seats for Democrats and Republicans between the Carter Map, on one hand, and the Reschenthaler 1 and 2 maps, on the other hand, differed by just one seat out of 17.

56. Concerning the map submitted by the Voters of PA *Amici*, the Court credits the evidence demonstrating that it had the best Popper-Polsby score of 0.3951 and, in this particular respect, is superior in terms of the metrics used to evaluate compactness.

57. As a result of its credibility and weight determinations, the Court finds that the map submitted by the Voters of PA *Amici*, the Congressional Intervenors’ maps (especially Reschenthaler 1), and the map of the Republican Legislative Intervenors (known as HB 2146) are consistent with the Free and Equal Elections Clause of the Pennsylvania Constitution, and, also, the aspirations and ideals expressed by that constitutional provision as pronounced by the Court in *LWV II* due to their compactness, degree of partisan fairness, and specific development of congressional districts.

58. For further support of this recommendation, the Court finds that the proposed congressional districts within the map proposed by Voters of PA *Amici*, Reschenthaler 1, and HB 2146 credibly and persuasively comply with the various experts’ universal recognition that the surface areas comprising the districts should be in accord with the natural, political, and structural geography of those areas.

59. The Court also finds that the proposed congressional districts within the map proposed by Voters of PA *Amici*, Reschenthaler 1, and HB 2146 credibly and

persuasively create a sufficient number of competitive, “toss up” congressional districts which could go either way, depending upon the particular election and/or office at issue and the qualifications and political platforms of the individual candidates.

60. On a vis-à-vis comparison, the Court finds that Reschenthaler 1 would slightly exceed the map of Voters of PA *Amici* in that it provided a more extensive report on the preservation of communities of interest, a precept recognized by the courts as a heavy, if not mandatory, factor in this type of assessment.

61. Although the Republican Legislative Intervenors requested the Court to provide some degree of presumptive deference to HB 2146, because the enactment had gone through the proper legislative process and was passed by the General Assembly, the Court declined to do so summarily and instead assessed HB 2146 evenly and through the same rigorous scrutiny, against all the traditional constitutional criteria and measures and on the same plane and footing as the other parties and *amici* and their respective maps.

62. The Court finds it is the General Assembly’s prerogative, rather its constitutional mandate, to redraw the state’s congressional districts under Article 1, section 4 of the United States Constitution and its related provisions in the Pennsylvania Constitution and state statutes.

63. Following this duty, HB 2146 was passed by the General Assembly, both the House of Representatives and Senate and, as such, constitutes a valid bill that cleared through and was enacted by Pennsylvania’s bicameral, legislative branch of government.

64. The Court finds that HB 2146 originated as a plan proposed and drawn by a well-known nonpartisan citizen, Amanda Holt, and, after being made available for

public comment, underwent the scrutiny and consideration necessary to reflect policy choices that are bestowed to the General Assembly as the legislative branch of government.

65. Having conducted a separate and independent review of HB 2146, in and of itself and alongside the other plans and maps, the Court credits all the evidence of record demonstrating the statistical soundness, partisan impartiality, and overall strengths of the figures and methods supporting HB 2146, including the manner and mode through which it was devised, contemplated, and passed by the legislative bodies and branch of the Commonwealth of Pennsylvania.

66. More specifically, the Court finds the methodology and reasoning employed by Dr. Barber to be credible and persuasive. Dr. Barber, who received his Ph.D. in political science from Princeton University in 2014 with emphases in American politics and quantitative methods/statistical analyses, was one of two experts who conducted a simulation analysis that compared proposed maps with a set of 50,000 simulated maps; he sufficiently articulated and identified the variables for the algorithmic creation of simulated maps; the parameters of his simulation analysis included only the traditional redistricting criteria, and not partisan data; and, in separately considering the partisan lean of districts, Dr. Barber analyzed a set of all statewide elections from 2012 to 2020, thereby accounting for a relatively greater amount of elections during a longer timeframe than the other experts.

67. Based on the credible evidence of record, the Court finds that, in dividing 15 counties, 16 municipalities and 9 precincts, HB 2146 performs very well regarding political subdivision splits. The Court especially notes that, while the range of precinct splits in the other submitted plans varies from 9 to 38, HB 2146 splits only

9 precincts, which is the lowest of any plan by a total of 7 precincts. Further, these splits are consistent and on par with the 2018 Remedial Plan.

68. The Court notes and provides evidentiary weight to the fact that HB 2146 places only two incumbents, a Democrat and a Republican, in one district and, when considered with the other competitive proposals, does not relatively seek to obtain an unfair partisan advantage through incumbent pairings.

69. The Court notes and provides great evidentiary weight to the fact that the district compositions of HB 4126 are consistent with Dr. Naughton's credited and unrefuted testimony, in the regards that follow.

70. Dr. Naughton credibly and undisputedly testified that the residents of Bucks County share the same community interests; Bucks County has been wholly contained within a single district for decades; and, therefore, Bucks County should be located entirely within one district.

71. Consistent with Dr. Naughton's recommendation, HB2146, unlike the map proposed by Governor Wolf, does not split Bucks County.

72. Dr. Naughton credibly and undisputedly testified that, regarding whether to combine Philadelphia's surplus population with Bucks County, the communities in Bucks County are more similar to those in Montgomery County and, thus, Bucks County should add population to its district by extending the district line into Montgomery County, rather than Philadelphia County.

73. Dr. Naughton credibly and undisputedly testified and opined that Philadelphia's surplus population would be best combined with a district with maximum commonality; on comparison, Delaware County and Philadelphia County share similar communities of interest; the most sensible plan in this respect would

attach surplus Philadelphia residences to Delaware County; and, hence, Philadelphia County should extend into Delaware County to obtain additional population.

74. Consistent with Dr. Naughton's recommendation, HB 2146 does not connect Philadelphia's surplus population to Bucks County.

75. Consistent with Dr. Naughton's recommendation, HB 2146 connects Philadelphia's surplus population to Delaware County.

76. Furthermore, according to credible evidence of record, although Dr. Barber did not explicitly consider race in his analysis, he determined, as confirmed by other experts in this case, that HB 2146 maintains two minority-majority congressional districts, including 1 district where a majority of the population was comprised of African-Americans, as did the 2018 Remedial Map.

77. Having reviewed the experts' various testimonies and reports, the Court accepts and credits a 0.324 Polsby-Popper score, which is remarkably similar to the 2018 Remedial Plan's Polsby-Popper score of 0.327, to accurately reflect and indicate the compactness measure for HB 2146.

78. Given the credible evidence of record, HB 2146 is predicted to result in 9 Democratic-leaning seats and 8 Republican-leaning seats and, consequently, is more favorable to Democrats than the most likely outcome of 50,000 computer drawn simulated maps that used no partisan data, which resulted in 8 Democratic-leaning seats and 9 Republican-leaning seats.

79. Unlike other maps that leaned Democrat, here, it is the Republican majority in the General Assembly that developed and proposed a plan, HB 2146, that favors Democrats, which ultimately underscores the partisan fairness of the plan.

80. The Court finds, as a result of the credible experts' opinions, reports, and concessions made during cross-examinations, that HB 2146 falls well within the

acceptable constitutional ranges and indicia used to measure partisan fairness, in the following particulars.

81. H.B. 2146, when analyzed with districts that have a Democratic vote share of .48 to .52, which is a common range for assessing competitive elections, creates 5 competitive seats, 4 of which lean Democratic, and, ultimately, has more competitive districts than any other plan.

82. H.B. 2146 possesses a mean-median of -0.015, which is very close to zero and virtually unbiased, and demonstrates that HB 2146 is more favorable to Democrats than 85% of the simulation results.

83. H.B. 2146 has an efficiency gap of -0.02, which, again, is very close to zero and virtually unbiased, and, furthermore, demonstrates that Democratic votes are not much more likely than Republican votes to be “wasted” across districts.

84. As a matter of fact, HB 2146 maintains the City of Pittsburgh within one congressional district and, unlike the plans proposed the Governor, the Senate Democratic Caucus, the Draw the Lines *Amici*, and the Ali *Amici*, preserve the shared interests of the communities located within the City.

85. Even without the testimony of Drs. Naughton and Barber, other experts agreed that HB 2146 satisfies the baseline floor for constitutionality under *LWV II*.

86. Based on all of the above, the Court finds and recommends that HB 2146 meets all the neutral, traditional redistricting criteria, as announced in *LWV II*, noting that none of the parties have meaningfully contested or otherwise disputed this fact.

87. Based on these features, facets, and characteristics detailed previously, the Court finds as fact and law that the “neutral criteria” in HB 2146 is paramount to any extraneous considerations. More specifically, the Court finds that there is no

credible evidence of record to establish that the neutral criteria have been subordinated, in whole or in part, to another factor or other factors.

88. As such, the Court concludes that HB 2146 passes constitutional muster under the Free and Equal Elections Clause. *See LWW II*, 178 A.3d at 816 (“[W]e find these neutral benchmarks to be particularly suitable as a measure in assessing whether a congressional districting plan dilutes the potency of an individual’s ability to select the congressional representative of his or her choice, and thereby violates the Free and Equal Elections Clause.”).

89. As explained above, HB 2146 was subject to vigorous scrutiny and was passed by a majority of assemblypersons in both chambers of the General Assembly. In Pennsylvania, the General Assembly has 253 members, consisting of a Senate with 50 members and a House of Representatives with 203 members, and it is beyond cavil that the breadth and diversity of the assemblypersons’ uniquely defined constituency reflect and represent, on the whole, the will of the people.

90. Consequently, HB 2146 properly redistricted the Commonwealth into 17 congressional districts in accordance with the constitutional process for lawmaking as vested in the legislative branch, and the Court must find that the decisions and policy choices expressed by the legislative branch are presumptively reasonable and legitimate, absent a showing of an unconstitutional defect or deficiency. *Cf. Upham v. Seamon*, 456 U.S. 37, 41-42.

91. Although Governor Wolf vetoed HB 2146 and that bill never obtained the official status of a duly enacted statute, neither Governor Wolf nor any other party herein has advanced any cognizable legal objection to the constitutionality of the congressional districts contained therein.

92. Admittedly, due to the breakdown or stalemate in the legislative process, and the failure of the General Assembly and Governor to pass a redistricting statute to serve as the boundary lines and composition of congressional districts in the United States House of Representatives, this Court has been directed to assess the evidence and ultimately recommend a map to our Supreme Court to serve that very purpose.

93. In absence of any cognizable legal or constitutional objection to the congressional districts in HB 2146 by the Governor and, without there being any basis upon which the Court could reasonably conclude or recommend that HB 2146 contravenes a constitutional or statutory violation, it is the considered judgment of the Court that the best course of action is to recognize and place appreciable weight to the fact that, on balance, HB 2146 represents “[t]he policies and preference of the state,” *Upham*, 456 U.S. at 41; *see Perry*, 132 S. Ct. at 941, and constitutes a profound depiction of what the voters in the Commonwealth of Pennsylvania desire, through the representative model of our republic and democratic form of government, when compared to the Governor or any other of the parties or their *amici*.

94. The Court believes that in, the context of this case, where it must recommend one map of many, as a matter of necessity, the interests of the Commonwealth as a sovereign state and political entity in its own right, would best be served by factoring in and considering that HB 2146 is functionally tantamount to the voice and will of the People, which, as a matter of American political theory since its founding, is a device of monumental import and should be honored and respected by all means necessary.

95. Therefore, with all things being relatively equal with regard to the maps that the Court has not previously discounted or recommended not be adopted, the Court

respectfully recommends that our highest and most honorable institution in the judicial branch of government, our Supreme Court, recognize and revere the expressed will of the People, and the “policies and preferences of our State,” *Upham*, 456 U.S. at 41; *see Perry*, 132 S. Ct. at 941, as previously stated, and adopt HB 2146 to represent the boundary lines for the Commonwealth of Pennsylvania in its creation of geographically-unique congressional districts so that the citizens of our great Commonwealth are ensured fair and equal representation in the United States House of Representatives.

96. In so recommending, the Court notes that, in times like these, other courts throughout the nation, including the United States Supreme Court, have appeared to promote and head such an admonition. For example, as the United States Supreme Court said in *Perry*: “Experience has shown the difficulty of defining neutral legal principles in this area, for redistricting ordinarily involves criteria and standards that have been weighed and evaluated by the elected branches in the exercise of their political judgment.” 565 U.S. at 941. And, as the United States Supreme Court instructed in another case:

Just as a federal district court, in the context of legislative reapportionment, should **follow the policies and preferences of the State, as expressed in statutory and constitutional provisions or in the reapportionment plans proposed by the state legislature**, whenever adherence to state policy does not detract from the requirements of the Federal Constitution, we hold that a district court should similarly honor state policies in the context of congressional reapportionment. In fashioning a reapportionment plan or in choosing among plans, **a district court should not pre-empt the legislative task nor intrude upon state policy any more than necessary.**

Upham v. Seamon, 456 U.S. 37, 41-42 (1982) (*per curiam*) (emphasis added). The Court believes that these underlying principles are no less applicable to a state court's examination of the policies and preferences enunciated by a state's legislative branch of government and reflect a proper exercise of judicial restraint in not pre-empting this otherwise legislative task.

97. For the above-stated reasons, and as its penultimate suggestion, the Court respectfully, yet firmly, **recommends that our Supreme Court adopt and implement HB 2146 as a matter of state constitutional law as it meets all of the traditional criteria of the Free and Equal Elections Clause, and does so in respects even noted by the Governor's expert, as well as the other considerations noted by the courts, it compares favorably to all of the other maps submitted herein, including the 2018 redistricting map, it was drawn by a non-partisan good government citizen, subjected to the scrutiny of the people and duly amended, it creates a Democratic leaning map which underscores its partisan fairness and, otherwise, is a reflection of the "policies and preferences of the State, as expressed in statutory and constitutional provisions or in the reapportionment plans proposed by the state legislature."** *Perry*, 132 S. Ct. at 941. (underlining added) *See also Upham*, 456 U.S. at 42 (reaffirming that a federal district court "erred when, in choosing between two possible court-ordered plans, it failed to choose that plan which most closely approximated the state-proposed plan" because "[t]he only limits on judicial deference to state apportionment policy [] were the substantive constitutional and statutory standards to which such state plans are subject"); *Donnelly*, 345 F. Supp. at 965 (adopting the legislature's proposed plan, explaining that "[t]he legislative adoption of [redistricting plan] tips the scales in favor of the plan . . . which provides districts essentially as outlined by the legislature

...” and observing that the plan had “the added advantage that it is basically the plan adopted by the legislature”).

B. Revised 2022 Primary Election Calendar Recommendations

2022 Pennsylvania Election Schedule

FF1. Under the current election schedule, Pennsylvania’s 2022 General Primary Election, which will include the next congressional primary election, is scheduled for May 17, 2022. *See* Section 603(a) of the Election Code, 25 P.S. §2753(a);

<https://www.dos.pa.gov/VotingElections/CandidatesCommittees/RunningforOffice/Documents/2022%20Important%20Dates.pdf> (last visited Feb. 2, 2022).

FF2. Under the current election schedule, the first day to circulate and file nomination petitions is February 15, 2022. *See* Section 908 of the Election Code, 25 P.S. §2868;

<https://www.dos.pa.gov/VotingElections/CandidatesCommittees/RunningforOffice/Documents/2022%20Important%20Dates.pdf> (last visited Feb. 2, 2022).

FF3. Under the current election schedule, the last day to circulate and file nomination petitions is March 8, 2022. *See* Section 977 of the Election Code, 25 P.S. § 2937;

<https://www.dos.pa.gov/VotingElections/CandidatesCommittees/RunningforOffice/Documents/2022%20Important%20Dates.pdf> (last visited Feb. 2, 2022).

FF4. Under the current election schedule, the last day to file objections to nomination petitions is March 15, 2022. *See* Section 977 of the Election Code, 25 P.S. § 2937;

<https://www.dos.pa.gov/VotingElections/CandidatesCommittees/RunningforOffice/Documents/2022%20Important%20Dates.pdf> (last visited Feb. 2, 2022).

1. **Parties’ Positions on Revisions to 2022 General Primary Election Calendar**

Senate Democratic Caucus Intervenors

FF5. The Senate Democratic Caucus Intervenors suggested that the 2022 General Primary Election schedule “is essentially unworkable at this point in time.” (N.T. at 1025.) They claim “[i]t will disenfranchise millions of Pennsylvania voters and severely prejudice candidates running for public office if [the schedule] is not modified by the Pennsylvania Supreme Court.” *Id.* at 1025. They point to the fact the Legislative Reapportionment Commission has not yet approved a final legislative redistricting map, the instant litigation regarding a congressional district plan, and this Court’s decision in *McLinko v. Department of State*, __ A.3d __ (Pa. Cmwlth., No. 244, 293 M.D. 2021, filed Jan. 28, 2022), as further support that the 2022 General Primary Election schedule should be adjusted, including postponing the primary. (N.T. at 1025-26.)

House Democratic Caucus Intervenors

FF6. The House Democratic Caucus Intervenors suggested that the Court should follow Judge Craig’s decision in *Mellow*, in which he talked about “the idea of maintaining a single day for the primary as a paramount consideration in order [] to avoid confusion of potentially having a primary for congressional and a primary for everybody else on different timelines with different petitioning periods[.]” (N.T. at 1042.)

Congressional Intervenors

FF7. The Congressional Intervenors indicated their belief that “there is absolutely no reason to move the” 2022 General Primary Election calendar, with respect to the primary itself, as its “premature.” (N.T. at 1055.) However, the Congressional Intervenors do think that the dates for circulating nomination petitions, among other dates, should be moved, and have been in the past, citing the *LWV III* case from 2018. *Id.* at 1055-56.

House Republican Intervenors

FF8. The House Republican Intervenors “would prefer to [sic] a least possible change to any election calendar[,]” and they “do not believe changing the primary date would be appropriate.” (N.T. at 1068.)

Senate Republican Intervenors

FF9. The Senate Republican Intervenors take the position that any changes to the 2022 General Primary Election calendar could be addressed by the General Assembly, if necessary. (N.T. at 1077-78.) The Senate Republican Intervenors recognized that the Court has changed the dates in the past; however, “they feel that conditions are such that they must change now because of the legal posture of this matter.” *Id.* at 1078. The Senate Republican Intervenors further believe that “changes should be limited only to what’s absolutely necessary[,]” and they do not “support a shortening of the petition circulation and signature gathering window.” *Id.* The Senate Republican Intervenors otherwise took no specific position as to this litigation’s effect on the three pertinent dates that exist on the calendar. *Id.*

Respondents

FF10. The Acting Secretary of the Commonwealth noted at the hearing that the election “calendar situation at the moment is --- rather complicated[.]” (N.T. at 1092-93.) Her counsel also informed that it would not be in the people of the Commonwealth’s best interest to have two separate primaries. *Id.* at 1093. As such, the Acting Secretary thinks “it would be preferable to have three weeks between the [] time of the final map, and really by final map we mean including the resolution and the appeal is adopted and the first date in the primary calendar.” She continued, “if we had to we think we could probably do that in two weeks that in two weeks if we could transfer resources. And there are other ways in which we could condense the existing calendar as well.” *Id.* at 1094-95.

Governor Wolf

FF11. Counsel indicated at the hearing that Governor Wolf “feels very strongly we should not divide the primary and we should end up with a primary date ultimately that will accommodate both redistricting processes that are currently still proceeding.” (N.T. at 1096.)

Gressman Petitioners

FF12. The Gressman Petitioners indicated that they do not believe moving the 2022 General Primary Election is necessary at this point. (N.T. at 1106.) Moreover, the Gressman Petitioners “would defer to the election administrators who are the professionals in that space, but [they] do recognize that there can be some compression of the preprimary schedule.” *Id.*

Carter Petitioners

FF13. The Carter Petitioners do not dispute that “the Court has the authority to change deadlines, including the primary deadline[.]” if necessary. (N.T.

at 1118.) However, the Carter Petitioners did not think it was necessary at the time of the hearing. *Id.*

The Court notes and recommends for adoption by the Supreme Court the Congressional Intervenors' proposed revisions to the 2022 General Primary Election calendar, which suggest February 22, 2022, as the deadline for adopting and implementing a congressional redistricting plan. Specifically, the Congressional Intervenors propose that the following dates be changed: (1) the first day to circulate and file nomination petitions; (2) the last day to circulate and file nomination petitions; and (3) the last day to file objections to nomination petitions. According to the Congressional Intervenors, using February 22, 2022, as the deadline by which the state judiciary must adopt any congressional reapportionment plan, the Congressional Intervenors assert that it would still be feasible to hold the 2022 General Primary Election on its currently scheduled date of May 17, 2022, which is a similar course of action the Supreme Court followed in *LWV III*. The current and revised election dates appear below:

2. Current 2022 General Primary Election Schedule

- First day to circulate/file nomination petitions – Tuesday, February 15, 2022
- Last day to circulate and file nomination petitions – Tuesday, March 8, 2022
- Last day to file objections to nomination petitions – Tuesday, March 15, 2022
- 2022 General Primary Election – Tuesday, May 17, 2022

3. Proposed REVISED 2022 General Primary Election Schedule

- First day to circulate/file nomination petitions – Tuesday, March 1, 2022
- Last day to circulate and file nomination petitions – Tuesday, March 15, 2022
- Last day to file objections to nomination petitions – Tuesday, March 22, 2022

- 2022 General Primary Election – Tuesday, May 17, 2022

The Court notes that the first two proposed revised dates, appearing immediately above, reflect a shift of exactly two weeks from the originally scheduled deadlines to the proposed revised deadlines. The third proposed revised date listed immediately above reflects a shift of exactly one week from the originally scheduled objection deadlines. The Court further notes that the above dates reflect the exact schedule adopted by the Supreme Court in *LWV III*, albeit two years later.

However, in light of the changed circumstances of this litigation prompted by the Supreme Court’s February 2, 2022 order, granting Petitioners’ Emergency Application for Extraordinary Relief and invoking its extraordinary jurisdiction, designating the undersigned as a Special Master in this matter and directing the filing of a Report and Recommendation, and further directing, *inter alia*, that oral argument on any exceptions filed to the Special Master’s Report is scheduled to be held on February 18, 2022, before the Supreme Court, this Court recognizes that further and/or different changes to the election calendar than those recommended above may be necessary under the circumstances.⁴⁹

s/ Patricia A. McCullough
PATRICIA A. McCULLOUGH, Judge
of the Commonwealth Court of
Pennsylvania Appointed as Special
Master

⁴⁹ *Amicus* Participants Voters of the Commonwealth’s Application for Leave to File Responsive Expert Report, filed on January 26, 2022, is denied. *See* 1/14/2022 Cmwlth. Ct. Order. This Court additionally notes that it will not consider the *Amici Curiae* Brief of NAACP Philadelphia Branch and Black Clergy of Philadelphia & Vicinity in Support of Senate Democratic Caucus’ Proposed Redistricting Plan 2, filed on January 31, 2022, which was after the evidentiary hearing in this matter.

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IN THE SUPREME COURT OF PENNSYLVANIA

CAROL ANN CARTER; MONICA PARRILLA;
REBECCA POYOUROW; WILLIAM TUNG; ROSEANNE
MILAZZO; BURT SIEGEL; SUSAN CASSANELLI; LEE
CASSANELLI; LYNN WACHMAN; MICHAEL
GUTTMAN; MAYA FONKEU; BRADY HILL; MARY
ELLEN BALCHUNIS; TOM DEWALL; STEPHANIE
MCNULTY; and JANET TEMIN,

Petitioners,

v.

LEIGH M. CHAPMAN, in her official capacity as the Acting
Secretary of the Commonwealth of Pennsylvania; JESSICA
MATHIS, in her official capacity as Director for the
Pennsylvania Bureau of Election Services and Notaries,

Respondents.

PHILIP T. GRESSMAN; RON Y. DONAGI; KRISTOPHER
R. TAPP; PAMELA GORKIN; DAVID P. MARSH; JAMES
L. ROSENBERGER; AMY MYERS; EUGENE BOMAN;
GARY GORDON; LIZ MCMAHON; TIMOTHY G.
FEEMAN; and GARTH ISAAK,

Petitioners,

v.

LEIGH M. CHAPMAN, in her official capacity as the Acting
Secretary of the Commonwealth of Pennsylvania; JESSICA
MATHIS, in her official capacity as Director for the
Pennsylvania Bureau of Election Services and Notaries,

Respondents.

No. 7 MM 2022

**CARTER PETITIONERS' EXCEPTIONS TO
THE SPECIAL MASTER'S REPORT**

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subject to cross examination, and what that cross examination revealed. *See Rep.* at 114 (FF338).

3. Erred in admitting into evidence additional expert reports submitted by Dr. Thomas Brunell on behalf of the Congressional Intervenors and Dr. John Memmi on behalf of the Senate Republican Intervenors. *See Rep.* at 114–15, 117.

4. Erred in electing to credit opinions, analyses, and conclusions of certain experts, including Dr. Michael Barber and Dr. Keith Naughton, but inconsistently crediting the opinions, analyses, and conclusions of other experts, such as Dr. Jonathan Rodden, Dr. Daryl DeFord, and Dr. Moon Duchin.

A. Dr. Jonathan Rodden (*Carter* Petitioners)

5. Erred in failing to find that Dr. Jonathan Rodden was the only expert that testified during proceedings before the Special Master who actually drew the map he or she was offering opinions on, and erred in not according the Carter Plan more weight on that basis. *See Rep.* at 58–66 (FF1–51).

6. Erred by finding that “Dr. Rodden did not give a straight answer” “when asked about his overall conclusions about how the Carter plan compares to the 2018 Remedial Plan.” *Rep.* at 61 (FF25). Dr. Rodden testified that he was “able to quantitatively analyze” how the Carter Plan compares to the 2018 Remedial Plan by “looking at the population data and overlaying the maps . . . to get just a simple measure that says what percentage of the population in each district that [he] created

was already in that district,” which he did “district by district and look[ing] at the plan as a whole,” ultimately concluding that “the maps were very similar . . . and the share of the population that was contained . . . in each district . . . [on] average, . . . was 87 percent.” N.T. at 114–15.

7. Erred by finding that “Dr. Rodden . . . appeared to admit that there may be a slight discrepancy in his calculation of HB 2146’s total county subdivision splits.” Rep. at 64 (FF44). Dr. Rodden testified that “*if* there [was] a slight discrepancy” between his calculation and the Legislative Data Processing Center’s tabulation of HB 2146’s total subdivision splits, it was probably due to “different municipal terminologies” used by Dr. Rodden and the Legislative Data Processing Center. N.T. at 151–53 (emphasis added).

8. Erred by finding that “Dr. Rodden . . . did not conduct a simulation analysis in this case, although he was capable of doing so, because ‘it didn’t occur to [him] that drawing a [sic] 100,000 other plans was something that [he] should do.’” Rep. at 65 (FF46) (alterations in original). Dr. Rodden testified that, in this case, he was “asked to draw . . . a plan and evaluate its fairness,” whereas the simulations analysis “is a technique that’s used to identify gerrymandering and . . . to understand some aspects of political geography.” N.T. at 158.

B. Dr. Michael Barber (House Republican Intervenors)

9. Erred in failing to find that Dr. Barber has limited experience using an algorithm to generate simulated plans prior to January 2022 and has never published in the areas of redistricting, partisan influence in the redistricting process, or simulated redistricting analyses, and thus erred in crediting Dr. Barber’s simulations where there is no basis to do so. *See* Rep. at 165 (FF5, 8); 176 (FF20–23); 209 ¶ 66; *see also* N.T. at 561–62.

10. Erred in failing to find that multiple courts have concluded that testimony given by Dr. Barber should be given little weight or no credit. *See, e.g.*, Rep. at 165 (FF11); *see also* N.T. at 562–66; *Common Cause v. Lewis*, No. 18 CVS 014001, 2019 WL 4569584, at *95 (N.C. Super. Ct. Sep. 3, 2019) (“In light of the above shortcomings in Dr. Barber’s analysis, the Court gives little weight to his testimony.”); *Jones v. DeSantis*, 462 F. Supp. 3d 1196, 1246 (N.D. Fla. 2020) (not crediting Dr. Barber’s testimony).

11. Erred in failing to find that Dr. Duchin found “clear errors of calculation” in Dr. Barber’s findings. *See, e.g.*, Rep. at 165 (FF11); *see also* N.T. at 368.

12. Erred in finding that any of Dr. Barber’s opinions, calculations, or analyses were credible in light of evidence that Dr. Barber does not have the proper

expertise and credibility and does not employ a replicable and accurate methodology.

C. Dr. Keith Naughton (Congressional Intervenors)

13. Erred in crediting the testimony of Dr. Naughton, despite finding that:

a. “Dr. Naughton . . . acknowledg[ed] that he [is] not a mathematician[,] . . . has ‘no particular experience in redistricting,’ and has never served as an expert in redistricting litigation before.” Rep. at 93 (FF215); 95 (FF225); *see also* Rep. at 114 (FF338);

b. “Dr. Naughton conceded that he provided no quantitative analysis of how any of the proposed plans perform on the neutral redistricting criteria” and “Dr. Naughton agreed that his report ‘does not identify any particular methodology’ that he used to arrive at his conclusions, and does not ‘cite any authority or particular evidence for [his] opinions.’” Rep. at 94 (FF219–220); *see also* Rep. at 114 (FF338); and

c. “[M]uch of [Dr. Naughton’s] professional career has been dedicated to helping Republican candidates in Pennsylvania win their seats,” and Dr. Naughton was retained in this case to testify on behalf of Republican interests. Rep. at 94 (FF218); *see also* Rep. at 114 (FF338).

14. Erred in crediting Dr. Naughton's testimony over testimony of other experts in this case that have a proven body of credible expert work. *See, e.g.*, Rep. at 160 (FF22–28).

15. Where the Court found that Dr. Naughton's expertise is based solely on his work experience in Pennsylvania campaign politics, Rep. at 93–94 (FF216–218), and Dr. Naughton admitted that he has not worked in Pennsylvania campaign politics since 2015, *see* Naughton Rebuttal Rep. Appx. 1 at 3; N.T. at 769, erred in crediting Dr. Naughton's testimony that:

a. Pittsburgh voters *presently* tend to particularly favor local candidates in statewide elections, *see* Rep. at 150 (FF10);

b. Pittsburgh voters *presently* share common interests in a representative's advocacy for the acquisition of federal funds and the obtaining of constituent services, *see* Rep. at 150 (FF11); and

c. Voters in Scranton and Wilkes-Barr *presently* prefer to be in separate districts, *see* Rep. at 96 (FF231)

despite Dr. Naughton admitting that he has not conducted or reviewed any public opinion polling in support of his opinions. *See* N.T. at 775–76.

16. Erred in failing to find that Dr. Naughton conflated voter party identification with communities of interest. *See* Rep. at 96 (FF229).

III. Traditional Redistricting Criteria

17. Erred in consistently finding that certain Submitted Plans, such as HB 2146 and the Reschenthaler Plans, are in compliance with the required redistricting principles, but failing to consistently find and credit that other Submitted Plans, such as the Carter Plan, are also in compliance with those same redistricting principles.

A. Contiguity

18. No errors as to findings on contiguity.

B. Equal Population

19. Erred in concluding that the maximum population deviation for congressional districts is 10 percent, where that is the standard for state legislative districts only, and the standard for congressional districts is “as nearly equal in population as practicable,” which is satisfied by a deviation of plus or minus one person. *See* Rep. at 138 (CL3); *see also Evenwel v. Abbott*, 578 U.S. 54, 59–60 (2016) (specifying that the 10% maximum deviation threshold applies to state and local legislative districts).

20. Erred in finding and concluding that the Carter Plan is to be given less weight for producing a two-person deviation, as opposed to one-person deviation, where the constitutional requirement that congressional districts be created “as nearly equal in population as practicable” is satisfied by a two-person deviation. *See*

Rep. at 138–39 (CL1–4; FF3). *See Carter Petitioners’ Brief in Support of Exceptions (“Brief in Support”)*, section III.A.1.

C. Compactness

21. Erred in failing to find that the Carter Plan had one of the highest Reock compactness scores out of all of the Submitted Plans. *See Rep. at 141 (FF4)*. *See Brief in Support*, section III.A.2.

D. Integrity of Political Subdivisions

22. Erred in failing to compare across all plans the total number of splits of subdivisions, instead only comparing the number of subdivisions that were split (even if each subdivision was split more than once). *See Rep. at 146 (FF36–38)*. *See Brief in Support*, section III.A.4.

23. Erred in failing to find that the splitting of certain political subdivisions is more important in assessing a plan than the splitting of others, with the split of counties being the most important metric. *See Rep. at 146–47 (FF36–43)*; *see also N.T. at 250–51 (Dr. DeFord agreeing that it is more important to avoid a county split than a borough split)*. *See Brief in Support*, section III.A.4.

IV. Historical Redistricting Criteria

A. Communities of Interest

24. Erred in finding that “Dr. Rodden . . . did not explicitly examine or appear to have considered the specific considerations that need to be taken into

account when establishing that splits maintain the surrounding communities of interest,” where Dr. Rodden did in fact provide extensive and specific discussion in his report and during his testimony about the Carter Plan’s preservation of communities of interest. Rep. at 156 (FF12); *see* Rodden Initial Rep. at 8–20 (Jan. 24, 2022) (specifically detailing decisions and tradeoffs to drawing boundaries for every district in the Carter Plan to achieve population equality, and specifically noting decisions to avoid splits in District 5, and unifying areas in Districts 7 and 15). *See Brief in Support*, section III.B.3.a.

25. To the extent Dr. Naughton’s testimony is to be credited, erred in failing to find that the Carter Plan is consistent with Dr. Naughton’s suggested configurations of communities of interest across the state. Rep. at 151 (FF17), 157–59 (FF15–20); 210–11 ¶¶ 70–75; *see also* Rodden Initial Rep. at 14, 20 (Jan. 24, 2022) (consistent with Dr. Naughton’s testimony, the Carter Plan keeps Bucks County whole, extended Bucks County into Montgomery County, attached portions of South Philadelphia with Delaware County, and did not split the City of Pittsburgh).

B. Incumbent Pairing

26. Erred in failing to find that, due to population loss in the center of Pennsylvania, the district that was eliminated was previously represented by a

Republican representative. *See* Rep. at 178 (FF1), 180 (FF11); *see also* Rodden Initial Rep. at 23 (Jan. 24, 2022). *See Brief in Support*, section III.B.3.c.

27. Erred in finding that the pairing of representatives based on their party affiliation or status as a candidate can be more or less indicative of unfair burdens on incumbents. *See* Rep. at 179 (FF2–5).

C. Partisan Fairness

28. Erred in failing to give more weight to the partisan fairness of the Carter Plan, given that it was the only plan expressly drawn without consideration of partisan performance. *See generally* Rep. at 162–76; N.T. at 117–18.

29. Erred in relying on metrics related to human geography and simulations as benchmarks of partisan fairness. *See generally* Rep. at 162–66. *See Brief in Support*, section III.B.1.b.

30. Erred in finding that the difference of “a few percentage points” is insignificant in evaluating mean-median calculations, where this Court has credited expert testimony asserting that the “range” of what is considered normal for this metric is in the narrow range between zero to four percentage points. Rep. at 172 (FF25); *see League of Women Voters v. Commonwealth*, 178 A.3d 737, 774 (Pa. 2018).

31. Erred in crediting Dr. Barber’s simulations over Dr. Duchin’s simulations, as well as crediting Dr. Barber’s calculations of the Efficiency Gap

metric over other experts, where every other expert that performed the calculation found HB 2146 to be significantly more unfair. *See* Rep. at 176 (FF22). *See Brief in Support*, section III.B.1.a.

32. Erred in concluding that plans which prioritize proportional election outcomes such as “negating a natural geographic disadvantage to achieve proportionality at the expense of traditional redistricting criteria” will *per se* violate the Pennsylvania Constitution’s Free and Equal Elections Clause, where proportionality is an important proxy for measuring partisan skew or unfairness as it relates to the desires of the state’s voters. Rep. at 177. *See Brief in Support*, section III.B.1.b.

33. Erred in concluding that proportionality is not a “goal of redistricting” and thus “any plan that attempts to achieve proportionality . . . must be disregarded.” Rep. at 178 (CL1; FF1). *See Brief in Support*, section III.B.1.b.

34. Even accepting the erroneous conclusion that a plan that results in proportional election outcomes is *per se* a violation of the Free and Equal Elections Clause of the state’s constitution, erred in failing to find that, pursuant to the opinion of Dr. Barber, which the Special Master has erroneously chosen to credit, HB 2146 shows a Democratic skew of 9 Democrat-leaning districts (*see infra* ¶ 40), and thus would also be a *per se* violation of the Pennsylvania Constitution. Rep. at 177; *see also* Barber Rebuttal Rep. at 15 (Jan. 26, 2022).

D. Least Change

35. Erred in concluding that the least-change approach is of “limited utility,” and that utilizing the least-change approach is different from evaluating redistricting plans against traditional criteria, where comparison to the 2018 Remedial Plan is a way to measure the degree to which the Carter Plan mirrors a map previously drawn by this Court that maximized adherence to every redistricting principle and where preservation of prior districts is a redistricting principle specifically enumerated by this Court. Rep. at 184 (CL3–4). *See Brief in Support*, section III.B.2.

36. Erred in concluding that the *Carter* Petitioners were proposing reliance on the least-change doctrine as a way to require, or sanction, a court to defer to its own prior redistricting map, where the least-change doctrine is merely crediting the most recent constitutional map, regardless of whether it was enacted by a legislature or drawn by a court. *See* Rep. at 187 (CL11). *See Brief in Support*, section III.B.2.

37. Erred in finding that the *Carter* Petitioners elevated a “subordinate factor into a dominate one” and thus “violate[d] the Free and Equal Elections Clause as a matter of law,” where the evidence showed that the Carter Plan sufficiently meets every one of the traditional *and* historical redistricting factors, that Dr. Rodden drew the Carter Plan with particular attention to those redistricting criteria, and that the least-change analysis is also a way to measure the degree to which the Carter

Plan adheres to the redistricting principles as established by this Court just four years ago. Rep. at 187 (FF10). *See Brief in Support*, section II.B.

38. Erred in finding that Dr. Rodden’s calculations of retained population share was not useful because “Dr. Rodden does not explain the extent to which the percentages of retained population share is either acceptable or so disparate so as to justify the elimination of any of the other plans or conversely to prioritize the Carter Plan based on this criterion,” where Dr. Rodden expressly offered the calculations as a way to compare which of the Submitted Plans retained the highest population distribution from the 2018 Remedial Plan, and thus least disrupts the existing districts. Rep. at 185 (FF7); Rodden Rebuttal Rep. at 1–2 (Jan. 26, 2022).

V. HB 2146

39. Erred in concluding that the HB 2146 Plan should be accorded any particular deference because it passed the legislative branch, given that it was vetoed by Governor Wolf and the veto has not been overridden. Rep. at 215–16 ¶¶ 96–97. *See Brief in Support*, section III.C.

40. Erred in finding that the HB 2146 Plan predicted a result of 9 Democratic-leaning seats and 8 Republican-leaning seats, and is thus more favorable to Democrats, when in fact HB 2146 is more favorable to Republicans and will likely result in the election of at least 9 Republicans. *See* Rep. at 211 ¶ 78; Rodden Rebuttal Rep. at 9–11 (Jan. 26, 2022).

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IN THE SUPREME COURT OF PENNSYLVANIA

CAROL ANN CARTER; MONICA PARRILLA;
REBECCA POYOUROW; WILLIAM TUNG; ROSEANNE
MILAZZO; BURT SIEGEL; SUSAN CASSANELLI; LEE
CASSANELLI; LYNN WACHMAN; MICHAEL
GUTTMAN; MAYA FONKEU; BRADY HILL; MARY
ELLEN BALCHUNIS; TOM DEWALL; STEPHANIE
MCNULTY; and JANET TEMIN,

Petitioners,

v.

LEIGH M. CHAPMAN, in her official capacity as the Acting
Secretary of the Commonwealth of Pennsylvania; JESSICA
MATHIS, in her official capacity as Director for the
Pennsylvania Bureau of Election Services and Notaries,

Respondents.

PHILIP T. GRESSMAN; RON Y. DONAGI; KRISTOPHER
R. TAPP; PAMELA GORKIN; DAVID P. MARSH; JAMES
L. ROSENBERGER; AMY MYERS; EUGENE BOMAN;
GARY GORDON; LIZ MCMAHON; TIMOTHY G.
FEEMAN; and GARTH ISAAK,

Petitioners,

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LEIGH M. CHAPMAN, in her official capacity as the Acting
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Respondents.

No. 7 MM 2022

**CARTER PETITIONERS' BRIEF IN SUPPORT OF
EXCEPTIONS TO THE SPECIAL MASTER'S REPORT**

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Pursuant to this Court’s February 2, 2022 Order, the *Carter* Petitioners respectfully submit the following Brief in Support of Exceptions to the Commonwealth Court’s Special Master’s Report and urge this Court to adopt the Carter Plan as the Commonwealth’s next congressional map.

I. INTRODUCTION

Four years ago, in *League of Women Voters of Pennsylvania v. Commonwealth*, 181 A.3d 1083 (Pa. 2018) (“*LWV IP*”), this Court invalidated the state’s 2011 congressional map as an unconstitutional partisan gerrymander and subsequently adopted a remedial congressional map that reflected the physical and political geography of the Commonwealth (the “2018 Remedial Plan”). In its accompanying opinion, this Court articulated the following redistricting principles to protect against partisan vote dilution: congressional districts should be compact, contiguous, equal in population, and maintain the integrity of political subdivisions. Of all the plans before the Court at the time, the 2018 Remedial Plan best reflected these criteria.

Now, in 2021, the Carter Plan is the map before this Court that best reflects these criteria and the underlying principle of equal representation they seek to protect. The Carter Plan not only performs as well or better on all traditional and historical redistricting standards than the other submissions before this Court (the “Submitted Plans”), it is also undisputedly the map that hews closest to this Court’s

2018 Remedial Plan, preserving the cores and lines of current districts to the greatest extent possible, while accounting for changes in the Commonwealth’s population over the past decade. In fact, the Carter Plan *improves* upon the 2018 Remedial Plan’s compliance with the traditional redistricting criteria articulated in *League of Women Voters*, as well as upon historical considerations like preserving communities of interest. None of the other Submitted Plans has fewer county splits, and only one plan splits fewer precincts. And, in adhering to these criteria, the Carter Plan is unsurpassed on partisan fairness.

The Carter Plan effectively guarantees the Commonwealth’s constitutional promise to Pennsylvania’s citizens that elections will be free and fair and that no votes will be diluted. This Court underscored in 2018 that the “overarching objective” of the Pennsylvania Constitution’s Free and Equal Elections Clause “is to prevent dilution of an individual’s vote by mandating that the power of his or her vote in the selection of representatives be equalized to the greatest degree possible with all other Pennsylvania citizens.” *League of Women Voters v. Commonwealth*, 178 A.3d 737, 817 (Pa. 2018) (“*LWVP*”). Accordingly, this Court viewed the neutral redistricting criteria as a “floor” to protect against vote dilution, *id.*, using them not as ends unto themselves but as tools to measure what really mattered—whether a congressional map unfairly dilutes votes. *Id.* at 816. The Carter Plan stands out for embodying equal participation through partisan fairness. It performs exceptionally

well on the fairness metrics considered by experts in this case, yet was not drawn with a partisan outcome in mind. The Carter Plan is the *only* plan whose map-drawer himself testified to the process and goals, and Dr. Rodden’s unrebutted testimony demonstrates that he drew the Carter Plan without partisan intent.

In sum, the Carter Plan meets or surpasses the performance of the 2018 Remedial Plan as well as the other Submitted Plans on traditional redistricting criteria, is superior or comparable to other plans on historical criteria, best reflects the political preferences of Pennsylvania voters, and best preserves the features of the districts in the 2018 Remedial Plan that this Court chose just four years ago. In contrast, HB 2146, the plan recommended by the Special Master, falls well below the Carter Plan on traditional and historical redistricting criteria and fares particularly poorly on partisan fairness measures, which reveal it to be among the most biased of the plans—and thus among the most likely to dilute votes in contravention of the constitutional command of equal representation. To ensure that command is fulfilled, the Court should adopt the Carter Plan in full.

II. CREATING THE CARTER PLAN

A. **This Court’s 2018 Remedial Plan is a logical and compelling starting point.**

As this Court knows well, Pennsylvania’s current congressional redistricting map is the culmination of months-long litigation, a record developed in the Commonwealth Court, and myriads of map submissions from parties, intervenors,

and *amici*. See *LWV II*, 181 A.3d at 1086–87. After invalidating the 2011 plan as a partisan gerrymander, this Court drew and adopted the 2018 Remedial Plan because it was “superior or comparable” on every standard that the Court considered. *Id.* at 1087.

Those standards, which this Court and the federal courts have developed over decades, fit into two principal categories. First, there are several “neutral criteria” (referred to herein as “traditional criteria”) used as the primary means to assess congressional redistricting plans: (1) population equality; (2) compactness; (3) contiguity; and (4) respect for political subdivisions. *Id.*; *LWV I*, 178 A.3d at 816–17. Second, if a plan complies with these four neutral principles, the court should look to so called “historical criteria,” *i.e.*, “other factors [that] have historically played a role in the drawing of legislative districts, such as the preservation of prior district lines, protection of incumbents, or the maintenance of the political balance which existed after the prior reapportionment.” *LWV I*, 178 A.3d at 817; *see also Mellow v. Mitchell*, 607 A.2d 204, 206 (Pa. 1992) (listing “effectuating adequate representation of a minority group,” “maintaining relationships of shared community interests,” and “not unduly departing from the useful familiarity of existing districts” as “advanc[ing] the cause of equality” in congressional redistricting); *id.* at 207 (including “avoiding contests between incumbent Representatives” as a “legitimate state objective” in congressional redistricting

(quoting *Karcher v. Daggett*, 462 U.S. 725, 740 (1983)); *id.* at 210 (considering whether a congressional plan was “politically fair”).

These standards enable courts to assess the fundamental underlying principle—whether a plan upholds the guarantee of “free and equal” elections promised by the state’s constitution by not diluting the power of any Pennsylvanians’ votes. *LWV I*, 178 A.3d at 816. The objective is “representational districts that both maintain the geographical and social cohesion of the communities in which people live and conduct the majority of their day-to-day affairs, and accord equal weight to the votes of residents in each of the various districts.” *Id.* at 814, 816.

The 2018 Remedial Plan has proven especially successful in meeting these goals. In Pennsylvania’s 2018 and 2020 elections, the current map produced a congressional delegation that mirrors the partisan preferences of Pennsylvania’s voters. Rodden Initial Rep. at 25 (Jan. 24, 2022). These elections also demonstrated that the current map allows for relatively competitive elections that respond to changes in Pennsylvania voters’ preferences. *Id.* at 6. In sum, the 2018 Remedial Plan reflects a careful balancing of historical and traditional redistricting factors and provides the most recent guidance both on the drawing of a proposed congressional plan and the criteria by which it should be evaluated.

B. The Carter Plan was drawn to build upon the 2018 Remedial Plan’s “superior” adherence to both traditional and historical redistricting criteria.

The Carter Plan was drawn by Dr. Jonathan Rodden, a professor of political science at Stanford University, who has published extensively on political representation, geographic location of demographic and partisan groups, and the drawing of electoral districts. *Id.* at 1–2. Dr. Rodden has been accepted and testified as an expert witness in six election law and redistricting cases, including most recently in two redistricting cases in Ohio in January 2022, in which the Ohio Supreme Court credited his maps and analysis. *Id.* at 2.

Dr. Rodden’s map-drawing process began with the 2018 Remedial Plan, which is widely acknowledged as a successful plan on both traditional redistricting criteria and partisan fairness. N.T. at 87–89, 247–48. His primary considerations in drawing the Carter Plan were to adhere to the traditional redistricting criteria while accounting for Pennsylvania’s population changes since 2010. Rodden Initial Rep. at 1 (Jan. 24, 2022). 2020 Census data show that, due to its relatively slow population growth compared to the nation, Pennsylvania is now entitled to one fewer congressional seat. And population changes within the Commonwealth have been asymmetric: while metropolitan and relatively densely populated areas of the state, like southeastern Pennsylvania and Allegheny County, gained population and grew denser, rural and relatively sparsely populated areas of the state generally lost

population. *Id.* at 6–7. As a result, major reconfigurations of existing districts are unavoidable in rural Pennsylvania, whereas metropolitan districts required only fine-tuning based on localized variations in the rate of population growth. *Id.* at 8–9.

When drawing the Carter Plan, Dr. Rodden did not consider partisan or racial data. N.T. at 117–18; Rodden Initial Rep. at 23 (Jan. 24, 2022). Rather, he made adjustments to the 2018 Remedial Plan with the goal of maintaining and improving its adherence to traditional and historical redistricting criteria. For example, Dr. Rodden avoided splitting communities of interest and, where possible, reunited communities of interest that were previously split in the 2018 Remedial Plan, such as in Carbon County. *See* N.T. at 107, 111, 113–14.

Dr. Rodden took a least-change approach because the 2018 Remedial Plan is a constitutional, fair map that this Court has determined reflected both redistricting standards and the underlying principle of equal representation. *See* N.T. at 89. Contrary to the Special Master’s characterization, the Carter Plan does not “elevate a subordinate factor into a dominant one” by using the least-change approach. Rep. at 187 (FF10). Rather, Dr. Rodden drew the map to comply—and it does comply—with all traditional redistricting criteria, none of which were “subordinate[d]” to another criterion. In these circumstances, a least-change approach was an effective means to meet the dominant traditional and historical redistricting principles that the 2018 Remedial Plan embodies. And such an approach has the added benefit of

ensuring continuity for voters, N.T. at 410–11, which is one of the reasons why this Court recognized preserving district lines as a valid redistricting criterion. *LWV I*, 178 A.3d at 816–17.

Notably, Dr. Rodden was the only map-drawer to testify. As a result, unlike every other plan, the Carter Plan’s process of creation can be accurately assessed as to underlying motivations and rationale. That the Carter Plan—alone among the Submitted Plans—has transparency about its provenance should be lauded, not criticized as the Special Master did, and this fact only bolsters its credibility for adoption by this Court.

III. REDISTRICTING PRINCIPLES

A. The Carter Plan complies with all four traditional redistricting criteria.

The Carter Plan complies with the four traditional principles of redistricting identified by this Court in *League of Women Voters*, including (1) population equality, (2) compactness, (3) contiguity, and (4) integrity of political subdivisions. *See LWV II*, 181 A.3d at 1087. Notably, the Carter Plan performs among the best of the Submitted Plans across all four criteria.

1. The Carter Plan has equal population.

The Carter Plan complies with the *League of Women Voters* principle of population equality. A congressional redistricting plan “should consist of: congressional districts . . . as nearly equal in population as practicable.” *Id.* at 1085.

Under the “one person, one vote” principle, congressional districts within a state must have equally apportioned numbers of persons. *See Wesberry v. Sanders*, 376 U.S. 1, 7–8 (1964). For federal congressional districts, “extremely small deviations in district populations may be justified by, inter alia, a desire to avoid splitting of political subdivisions and precincts, to provide adequate representation to a minority group, and/or to preserve communities of interest.” *Mellow*, 607 A.2d at 208.

Based on the 2020 Census, the ideal population of each congressional district is 764,865. Rodden Initial Rep. at 21 (Jan. 24, 2022). Each of the proposed maps, including the Carter Plan, creates 17 districts in which the population, based on 2020 Census data, is either precisely that number, one more, or one fewer. Rodden Rebuttal Rep. at 2 (Jan. 26, 2022). The Carter Plan includes four districts with the ideal population and 13 districts with a deviation of plus or minus one person. Rodden Initial Rep. at 21 (Jan. 24, 2022).

The Special Master wrongly gave less weight to the Carter Plan based on its maximum two-person population deviation. *See Rep.* at 139 (FF3). The Special Master cites no authority supporting her decision, and population deviations of plus or minus one person have long been considered to satisfy the population equality standard. *See Mellow*, 607 A.2d at 208 (adopting plan that had a total maximum deviation of “0.0111%”); *Kalson v. Paterson*, 542 F.3d 281, 285 n.6 (2d Cir. 2008) (stating that New York’s congressional districts “each . . . had the same total

population of 654,360” with “deviations [of] plus or minus one person”); *Essex v. Kobach*, 874 F. Supp. 2d 1069, 1088 (D. Kan. 2012) (“The Court’s plan results in two districts with populations of 713,278 and two with populations of 713,281. Such a distribution provides equality among Kansas voters as nearly as practicable, and therefore satisfies Article I, Section 2 of the U.S. Constitution.”); *Colleton Cnty. Council v. McConnell*, 201 F. Supp. 2d 618, 664 (D.S.C. 2002) (“In keeping with our overriding concern, the court plan complies with the ‘as nearly as practicable’ population equality requirement of Article 1, § 2 of the Constitution . . . with a deviation of plus or minus one person.” (citing *Karcher*, 462 U.S. at 730)).

This Court itself has previously adopted a map with a much greater deviation than two persons, selecting that plan over others, including a map with zero deviation. *See Mellow*, 607 A.2d at 208. This illustrates the Special Master’s error in giving less weight to the Carter Plan.

Indeed, congressional maps with population deviations of two or more persons are commonplace across the country. *See, e.g.*, Oregon (two-person population range after 2010 redistricting cycle);¹ Georgia (two-person population

¹ *See* “2010 Redistricting Deviation Table,” Nat’l Conf. State Legislatures (Jan. 15, 2020), <https://www.ncsl.org/research/redistricting/2010-ncsl-redistricting-deviation-table.aspx>.

range after 2010 redistricting cycle);² Colorado (two-person population range in court-enacted plan after 2000 redistricting cycle);³ Maryland (two-person population range after 2000 redistricting cycle).⁴ And counsel is not aware of a single case striking down a congressional map based on a two-person deviation. Thus, precedent and historical practice roundly undermine the Special Master's decision to assign less weight to the Carter Plan because of its population deviation.

To summarize, the Carter Plan has a minimal population deviation that has never been found to violate the equal population principle and, in fact, complies with the standard that has been articulated by multiple courts. It thus satisfies the constitutional requirement of population equality, and the maximum two-person deviation is no basis for giving it less weight.⁵

² See *id.*; see also “Justice Approves Georgia’s Redistricting Plans,” Ga. Dep’t of Law (Dec. 23, 2011), <https://law.georgia.gov/press-releases/2011-12-23/justice-approves-georgias-redistricting-plans> (announcing preclearance by U.S. Department of Justice).

³ See “Designing P.S. 94-171 Redistricting Data for the Year 2010 Census,” U.S. Census Bureau (Sept. 2004), https://www2.census.gov/programs-surveys/rdo/2010_pl94-171rv.pdf, at 26; *Beauprez v. Avalos*, 42 P.3d 642 (Colo. 2002) (adopting plan).

⁴ See U.S. Census Bureau, *supra* note 3; *Duckworth v. State Bd. of Elections*, 213 F. Supp. 2d 543 (D. Md. 2002) (rejecting challenge to plan that did not allege unconstitutional population deviation), *aff’d* 332 F.3d 769 (4th Cir. 2003).

⁵ Nevertheless, Dr. Rodden drew a very slightly revised map, which includes twelve districts with the ideal population and five districts with one fewer person than the ideal. See Exhibit A. The only changes he made were to further equalize population, which resulted in an additional split of a Vote Tabulation District (“VTD”) but did not otherwise impact any of the plan-wide metrics that Dr. Rodden reported. *Id.*

2. The Carter Plan is compact.

The Carter Plan complies with the *League of Women Voters* principle of compactness. A congressional redistricting plan “should consist of: congressional districts composed of compact . . . territory.” *LWV II*, 181 A.3d at 1085; *see also Miller v. Johnson*, 515 U.S. 900, 916 (1995); *Brown v. Thomson*, 462 U.S. 835, 842 (1983). However, there is no bright-line test to determine whether a plan is sufficiently compact to satisfy the criterion. *See* N.T. at 404–05. Nor is there a widely accepted “best” measure of compactness, as each measure of this principle achieves something different. Because each method has certain limitations, it is important to consider how maps perform across multiple metrics. Rodden Rebuttal Rep. at 3 (Jan. 26, 2022); N.T. at 214.

To evaluate compactness, this Court has relied on the Reock and Polsby-Popper measures. *See LWV I*, 178 A.3d at 771–72 (calling the Reock and Polsby-

Avoiding an additional VTD split is precisely the kind of tradeoff that courts, including this Court, have recognized as reason to allow minor population deviations—indeed, much greater deviations than the Carter Plan’s. *Mellow*, 607 A.2d at 208, 218 (holding that a deviation of 0.0111% was “fully justified by the policy of preserving municipalities and precincts” and adopting the Special Master’s conclusion that “a serious election administration problem arises from requiring the voters in a single precinct to look to two different sets of congressional candidates”); *Shayer v. Kirkpatrick*, 541 F. Supp. 922, 933 (W.D. Mo. 1982), *aff’d sub nom.*, *Schatzle v. Kirkpatrick*, 456 U.S. 966 (1982) (holding that departures from mathematical perfection are justified by avoiding the splitting of election precincts). However, to the extent this Court agrees with the Special Master’s equal population analysis, the *Carter* Petitioners respectfully request that this Court consider and adopt the Revised Carter Plan set forth in Exhibit A.

Popper metrics “widely-accepted standards”). According to these measures, the Carter Plan closely mirrors or exceeds the respective compactness scores of the 2018 Remedial Plan: it matches the 2018 Remedial Plan’s Reock score, does better than the 2018 Remedial Plan on the Schwartzberg metric, and falls just shy of matching (each by 0.01) the 2018 Remedial Plan’s Population Polygon and Convex Hull scores. Rodden Initial Rep. at 22 tbl. 5 (Jan. 24, 2022).

Moreover, the Carter Plan is similarly compact to the other Submitted Plans. *See* DeFord Rebuttal Rep. ¶ 25 tbl. 8 (Jan. 26, 2022). In particular, the Carter Plan’s Reock compactness score is the second-highest among the Submitted Plans. *Id.* One of the least compact plans is HB 2146, the plan that the Special Master recommended. N.T. at 335.

Compactness scores in particular can be sensitive to individual redistricting choices that account for other traditional criteria. *See* N.T. at 398–99 (Dr. Duchin explaining that complying with traditional redistricting factors is a balancing act). For instance, the Carter Plan’s somewhat lower Polsby-Popper score reflects Dr. Rodden’s decision to keep the city of Pittsburgh whole; splitting Pittsburgh would have improved the plan’s score on that measure, but at the expense of preserving the Commonwealth’s second-largest city. *See* N.T. at 217 (Dr. DeFord explaining that maps that keep Pittsburgh whole obtain lower, though still compliant, Polsby-Popper scores than those maps that split Pittsburgh); Rep. at 148 (FF4). Similarly, some of

the Carter Plan’s slightly lower compactness measures result from the effort to maintain population equality in Districts 4 and 5 by accommodating asymmetries in the rate of population growth between Montgomery, Delaware, and Bucks Counties while minimizing county splits in southeastern Pennsylvania. Rodden Initial Rep. at 23 (Jan. 24, 2022).

In sum, the Carter Plan is superior or comparable on the criterion of compactness to both the 2018 Remedial Plan and the other Submitted Plans.

3. The Carter Plan is contiguous.

The Carter Plan complies with the *League of Women Voters* principle of contiguity. A congressional redistricting plan “should consist of: congressional districts composed of . . . contiguous territory.” *LWV II*, 181 A.3d at 1085; *see also Miller*, 515 U.S. at 916. Of particular concern are districts that contain shapes or formations, such as “isthmuses” or “tentacles” that destroy or strain the notion of contiguity of a district. *LWV I*, 178 A.3d at 819. The Carter Plan, like each of the other Submitted Plans, is composed of contiguous districts.

4. The Carter Plan maintains political subdivisions.

Finally, the Carter Plan also complies with the *League of Women Voters* principle of respect for political subdivisions. A congressional redistricting plan “should consist of: congressional districts . . . which do not divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure

equality of population.” *LWV II*, 181 A.3d at 1085; *see also Karcher*, 462 U.S. at 740–41; *Reynolds v. Sims*, 377 U.S. 533, 580–81 (1964).

The Carter Plan splits fewer political subdivisions than the 2018 Remedial Plan, Rodden Initial Rep. at 21–22 (Jan. 24, 2022), and maintains the integrity of political subdivisions as well as or better than the other Submitted Plans. The Carter Plan is especially effective at maintaining the integrity of counties and Vote Tabulation Districts (“VTDs”), which are equivalent to precincts.

There are two different ways to measure splits of subdivisions such as counties. The first is to measure the *number* of split counties in a plan, which is the number of counties that are not kept whole, regardless of how many times they are split. Rodden Rebuttal Rep. at 3 (Jan. 26, 2022). However, this measure does not capture multiple splits of a single county. For that reason, it is also important to consider the *total* number of county splits in a plan, as that captures more fully the number of *times* counties are split. For example, if a county is split between three districts, the non-contiguous splits of the county are counted as two splits rather than one. *Id.* at 3–4.

Among all the political subdivisions, it is most important to keep counties whole, *see* N.T. at 250–51 (Dr. DeFord explaining that counties are a “more fundamental political unit” than others), and the Carter Plan excels on that metric. The Carter Plan is tied for both fewest *number* of split counties and *total* county

splits among the Submitted Plans. Rodden Rebuttal Rep. at 4 tbl. 2 (Jan. 26, 2022).⁶ The Carter Plan ties with the Reschenthaler Plans for fewest *number* of split counties, 13, but the Reschenthaler Plans each have 18 *total* county splits, one more than the Carter Plan, which has 17. *Id.* at 3–4. The Carter Plan ties with the Citizen Voters Plan and Voters of PA Plan on the *total* county splits, but those plans have a higher *number* of split counties, at 14 and 15 splits respectively. *Id.* Thus, when considering both metrics of county splits, the Carter Plan best maintains the integrity of Pennsylvania counties.

Another type of political subdivision is a VTD—another term for a precinct. For election administration, splitting VTDs can lead to mistakes for local election administrators who must be sure to provide the right ballot for residents living in

⁶ The counting of county splits varies depending on whether a small six-person non-contiguous fragment of Chester County is counted as a “split” if it is placed in a different district than the rest of Chester County. In calculating county splits in the plan it adopted, the *League of Women Voters* Court did not count the separation of that fragment from Chester County because it was more “appropriate[to] place[it] inside the district that contains Delaware County.” *LWV II*, 181 A.3d at 1087 n.10. Dr. Rodden maintained that aspect of the 2018 Remedial Plan, such that the Chester County fragment continues to be “appropriately placed” inside District 5 with Delaware County and is kept contiguous with its surrounding area, and to ensure contiguity of the districts. Thus, Dr. Rodden’s tabulation of county splits in his first report reflected that guidance and reported the number of split counties in the Carter Plan as 13. Rodden Initial Rep. at 21 (Jan. 24, 2022). In his response report, Dr. Rodden prepared a comparative table of county splits, but due to the time constraints, he was unable to fully assess all technicalities in each of the 13 other submitted plans, including their treatment of the Chester County fragment, so for illustrative purposes he counted any split, no matter its size and location, including the Chester County fragment. Rodden Rebuttal Rep. at 4 (Jan. 26, 2022).

two different political districts, even though they might be voting at the same polling place. *See Mellow*, 607 A.2d at 218 (Special Master opinion explaining that “a serious election administration problem rises from requiring the voters in a single precinct to look to two different sets of congressional candidates,” and emphasizing that this “problem is not a minor one”). When seeking to establish districts of equal population, VTDs are oftentimes split because they do not add up to precisely the right numbers, especially where map-drawers are working within a very narrow allowable deviation, like plus or minus one person. Rodden Rebuttal Rep. at 6 (Jan. 26, 2022).

Nevertheless, it is possible to minimize these splits, and the Carter Plan splits only 14 VTDs, the second-lowest number among the Submitted Plans. *Id.*⁷ In contrast, other plans, such as both Reschenthaler Plans and the Ali Plan, each split twice as many VTDs. *Id.* For these reasons, the Carter Plan is one of the best plans at maintaining political subdivisions.

The Special Master’s analysis of subdivision splits, *see* Rep. at 141–47, ignored that the Carter Plan has the fewest or second-fewest number of both county and VTD splits. That oversight is particularly problematic given that counties are

⁷ Dr. Rodden’s revised plan splits one additional VTD in order to further equalize population. *See supra* note 5; *see also* Ex. A. With 15 VTD splits, the Revised Carter Plan still splits the second lowest number of VTDs among the Submitted Plans. Rodden Rebuttal Rep. at 6 (Jan. 26, 2022).

the most important of the political subdivisions to keep intact, *see* N.T. at 250–51, and this Court adopted the *Mellow* Special Master’s report recognizing that “serious election administration problem[s]” can arise from splitting VTDs. *Mellow*, 607 A.2d at 211; *see also id.* at 218 (Special Master’s Report).

B. The Carter Plan complies with other historical redistricting factors.

In addition to the traditional redistricting criteria outlined above, this Court has identified several historical factors relevant for evaluating a redistricting plan, including partisan fairness, preserving prior districts, protection of minority voting rights, respect for communities of interest, and incumbency protection. *LWV I*, 178 A.3d at 817; *Mellow*, 607 A.2d at 208. The Carter Plan performs better than the other Submitted Plans on partisan fairness, is undisputedly superior on maintaining existing districts, and is superior or comparable on the remaining measures.

1. The Carter Plan best reflects partisan fairness, in compliance with the Free and Fair Elections Clause.

The Carter Plan best reflects the partisan preferences of Pennsylvania voters. Although partisan fairness has long been a factor in Pennsylvania’s redistricting, *see Mellow*, 607 A.2d at 210, this Court underscored in 2018 that the “overarching objective” of the Pennsylvania Constitution’s Free and Equal Elections Clause in any redistricting case “is to prevent dilution of an individual’s vote by mandating that the power of his or her vote in the selection of representatives be equalized to the greatest degree possible with all other Pennsylvania citizens.” *LWV I*, 178 A.3d

at 817. Accordingly, in considering compliance with neutral redistricting criteria, this Court has emphasized that the criteria are not just goals in and of themselves, but are also a means of assessing whether a plan will treat Pennsylvania voters of both parties equally. And to further evaluate whether a plan meets that constitutional requirement, this Court has considered partisan fairness metrics like the “efficiency gap” and the “mean-median gap.” *Id.* at 774, 817.⁸

Moreover, in conducting its analysis four years ago, this Court observed that advancements in map-drawing technology and analytical software could “potentially allow mapmakers, in the future, to engineer congressional districting maps, which although minimally comporting with these neutral ‘floor’ criteria, nevertheless operate to unfairly dilute the power of a particular group’s vote for a congressional representative.” *Id.* at 817. Those advances have now arrived, so an evaluation of minimal compliance with the “floor” is insufficient to guard against vote dilution. Rather, ensuring equal representation requires further analysis using partisan fairness metrics. As evidenced by the fact that some of the Submitted Plans

⁸ An “efficiency gap” is “a formula that measures the number of ‘wasted’ votes for one party against the number of ‘wasted’ votes for another party,” where “[t]he larger the number, the greater the partisan bias.” *LWVI*, 178 A.3d at 777. The “mean-median gap” similarly measures partisan bias by calculating the difference between the average and median vote share per party in each district, where a difference between zero to four percent is considered “normal,” but greater gaps demonstrate an “extreme partisan skew of voters” that “is not an outcome that naturally emerges from Pennsylvania’s voter geography.” *Id.* at 776.

that satisfy the “floor” on traditional redistricting criteria nevertheless unfairly dilute votes, partisan fairness metrics should be given even more weight in this proceeding—not less, as the Special Master recommends.

a. The Carter Plan exhibits exceptional partisan fairness, unlike many of the other Submitted Plans.

The Carter Plan performs exceptionally—and far better than most other plans, especially Republican-drawn plans—on partisan fairness metrics. While partisan data was not considered in the drawing of the Carter Plan, Dr. Rodden analyzed the partisanship of his and the other Submitted Plans after they were drawn. Rodden Initial Rep. at 23 (Jan. 24, 2022); N.T. at 118. His analysis—and the analysis of other experts for competing parties in this case—shows that, on numerous metrics, the Carter Plan is exceedingly fair.

The Carter Plan is tied for best among all Submitted Plans on the “direct majority responsiveness” metric, which measures the number of times that the political party whose candidate won the statewide vote also carried most of the plans’ congressional districts. Under that metric, the Carter Plan tied for the fewest anti-majoritarian outcomes, and those outcomes favored different parties—another indicator of partisan fairness. *See* DeFord Rebuttal Rep. at ¶¶ 30, 31 tbl. 9 (Jan. 26, 2022); N.T. at 136–38.

On the efficiency gap metric previously relied on by this Court, the Carter Plan achieves the score closest to zero, the best among all Submitted Plans and a

strong indication that the Carter Plan treats voters from both parties equally. *See* DeFord Rebuttal Rep. at 18 fig. 4 (Jan. 26, 2022); N.T. at 402 (Dr. Duchin explaining that the Carter Plan “has [an] especially excellent efficiency gap”; “the best one”). The Carter Plan also ties for best mean-median difference among all plans. *See* Gressman January 29, 2022 Post-Trial Submission, Ex. 1 at 2 (showing mean-median difference analysis for each plan).

The Special Master’s focus on whether particular plans, based on their scores, “favor Democrats” or “favor Republicans,” *see* Rep. at 168–75, is misguided because these metrics are meant to show degrees of partisan skew based on the deviation from zero, regardless of which direction (and thus party) the plan favors. *See* N.T. at 260 (Dr. DeFord agreeing that “closest to zero [] is an indication of treating voters from each party equally”); N.T. at 371 (Dr. Duchin explaining that “closest to zero . . . is where you want to be” on all the partisan fairness metrics).⁹

⁹ Regardless, all of the scores reported by Dr. Duchin and Dr. DeFord show that any slight partisan skew inherent in the Carter Plan favors Republicans. The fact that one expert, Dr. Barber, reported an efficiency gap for the Carter Plan that “favor[s] Democrats” does not negate the other reported efficiency gap figures, which “favor[] Republicans.” Moreover, multiple courts have concluded that Dr. Barber’s testimony should be given little weight or no credit. N.T. at 563–64. For example, in a 2019 North Carolina case, *Common Cause v. Lewis*, the court identified several shortcomings in Dr. Barber’s analysis and, in light of those findings, gave little weight to his testimony. N.T. at 564–65. Dr. Barber’s methodology is also unsound because of the techniques that he has relied on. *See* N.T. at 366–67 (explained by Dr. Duchin). For example, Dr. Barber is not qualified to render opinions about the use of simulated districting plans through algorithms. Dr. Barber has limited

Consistent with its performance on these fairness measures, and based on recent election data, the Carter Plan creates eight districts where Democrats are expected to win, one of which (District 8) is potentially quite competitive; eight districts where Republicans are quite likely to win, two of which are at least potentially competitive (1 and 10); and one district (District 7) that is a toss-up with a very slight Democratic lean. Rodden Initial Rep. at 25 (Jan. 24, 2022). Overall, the anticipated number of Democratic seats in the Carter Plan is nine, consistent with the partisan breakdown in Pennsylvania. Rodden Rebuttal Rep. at 9–10 (Jan. 26, 2022). Consistent with its least-change approach, the Carter Plan retains ten metropolitan districts that, under the 2018 Remedial Plan, saw an average Democratic vote share above 50 percent. Rodden Initial Rep. at 23 (Jan. 24, 2022). However, the Republican incumbent in District 1, Brian Fitzpatrick, has typically outperformed his party by over seven percentage points, resulting in a likely Republican district instead of an apparently reliably-Democratic district.

experience using an algorithm to generate simulated plans prior to January 2022, and he has never published in the areas of redistricting, partisan influence in the redistricting process, or simulated redistricting analyses. *See* N.T. at 561–63. Additionally, Dr. Barber’s execution of his methodology of simulated redistricting is suspect because there were “clear errors of calculation” that call into question the accuracy of his analyses, including, for instance, partisan fairness. N.T. at 368. In sum, Dr. Barber is not credible, his analysis is methodologically unsound, and his conclusions are unreliable. The Court thus should not credit Dr. Barber’s testimony and conclusions.

Accordingly, the *true* anticipated number of Democratic seats in the Carter Plan is nine. Rodden Rebuttal Rep. at 9–10 (Jan. 26, 2022).

While a couple of the other Submitted Plans are comparably fair to the Carter Plan, *see* Rodden Rebuttal Rep. at 9 (Jan. 26, 2022), others dilute Pennsylvanians' votes by providing undue structural advantages to one political party at the expense of the other. N.T. at 135-36. For instance, the HB 2146 Plan, recommended by the Special Master, and Voters of PA Plan, each produce a majority of Republican-leaning districts despite Democrats' overall statewide majorities. Rodden Rebuttal Rep. at 10 (Jan. 26, 2022); N.T. at 131. Both Reschenthaler Plans similarly produce eight comfortable Republican seats and an unusually low number of comfortable Democratic seats. Rodden Rebuttal Rep. at 10 (Jan. 26, 2022); N.T. at 130-31. All four of these plans unusually skew the distribution of Democratic vote share across districts, suggesting unfair bias and vote dilution.

The HB 2146 Plan and the Reschenthaler Plans are the most biased plans and thus do the most to dilute Pennsylvanians' votes. The Reschenthaler Plans have the highest efficiency gap of all the plans, demonstrating that the plans clearly favor Republicans. DeFord Rebuttal Rep. at 18 (Jan. 26, 2022); N.T. at 135-36. The Reschenthaler Plans, along with the HB 2146 Plan, performed particularly poorly on a mean-median analysis of partisan fairness because they consistently produced outcomes favoring Republicans. N.T. at 135-36. Even the expert called to testify by

the proponents of the HB 2146 Plan admitted that under his analysis of mean-median scores, HB 2146 and the two Reschenthaler Plans were the most biased of all the Submitted Plans, and all three were particularly biased in favor of the Republican Party. N.T. at 575-78.¹⁰ Most notably, in terms of partisan fairness metrics, the HB 2146 Plan performs much like the 2011 congressional plan that was struck down by this Court as an unconstitutional partisan gerrymander. *See* N.T. at 364–65.

As for other Submitted Plans, the Senate Democratic Caucus Plan Number 1 produces fewer comfortable Democratic seats than almost every other plan. Rodden Rebuttal Rep. at 9–10 (Jan. 26, 2022). Of the remaining Submitted Plans, some produce a greater number of comfortable Democratic seats, and others are unusual in that they fail to produce many districts that are competitive. *Id.*

b. The Special Master’s partisan fairness analysis was flawed and contrary to this Court’s precedent.

Rather than choose among the Submitted Plans that exhibited the most partisan fairness based on objective metrics largely agreed upon by the testifying experts, the Special Master instead gave the most weight to only those plans that exhibited the *least* partisan fairness—*i.e.*, those that were the most biased in favor of Republicans. The Special Master’s decision to do so was premised on the

¹⁰ For the reasons set forth above, *supra* note 8, Dr. Barber’s testimony should be given little weight, if any. But if any of his testimony should be credited, it should be his admissions (substantiated by other experts) about the high degree of partisan bias of HB 2146 and the Reschenthaler Plans.

meritless theory that, in light of Pennsylvania’s political geography naturally favoring Republicans, a fair map which treats the two political parties equally—and thus does not dilute votes—must have impermissibly prioritized partisanship. This analysis is wrong for a host of reasons.

First, as explained above, the Free and Equal Elections Clause of the Pennsylvania Constitution prohibits “the dilution of an individual’s vote” and mandates “that the power of [an individual’s] vote in the selection of representatives be equalized to the greatest degree possible with all other Pennsylvania citizens.” *LWV I*, 178 A.3d at 817. Accordingly, partisan fairness is a constitutional requirement that the neutral redistricting criteria are meant to protect—indeed, this Court struck down the 2011 map as unconstitutional precisely because it unfairly advantaged one political party. In suggesting the opposite, the Special Master relies on a 2013 Pennsylvania Supreme Court decision and federal law, neither of which can supersede this Court’s more recent pronouncement in *League of Women Voters*. Rep. at 176–77. Moreover, the superiority of the Carter Plan is not predicated on some simple proportional representation standard, and the *Carter* Petitioners and others do not ask this Court to adopt one. Rather, they urge the Court to use a range of partisan fairness measures to evaluate whether a particular plan treats voters from different political parties equally—just as this Court did in *League of Women Voters*, and as is required under the Pennsylvania Constitution.

Second, the Special Master’s emphasis on Pennsylvania’s political geography (or “human geography”) is misplaced. There is no asterisk in the Free and Equal Elections Clause explaining that a plan must treat voters equally only to the extent that it does not deviate from the *default* political geography of the state. Instead, traditional redistricting criteria itself provide the backstop to ensure that a plan’s partisan makeup does not deviate from what the political geography *allows*. The Carter Plan meets all of the neutral, geography-based redistricting criteria described above. As Dr. Rodden, the author of the political geography paper that the Special Master credited in drawing her erroneous conclusions, stated in no uncertain terms, “it is not the case that the human geography in Pennsylvania somehow requires that we draw unfair districts.” N.T. at 192.

Relatedly, the Special Master’s reliance on a simulations analysis is misplaced in this context. As Dr. Rodden explained in his testimony, a simulations analysis “is a technique that’s used to identify gerrymandering and . . . to understand some aspects of political geography.” N.T. at 157–58; *see also* N.T. at 275–76 (Dr. DeFord noting that simulations are more applicable in other contexts). As a threshold matter, none of the maps are subject to a partisan gerrymandering challenge, meaning that the analysis is not well-suited to the dispute. Even so, despite the limitations of political geography, fair Pennsylvania congressional maps are not absent from a simulations analysis: in the “Pennsylvania congressional context,” “a good share of

[] simulations end up in a range that . . . produces . . . partisan fairness.” N.T. at 192; *see also* N.T. at 392 (Dr. Duchin explaining that her ensembles created “tens of thousands of examples that do well on partisan fairness but were made with no partisan data”). Therefore, especially given that partisan fairness is a constitutional goal, there is no legal value in comparing maps to the *average* map in a set of simulations. N.T. at 383, 386–87 (Dr. Duchin explaining that it is a “conceptual mistake” to assume that “typical is necessarily fair”; “Sometimes you want to be an outlier and you want to be an outlier in the direction of better scores and better upholding the principles.”). Indeed, even Dr. Barber acknowledged that if two maps are equivalent with respect to the traditional redistricting criteria, it is better to choose one with less bias and more fairness or symmetry than one that is more biased and less fair or symmetrical. N.T. at 582–86. In short, statewide partisan fairness metrics serve as the most relevant means of determining if a map is compliant with the criteria articulated in *League of Women Voters*, so long as the maps that achieve partisan fairness on those metrics also resemble other maps on traditional criteria.

In any event, the Special Master’s misguided assumption that plans achieving partisan fairness necessarily result from intentional gerrymanders, *see* Rep. at 176–78, must be dispelled as to the Carter Plan, as it is the *only* plan for which the map-drawer testified regarding his process and intent. And Dr. Rodden explained that he

drew the 17-district map without considering partisan outcomes and certainly without any intent to favor Democrats.

2. The Carter Plan is undisputedly the least-change plan.

There is no dispute that the Carter Plan best preserves the lines and cores of the 2018 Remedial Plan's districts.

Core preservation is a historical consideration in this state's redistricting process. *LWVI*, 178 A.3d at 817 (“We recognize that other factors have historically played a role in the drawing of legislative districts, such as the preservation of prior district lines”); *see also Mellow*, 607 A.2d at 208. Moreover, courts commonly deploy a least-change strategy when, as here, the existing map is rendered obsolete by population changes. *See LaComb v. Growe*, 541 F. Supp. 154, 151 (D. Minn. 1982) (stating that the “starting point” for new, court-drawn congressional districts is the last configuration of districts); *see also Johnson v. Wis. Elections Comm’n*, 2021 WI 87 ¶ 81 (plurality op.), ¶ 87 (Hagedorn, J., concurring) (Wis. Nov. 30, 2021) (holding that judicially adopted plans should attempt to minimize changes from the previous map); *Hippert v. Ritchie*, 813 N.W. 2d 374, 380 (Minn. 2012) (explaining that the judicial redistricting panel “utilizes a least-change strategy where feasible”). Furthermore, when courts do make any changes that are not strictly necessary, such changes are often made only to achieve fair outcomes. *See Prosser v. Elections Board*, 793 F. Supp. 859, 867 (W.D. Wis. 1992) (per curiam) (“We are comparing

submitted plans with a view to picking the one (or devising our own) *most consistent with judicial neutrality*. Judges should not select a plan that seeks partisan advantage. . . .”) (emphasis added).

By taking the least-change approach, the *Carter* Petitioners were able to preserve the core of the 2018 Remedial Plan’s districts and create continuity for the overwhelming majority of Pennsylvania residents. *See Karcher*, 462 U.S. at 740 (recognizing that preserving district cores is a traditional principle of redistricting); *Reynolds*, 377 U.S. at 578–79 (same). And as described above, the 2018 Remedial Plan is an especially useful benchmark for any plan evaluated by this Court because it is the product of a careful judicial process and has already been extensively vetted and analyzed according to redistricting criteria. N.T. at 88-89.

Among the Submitted Plans, the Carter Plan makes the least changes to, and is least disruptive of, the 2018 Remedial Plan, which is an additional and reasonable basis to prefer that plan over others. *See Duchin Initial Rep.* at 7 (Jan. 24, 2022); N.T. at 410–11. The Carter Plan retains 86.6 percent of Pennsylvania’s population in the same congressional districts to which they were assigned in the 2018 Remedial Plan, well above the plan with the next-highest retention share. *Rodden Rebuttal Rep.* at 2 (Jan. 26, 2022); N.T. at 407–08 (Dr. Duchin stating that the Carter Plan has a “superlative least change score” and “just laps had [sic] field when it comes to least change”). Although the Special Master expressed concern about how to

prioritize the Submitted Plans on a least-change metric, *see* Rep. at 185 (FF7), there was no dispute among experts that Dr. Rodden’s retained population share calculations are sufficient to show that the Carter Plan’s districts retain more of their former populations than any other Submitted Plan, and is thus closest to the 2018 Remedial Plan. N.T. at 346–47; 407–08.

Notably, as discussed above, the Carter Plan’s least-change approach required no sacrifice of any traditional redistricting criteria outlined by this Court: it meets or surpasses the 2018 Remedial Plan on population equality, compactness, contiguity, and political subdivision splits, and it performs as well or better than the Submitted Plans on all other redistricting criteria.

The Special Master’s criticisms of the Carter Plan’s approach, *see* Rep. at 183–88, are misguided and unsupported. First, the Special Master erroneously contends that this Court rejected the least-change approach in *Holt*. Instead, this Court simply explained that its “prior ‘approvals’ of plans do not establish that those plans survived not only the challenges actually made, but all possible challenges.” *Holt v. 2011 Legislative Reapportionment Comm’n*, 38 A.3d 711, 735 (Pa. 2012). Here, the 2018 Remedial Plan was not just “approved,” but was drawn by this Court specifically to meet all relevant criteria. Furthermore, the *Carter* Petitioners do not contend that the 2018 Remedial Plan should be blindly re-adopted because it was previously approved, but rather believe that such a map is the most logical and

reasonable starting point for drawing a new plan that similarly complies with all other criteria this Court considers.

Second, approving the *Carter* Petitioners' approach would not, as the Special Master contends, *see* Rep. at 188 (FF11–12), inoculate future plans from further challenges. In drawing the Carter Plan, Dr. Rodden did not indiscriminately assume the 2018 Remedial Plan's constitutionality; he made changes when necessary to further some legitimate goal (for example, to account for population shifts, further decrease political subdivision splits where possible, and reunite communities of interest) and evaluated the Carter Plan along the same criteria as every other plan. Still, to the extent the Special Master's concerns hinged on this Court's critique of any "supposed constitutionalization of prior redistricting plans," that concern was for plans drawn through the "inherently political" redistricting process at issue in the state legislative context—not plans previously evaluated and adjudicated fair by the judiciary. *Holt v. 2011 Legislative Reapportionment Comm'n*, 67 A.3d 1211, 1234–36 (Pa. 2013).

Ultimately, the Court should adopt the Carter Plan because it simultaneously meets or surpasses the 2018 Remedial Plan and the Submitted Plans on every one of the traditional redistricting criteria outlined by the Pennsylvania Supreme Court, while also better preserving the core of the 2018 Remedial Plan's districts and

creating important continuity for the overwhelming majority of Pennsylvania residents.

3. The Carter Plan performs well on the other historical redistricting criteria.

a. The Carter Plan protects communities of interest.

In *LWW I*, this Court interpreted the state’s constitution to provide “great[] emphasis on creating representational districts that . . . maintain the geographical and social cohesion of the communities in which people live.” 178 A.3d. at 814–15. The 2018 Remedial Plan was very careful to avoid splitting communities. By generally retaining the boundaries of the 2018 Remedial Plan and changing district lines only where necessary to reflect variable population changes, the Carter Plan specifically sought to preserve communities determined to be important by this Court and its map-drawer. For instance, the Carter Plan retained the arrangement of districts in the Philadelphia area and its surrounding counties. Rodden Initial Rep. at 12–13 (Jan. 24, 2022). It also respects communities of interest by, among other things, keeping Pittsburgh within one district, keeping the city of Harrisburg whole, and attaching the surplus population of Philadelphia to Delaware County. *See LWW*

I, 178 A.3d at 750; *see also* Rodden Initial Rep. at 8 (Jan. 24, 2022); Naughton Response Rep. at 8–9 (Jan. 26, 2022); N.T. at 101–04.¹¹

The Carter Plan was also able to reunify certain communities of interest that were separated in the 2018 Remedial Plan. For instance, because District 7 required additional population, Carbon County was added to unify the Allentown-Bethlehem-Easton metropolitan statistical area consisting of Northampton, Lehigh, and Carbon Counties. Rodden Initial Rep. at 14 (Jan. 24, 2022). Likewise, the new District 15, which had to change significantly due to population changes and the loss of what is

¹¹ Dr. Naughton is not qualified to render opinions about redistricting plans. He is not a computer scientist or mathematician. N.T. at 688–89. Instead, Dr. Naughton’s claim of expertise is rooted in his “15 years working in Pennsylvania campaign politics” and his work for various Republican candidates. N.T. at 687–88. Dr. Naughton has not appeared as an expert witness in redistricting litigation before, has no particular experience in redistricting, and has never tried to draw a redistricting plan for Pennsylvania. N.T. at 777–78. Dr. Naughton is also unable to offer any objective insight into the critical topics of redistricting because his career has largely been devoted to helping Republican political candidates, and he was retained by Republican politicians in this litigation to offer an opinion about their proposed map. N.T. at 769–70. Moreover, he purported to know the preferences of voters in numerous locations around the Commonwealth, yet admitted that he had done no relevant polling of Pennsylvanians and, in any event, has not worked on a campaign in the state since 2015 (other than one minor engagement for a Superior Court candidate). N.T. at 777. Dr. Naughton is not credible, his analyses are methodologically unsound, and his conclusions are unreliable. For these reasons, Dr. Naughton’s testimony should be given little weight, if any. To the extent the Court credits his testimony about communities of interest, however, it is additional evidence supporting the Carter Plan’s respect for communities of interest: Every single map-drawing choice that Dr. Naughton advocated for and the Special Master credited as evidence of maintaining communities of interest is reflected in the Carter Plan. *See generally* Rodden Initial Rep. at 12–20 (Jan. 24, 2022).

District 12 under the 2018 Remedial Plan, now avoids a split of Centre County that had previously separated State College from some of its suburbs. *Id.* at 18.

The Special Master’s findings regarding the Carter Plan’s treatment of communities of interest defy the record. In particular, contrary to the finding that Dr. Rodden “did not explicitly examine or appear to have considered the specific considerations that need to be taken into account when establishing that splits maintain the surrounding communities of interest,” Rep. at 156 (FF12), Dr. Rodden deliberately constructed the Carter Plan to ensure the maintenance of communities of interest—both those that were protected by the Court in 2018 and those that were not. And, as discussed above, to the extent the Carter Plan had to alter the boundaries of the 2018 Remedial Plan to account for population changes and the Commonwealth’s loss of a congressional seat, it did so with a focus on maintaining natural and political subdivision boundaries and keeping communities whole.

b. The Carter Plan protects minority voting rights.

The Carter Plan maintains the protection of minority voting rights reflected in the 2018 Remedial Plan. Federal law requires that districts be drawn to protect the equal opportunity of racial, ethnic, and language minorities to participate in the political process and elect candidates of their choice, whether alone or in alliance with others. Voting Rights Act of 1965, 52 U.S.C. § 10301(b) (2018). And districts must not have the purpose or effect of denying or abridging the voting rights of any

United States citizen on account of race, ethnicity, or membership in a language minority group. U.S. Const. Amend. XIV, XV; 52 U.S.C. § 10301(a).

The Carter Plan complies with these criteria because Dr. Rodden did not consider racial data in drawing district lines. Rodden Initial Rep. at 23 (Jan. 24, 2022); N.T. at 117. Notably, the Carter Plan stands alone among the Submitted Plans in this regard—because Dr. Rodden was the only map-drawer to testify, no other plan proponent can point to any direct evidence that its plan did not consider racial data. *See, e.g.*, N.T. at 288. Moreover, because the Carter Plan closely follows the boundaries of the 2018 Remedial Plan with regard to those areas of the state with sizeable minority populations, it has preserved the minority opportunity districts that the Pennsylvania Supreme Court approved in 2018. *See* DeFord Rebuttal Rep. at 20 tbl. 14 (Jan. 26, 2022) (2018 Remedial Plan and Carter Plan both have two majority-minority districts); *see also* N.T. at 190–91 (Dr. Rodden testifying that his analysis of racial data as it relates to the Carter Plan consisted of confirming that the Plan reflected hardly any changes in the minority communities from the 2018 Remedial Plan, which is compliant with the Voting Rights Act).

c. The Carter Plan protects incumbents.

The Carter Plan adequately protects incumbents. This Court in *LWV I* recognized that the “protection of incumbents” has “historically played a role in the

drawing of legislative districts.” 178 A.3d at 817; *see also Mellow*, 607 A.2d at 207 (avoiding contests between incumbents is a legitimate objective in districting).

Because the Carter Plan makes minor changes to most districts, incumbents have not been inadvertently removed from any existing districts. The single circumstance in which the Carter Plan places two incumbents in the same district was unavoidable. Rep. Keller currently represents District 12, which will no longer exist because of population loss. Under the Carter Plan, he now is located in District 15, along with incumbent Rep. Thompson, another rural representative. This decision, though, had no impact on the Carter Plan’s satisfaction of traditional redistricting criteria. Rodden Initial Rep. at 23 (Jan. 24, 2022).

Though the Special Master recognized that the loss of one district would require the pairing of at least one set of incumbents in one district, Rep. at 178 (FF1), she errs in claiming that the “significance” of an incumbent pairing is contingent upon the party affiliations of the candidates that have been paired together. Rather, if the premise is that districts should be drawn to avoid contests between incumbents, *see Mellow*, 607 A.2d at 207, then any plan that pairs two incumbents together should be given the same weight—the party of the individual incumbents that are paired is inapposite to the inquiry. To the extent partisan fairness is a concern, that is best evaluated by the metrics discussed above, and not merely by counting incumbents.

C. No legislative deference is owed to a plan that is not duly enacted.

No deference should be given to any particular plan proposed in this litigation, especially not to the HB 2146 Plan. Instead, all Submitted Plans must be evaluated along the same criteria and “must be considered on the same footing.” *Mellow*, 607 A.2d at 215 (Special Master’s Report).

The Special Master posited that HB 2146 should receive preference because courts must defer to redistricting plans that reflect state policy. *See* Rep. at 213–17 (citing *Upham v. Seamon*, 456 U.S. 37 (1982) and *Perry v. Perez*, 565 U.S. 388 (2012)). This is incorrect as a matter of law and reasoning. The Special Master misses a critical distinction between the maps at issue in *Upham* and *Perry* and HB 2146—namely, whether the maps were duly enacted under state constitutional requirements. Here, as the Special Master has recognized, Governor Wolf’s veto of HB 2146 means that the “bill never obtained the official status of a duly enacted statute.” Rep. at 213 ¶ 91. But the Special Master appears to discount the Governor’s veto by citing the supposed lack of cognizable legal objections to the constitutionality of HB 2146. *Id.* However, it is not for the Special Master, or any court for that matter, to discount the weight given to a Governor’s veto.

HB 2146 is, at most, simply another proposal that this Court should consider with all other Submitted Plans before it. *See Wis. Elections Comm’n*, 2021 WI at ¶ 86, n.15 (Nov. 30, 2021) (Hagedorn, J., concurring) (describing Legislature’s

submission of redistricting bill that was vetoed by governor as “mere proposals deserving no special weight”). After all, under the Pennsylvania Constitution, the lawmaking process of the Commonwealth belongs to *both* the General Assembly and the Governor, who has veto power over proposed laws. *See* Pa. Const. art. IV, § 15. Where a state constitution requires the participation of both the legislative and executive branches in the lawmaking process, a redistricting plan that the Governor has vetoed is not enforceable as a matter of law. *See Smiley v. Holm*, 285 U.S. 355, 373 (1932); *see also Ariz. State Legis. v. Ariz. Indep. Redistricting Comm’n*, 576 U.S. 787, 807 (2015).

A legislative reapportionment plan that has been vetoed by the Governor represents merely the legislature’s “proffered” plan, and, where the Governor has a contrary recommendation, does not reflect “the State’s policy.” *Sixty-Seventh Minn. State S. v. Beens*, 406 U.S. 187, 197 (1972); *see also Carstens v. Lamm*, 543 F. Supp. 68, 79 (D. Colo. 1982) (explaining that a vetoed legislative plan “cannot represent current state policy any more than the Governor’s proposal”). As a result, where, as here, the political branches have failed to enact redistricting plans, one branch’s preferred plan cannot represent the policies and preference of the state any more than any other law that has failed to meet the constitutional requirements for legislative enactment. Thus, none of the Submitted Plans is due particular deference as a statement of state policy or the will of the people. *See, e.g., Smith v. Clark*, 189 F.

Supp. 2d 529, 533–34 (S.D. Miss. 2002) (holding that where the state “failed to enact a congressional redistricting plan . . . there is no expression, certainly no clear expression, of state policy on congressional redistricting to which we must defer”); *Carstens*, 543 F. Supp. at 79 (affording no deference because vetoed redistricting plan was only the “proffered current policy rather than clear expressions of state policy”) (internal citations omitted); *O’Sullivan v. Brier*, 540 F. Supp. 1200, 1202 (D. Kan. 1982) (“[W]e are not required to defer to any plan that has not survived the full legislative process to become law.”); *Essex*, 874 F. Supp. 2d at 1084 (D. Kan. 2012) (“Regardless which option our constitutional analysis prompts us to choose, we owe no deference to any proposed plan, as none has successfully navigated the legislative process to the point of enactment.”).

For these reasons, in impasse litigation, vetoed redistricting plans should not receive deference. *See, e.g., Wis. State AFL-CIO v. Elections Bd.*, 543 F. Supp. 630, 632 (E.D. Wis. 1982) (three-judge panel) (court explaining in impasse litigation that “[t]he vetoed plan has been submitted to us for our consideration and, after reviewing it, we conclude that it is one of the worst efforts before us and for that reason we decline to adopt it. The plan has, in our opinion, no redeeming value.”); *Ritchie*, 813.N.W.2d at 379 n.6 (Minn. 2012) (court in impasse litigation refusing to adopt or show deference to the Minnesota Legislature’s redistricting plan because it “was never enacted into law”). Recently, for example, Wisconsin’s Legislature asked the

Wisconsin Supreme Court to do the same thing the Special Master recommends to this Court—to give their map special deference. But the Wisconsin Supreme Court, recognizing that the Legislature’s maps “did not survive the political process,” explicitly refused to give the Legislature’s plans any special status. *See Wis. Elections Comm’n*, 2021 WI 87 at ¶ 72 n.8; *see also id.* (J. Hagedorn, concurring) at ¶ 86 n.15 (describing the Legislature’s submission as “mere proposals deserving no special weight”).

The *Carter* Petitioners are not aware of any court that has adopted a legislature’s vetoed map in impasse litigation since the 1970 redistricting cycle, and those decades-old cases are not comparable to the circumstances before the Court today. In *Skolnick v. State Electoral Board of Illinois*, the court adopted a legislatively proposed plan only after independently concluding that the plan was superior to other plans across a range of traditional redistricting criteria and highlighting that the plan had received “substantial bipartisan support” in the legislature, 336 F. Supp. 839, 846 (N.D. Ill. 1971), which, of course, is not the case here. In *Donnelly v. Meskill*, the court similarly did not adopt the legislature’s map wholesale but instead made changes to the plan which addressed, in large part, the Governor’s reason for vetoing the plan. 345 F. Supp. 962 963–65 (D. Conn. 1972) (explaining the Governor’s veto because of the legislature’s significant and impermissible population deviations, and the court’s adjustment of the legislature’s

plan to ensure it reached virtual population equality). Thus, neither case stands for the proposition that courts should afford any deference to, let alone adopt, a legislature's plan in impasse litigation when the plan has not been enacted into law.

Moreover, in prior Pennsylvania impasse litigation, neither this Court nor special masters appointed to assess the merits of proposed redistricting maps have given preferential treatment to reapportionment plans put forth by legislators. Specifically, in 1992, the Pennsylvania Supreme Court appointed a Special Master from the Pennsylvania Commonwealth Court to recommend a map for the court to adopt after Pennsylvania's political branches failed to successfully enact a redistricting plan on their own. *See Mellow*, 607 A.2d at 205–06. In that proceeding, the Special Master received six different plans submitted by various groups, including by various lawmakers. *Id.* at 205. Before engaging in a detailed analysis comparing the maps before him, the Special Master specifically noted in his opinion to the court that all plans “must be considered on the same footing.” *Id.* at 215. Thus, this Court must consider all Submitted Plans on equal footing, just as it did in *Mellow*.

Finally, seeking to elevate a plan that failed enactment relies on a perilous notion of legislative supremacy that is contrary to fundamental constitutional principles. Presentment to the executive is an essential component of enacting legislation. *See Pa. Const.*, art. IV, § 15 (requiring presentment of bills to the

Governor); *Scarnati v. Wolf*, 173 A.3d 1110, 1120 (Pa. 2017) (“No bill may become law without first being submitted to the Governor for approval or disapproval.”). Treating a vetoed bill as tantamount to one that was properly enacted under Pennsylvania’s state legislative process would improperly elevate the actions of the legislative branch over that of the executive branch, and in effect eliminate the Governor’s veto power by creating a judicial end-around. Setting a precedent that vetoed bills deserve judicial deference despite failing enactment will create perverse incentives for the legislature to attempt to enact laws that will receive special treatment in the courts as opposed to seeking compromise with the Governor.

At bottom, what matters is that because HB 2146 was vetoed by the Governor, it was not duly enacted by the Commonwealth, is not reflective of state policy, and is thus not entitled to deference under *Upham* or *Perry*. HB 2146 is, at most, simply another proposal that this Court should consider with all other Submitted Plans before it.

IV. CONCLUSION

The Carter Plan is the only one of the Submitted Plans that satisfies all redistricting criteria and undisputedly exceeds all other Submitted Plans on one of those criteria—retention of previous districts. This Court should adopt the Carter Plan as the Pennsylvania congressional redistricting plan.

Dated: February 14, 2022

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Exhibit A

IN THE SUPREME COURT OF PENNSYLVANIA

CAROL ANN CARTER; MONICA PARRILLA;
REBECCA POYOUROW; WILLIAM TUNG; ROSEANNE
MILAZZO; BURT SIEGEL; SUSAN CASSANELLI; LEE
CASSANELLI; LYNN WACHMAN; MICHAEL
GUTTMAN; MAYA FONKEU; BRADY HILL; MARY
ELLEN BALCHUNIS; TOM DEWALL; STEPHANIE
MCNULTY; and JANET TEMIN,

Petitioners,

v.

LEIGH M. CHAPMAN, in her official capacity as the Acting
Secretary of the Commonwealth of Pennsylvania; JESSICA
MATHIS, in her official capacity as Director for the
Pennsylvania Bureau of Election Services and Notaries,

Respondents.

No. 7 MM 2022

PHILIP T. GRESSMAN; RON Y. DONAGI; KRISTOPHER
R. TAPP; PAMELA GORKIN; DAVID P. MARSH; JAMES
L. ROSENBERGER; AMY MYERS; EUGENE BOMAN;
GARY GORDON; LIZ MCMAHON; TIMOTHY G.
FEEMAN; and GARTH ISAAK,

Petitioners,

v.

LEIGH M. CHAPMAN, in her official capacity as the Acting
Secretary of the Commonwealth of Pennsylvania; JESSICA
MATHIS, in her official capacity as Director for the
Pennsylvania Bureau of Election Services and Notaries,

Respondents.

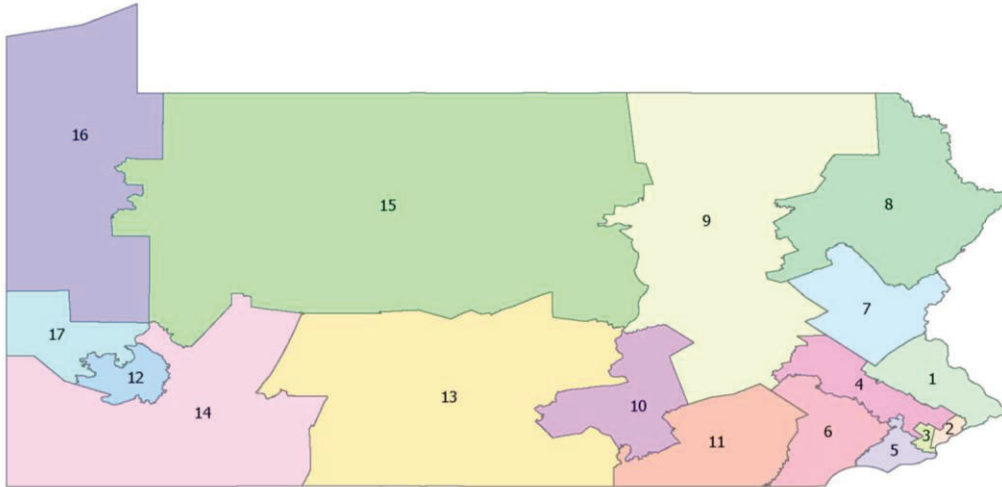
DECLARATION OF JONATHAN RODDEN, Ph.D.

1. I, Jonathan Rodden, am an adult individual over the age of eighteen (18) and competent to testify as to the matters set forth below.
2. On January 24, 2022, I produced to the Commonwealth Court a congressional redistricting plan (the “Carter Plan”), which I created as described in my initial expert report.
3. On February 7, 2022, counsel for the *Carter* Petitioners asked me to revise the Carter Plan solely to further equalize population across districts and achieve no more than a one-person population deviation where possible.
4. In the previous Carter Plan, I had allowed districts to be either exactly at the target population (4 districts), one person over (4 districts), or one person under (9 districts). In the revised plan, I no longer allow any districts to be one person over. In the revised plan, 12 districts are exactly at the target population and 5 districts are one person below.
5. To do this, I revisited each location along each border where I had either worked with a specific combination of Vote Tabulation Districts (“VTD”) or split a single VTD to equalize population across districts. In most cases, I split the same VTD, but used a slightly different arrangement of census blocks in order to make the requisite one-person change in district population. In one location, due to coarseness in the sizes of blocks that

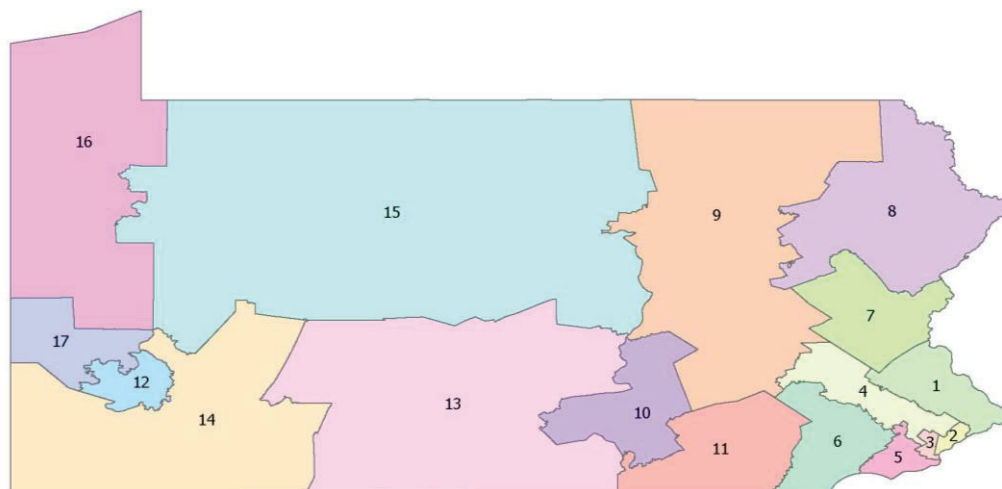
prevented me from achieving the target population total using the blocks in the VTD I had initially split, I split a *different* adjoining VTD, keeping whole the VTD that had been split in the initial Carter Plan. In other words, I did not split an additional VTD, but rather, split an alternative adjoining VTD.

6. In one location, the intersection of Districts 3 and 5 in South Philadelphia, I had been able to avoid splitting any VTDs in the initial Carter Plan. This was no longer possible in my pursuit to achieve zero population deviation, so I had to split an additional VTD in order to achieve zero population deviation between these two districts.
7. Other than this additional VTD split in South Philadelphia, these changes that I made to minimize population deviation do not affect the plan-wide metrics reported for the Carter Plan in the expert submissions I made on January 24 and 26 or in my Commonwealth Court testimony on January 27. In other words, the only change to the reported metrics is an increase in the number of VTD splits, from 14 to 15.

8. The following map depicts the Carter Plan, for which a block equivalency file and shape file were submitted to the Commonwealth Court on January 24, 2022.



9. The following map depicts my revised congressional plan (the “Carter Revised Plan”), for which a block equivalency file and shape file are available to download at <https://ballardspahr.sharefile.com/d-s028ac6af696b4e0ea9122cc758dd4855>.



10. I declare under the penalty of perjury that the foregoing is true and correct.

The statements contained in this Declaration are made subject to the penalties of 18 Pa. C.S. § 4904, relating to unsworn falsification to authorities.



Executed on February 14, 2022

Jonathan Rodden

Petitioners Philip T. Gressman, Ron Y. Donagi, Kristopher R. Tapp, Pamela Gorkin, David P. Marsh, James L. Rosenberger, Amy Myers, Eugene Boman, Gary Gordon, Liz McMahon, Timothy G. Feeman, and Garth Isaak (collectively, the “Gressman Math/Science Petitioners” or the “GMS Petitioners”) submit the following exceptions to the February 7, 2022 Report of Commonwealth Court Judge Patricia A. McCullough, acting as a Special Master pursuant to this Court’s February 2, 2022 Order.

The GMS Petitioners summarize here the central reasons they take exception to the Special Master’s Report. More detail, with supporting argument and citations to the record below, can be found in the GMS Petitioners’ brief, filed concurrently with these Exceptions.

The Special Master’s Report contains numbered proposed findings and conclusions, but the numbering resets to 1 from section to section, and in some instances, the Report provides numbered paragraphs that are not clearly identified as findings of fact or conclusions of law. Accordingly, to aid in the Court’s review, the GMS Petitioners provide both the number corresponding to particular proposed findings, conclusions, or paragraphs, as well as the corresponding page number.

EXCEPTIONS

1. The Special Master recommended adoption of a plan that is clearly inferior to the GMS (Gressman Math/Science) Plan on all relevant metrics. [FF107

(Pages 73–74); FF109 (Page 74); FF15–16 (Page 144); FF37–40 (Pages 146–47); FF25 (Page 172); ¶ 12 (Page 191); ¶ 23 (Page 193); Page 205 (erroneous proposed recommendation regarding the Gressman Plan); ¶ 64–65 (Pages 208–09); ¶¶ 67–68 (Pages 209–10); ¶¶ 76–83 (Pages 211–212); ¶¶ 85–88 (Pages 212–13).]

2. The Special Master erroneously accorded deference to House Bill 2146 (HB2146) even though that bill was vetoed by the Governor and never become law. [¶¶ 61–65 (Pages 208–09); ¶¶ 89–97 (Pages 213–17).]

3. The Special Master miscalculated political-subdivision splits in numerous and repeated instances, which led to a flawed analysis of the extent to which each proposed plan split the six types of subdivisions enumerated in the Pennsylvania Constitution more times than was “absolutely necessary.” PA. CONST. art. II, § 16. [CL3 (Page 142); FF3–4 (Pages 142–43); FF7–10 (Page 143); FF12 (Page 143); FF15–16 (Page 144); FF18–23 (Pages 144–45); FF25–28 (Page 145); FF30–31 (Pages 145–46); FF33 (Page 146); FF36–43 (Pages 146–47); ¶¶ 23–24 (Page 193); ¶ 67 (Pages 209–10).]

4. The Special Master erroneously assessed the expert evidence on the neutral redistricting criteria and repeatedly made erroneous “apples to oranges” comparisons of various metrics, leading to incorrect conclusions of law. [FF81 (Page 70); FF137–139 (Pages 79–80); CL2 (Page 138); FF1–4 (Pages 142–43); CL3 (Page 142); FF42–43 (Page 147); FF2–3 (Page 147); FF9 (Pages 155–56); ¶ 17

(Page 192); ¶¶ 23–25 (Pages 193–94); ¶¶ 51–54 (Pages 206–07); ¶ 67 (Pages 209–10).]

5. The Special Master erroneously assessed the expert evidence on the efficiency-gap, mean-median, and anti-majoritarian-outcomes measures of partisan fairness, such as by misconstruing what the experts actually reported, relying on experts with unsupported methodologies, or providing an incomplete statement of the expert opinions on these metrics. [FF92 (Page 71); FF97 (Page 72); FF107–10 (Pages 73–74); FF234 (Page 97), FF258 (Page 101); FF4 (Page 167); FF11–23 (Pages 168–71); FF25 (Page 172); FF1 (Page 172); FF18–19 (Pages 175–76); ¶ 12 (Page 191); ¶¶ 40–43 (Page 197); Page 205 (erroneous recommendation regarding the Gressman Plan); ¶¶ 57–60 (Pages 207–08); ¶¶ 65–66 (Page 209); ¶¶ 78–83 (Pages 211–12); ¶ 88 (Page 213).]

6. The Special Master erroneously credited and gave weight to the testimony of Dr. Keith Naughton, who offered only his personal opinions based on no methodology, data, or research, and who lacks any expertise in redistricting. [FF214 (Page 93); FF221–27 (Pages 94–95); FF230–36 (Pages 96–97); FF10 (Page 150); FF2–5 (Pages 154–55); FF15–28 (Pages 157–61); ¶ 31 (Page 195); ¶¶ 69–75 (Pages 210–11).] Moreover, the Special Master improperly gave weight to Dr. Naughton’s opinion because, in her view, the parties had not rebutted Dr. Naughton’s testimony [FF10 (Page 150); FF17 (Page 151); FF2–5 (Pages 154–55);

¶¶ 69–73 (Pages 210–11)], but his sole expert report was not filed until the final deadline for all expert *rebuttal* reports, less than 16 hours before the evidentiary hearing commenced; the Special Master refused to allow rebuttal witnesses; and the Special Master unilaterally decided the order of witnesses, with Dr. Naughton testifying next-to-last.

7. The Special Master erroneously credited and gave weight to the testimony of Dr. Michael Barber, who lacks expertise in redistricting and whose partisan-fairness testimony was methodologically flawed and unsupported. [FF175–83 (Pages 86–88); FF188–213 (Pages 88–93); FF8 (Page 149); CL2 (Page 149); FF1–13 (Pages 164–66); FF11–23 (Pages 168–71); FF1–16 (Pages 172–75); FF20–23 (Page 176); ¶¶ 41–43 (Page 197); ¶¶ 57–60 (Pages 207–08); ¶ 66 (Page 209); ¶¶ 78–83 (Pages 211–12).]

8. The Special Master misinterpreted the evidence and erroneously concluded, as both a legal and a factual matter, that any fair map must be biased in favor of Republicans as a result of Pennsylvania’s political geography. [FF110 (Page 74); FF1–10 (Pages 162–64); Pages 176–78 (discussion); ¶ 12 (Page 191); ¶¶ 37–42 (Pages 196–97); ¶ 44 (Page 198); ¶¶ 57–60 (Pages 207–08); ¶ 65 (Page 209); ¶¶ 78–83 (Pages 211–12).]

9. The Special Master erroneously identified as the maps best complying with the Free and Equal Elections Clause the four maps that are, in reality, the most

unfair and have the largest pro-Republican bias. [FF109 (Page 74); FF258 (Page 101); ¶ 12 (Page 191); Page 205 (erroneous recommendation regarding the Gressman Plan); ¶¶ 57–60 (Pages 207–08); ¶ 65 (Page 209); ¶¶ 78–83 (Pages 211–12); ¶ 88 (Page 213).]

10. The Special Master misread and misapplied both the holding relating to, and the relevance of, the expert evidence in *League of Women Voters v. Commonwealth*, 178 A.3d 737 (Pa. 2018) (“*LWV P*”). [FF92 (Page 71); Page 166 (discussion); FF1 (Page 166); FF24 (Page 171); FF1 (Page 172); FF18–19 (Pages 175–76); FF12 (Page 191); ¶¶ 57–59 (Pages 207–08); ¶ 65 (Page 209); ¶ 88 (Page 213).]

11. The Special Master misapplied *LWV I*, 178 A.3d at 817, in failing to adequately and correctly evaluate plans for partisan fairness, in part by ignoring the Supreme Court’s caution that “advances in map drawing technology and analytical software can potentially allow mapmakers, in the future, to engineer congressional districting maps, which, although minimally comporting with these neutral ‘floor’ criteria nevertheless operate to unfairly dilute the power of a particular group’s vote for a congressional representative.” [FF104 (Page 73); FF74 (Page 103); FF9 (Pages 155–56); Pages 176–78 (discussion); ¶ 12 (Page 191); ¶¶ 43–44 (Pages 197–98); ¶ 88 (Page 213).]

12. The Special Master erroneously elevated preservation of communities of interest above the constitutional redistricting criteria and failed to account for the extent to which preservation of political subdivisions preserves communities of interest. [FF103 (Page 73); FF111 (Page 74); Pages 152–54 (discussion of law on communities of interest); FF1–28 (Pages 154–61); FF10 (Page 156); Page 205 (erroneous recommendation regarding the Gressman Plan).]

13. The Special Master erroneously cited or relied on expert evidence that (a) was hearsay because the experts did not testify under oath and (b) should not receive any weight because it was never subjected to cross-examination. [FF260–339 (Pages 101–14); Pages 114–17 (recommended findings on evidentiary objections).]

14. The Special Master erroneously rejected the GMS Plan based on an incorrect finding, not supported by any evidence, that the GMS Plan was designed to optimize on partisan fairness. [FF2 (Page 178); ¶ 47 (Page 198); Page 205 (erroneous recommendation regarding the Gressman Plan).]

15. The Special Master erroneously found that the GMS Plan did not adequately account for preservation of communities of interest. [FF103 (Page 73); FF111 (Page 74); FF8 (Page 155); FF10 (Page 156); ¶ 47 (Page 198); Page 205 (erroneous recommendation regarding the Gressman Plan).]

16. The Special Master erroneously found, contrary to record evidence, that the GMS Plan had a partisan bias in favor of Democratic voters. [¶¶ 41–42 (Page 197); ¶ 47 (Page 198); Page 205 (recommendation regarding the Gressman Plan).]

CONCLUSION

For the foregoing reasons, as well as those set forth in the brief filed concurrently with these Exceptions, the GMS Petitioners take exception to the Special Master’s Report and respectfully suggest that, rather than adopting the Special Master’s recommendation, the Court should adopt the GMS Plan for the people of the Commonwealth.

Dated: February 14, 2022

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CERTIFICATE OF COMPLIANCE

I certify that this filing complies with the provisions of the *Case Records Public Access Policy of the Unified Judicial System of Pennsylvania* that require filing confidential information and documents differently than non-confidential information and documents.

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PROOF OF SERVICE

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Attachment A Table Comparing the Plans Proposed by the Parties, which was attached to the Gressman Math/Science Petitioners' Post-Trial Submission at the Commonwealth Court, filed January 29, 2022

Attachment B Table Comparing the GMS Plan and the Plans Proposed by *Amici*, which was attached to the Gressman Math/Science Petitioners' Post-Trial Submission at the Commonwealth Court, filed January 29, 2022

**TABLE OF CITED RECORD MATERIALS FILED WITH
THE SPECIAL MASTER**

Citation	Description
“Barber Rebuttal”	Rebuttal Report of Professor Michael Barber, attached as Exhibit A to Rebuttal Brief of House Republican Intervenors Kerry Benninghoff, Majority Leader, and Bryan Cutler, Speaker of the Pennsylvania House of Representatives, filed Jan. 26, 2022
“Carter Pet.”	Carter Petitioners’ Petition for Review Addressed to the Commonwealth Court’s Original Jurisdiction, filed Dec. 17, 2021
“Caughey Rebuttal”	Rebuttal Report of Professor Devin Caughey, attached as Exhibit A to Senate Democratic Caucus’ Brief in Response to Proposed Redistricting Plans, filed Jan. 26, 2022
“DeFord Opening”	Expert Report of Professor Daryl R. DeFord, attached as Exhibit 1 to Brief in Support of Gressman Math/Science Petitioners’ Congressional Plan, filed Jan. 24, 2022
“DeFord Rebuttal”	Rebuttal Report of Professor Daryl R. DeFord, attached as Exhibit 1 to Responsive Brief in Support of Gressman Math/Science Petitioners’ Congressional Plan, filed Jan. 26, 2022
“Duchin Opening”	Expert Report of Professor Moon Duchin, attached as Exhibit A to Governor Wolf’s Brief in Support of Proposed 17-District Congressional Redistricting Plan, filed Jan. 24, 2022

Citation	Description
“Duchin Rebuttal”	Expert Report of Professor Moon Duchin, attached as Exhibit A to Governor Wolf’s Responsive Brief in Support of Proposed 17-District Congressional Redistricting Plan, filed Jan. 26, 2022
“GMS Opening Br.”	Brief in Support of Gressman Math/Science Petitioners’ Congressional Plan, filed Jan. 24, 2022
“GMS Pet.”	Gressman Math/Science Petitioners’ Petition for Review Addressed to the Commonwealth Court’s Original Jurisdiction, filed Dec. 17, 2021
“House Dem. Caucus Br.”	Brief of Intervenor Representative Joanna E. McClinton, Leader of the Democratic Caucus of the Pennsylvania House of Representatives, in Support of Proposed Congressional Redistricting Plan, filed Jan. 24, 2022
“House Republican Intervenors’ Br.”	Opening Brief of House Republican Intervenors Kerry Benninghoff, Majority Leader, and Bryan Cutler, Speaker of the Pennsylvania House of Representatives in Support of Proposed Congressional Redistricting Map, filed Jan. 24, 2022
“Report”	Report of Commonwealth Court Judge Patricia McCullough, acting as a Special Master, filed Feb. 7, 2022
“Rodden Opening”	Expert Report of Professor Jonathan Rodden, attached as Exhibit 1 to Carter Petitioners’ Brief in Support of Proposed Congressional Redistricting Plan, filed Jan. 24, 2022

Citation

Description

“Rodden Rebuttal”

Expert Report of Professor Jonathan Rodden, attached as Exhibit 1 to Carter Petitioners’ Response Brief in Support of Proposed Congressional Redistricting Plan, filed Jan. 26, 2022

“Tr.”

Official Transcript of Hearings Dated January 27, 2022 and January 28, 2022 before Judge Patricia A. McCullough

INTRODUCTION

Four years ago, in striking down the most egregious partisan gerrymander in the history of the Commonwealth, this Court expressed confidence in the promise of high-performance computing technology to create maps that “scrupulously adhere to neutral criteria” while also promoting elections that are truly “free and equal,” *League of Women Voters v. Commonwealth*, 178 A.3d 737, 816–18 (Pa. 2018) (*LWV I*)—so that every Pennsylvania citizen can exercise an equal right to vote, regardless of party, race, or region.

The Gressman Math/Science, or GMS, Petitioners—12 professors of mathematics, statistics, computer science, geography, and data science from Pennsylvania’s leading colleges and universities—have come together to deliver on that promise. The GMS Petitioners and their expert team have distilled the legal redistricting criteria from a long line of this Court’s cases culminating in the 2018 *League of Women Voters* decisions, translated the Court’s commands into algorithmic instructions, programmed computers to generate literally millions of maps, searched for the map that best adheres to all the Court’s criteria simultaneously, and crafted what may be the most balanced congressional redistricting plan Pennsylvania has ever seen.

The GMS Plan divides fewer political subdivisions than other maps before this Court and features districts that are equal in population, contiguous, and highly

compact. Furthermore, data from 9,178 precincts in 18 recent statewide general elections confirms that, in the GMS Plan, citizens who voted for Republican candidates and citizens who voted for Democratic candidates are treated with near-perfect evenhandedness. The GMS Plan does all this while properly accounting for Pennsylvania's increasing diversity, as it includes—for the first time in the Commonwealth's history—*three* majority-minority congressional districts, one of which is predominantly Latino.

The Special Master ignored all this and selected a map that is inferior on *every* relevant metric. Her report is replete with factual and legal errors, and it operates from a presumption favoring a map that was vetoed by the Governor. This Court should not repeat these errors.

Unlike other parties in this case, the GMS Petitioners are not here to push a narrow, parochial agenda on behalf of a political party or incumbent officeholder. Rather, their goal is to provide this Court a public service, to show that districting plans can serve the common good, and to help their fellow Pennsylvanians enjoy fair and effective representation in Congress for the next decade.

In choosing a congressional districting plan, the Court need not take sides between Democratic and Republican leaders, between the Governor and the Legislature, between Senators and Representatives, or between state and federal officeholders. Instead, it need only identify the map that most scrupulously adheres

to all the Commonwealth’s traditional neutral redistricting criteria and the map that gives all Pennsylvania citizens an equal opportunity to translate their votes into representation. Fortunately, those maps are one and the same: the GMS Plan.

STATEMENT OF JURISDICTION

This Court has plenary jurisdiction pursuant to 42 Pa. C.S. §726.

ORDER IN QUESTION

On February 7, 2022, the Special Master filed a Report containing proposed findings of fact and conclusions of law and recommending that this Court adopt the vetoed Pennsylvania House Bill 2146 (“HB2146”) as the Commonwealth’s congressional redistricting plan for the next decade.

SCOPE AND STANDARD OF REVIEW

The Special Master’s Report is reviewed *de novo*, see, e.g., *LWV I*, 178 A.3d at 801 n.62; *Erfer v. Commonwealth*, 794 A.2d 325, 329 (Pa. 2002), *abrogated on other grounds by LWV I*, 178 A.3d 737; and its findings “are not binding on this Court,” *In re Office of Phila. Dist. Att’y*, 244 A.3d 319, 326 (Pa. 2020).

QUESTION INVOLVED

What congressional redistricting plan remedies the existing unconstitutional malapportionment of Pennsylvania’s congressional districts while best complying with the Free and Equal Elections Clause, Pennsylvania’s neutral redistricting criteria, the Voting Rights Act, and all other applicable redistricting requirements?

STATEMENT OF THE CASE

A. The Court Must Adopt a New Congressional Redistricting Plan.

On January 24, 2022, the Republican majority in the General Assembly passed HB2146 without a single vote from any Democratic legislator.¹ The Governor vetoed it two days later.² As a result, no constitutional districting plan is in place for the 2022 congressional election cycle. Because elections cannot go forward under the existing malapportioned plan, it is now “the judiciary’s role to determine the appropriate redistricting plan.” *LWV I*, 178 A.3d at 821–22.

B. The Record Below Provides a Comprehensive Basis for Selecting a New Congressional Redistricting Plan.

Two sets of Pennsylvania voters who reside in malapportioned districts petitioned for relief: (1) the Carter Petitioners, 16 voters affiliated with and supported by the national Democratic Party; and (2) the GMS Petitioners, 12 voters who are award-winning professors of mathematics and science at Bryn Mawr College,

¹ In the House, HB2146 received no Democratic votes, and only two Republicans voted against it. See Pennsylvania House of Representatives, *House Roll Calls: House Bill 2146* (Jan. 12, 2022), https://www.legis.state.pa.us/CFDOCS/Legis/RC/Public/rc_view_action2.cfm?sess_yr=2021&sess_ind=0&rc_body=H&rc_nbr=708. In the Senate, it received no Democratic votes, and no Republicans voted against it. See Pennsylvania State Senate, *Senate Roll Calls: House Bill 2146* (Jan. 24, 2022), https://www.legis.state.pa.us/CFDOCS/Legis/RC/Public/rc_view_action2.cfm?sess_yr=2021&sess_ind=0&rc_body=S&rc_nbr=429.

² See Office of the Governor, Veto Message (Jan. 26, 2022), <https://www.governor.pa.gov/wp-content/uploads/2022/01/20220126-HB-2146-Veto-Message.pdf>.

Bucknell University, Lafayette College, Lehigh University, Penn State University, St. Joseph's University, the University of Pennsylvania, and Villanova University.³

Ten sets of intervenors petitioned to join, including the following elected officials, whose intervention was granted:

- (i) Tom Wolf, Governor of the Commonwealth of Pennsylvania;
- (ii) Speaker Bryan Cutler and Majority Leader Kerry Benninghoff of the Pennsylvania House, and President Pro Tempore Jake Corman and Majority Leader Kim Ward of the Pennsylvania Senate (together, the “House Republicans”);
- (iii) Pennsylvania State Senators Maria Collett, Katie Muth, Sharif Street, and Anthony Williams;
- (iv) Senator Jay Costa and members of the Democratic Caucus of the Pennsylvania Senate (together with Senators Collet, Muth, Street, and Williams, the “Senate Democrats”);⁴
- (v) Representative Joanna McClinton, Leader of the Democratic Caucus of the Pennsylvania House (“the House Democrats”); and

³ See Carter Pet. ¶9; GMS Pet. ¶¶10–14.

⁴ The Collett and Costa intervenors participated as one party. Jan. 14, 2022 Order ¶2.

- (vi) Congressman Guy Reschenthaler, Swatara Township Commissioner Jeffrey Varner, Tom Marino, Ryan Costello, and Bud Shuster (the “Reschenthaler Intervenors” or the “Congressional Intervenors”).

Four Pennsylvania voter groups were denied intervention but participated as *amici*.⁵

Thirteen maps were timely proposed by parties and *amici*, and after two rounds of briefing, the Commonwealth Court held an evidentiary hearing with testimony from six expert witnesses, whose reports were admitted in evidence:⁶

- Dr. Jonathan Rodden, Professor of Political Science at Stanford University, for the Carter Petitioners;
- Dr. Daryl DeFord, Assistant Professor of Data Analytics in the Department of Mathematics and Statistics at Washington State University, for the GMS Petitioners;
- Dr. Moon Duchin, Professor of Mathematics at Tufts University, for the Governor;
- Dr. Michael Barber, Associate Professor of Political Science at Brigham Young University, for the House Republicans;

⁵ They were: (1) Leslie Osche and other voters, who call themselves “Citizen-Voters”; (2) Voters of the Commonwealth of Pennsylvania, a group of Republican voters; (3) Khalif Ali and other voters, affiliated with Common Cause and other organizations; and (4) voters associated with Draw the Lines PA. *See generally* Jan. 14, 2022 Order.

⁶ Tr. 26:2-11.

- Dr. Keith Naughton, co-founder and principal at Silent Majority Strategies, for the Reschenthaler Intervenors; and
- Dr. Devin Caughey, Associate Professor of Political Science at the Massachusetts Institute of Technology, for the Senate Democrats.

In addition, over objection,⁷ the Commonwealth Court admitted in evidence four expert reports and witness statements from authors who did not testify and were never subject to cross-examination.⁸ The Commonwealth Court also considered three submissions from *amici*, who did not participate in the evidentiary hearing.⁹

On February 2, 2022, this Court accepted jurisdiction over this matter and designated the Commonwealth Court Judge as Special Master. On February 7, the Special Master filed her Report recommending adoption of HB2146.

C. The GMS Petitioners Used Computational Redistricting to Achieve Superior Performance on All Criteria Simultaneously.

The parties used different methods to generate their proposed redistricting plans. The GMS Plan was created using “computational redistricting,” which draws

⁷ Tr. 886:20–887:14, 888:23–889:13.

⁸ Tr. 1118:25–1119:13. They were: Dr. John Memmi, for the Pennsylvania Senate Republican Caucus; Dr. Thomas Brunell, for the Reschenthaler Intervenors; and Lora Schoenberg and Michael Lamb, both for the Senate Democrats.

⁹ They were from Justin Villere, for Draw the Lines PA; Sean Trende, for Voters of the Commonwealth; and Sarah Andre, for the Ali *amici*. Because none of the *amici*’s maps or expert opinions were “subjected to the rigors of evidentiary challenges either for admissibility or accuracy, as tested through cross-examination,” *LWW I*, 178 A.3d at 831 (Baer, J., concurring and dissenting), the Court should not select an *amicus* map unless it is clearly superior to all alternatives.

from advances in mathematics, statistics, and computer science to apply high-performance computing, algorithmic techniques, and spatial demography to redistricting.¹⁰ The premise is simple: “Given the number of [redistricting] criteria typically present and the spatial nature of how the criteria operate, it is not easy for humans to find optimal redistricting outcomes on their own.... Put simply, good maps are needles in a haystack of bad or at least worse maps. Enter redistricting algorithms. They are capable of meticulous exploration of the astronomical number of ways in which a state can be partitioned. They can identify possible configurations of districts and zero in on the maps that best meet the redistricting criteria. The algorithms sort through the haystack more efficiently and more systematically so that the needle—the better maps—can be found.”¹¹ In this way, a “computer program essentially substitutes for a very large body of neutral experts and the viable, neutral maps they draw.”¹²

As this Court has recognized, redistricting is a complex process that involves balancing multiple legal requirements. *See Holt v. 2011 Legislative Reapportionment Comm’n*, 67 A.3d 1211, 1237–41 (Pa. 2013) (*Holt II*); *Holt v. 2011*

¹⁰ Tr. 200:24–201:12.

¹¹ Emily Rong Zhang, *Bolstering Faith with Facts: Supporting Independent Redistricting Commissions with Redistricting Algorithms*, 109 CAL. L. REV. 987, 1011–13 (2021) (internal quotation marks omitted) [hereinafter “Zhang”].

¹² Bruce E. Cain, et al., *A Reasonable Bias Approach to Gerrymandering: Using Automated Plan Generation to Evaluate Redistricting Proposals*, 59 WM. & MARY L. REV. 1521, 1536–37 (2018).

Legislative Reapportionment Comm’n, 38 A.3d 711, 759–61 (Pa. 2012) (*Holt I*). Improving compliance with one requirement often creates “downstream consequences” for compliance with others.¹³ For example, achieving population equality necessarily requires splitting some political subdivisions, and keeping certain counties intact could make the map as a whole less compact.¹⁴ Exploring millions of alternatives by computer sheds light on these tradeoffs.

As some of Pennsylvania’s leading mathematicians and scientists, the GMS Petitioners understand how high-performance computers and cutting-edge algorithmic techniques can thwart gerrymandering, streamline the mapmaking process, and promote fair and effective representation. They have taken to heart this Court’s observation that technology can “aid in the expeditious development of districting maps, the boundaries of which are drawn to scrupulously adhere to neutral criteria.” *LWV I*, 178 A.3d at 817–18; *see id.* at 819 n.75. Through computational redistricting, the GMS Petitioners have put forth a plan that “scrupulously adheres” to neutral criteria so effectively, and in a manner so fair to Pennsylvania voters, that it is the best plan before this Court.

¹³ Zhang, *supra*, at 1013.

¹⁴ *Id.*

SUMMARY OF ARGUMENT

This Court should reject the Special Master’s recommendation and, instead, adopt the GMS Plan.

I. As shown below, of all plans submitted in these proceedings, the GMS Plan best satisfies, all at once, the full set of neutral redistricting criteria that establish a “floor” for complying with the Free and Equal Elections Clause—population equality, respect for political subdivisions, compactness, and contiguity.

II. The GMS Plan is superior to all plans—including the demonstrably Republican-favoring HB2146—in complying with the mandate that a redistricting plan provide “all voters ... an equal opportunity to translate their votes into representation.” *LWV I*, 178 A.3d at 814. The GMS Plan provides equal electoral opportunities not only for Republican and Democratic voters, but also for minority voters: It is the *only* plan with three majority-minority districts, and the *only* plan with a predominantly Latino majority-minority district, reflecting the Commonwealth’s increasingly diverse citizenry.

III. The GMS Plan also addresses other factors traditionally considered in redistricting. It is the only plan that does not “pair” in a single district the homes of two or more incumbents running for reelection; it hews closely to the choices reflected in the 2018 Plan; and it preserves communities of interest.

IV. Evaluating all factors collectively, the GMS Plan is superior to all other plans before the Court.

V. The Special Master's recommendation is factually and legally flawed. The GMS Plan is superior to the Special Master's recommended plan in every way, as shown in the table below, where green shading highlights metrics on which one plan outperforms the other and yellow indicates a tie:

Redistricting Principle	Metric	GMS	HB2146
Population Equality	Maximum Population Deviation	1 person	1 person
Contiguity	Non-Contiguous Districts	0	0
Compactness	Mean Polsby-Popper (higher is better)	0.33	0.31
	Mean Reock (higher is better)	0.40	0.38
	Mean Convex Hull (higher is better)	0.80	0.78
	Cut Edges (lower is better)	5,546	5,882
Respect for Political Subdivisions	Total Split Political Subdivisions	49	54
	Political Subdivision Pieces Created by Splits (omitting pieces created when boroughs are split along county lines)	49	54
Minority Electoral Opportunity	Minority Opportunity Districts (MODs)	3	2
	MODs with Latino Adult Citizens as Largest Minority Group	1	0
Partisan Fairness	Antimajoritarian Outcomes (DeFord) (fewer is better)	3 (2 favoring Republicans; 1 favoring Democrats)	5 (all favoring Republicans)
	Average Mean-Median Gap (DeFord) (closer to zero is better)	-0.8%	-2.9%
	Average Efficiency Gap (DeFord) (closer to zero is better)	0.8%	-6.3%
Incumbent Pairings	Districts that Pair Incumbents Seeking Reelection	0	1

ARGUMENT

I. The GMS Plan Satisfies, Simultaneously, All the Neutral Criteria that Serve as the Constitutional “Floor” for a Redistricting Plan.

In *LWW I*, this Court described four “neutral criteria”—population equality, minimizing the division of political subdivisions, compactness, and contiguity—as the “‘floor’ of protection for an individual against the dilution of his or her vote in the creation of [congressional] districts.” 178 A.3d at 817. The GMS Plan satisfies *all* these criteria, simultaneously.

The GMS Petitioners have prepared two tables (Attachments A and B) that identify each redistricting criterion and associated metrics, with the metrics calculated in the same way for every plan before this Court.¹⁵ The GMS Petitioners were the only party to present an expert, Dr. DeFord, who analyzed every plan, top to bottom, and provided all data for review and cross-examination.¹⁶ Rather than wrestle with how to translate the differing methods of measuring performance submitted by the parties and *amici*, the Court can use these tables to make

¹⁵ These tables were attached to the GMS Petitioners’ January 29 post-trial submission in the Commonwealth Court. All data is found in Dr. DeFord’s Rebuttal Report, except where otherwise stated.

¹⁶ Indeed, Dr. DeFord’s analysis was so comprehensive that, rather than challenge his methodology, parties used cross-examination to cherry-pick particular metrics he had calculated that favored their own map. Tr. 253:23–261:17 (Carter), 263:21–267:1 (Governor), 269:3–270:4 (House Republicans), 285:6–287:20 (Reschenthaler Intervenors), 318:4–25 (Senate Democrats); *see also* Tr. 319:22–321:21.

comprehensive, data-driven, apples-to-apples comparisons of all 13 plans. They show that the GMS Plan outperforms the others in satisfying the neutral criteria.

A. The GMS Plan Achieves Absolute Population Equality.

Population equality is the primary consideration, and indeed the entire impetus, for redistricting. The command under Article I, Section 2 of the U.S. Constitution “that Representatives be chosen ‘by the People of the several States,’” *Wesberry v. Sanders*, 376 U.S. 1, 7 (1964), requires “absolute population equality” in congressional districts, *Karcher v. Daggett*, 462 U.S. 725, 732–33 (1983). Accordingly, in *League of Women Voters of Pennsylvania v. Commonwealth*, 181 A.3d 1083 (Pa. 2018) (*LWV II*), this Court held that “the constitutional guarantee of one person, one vote” in congressional redistricting means that “no district has more than a one-person difference in population from any other district.” *Id.* at 1087.

Perfect population equality is possible, and the GMS Plan achieves it. No district has more than a one-person difference in population from any other district; twelve contain 764,865 persons each, and five contain 764,864 persons each.¹⁷

The Carter Plan, House Democrats Plan, and Ali *Amici* Plan did not achieve absolute population equality.¹⁸ The Carter and House Democrats plans both have a

¹⁷ DeFord Opening ¶¶22 & Table 1; Tr. 203:18–204:3.

¹⁸ DeFord Rebuttal, Table 1 and App’x A, Table 1a.

two-person difference from their largest to smallest districts,¹⁹ meaning they could be subject to a federal one-person-one-vote challenge. *See, e.g., Vieth v. Pennsylvania*, 195 F. Supp. 2d 672, 675–76, 678 (M.D. Pa. 2002) (three-judge court) (invalidating a congressional redistricting plan because it had a 19-person maximum population deviation). The *Ali Amici* Plan has a much greater population deviation—8,676 persons²⁰—because it used data that reallocated many incarcerated people to their home addresses.²¹ To ensure the plan it adopts does not face a federal lawsuit, the Court should choose a plan with a one-person maximum population deviation.

B. The GMS Plan Splits the Fewest Political Subdivisions.

The congressional plan this Court adopts must not split counties, cities, incorporated towns, boroughs, townships, or wards “[u]nless absolutely necessary.” PA. CONST. art. II, §16; *see LWV I*, 178 A.3d at 816–17. Of course, “some divisions are inevitable” to comply with other legal requirements. *Holt I*, 38 A.3d at 758. But

¹⁹ *See* Rodden Opening, Table 4; House Dem. Caucus Br. at 9; DeFord Rebuttal, Table 1, and App’x A, Table 1a.

²⁰ DeFord Rebuttal, App’x A, Table 1a.

²¹ All other parties relied on (1) the 2020 Census data, unadjusted for errors in Pennsylvania’s precinct boundaries and populations; or (2) the Legislative Reapportionment Commission’s Data Set #1, which corrects these Pennsylvania-specific errors in the 2020 Census Data. Any plan this Court adopts should be based, as the GMS Plan is, on the LRC’s adjusted Data Set #1. That is consistent with Pennsylvania House Resolution 165 and the Court’s use of adjusted Census data in *LWV I*, 181 A.3d at 1087 n.8, and *Mellow v. Mitchell*, 607 A.2d 204, 218–19 (Pa. 1992). All statistics in this brief and calculated by Dr. DeFord were calculated using Data Set #1.

splitting these six political-subdivision types should be avoided unless “absolutely necessary.”²²

The GMS Plan outperforms every other plan in preserving the integrity of political subdivisions.²³ It splits 15 counties, 1 city, 0 towns, 3 boroughs, 15 townships, and 15 wards.²⁴ Of those 15 counties, three (Philadelphia, Allegheny, and Montgomery) must be split because they each have more residents than a single district has, and each is split the minimum number of times dictated by population.²⁵ The same is true for the GMS Plan’s sole split city, Philadelphia, which is divided among three districts, the mathematical minimum.²⁶ And each of the GMS Plan’s three borough splits occurs “naturally” along a county boundary that already divides the borough.²⁷ *LWVI*, 178 A.3d at 762 n.22. The GMS Plan also minimizes political-subdivision “pieces” created by splits.²⁸ The pieces metric (a) calculates the number of political-subdivision pieces above those required if each political subdivision were

²² The Carter Petitioners’ expert, Dr. Rodden, also evaluated the extent to which the Carter Plan preserved voting tabulation districts, or VTDs. *See* Rodden Opening at 22. But VTDs are not one of the six political subdivisions protected by the Constitution. Tr. 143:1–9; *see also* PA. CONST. art. II, §16.

²³ *See* DeFord Rebuttal, Table 6, and App’x A, Table 6a.

²⁴ DeFord Opening ¶¶29, 38, 41, 42, 48, 52. The GMS Plan also keeps Chester County fully intact; the 2018 Plan placed the county’s discontinuous portion into a second district. *Id.* ¶34 & n.3.

²⁵ *Id.* ¶¶29–33.

²⁶ *Id.* ¶38.

²⁷ *Id.* ¶¶42–47.

²⁸ DeFord Rebuttal, Table 7, and App’x A, Table 7a.

kept solely in one district and (b) omits splits of boroughs that occur along county lines.²⁹ For example, the GMS Plan has 17 municipality “pieces”: 2 pieces for Philadelphia (which is split two times) plus one piece for each of the plan’s 15 split townships.³⁰ This metric allows one to quickly and easily evaluate the extent to which political subdivisions are not just split, but split more times than may be necessary or appropriate.³¹

This table shows how the GMS Plan is superior to HB2146 in minimizing political subdivision splits and pieces,³² with green shading identifying superior numbers and yellow denoting a tie:

Metric	GMS Plan	HB2146
Split Counties	15	15
Split Municipalities (<i>including boroughs split on county lines</i>)	19	21
Split Wards	15	18
Total Splits	49	54
County Pieces Created by Splits	17	18
Municipality Pieces Created by Splits	17	18
Ward Pieces Created by Splits	15	18
Total Pieces Created by Splits	49	54
Districts Containing Parts of Philadelphia	3	4

²⁹ *Id.* ¶23.

³⁰ *Id.* at Tables 3 & 7.

³¹ DeFord Opening ¶27.

³² DeFord Rebuttal, Tables 4, 6, & 7.

The GMS Plan also reflects a prioritization of political-subdivision splits consistent with the plan ordered into effect in *LWV II* (“the 2018 Plan”). Like that plan, the GMS Plan splits only one city (Philadelphia) and keeps Pittsburgh whole.³³ The GMS Plan is one of only two proposed plans that splits Philadelphia into the minimum-population-required districts (three) *and* splits no other cities.³⁴ Furthermore, the GMS Plan follows the 2018 Plan’s approach in tolerating a small number of split townships to minimize divisions of other municipalities, including county seats.³⁵ And the GMS Plan follows the 2018 Plan’s approach in minimizing, to the extent possible, the splitting of wards, particularly in Philadelphia. *See LWV II*, 181 A.3d at 1087 n.11. Indeed, the GMS Plan splits the fewest wards of all but one submitted map.³⁶

In total, the GMS Plan has only 49 splits across all six types of political subdivisions—*the very best* across all parties’ and *amici*’s maps³⁷—and is tied for first in fewest pieces created by splitting the six political-subdivision types:³⁸

³³ *Id.* at Table 4.

³⁴ *Id.* at Table 4 and App’x A, Table 4a. The other is the House Democrats’ Plan, which is inferior by essentially every other metric. *See* Attachment A.

³⁵ *See* DeFord Opening ¶48.

³⁶ DeFord Rebuttal, Table 5 and App’x A, Table 5a. Senate Democrats Plan 2 splits one fewer ward, but splits one more county and five more boroughs along county lines, and it splits Pittsburgh. It is inferior to the GMS Plan by other metrics, too. *See* Attachment A.

³⁷ Others evaluate splits by ignoring boroughs split along county lines. By that metric, the GMS Plan ties for best (46) with Draw the Lines and Senate Democrats 2. *Id.*

³⁸ *Id.* at Tables 6 & 7 and App’x A, Tables 6a & 7a; Tr. 212:18–213:12 (DeFord).

Plan	Total Splits	Pieces Created by Splits
GMS	49	49
Sen. Dems. 2	51	49
Draw the Lines	52	49
HB2146	54	54
Citizen-Voters	54	55
Resenthaler 2	57	57
Resenthaler 1	58	58
Carter	58	59
Sen. Dems. 1	59	56
House Dems.	61	58
Governor	63	63
Ali	73	71
Voters of PA	79	76

Looking to the sum of splits and pieces across all six political-subdivision types accounts for tradeoffs when respecting political subdivisions.³⁹ While other parties may tout their performance on one or two subcategories of political subdivisions, no plan outperforms the GMS Plan on *total* splits or *total* pieces created by splits.⁴⁰ Simply put, of all the plans submitted by parties and *amici*, the GMS Plan splits the *fewest* political subdivisions, and *no plan* creates fewer political-subdivision pieces.

C. The GMS Plan Achieves Highly Compact Districts.

A congressional plan must contain districts “composed of compact ... territory.” PA. CONST. art. II, §16; *see LWVI*, 178 A.3d at 816–17. Simultaneously

³⁹ Tr. 211:11–213:7.

⁴⁰ DeFord Rebuttal, Tables 6, 7 and App’x A, Tables 6a, 7a.

complying with other criteria can introduce “elements of unavoidable noncompactness.” *Commw. ex rel. Specter v. Levin*, 293 A.2d 15, 18–19 (Pa. 1972) (internal quotation marks omitted), *abrogated on other grounds by Holt I*, 38 A.3d 711 (Pa. 2012). Nevertheless, in keeping with *LWV II*, the compactness of any plan adopted by the Court should be “superior or comparable” to that of the other submitted plans. 181 A.3d at 1087. The GMS Plan satisfies that standard.

“Compactness” refers to a district’s or plan’s geographic or geometric regularity.⁴¹ Several measures of compactness exist, *LWV I*, 178 A.3d at 771–72, and it is important to consider more than one because each “represents a different, potentially relevant portion of the full geometric information” and “no single compactness measure can perfectly capture all facets of the regularity of a shape.”⁴² Consequently, Dr. DeFord calculated the Convex Hull, Reock, Polsby-Popper, and Cut Edges compactness measures for every submitted plan.⁴³ *Cf. LWV II*, 181 A.3d at 1087 (assessing compactness measures).

The GMS Plan is the *best* among all party-submitted plans in its minimum Convex Hull score, which demonstrates that no single district in the plan is, on its

⁴¹ DeFord Opening ¶54.

⁴² *Id.* ¶57; *see also* Tr. 94:2–7 (Rodden), 214:10–17 (DeFord), 333:14–334:14 (Duchin).

⁴³ DeFord Rebuttal, Table 8 and App’x A, Table 8a; *see also* DeFord Opening ¶¶54–61 (explaining each compactness measure).

own, noncompact.⁴⁴ The GMS Plan also is among the best in other measures of compactness: mean Reock, mean Polsby-Popper, mean Convex Hull, and Cut Edges.⁴⁵

Notably, the GMS Plan achieves these levels of compactness even though two of its districts follow the irregular Pittsburgh border to keep that city intact. As Dr. DeFord testified, given Pittsburgh’s shape, plans that follow the city’s border will tend to have lower Polsby-Popper scores, as compared to maps smoothly slicing Pittsburgh in two.⁴⁶ This is an example of a tradeoff in optimizing multiple redistricting criteria simultaneously⁴⁷—one that comports with Pennsylvania law, which calls generally for compact districts, but prioritizes keeping political subdivisions intact “[u]nless absolutely necessary.” PA. CONST. art. II, §16.

D. The GMS Plan Contains Only Contiguous Districts.

The congressional plan this Court adopts must contain districts “composed of ... contiguous territory.” PA. CONST. art. II, §16; *see LWVI*, 178 A.3d at 816–17. A contiguous district is one “in which no part of the district is wholly physically

⁴⁴ *See* DeFord Rebuttal ¶26.

⁴⁵ *Id.* ¶¶25–26 & Table 8; Tr. 214:19–24.

⁴⁶ *See* Tr. 215:13–218:7.

⁴⁷ *Id.*; *see also id.* at 338:6–18 (Duchin).

separate from any other part.” *Specter*, 293 A.2d at 17–18 (internal quotation marks and footnote omitted). The GMS Plan avoids any discontinuity.⁴⁸

II. The GMS Plan Performs Better than Any Other Plan in Providing All Voters an Equal Opportunity to Translate Their Votes into Representation.

As explained, the GMS Plan is superior on the Pennsylvania Constitution’s full set of neutral “floor” criteria. But the Court must look beyond the “floor.” In *LWW I*, this Court recognized that “advances in map drawing technology and analytical software can potentially allow mapmakers, in the future, to engineer congressional districting maps, which, although minimally comporting with these neutral ‘floor’ criteria, nevertheless operate to unfairly dilute the power of a particular group’s vote for a congressional representative.” 178 A.3d at 817.

With that statement, this Court presciently foresaw HB2146, which would dilute Democratic votes while purporting to comply with the “floor” criteria. By contrast, the GMS Plan scrupulously ensures that all voters will be treated equally. The GMS Plan is far superior to HB2146 on objective metrics of partisan fairness that assess whether a plan is giving “all voters ... an equal opportunity to translate their votes into representation.” *Id.* at 814. The GMS Plan does not surpass just HB2146 on this score. It is either the very best, or effectively tied for the very best,

⁴⁸ See DeFord Rebuttal ¶27.

among every one of the plans, whether submitted by parties or *amici*, on virtually *every* measure of partisan fairness in the record.

Beyond ensuring partisan fairness, the GMS Plan also ensures that the Commonwealth’s minority voters are given an “equal opportunity to translate their votes into representation.” *Id.* Indeed, *only* the GMS Plan has three majority-minority opportunity districts, including one in which Latinos would be the largest group of adult minority citizens.

A. The GMS Plan Is Fair to Voters from Both Parties.

Article I, Section 5 of the Pennsylvania Constitution demands that a congressional redistricting plan “prevent dilution of an individual’s vote” and equalize the power of each citizen’s vote “*to the greatest degree possible.*” *Id.* at 817 (emphasis added). Scholars and scientists have several reliable ways to measure whether a redistricting plan will fulfill these aims.⁴⁹ Each is a different way of evaluating the extent to which a proposed map comports with majoritarian election principles—the notion that the party whose candidates win a majority of the votes statewide should likewise have a realistic probability of winning a majority of the

⁴⁹ See DeFord Opening §V.E.3; see also Tr. 222:7–24. As with the neutral criteria, parties’ experts calculated partisan-fairness measures in different ways. The Court can use Dr. DeFord’s calculations for all plans, or the PlanScore calculations, to make apples-to-apples assessments among plans. See Attachments A & B.

congressional districts.⁵⁰ On these metrics, the GMS Plan achieves the best, or near-best, scores of all the plans.

1. The GMS Plan Achieves a Near-Perfect Mean-Median Score.

In *LWVI*, this Court credited the *mean-median score* as a measure of partisan fairness. *See* 178 A.3d at 774. The mean-median score captures how much of a state's vote is needed to capture half the seats in a proposed map.⁵¹ As Dr. DeFord explained, the mean-median score relates to partisan symmetry: If one party is expected to turn a 55%-to-45% statewide vote advantage into a 10-to-7 seat advantage, then a symmetric result would require the other party to achieve the same seats advantage with the same statewide vote advantage. If the mean-median score is close to zero, then about half the districts in the proposed plan are more Democratic than the state as a whole, and about half the districts are more Republican than the state as a whole—an intuitively sensible property for any truly fair map.⁵² But if the mean-median score is further away from zero, the proposed plan is skewed to favor one major political party and disfavor the other.

To calculate this measure, Dr. DeFord obtained actual election data showing the votes cast for each candidate in each of the 9,178 voting precincts in each of 18

⁵⁰ Tr. 219:4–18.

⁵¹ Duchin Opening at 17; DeFord Opening ¶¶78.

⁵² DeFord Opening ¶¶78–79; *see also* Tr. 227:18–231:20.

statewide general elections from 2012 through 2020.⁵³ “By overlaying the precinct-level election results on top of the geographic boundaries as shown on a particular map, he was able to determine whether a particular district had more Republican or Democratic votes during the elections.” *LWV I*, 178 A.3d at 773.⁵⁴ He then compared the vote share the Democratic candidate would have obtained in each election in each proposed plan’s “median” district—the ninth-most Democratic and ninth-most Republican district in each 17-district proposed plan—with the vote share that same candidate garnered statewide.⁵⁵ That comparison is Dr. DeFord’s mean-median score.⁵⁶

Dr. DeFord reported both whether the mean-median score favored Democrats or Republicans in each of the 18 elections he analyzed, and an average mean-median score across them all.⁵⁷ For HB2146, all 18 elections had a mean-median score favoring Republicans, and the average score was 2.9% favoring Republicans.⁵⁸ By contrast, the GMS Plan had 13 elections where the mean-median score favored

⁵³ DeFord Opening ¶¶68.

⁵⁴ See DeFord Opening ¶¶70, 78–79.

⁵⁵ *Id.* ¶79. In *LWV I*, experts calculated the mean-median score by identifying the median-district vote share and comparing it to the average vote share across the districts. 178 A.3d at 774. Dr. DeFord explained that his manner of calculation—where the statewide vote share is used instead of the average district vote share—better controls for differences in voter turnout across districts in a redistricting plan. DeFord Opening ¶79.

⁵⁶ *Id.* ¶78.

⁵⁷ *Id.* ¶¶97–100.

⁵⁸ DeFord Rebuttal Table 12.

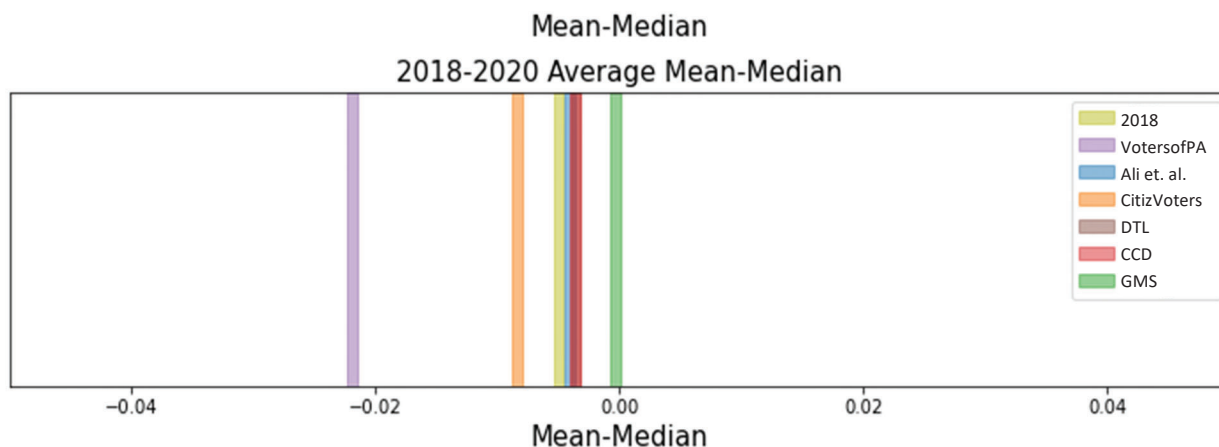
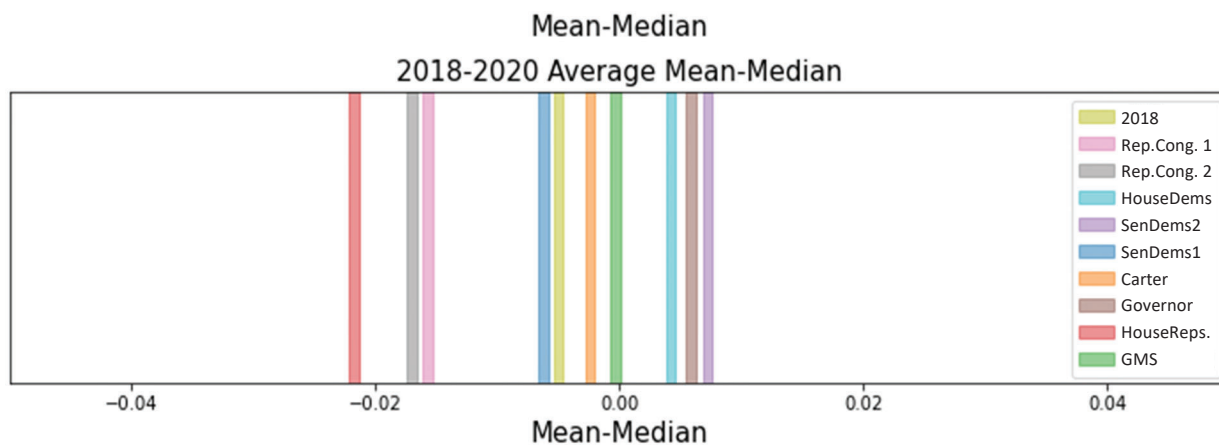
Republicans and 5 where it favored Democrats; its average mean-median score is much closer to zero—0.8% in favor of Republicans.⁵⁹ That 0.8% score is the second-best average mean-median score of all plans submitted by all parties and *amici*.⁶⁰ For the most recent elections (2018–2020), which are likely to be the most reflective of the current political environment, the GMS Plan has the *best* average mean-median score of all plans.⁶¹ The following figures from Dr. DeFord show his mean-median calculations, averaged across elections from 2018 to 2020, with the bars colored according to the corresponding plan⁶²:

⁵⁹ *Id.*

⁶⁰ DeFord Rebuttal ¶38, Table 12 and App’x A, Table 12a.

⁶¹ *See* DeFord Rebuttal ¶39, Figure 3 and App’x A, Figure 3a. Other experts also calculated the mean-median scores of each plan, though with different, less comprehensive sets of election results. While Dr. DeFord relied on the results of 18 statewide elections from 2012 to 2020, Dr. Duchin relied on 12 elections (Duchin Opening at 18–19), Dr. Rodden relied on 11 elections (Rodden Opening at 4; Rodden Rebuttal at 7), and Dr. Barber relied on 17 elections (Barber Rebuttal at 13 n.5). No matter which set of elections is used, the GMS Plan scored close to the ideal score of zero. *See, e.g.*, Duchin Rebuttal at 4; Barber Rebuttal at 21. Indeed, Governor Wolf’s expert, Dr. Duchin, admitted that the GMS Plan is an “excellent plan” with partisan-fairness scores better than several of the plans that she initially had rated as “dominating the field” in this area. Tr. 424:23–433:20.

⁶² DeFord Rebuttal, Figure 3 and App’x A, Figure 3a. Comparatively, the Senate Democrats 2 Plan, which scores slightly better than the GMS Plan on average mean-median, scores further away from zero for the more recent elections. *Id.* ¶39.



And as shown in the table below, the GMS Plan tied for the *very best* in its mean-median score as calculated by PlanScore.org⁶³—an independent site that Dr.

⁶³ DeFord Rebuttal, App’x D. While Dr. Caughey assessed a few of the proposed plans, Dr. DeFord assessed all the plans. To the extent they reached different results, Dr. DeFord’s results should be used as he assessed all the plans and supplied his backup, *id.*; using his results guarantees an apples-to-apples approach.

Caughey testified is nonpartisan, transparent, and available to any member of the public.⁶⁴ HB2146 scored among the very *worst*.⁶⁵

Plan	PlanScore's Mean-Median Score
GMS	0.4% R
Carter	0.4% R
Governor	0.4% R
Sen. Dems. 2	0.5% R
Sen. Dems. 1	0.6% R
House Dems.	0.7% D
Ali	0.7% R
Draw the Lines	1.0% R
Citizen-Voters	1.7% R
Voters of PA	2.2% R
HB2146	2.3% R
Reschenthaler 2	2.4% R
Reschenthaler 1	2.4% R

2. The GMS Plan Achieves a Near-Perfect Efficiency-Gap Score.

The *efficiency gap score*, also credited in *LWV I*, is “a formula that measures the number of ‘wasted’ votes for one party against the number of ‘wasted’ votes for another party,” where “[t]he larger the number, the greater the partisan bias.” 178 A.3d at 777. As Dr. DeFord explained, a vote is considered “wasted” if it was for the losing candidate in a district or for the winning candidate but beyond the number needed to win the district, because “the most efficient distribution of votes is to carry

⁶⁴ See Tr. 962:21–964:8, 1009:10–23. PlanScore allows anyone to submit a proposed redistricting plan and receive four partisan-fairness measures based on 2012–2020 election data from Pennsylvania’s presidential and congressional elections. See Tr. 915:21–916:7, 926:24–927:13, 1014:10–1015:8 (Caughey); see also Unified District Model, PLANSCORE (Dec. 2021), <https://planscore.campaignlegal.org/models/data/2021D/>.

⁶⁵ See DeFord Rebuttal, App’x D; see also Caughey Rebuttal at 12–15.

as many districts as possible by as narrow a margin as possible, while having the opposing party win its [smaller number of] districts by large majorities.”⁶⁶ An efficiency gap that is close to zero suggests neither party’s voters are unfairly favored.⁶⁷

The GMS Plan is among the best, with a mean efficiency-gap score extraordinarily close to zero (0.8%, as calculated by Dr. DeFord over 18 elections).⁶⁸ And as calculated by PlanScore.org, the GMS Plan scored better than all but one of the other plans, while HB2146 is again among the worst.⁶⁹

Plan	PlanScore’s Efficiency-Gap Score
House Dems.	1.2% D
GMS	1.4% R
Carter	1.8% R
Governor	1.9% R
Sen. Dems. 2	2.4% R
Ali	2.4% R
Sen. Dems. 1	2.5% R
Draw the Lines	3.5% R
Citizen-Voters	4.6% R
Resenthaler 2	6.3% R
Resenthaler 1	6.4% R
HB2146	6.6% R
Voters of PA	6.8% R

⁶⁶ DeFord Opening ¶80.

⁶⁷ *Id.* ¶¶97, 100.

⁶⁸ DeFord Rebuttal, Table 13.

⁶⁹ *See* DeFord Rebuttal, App’x D; Tr. 968:16–969:9 (Caughey). Slightly better on this metric is the House Democrats Plan, *see* DeFord Rebuttal, App’x D, which is inferior to the GMS Plan by nearly every other metric. *See infra* page 58.

3. The GMS Plan Achieves Superior Majority Responsiveness.

Another test of partisan fairness is a *majority-responsiveness measure* based on the plan's seats-votes curve.⁷⁰ This measure evaluates the extent to which a proposed redistricting plan allows each political party to convert a majority of votes into a majority of seats, without making it harder for one party or the other to do so.⁷¹ The GMS Plan is again among the best by this measure, with only three instances across the 18 elections that Dr. DeFord studied in which a majority of votes would not have been converted into a majority of seats.⁷² And these three instances were split between the political parties, suggesting that the plan does not make it harder for either party to convert a vote-share majority into a seat-share majority.⁷³ By contrast, most other submitted plans had more instances when a vote majority did not translate into a seat majority,⁷⁴ or had antimajoritarian outcomes that always disadvantaged one party's voters but never the other party's voters.⁷⁵ This table compares outcomes under the GMS Plan to those under HB2146, with

⁷⁰ DeFord Opening ¶¶73–76, 88–89; Duchin Opening at 14; Tr. 900:20–903:23 (Caughey).

⁷¹ DeFord Opening ¶¶73–76; Tr. 361:9–364:9 (Duchin).

⁷² DeFord Rebuttal, Tables 9 & 10.

⁷³ *Id.*; see also DeFord Opening ¶84.

⁷⁴ These are HB2146, the Governor's Plan, and the two Reschenthaler plans. DeFord Rebuttal, Tables 9 & 10.

⁷⁵ No plan had all such outcomes favoring Democrats. The following plans' antimajoritarian outcomes favored only Republicans: HB2146, both Reschenthaler plans, Senate Democrats 1, Draw the Lines, Citizen-Voters, and Voters of PA. *Id.*

antimajoritarian outcomes shaded either in red (favoring Republicans) or blue (favoring Democrats)⁷⁶:

Election	Winner	Dem. Vote %	GMS (Dem. Seats/ 17)	HB2146 (Dem. Seats/ 17)
U.S. President '12	D	52.7%	59% (10)	53% (9)
U.S. Senator '12	D	54.6%	59% (10)	53% (9)
Attorney General '12	D	57.5%	71% (12)	76% (13)
Auditor General '12	D	51.7%	41% (7)	35% (6)
State Treasurer '12	D	54.4%	59% (10)	47% (8)
Governor '14	D	54.9%	59% (10)	53% (9)
U.S. President '16	R	49.6%	47% (8)	41% (7)
U.S. Senator '16	R	49.3%	53% (9)	29% (5)
Attorney General '16	D	51.4%	59% (10)	41% (7)
Auditor General '16	D	52.6%	47% (8)	41% (7)
State Treasurer '16	D	53.4%	59% (10)	59% (10)
Justice '17	R	47.7%	41% (7)	35% (6)
Governor '18	D	58.7%	65% (11)	59% (10)
U.S. Senator '18	D	56.7%	59% (10)	59% (10)
U.S. President '20	D	50.6%	53% (9)	47% (8)
Attorney General '20	D	52.3%	59% (10)	59% (10)
Auditor General '20	R	48.4%	47% (8)	29% (5)
State Treasurer '20	R	49.6%	47% (8)	41% (7)

4. The GMS Plan's Competitive Districts Ensure Evenhanded Responsiveness to Shifts in Voter Opinion.

The GMS Plan also achieves perfect balance on a measure of districts that are potentially responsive or competitive between the political parties. Again looking across 18 statewide general elections, the GMS Plan contains 5 districts that consistently voted Democratic in those elections, 5 districts that consistently voted

⁷⁶ DeFord Rebuttal, Table 9 (percentages rounded).

Republican, and 7 districts that have swung for either party.⁷⁷ The GMS Plan is one of only two submitted plans that achieves a perfect balance on this measure, with an equal number of districts that consistently voted in favor of each party.⁷⁸

* * *

In sum, across the full range of measurements for partisan fairness, the GMS Plan is either the very best, or among the very best, of all submitted plans. As measured by PlanScore, the GMS Plan is indisputably the best. *See* Attachments A & B. Thus, the GMS Plan best vindicates the constitutional guarantee to give “all voters ... an equal opportunity to translate their votes into representation.” *LWV I*, 178 A.3d at 814.

B. The GMS Plan Best Provides Minority Voters with the Opportunity to Translate Their Votes into Representation.

The GMS Plan also provides minority-group members with an equal opportunity “to translate their votes into representation.” *LWV I*, 178 A.3d at 804. Ensuring minority electoral opportunity requires compliance with both the U.S. Constitution and Section 2 of the Voting Rights Act (VRA), 52 U.S.C. §10301. *See LWV I*, 178 A.3d at 817 n.72; *see also* PA. CONST. art. I, §29 (“Equality of rights under the law shall not be denied or abridged in the Commonwealth of Pennsylvania

⁷⁷ DeFord Rebuttal ¶33 & Table 11; Tr. 224:16–226:4.

⁷⁸ DeFord Rebuttal, Table 11 and App’x A, Table 11a. The other is the Draw the Lines Plan. *Id.*

because of the race or ethnicity of the individual.”). A plan cannot make excessive or unjustified use of race or racial data. *See Shaw v. Reno*, 509 U.S. 630, 642, 646–49 (1993). Nor can the plan deny or abridge the right to vote on account of race, color, or membership in a language minority group. 52 U.S.C. §10301.

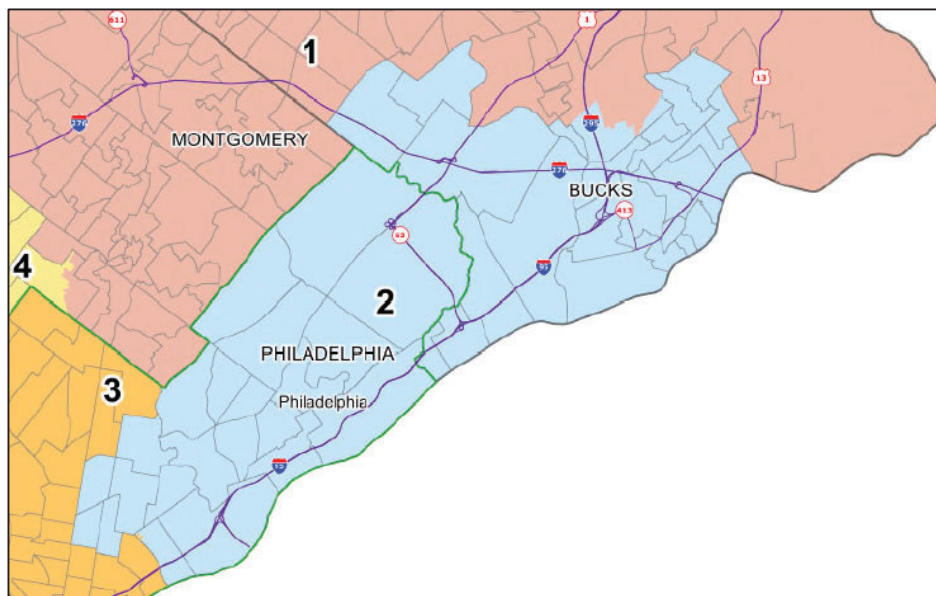
To satisfy federal law, a redistricting plan should provide effective opportunities for minority-group members to nominate and elect their preferred candidates in a number of reasonably compact districts “roughly proportional” to the minority group’s share of the state’s citizen voting-age population, or CVAP. *LULAC v. Perry*, 548 U.S. 399, 426, 436–38 (2006); *Johnson v. De Grandy*, 512 U.S. 997, 1000 (1994).⁷⁹ About 20% of the Commonwealth’s CVAP belongs to a racial or language minority group, with Black and Latino adult citizens constituting about 11% and 6%, respectively.⁸⁰ In a 17-district plan, 20% of 17 districts would equal 3.4 districts. Under the “rough” proportionality principle, this means Pennsylvania should have at least three congressional districts where minority voters have a realistic opportunity to nominate and then elect their preferred candidates.

⁷⁹ In *Mellow*, this Court relied on a similar proportionality analysis to conclude that an additional district in which Black voters would have an opportunity to nominate and elect their preferred candidates should be included in the congressional plan. *See* 607 A.2d at 206–07 (discussing the need for a second Black opportunity district in a 21-district plan “in light of Pennsylvania’s 9% African-American population”).

⁸⁰ U.S. Census Bureau, *American Community Survey: S2901 Citizen Voting-Age Population by Selected Characteristics*, <https://data.census.gov/cedsci/table?q=citizen&g=0400000US42&d=ACS%201-Year%20Estimates%20Subject%20Tables&tid=ACSST1Y2019.S2901> (last visited Feb. 12, 2022); *see also* Tr. 242:11–15.

The GMS Plan satisfies this principle. Unlike any of the other plans, the GMS Plan includes *three* majority-minority districts in which minority citizens will have such an opportunity, and in one of those, Latino adult citizens would constitute the largest minority group. Both of these features would be historic firsts for the Commonwealth—a reflection of the Commonwealth’s diversifying population. The GMS Plan’s minority opportunity districts are described below.

District 2



District 2 connects Northeast Philadelphia with similar communities in southern Bucks County, including the relatively diverse townships of Bensalem, Bristol, and Middletown. Minority-group members constitute 52% of the district’s voting-age population,⁸¹ and District 2 would be the first majority-minority

⁸¹ DeFord Opening ¶117.

congressional district in Pennsylvania to have more Latino than Black adult citizen residents.⁸² The district has been carried by Latino-preferred candidates in 18 of 18 recent statewide general elections and 7 of 10 recent statewide Democratic primaries (and the three exceptions were all more than five years ago).⁸³ The percentage of proposed District 2's adult citizen population that is Latino is increasing by about a half percentage point a year.⁸⁴ And a glimpse of the promising future for Latino voters in this proposed district can be seen in the May 2021 Democratic primary election for Philadelphia's District Attorney, in which Latino candidate Carlos Vega, who won only 33% of the vote citywide, nonetheless easily carried the Philadelphia portion of this district with 64% of the vote.⁸⁵

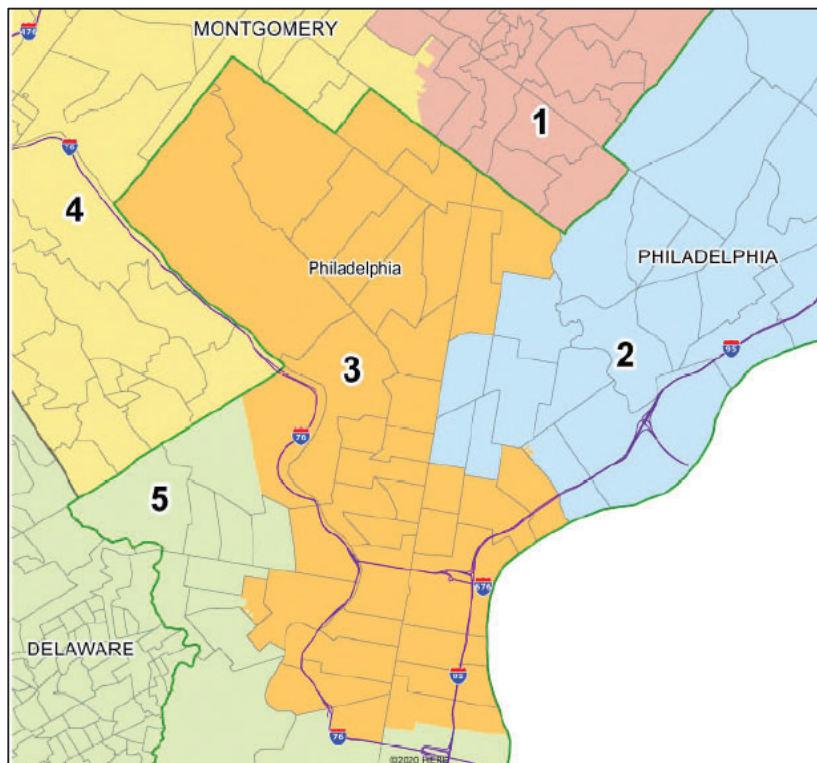
⁸² In general elections in the Philadelphia area, Black voters and Latino voters consistently and cohesively support the same candidates, usually by landslide margins, as more than 90% of Black voters and more than 60% of Latino voters cast their ballots for Democratic candidates. *See* DeFord Opening ¶¶9, 119, 135, 140.

⁸³ *See Id.* ¶55, Table 4.

⁸⁴ *Id.* ¶140.

⁸⁵ *Id.* About 80% of proposed District 2's residents live in Philadelphia.

District 3

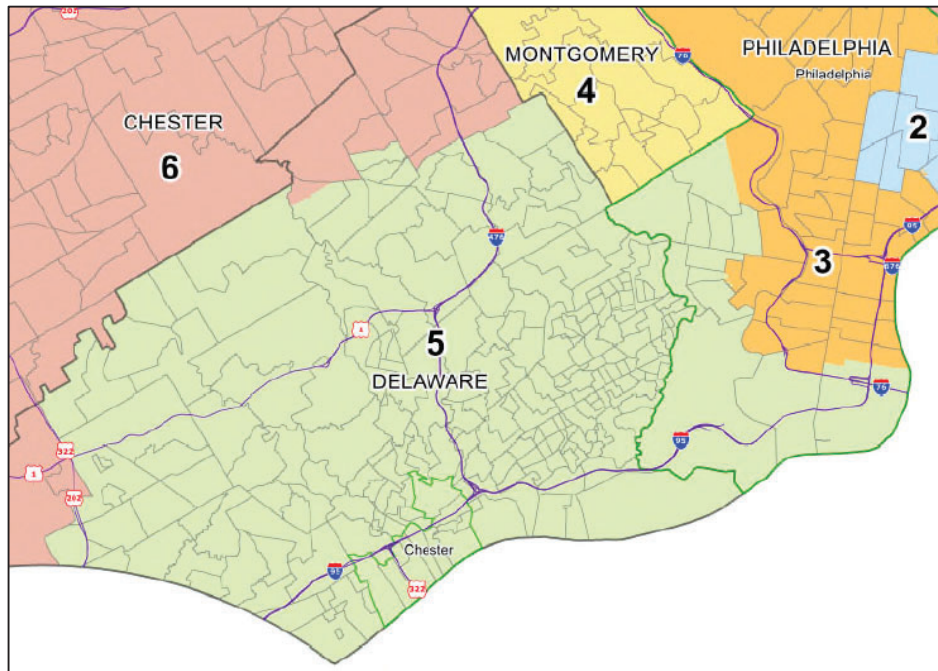


District 3 consists entirely of communities within Philadelphia city limits, joining Northwest Philadelphia, Center City, and parts of West and South Philadelphia. Minority-group members constitute 57% of the district’s voting-age population.⁸⁶ Proposed District 3 maintains the core of current District 3 and is a minority opportunity district with a track record of strongly supporting the same Black-preferred candidates that current District 3 supports.⁸⁷

⁸⁶ DeFord Opening ¶117.

⁸⁷ Dr. DeFord found that proposed District 3 and current District 3 voted for the same candidate in every citywide Democratic primary since 2015 involving candidates from more than one racial or language minority group. *See id.* ¶48, Table 2.

District 5



District 5 contains most of Delaware County, linked with parts of West and South Philadelphia. These neighboring communities include the Philadelphia International Airport at the county border, as well as industrial areas in Southwest Philadelphia and the Navy Yard, connecting them with industrial and port facilities south of Philadelphia in Delaware County. Minority-group members constitute 51% of the district's voting-age population.⁸⁸ And District 5 is also a minority opportunity district with a track record of strongly supporting the same Black-preferred candidates that the current District 3 supports.⁸⁹

* * *

⁸⁸ DeFord Opening ¶¶117.

⁸⁹ *Id.* ¶¶118–19, 128.

The GMS Plan creates these ample opportunities for minority voters without allowing race to predominate. As Dr. DeFord testified, there is no evidence the GMS Plan was created to specifically benefit any racial group or to hit an arbitrary threshold of minority voting-age population.⁹⁰ Each of the GMS Plan’s minority opportunity districts is compact, contiguous, and respectful of municipal and ward boundaries and does not raise any concerns associated with racial gerrymandering. Thus, in addition to performing optimally on the neutral criteria and partisan fairness, the GMS Plan also best results in opportunity for Pennsylvania’s diversifying population.

III. The GMS Plan Best Addresses Other Legitimate Redistricting Factors.

Though “wholly subordinate” to the neutral criteria and compliance with the Free and Equal Elections Clause, other factors also may play a legitimate role in redistricting. These can include avoiding incumbent pairings, minimizing unnecessary changes to a prior map, and preserving communities of interest. *See LWV I*, 178 A.3d at 817.

⁹⁰ Tr. 243:13–244:3; *see also* *Cooper v. Harris*, 137 S. Ct. 1455, 1469 (2017); *Bethune-Hill v. Va. State Bd. of Elections*, 137 S. Ct. 788, 799, 801–02 (2017); *Ala. Legis. Black Caucus v. Alabama*, 575 U.S. 254, 266–67, 275 (2015); *Bush v. Vera*, 517 U.S. 952, 969–73 (1996) (plurality opinion).

A. Unlike Every Other Plan, the GMS Plan Pairs No Incumbents Seeking Reelection.

The protection of incumbents can play a role in Pennsylvania’s redistricting process. *See LWV I*, 178 A.3d at 817. Indeed, incumbent “pairing” can be relevant to partisan fairness where a map disproportionately pairs the incumbents of one political party.

The GMS Plan is the only plan that pairs *zero* incumbent Representatives seeking reelection in 2022.⁹¹ By contrast, HB2146, the Carter Plan, the Senate Democrats Plan 1, and the Reschenthaler Plan 2 each pair *two* incumbents seeking reelection, and each of the other plans pairs *four* such incumbents.⁹² Some of these pairings have a partisan imbalance: The Senate Democrats Plan 2 and the House Democrats Plan pair three Republicans, while the Reschenthaler Plan 1 pairs three Democrats.⁹³ The following table summarizes incumbent pairings, with asterisks identifying incumbents not running for reelection⁹⁴:

⁹¹ DeFord Rebuttal ¶45, Table 15 and App’x A, Table 15a.

⁹² *Id.*

⁹³ *Id.*

⁹⁴ *Id.*

Plan	Number of Incumbents Seeking Reelection Who Are Paired	Names of Paired Incumbents (an asterisk indicates the incumbent is not seeking reelection)
GMS	0	District 14: Reschenthaler (R) and Lamb* (D)
HB2146	2	District 8: Meuser (R) and Cartwright (D) District 15: Lamb* (D) and Doyle* (D)
Carter	2	District 15: Keller (R) and Thompson (R) District 17: Lamb* (D) and Doyle* (D)
Sen. Dems. 1	2	District 9: Meuser (R) and Keller (R)
Reschenthaler 2	2	District 7: Keller (R) and Cartwright (D)
Governor	4	District 5: Dean (D) and Scanlon (D) District 12: Keller (R) and Joyce (R)
Sen. Dems. 2	4	District 1: Fitzpatrick (R) and Boyle (D) District 9: Meuser (R) and Keller (R)
House Dems.	4	District 8: Meuser (R) and Cartwright (D) District 11: Perry (R) and Smucker (R) District 17: Lamb (D)* and Doyle (D)*
Reschenthaler 1	4	District 7: Keller (R) and Cartwright (D) District 13: Scanlon (D) and Houlahan (D)
Draw the Lines	4	District 1: Fitzpatrick (R) Boyle (D) District 9: Meuser (R) and Keller (R)
Citizen-Voters	4	District 5: Scanlon (D) Dean (D) District 8: Meuser (R) and Cartwright (D) District 17: Lamb* (D) and Doyle* (D)
Ali	4	District 5: Scanlon (D) Dean (D) District 9: Meuser (R) and Keller (R)
Voters of PA	4	District 1: Fitzpatrick (R) and Boyle (D) District 8: Meuser (R) and Cartwright (D)

Especially given the importance of seniority in Congress, the Commonwealth would benefit from a plan that does not pit incumbents against each other.

B. The GMS Plan Pays Proper Deference to the 2018 Plan.

The “preservation of prior district lines,” otherwise known as “least change,” is another subordinate factor the Court may consider. *LWV I*, 178 A.3d at 817. As Professor Persily has noted, one legitimate purpose of the “least change” approach is to avoid the targeting of specific officeholders for defeat.⁹⁵ It appears that some plans, unlike the GMS Plan, may have taken this approach. The most senior Democrat in Pennsylvania’s House delegation, District 8’s Congressman Matt Cartwright—one of only seven Democratic Representatives nationwide who won in November 2020 while President Trump carried his district⁹⁶—finds himself not only paired with a Republican incumbent in six plans (see the table above), but also placed in a district with tens of thousands of new constituents and a significantly larger Republican base in seven of the thirteen proposed plans.⁹⁷

In general, using metrics like “retained population share” to illustrate plan-wide that a redistricting plan is “least change”⁹⁸ has limited utility when a change to

⁹⁵ See Nathaniel Persily, *In Defense of Foxes Guarding Henhouses: The Case for Judicial Acquiescence to Incumbent-Protecting Gerrymanders*, 116 HARV. L. REV. 649, 662–63 (2002) (noting that incumbent-protecting districts “frequently operate under a ‘least-change’ principle”).

⁹⁶ J. Miles Coleman, *2020’s Crossover Districts*, Ctr. for Politics (Feb. 4, 2021), <https://centerforpolitics.org/crystalball/articles/2020s-crossover-districts/>.

⁹⁷ Those seven plans are HB2146, Resenthaler Plans 1 and 2, the Voters of PA Plan, the Citizen-Voters Plan—and curiously, both the Governor’s Plan and the House Democrats Plan. See DeFord Rebuttal, Table 15 and App’x A, Table 15a.

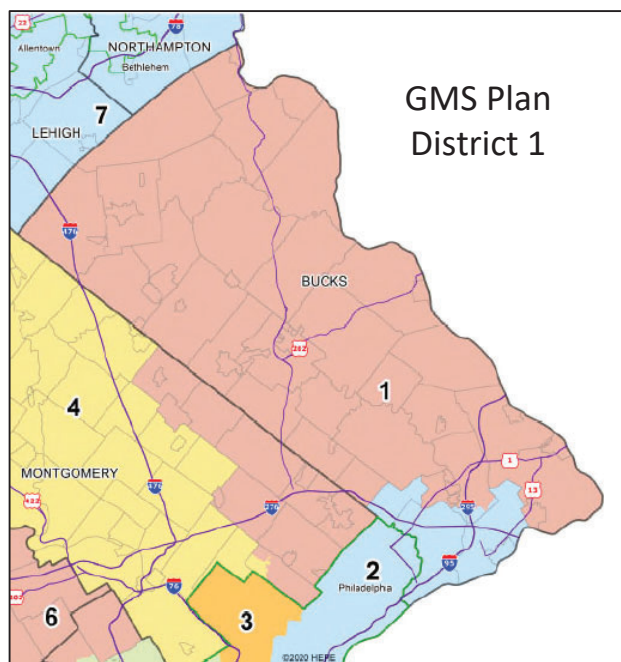
⁹⁸ See Rodden Opening at 20.

the number of districts makes it impossible to directly compare the old district to a new district (*i.e.*, there can be no “new” District 18 in a 17-district map). In any event, the GMS Plan performs well on this metric. Between 73% and 95% of the population in most of the GMS Plan’s districts comes from the district’s predecessor in the 2018 Plan, and that is equally true for districts currently represented by Democrats like Representatives Cartwright, Houlihan, and Wild, and by Republicans like Representatives Fitzpatrick, Kelly, and Thompson.

C. The GMS Plan Preserves Communities of Interest.

As noted above, the GMS Plan performs better than any other plan in keeping political subdivisions together. Because protecting subdivisions helps “maintain the geographical and social cohesion of the communities in which people live and conduct the majority of their day-to-day affairs,” *LWW I*, 178 A.3d at 814, the GMS Plan likewise preserves communities of interest. However, keeping together communities that do not dovetail precisely with political subdivisions but nonetheless reflect a “common economic base,” “circulation arteries,” shared “schools of higher education,” and common “news media” also can be an appropriate, *Mellow*, 607 A.2d at 208, 220–21, though “wholly subordinate,” *LWW I*, 178 A.3d at 817, consideration in redistricting, *see also Holt II*, 67 A.3d at 1241–42.

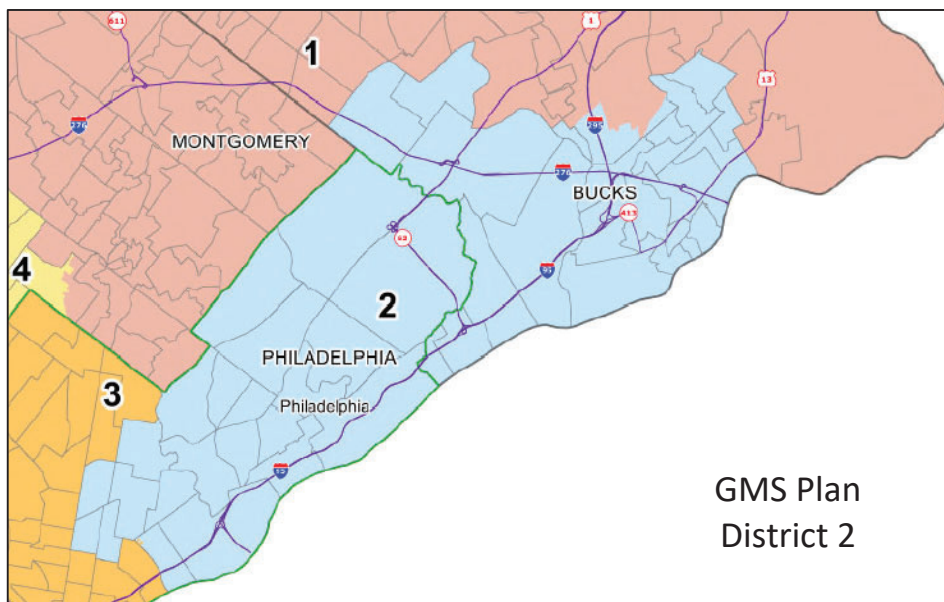
A district-by-district overview demonstrates how the GMS Plan—beyond preserving political subdivisions—also substantially preserves communities defined by actual shared interests.⁹⁹



District 1: District 1 joins all the communities of Bucks County (other than the relatively diverse inner suburbs nearest to Northeast Philadelphia) with similar communities along the Montgomery County/Bucks County border. This approach is sensible: The communities of Bucks and Montgomery Counties are so closely aligned that the local newspapers in the former county cover news in the latter

⁹⁹ Each of these insets outlines counties in black and cities in green. For most insets, boroughs and townships (along with Pennsylvania’s sole incorporated town) are outlined in gray. For districts in the Philadelphia area, the gray lines show ward boundaries.

county.¹⁰⁰ This area has also experienced notable population growth over the past decade, fueled in part by the rapid expansion of biotechnology in both counties.¹⁰¹

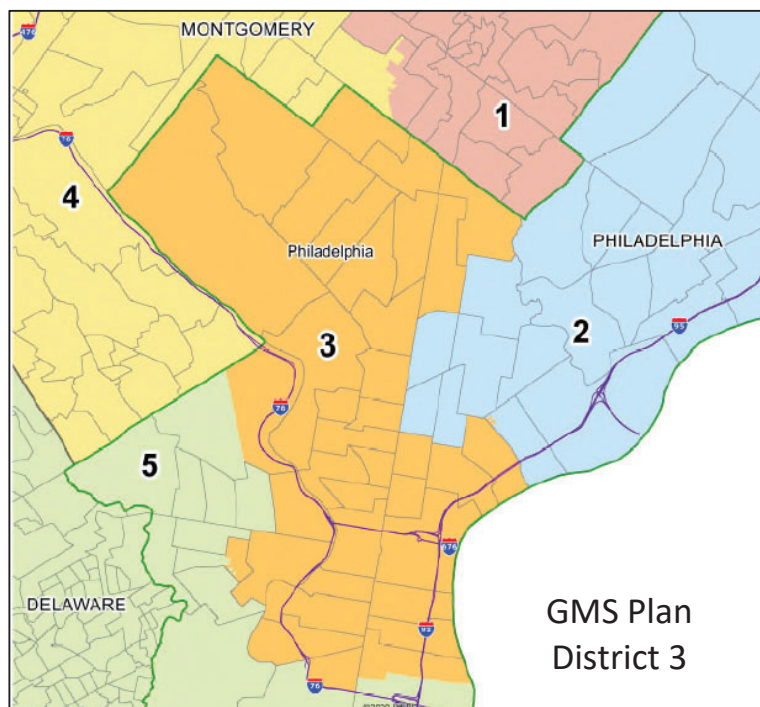


District 2: As noted above, District 2 joins a diversifying population in lower Bucks County (including Bensalem, Bristol, and Middletown) with a similar population in Northeast Philadelphia and thus is a minority opportunity district that could provide historic opportunities to Pennsylvania’s growing Latino population. Inner-suburban communities in lower Bucks County, such as Bensalem, also share

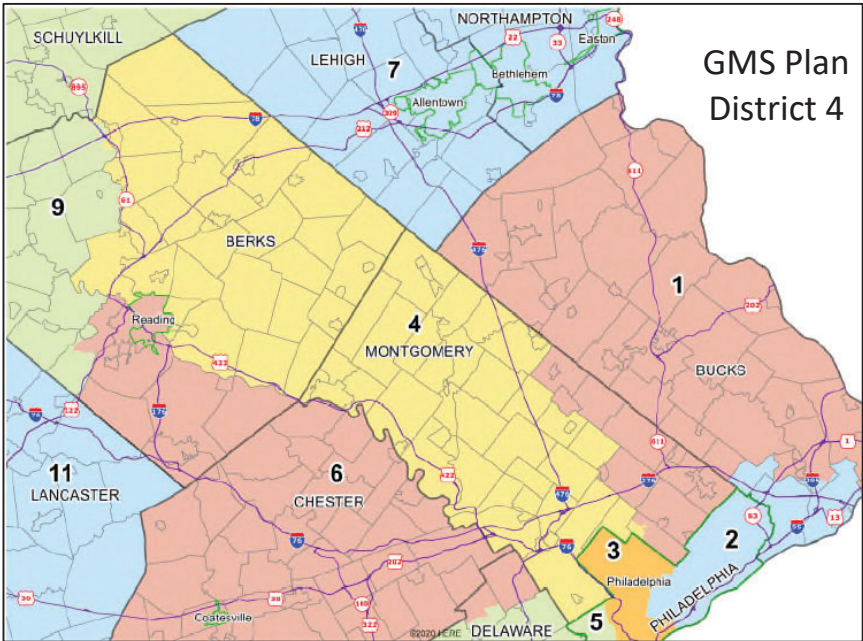
¹⁰⁰ See, e.g., Nick Siano, *Snow Storm Closures: See What's Closed, Delayed in Bucks and Montgomery Counties*, Bucks Cty. Courier Times (Dec. 17, 2020), <https://www.buckscountycouriertimes.com/story/news/2020/12/16/bucks-montgomery-county-closures-see-whats-closed-thursday-pa-storm/3933497001/>; Christopher Dornblaser, *Deed Scam Targeting Montgomery County Homeowners*, Bucks Cty. Courier Times (Sept. 10, 2020), <https://www.buckscountycouriertimes.com/story/news/2020/09/10/deed-scam-targeting-montgomery-county-homeowners/3460196001/>.

¹⁰¹ See Christine Tarlecki, *Montgomery County Makes List of Top 10 Biopharma Clusters Nationwide*, MontCo.Today (Mar. 23, 2021), <https://montco.today/2021/03/montgomery-county-makes-list-of-top-10-biopharma-clusters-nationwide/>.

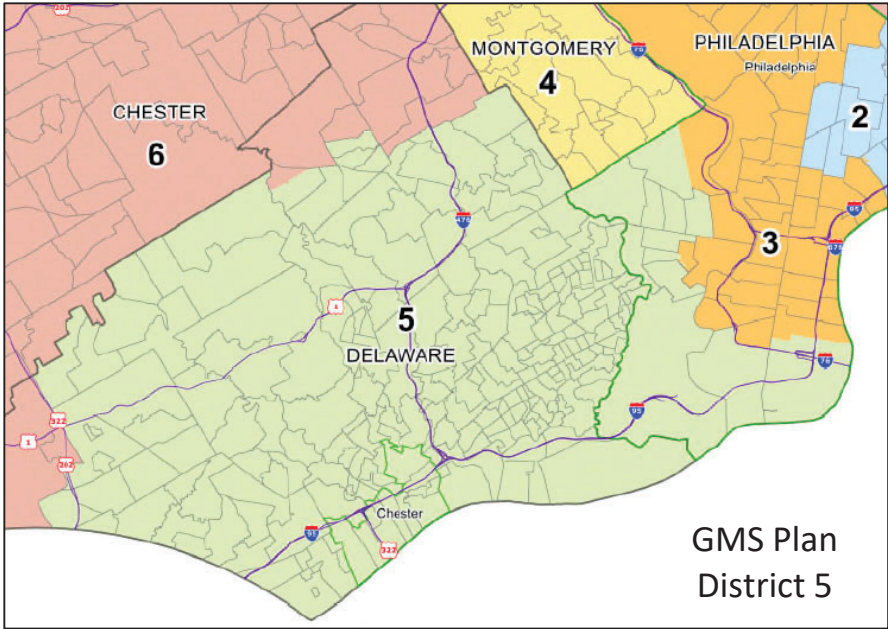
economic interests more akin to their Northeast Philadelphia neighbors than to the more exurban or rural communities in upper Bucks County. This district is connected by Interstate 95, Roosevelt Boulevard (US-1), and multiple SEPTA bus and train lines.



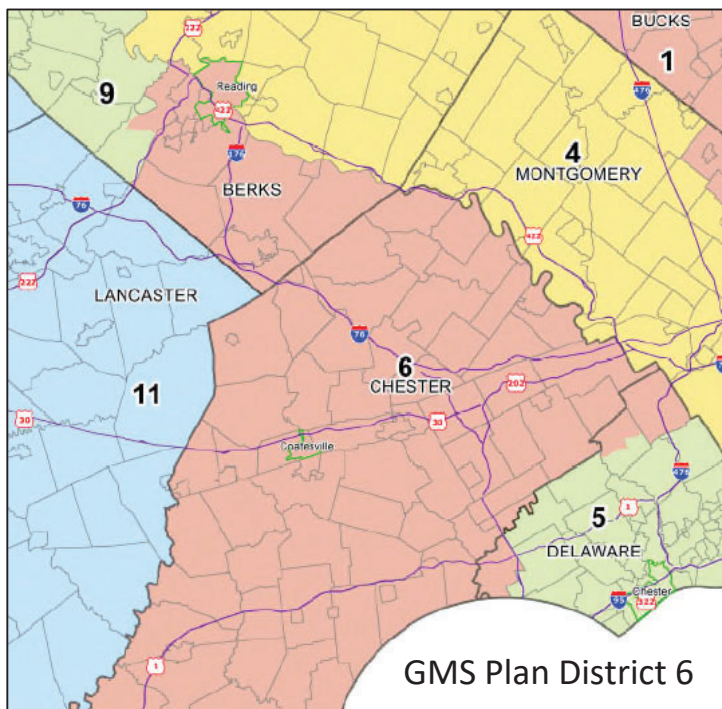
District 3: As noted above, District 3 consists entirely of communities within Philadelphia city limits and is a minority opportunity district, much like District 3 in the 2018 Plan.



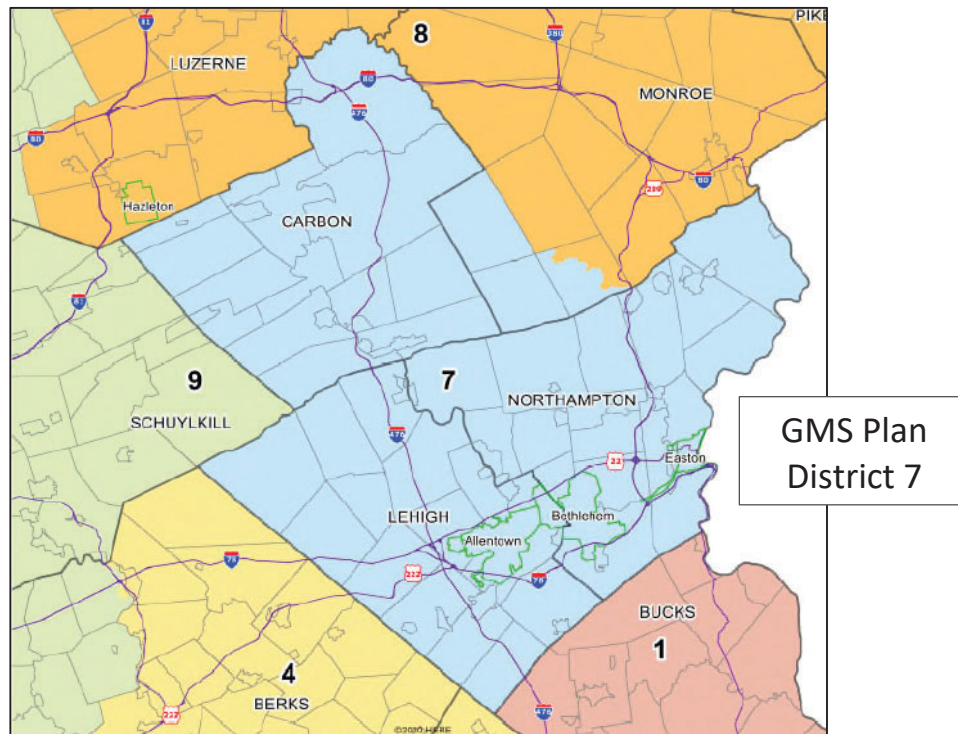
District 4: District 4 unites most of rapidly growing Montgomery County with the neighboring communities of eastern Berks County. It follows the northern end of Pottsville Pike (PA-61 N) to the Schuylkill County border, keeping together communities such as Leesport and Hamburg in northern Berks County.



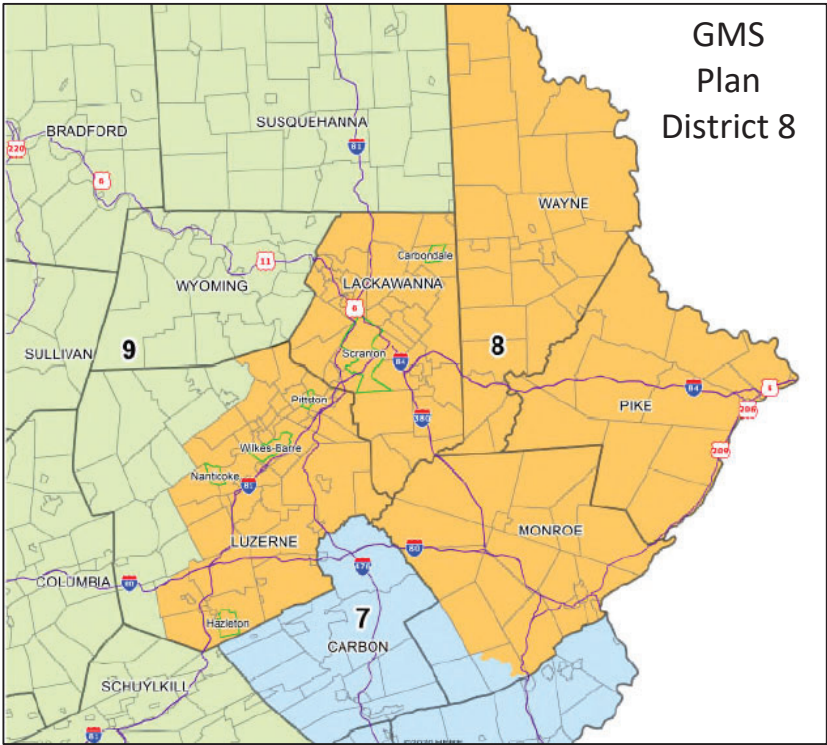
District 5: As described above, District 5 is the GMS Plan’s third minority opportunity district and encompasses communities stretching across the Philadelphia-Delaware County border.



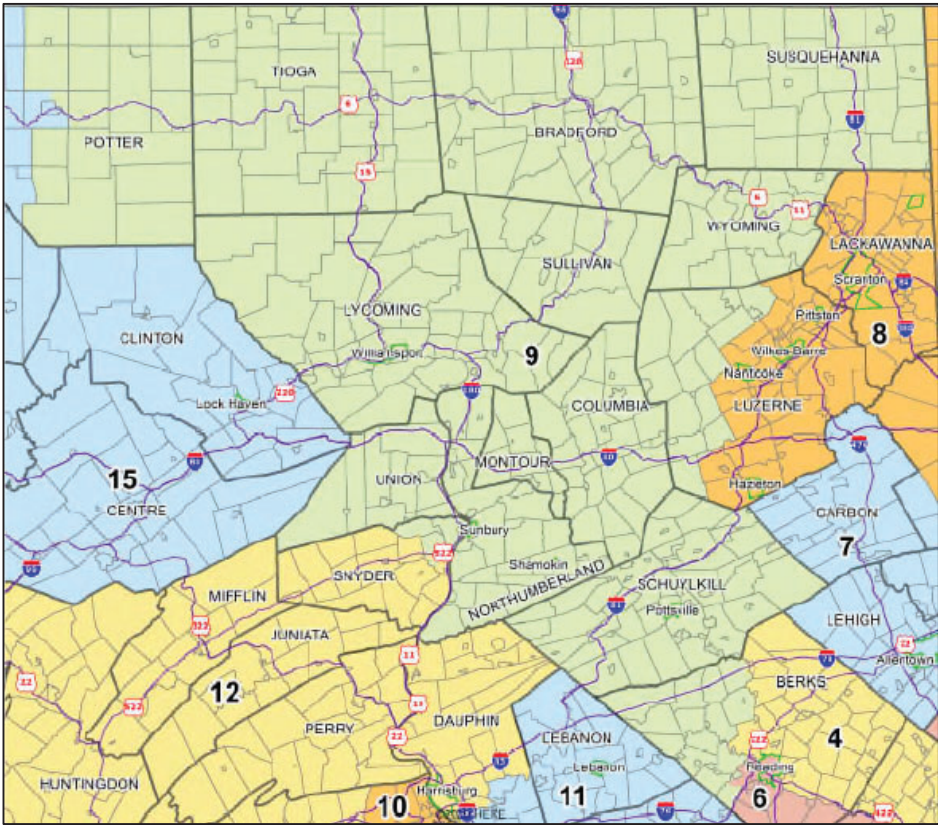
District 6: District 6 keeps Chester County intact and, like the 2018 Plan, links it with portions of Delaware County and Berks County, including a region noted for state parks and other natural areas. The district includes all of Reading, Pennsylvania’s fourth largest city, with a growing Latino population. The counties joined in District 6 share strong population growth and increasing diversity.



District 7: District 7 joins all of Lehigh, Northampton, and Carbon Counties and thus preserves the core of the Lehigh Valley, keeping the Allentown-Bethlehem-Easton area intact. This district is connected via the Northeast Extension of the Pennsylvania Turnpike (I-476) and its arteries.

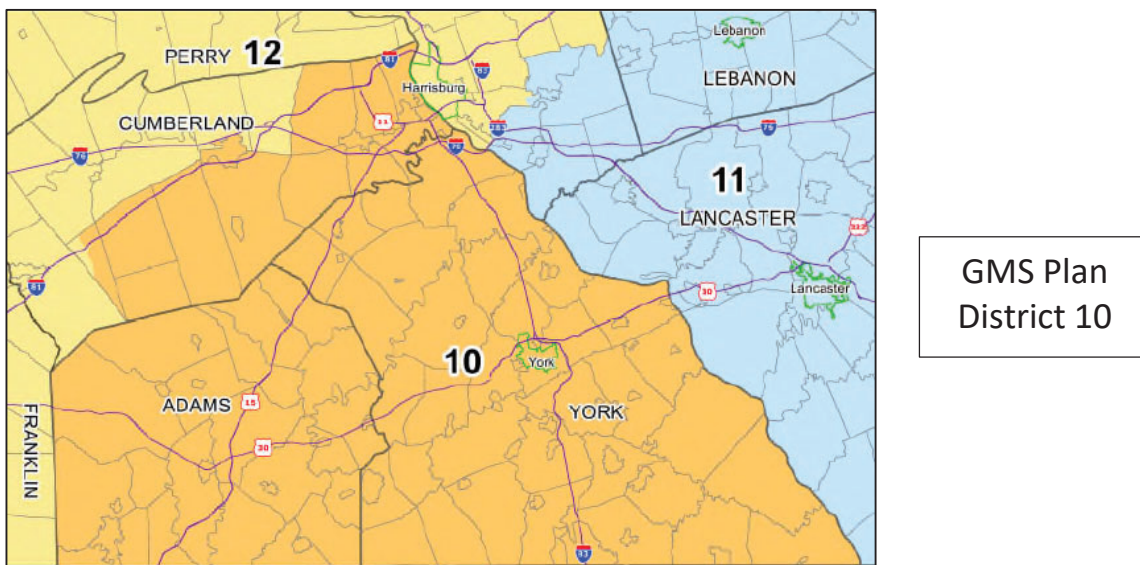


District 8: District 8 keeps whole Lackawanna, Wayne, and Pike Counties, and joins them with most of Luzerne and Monroe Counties. This District is anchored by Scranton, Wilkes-Barre, and Hazleton, joining those cities with compatible communities in the Poconos.

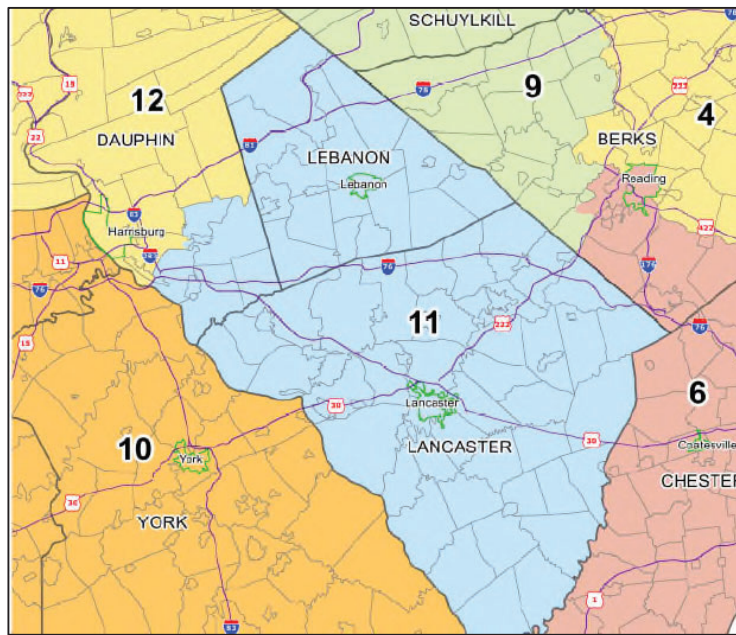


GMS
Plan
District 9

District 9: District 9 groups the Northern Tier counties of Susquehanna, Bradford, Tioga, and most of Potter with adjoining counties to the south. This portion of the state is experiencing slow population growth, and this district keeps these communities together while preserving 11 counties intact.

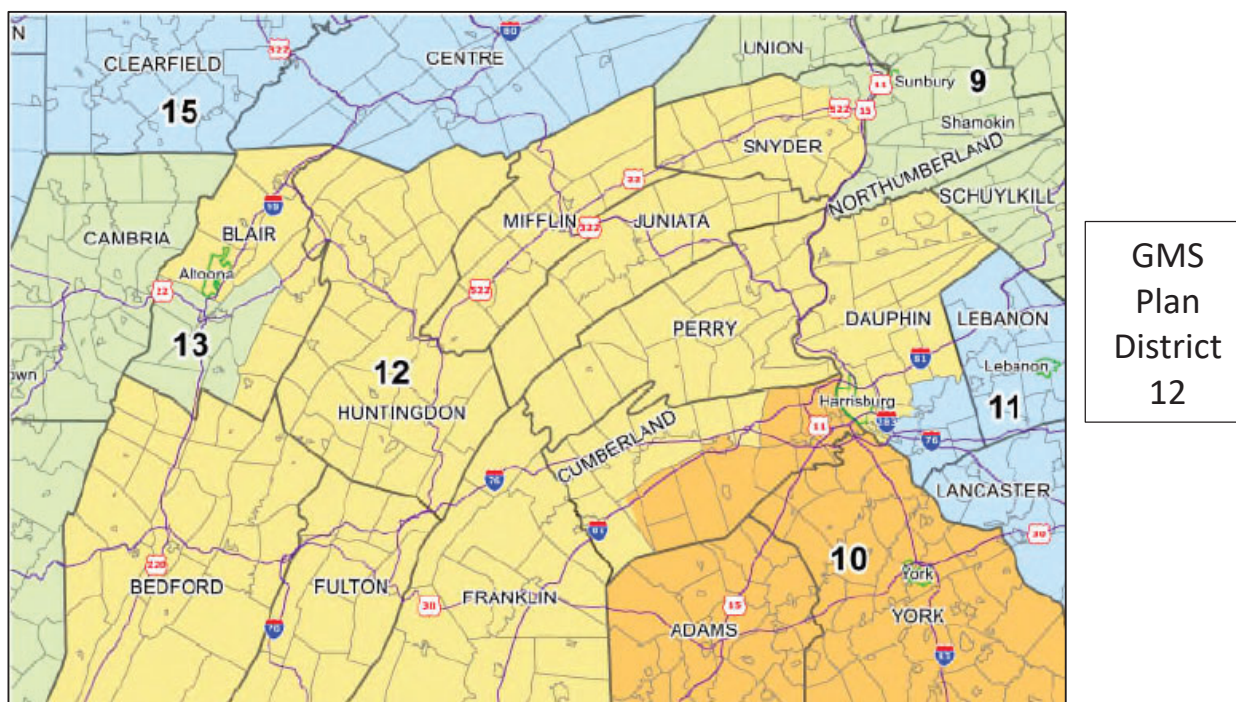


District 10: District 10 joins all of Adams County and York County—keeping intact the York-Hanover and Gettysburg Metropolitan Statistical Areas—with adjoining communities in central and eastern Cumberland County, including the county seat of Carlisle. District 10 includes farmland and a shared agricultural heritage but also encompasses a rapidly growing and diversifying area that shares growing manufacturing and logistics industries; is home to many colleges and universities; and is connected by major transportation arteries.



GMS Plan
District 11

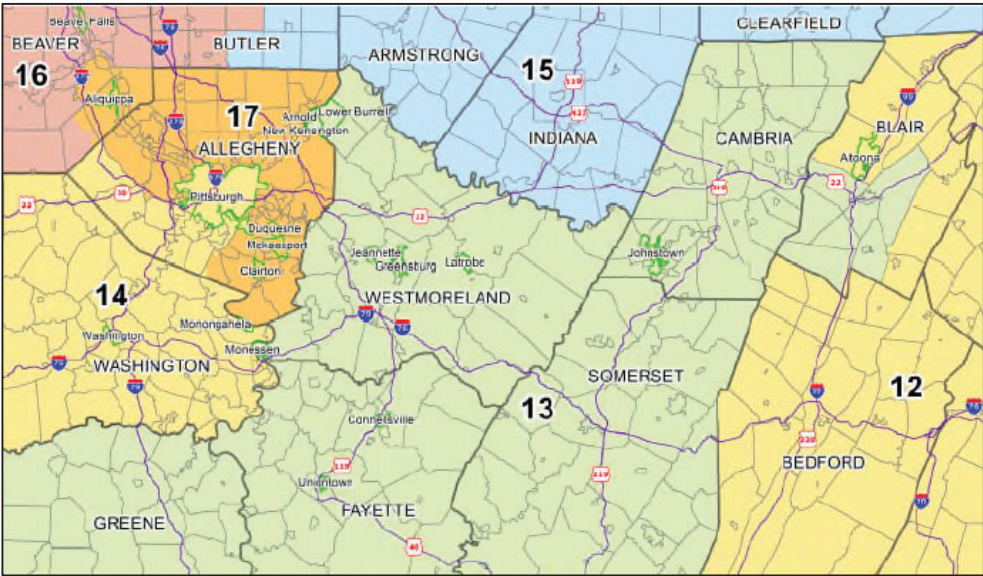
District 11: District 11 keeps all of Lancaster and Lebanon Counties intact, as well as the Lancaster and Lebanon MSAs, along with similarly fast-growing and increasingly diverse neighboring communities in Dauphin County. Lebanon and Lancaster Counties feature a shared agricultural history, as well as major regional healthcare providers Lancaster General Hospital and the Penn State Health Milton S. Hershey Medical Center. District 11 is connected by Route 283 and the Turnpike.



GMS
Plan
District
12

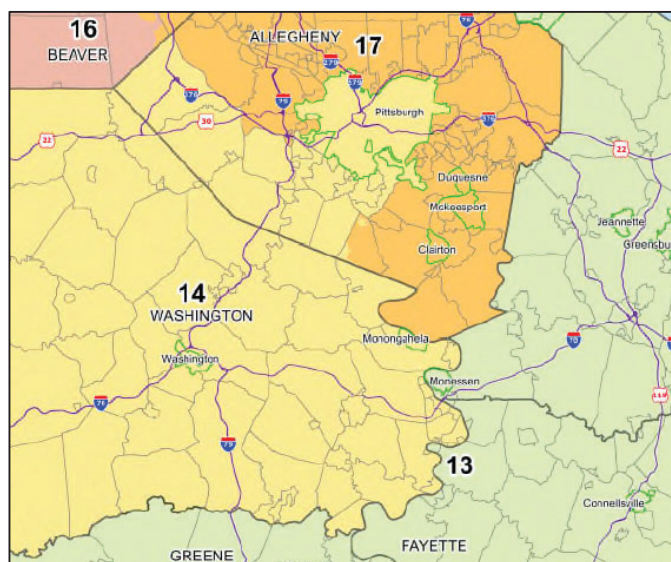
District 12: District 12 keeps intact seven whole counties—Bedford, Fulton, Franklin, Huntingdon, Mifflin, Juniata, and Perry—as well as the Chambersburg-Waynesboro MSA. Grouping these counties with parts of Blair, Cumberland, Snyder, and Dauphin Counties, the district contains the mountainous and rural region of south-central Pennsylvania. This district is anchored by the intact cities of Harrisburg and Altoona, whose sports teams compete in the Mid Penn Conference.¹⁰² Amtrak operates a daily train traversing this district from Altoona to Harrisburg.

¹⁰² See, e.g., Jon Fauber, *Harrisburg Girls Fall to Altoona Despite Big Outing from Ahnae Robinson*, PennLive (Feb. 2, 2022), <https://www.pennlive.com/highschoolsports/2022/02/harrisburg-girls-fall-to-altoona-despite-big-outing-from-ahnae-robinson.html>.



GMS Plan
District
13

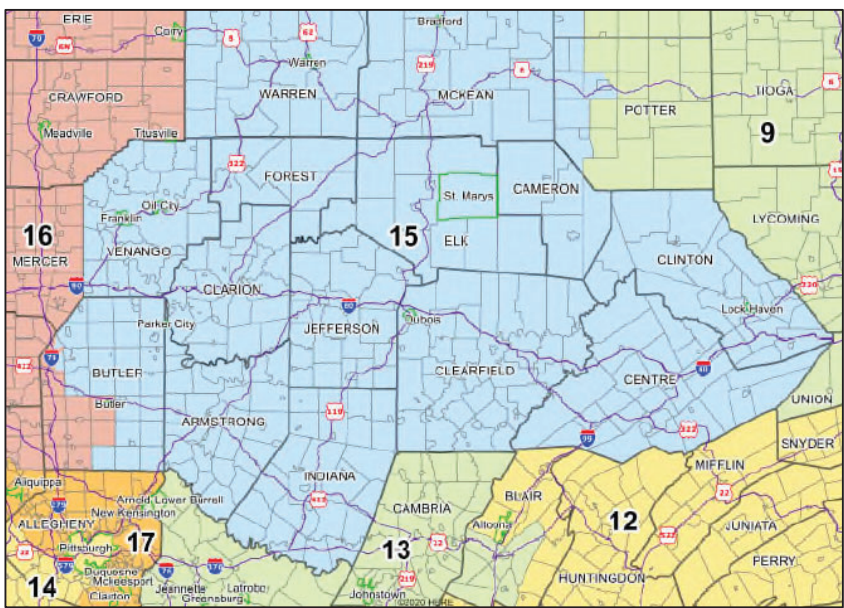
District 13: District 13 joins all the Laurel Highlands—Westmoreland, Fayette, and Somerset Counties—with Greene County to the southwest and Cambria County and parts of Blair County to the northeast. This District keeps five counties intact and unites communities with similar economic characteristics and interests in this mountainous area that has historically been a major source of American energy production. Outdoor recreational opportunities in the Laurel Highlands are contributing to a growth in tourism in the area.



GMS Plan
District 14

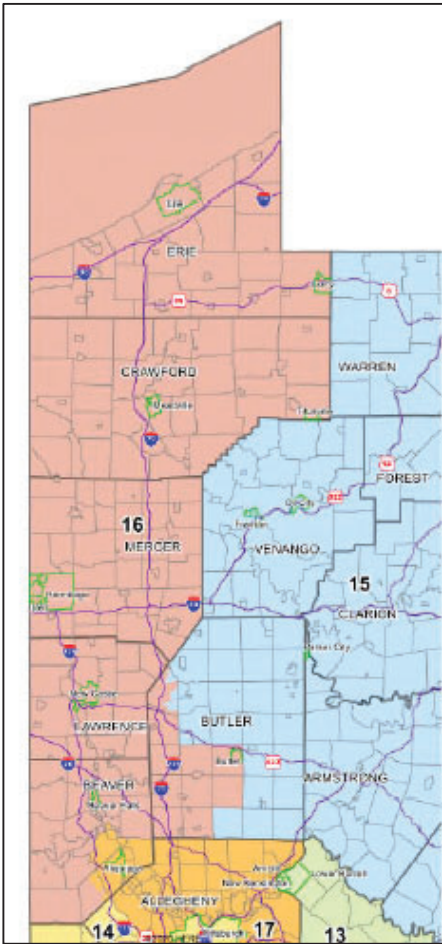
District 14: District 14 centers on Pittsburgh, the Commonwealth’s second-largest city, which is kept fully intact. It pairs Pittsburgh with its southwest Allegheny County suburbs and all of neighboring Washington County. The recently opened Southern Beltway runs through District 14, connecting residents of Washington County to southwest Allegheny County, including the Pittsburgh International Airport and surrounding areas—a reflection of the growing economic ties across this district. Indeed, Washington County—home to many Marcellus Shale natural-gas wells—has become an engine of job creation in the Pittsburgh area.¹⁰³

¹⁰³ *Washington County, Pittsburgh Region*, <https://pittsburghregion.org/the-region/washington-county/> (last visited Feb. 12, 2022).



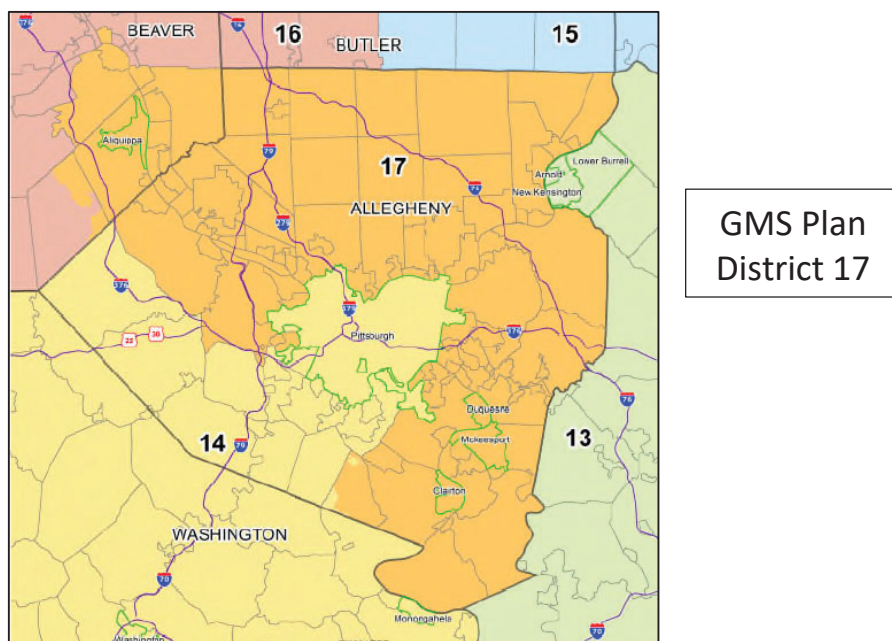
GMS Plan
District 15

District 15: District 15 gathers much of the Pennsylvania Wilds in one district, keeping 13 counties, as well as the State College-Dubois Combined Statistical Area (CSA), whole and intact. District 15 brings together communities that share geological characteristics and economic interests in tourism, outdoor recreational opportunities, and energy production. Whereas the 2018 Plan separated State College from some of its neighbors, this district keeps Centre County whole.



GMS Plan
District 16

District 16: District 16 includes most of Pennsylvania’s western border counties and is anchored by Erie County in the northwest, linking it with other industrial and rural counties to its south: all of Crawford, Mercer, and Lawrence, and most of Beaver and Butler Counties. The district is connected north to south by I-79.



District 17: District 17 connects the bulk of the non-Pittsburgh portions of Allegheny County, including Pittsburgh’s northern and eastern suburbs and exurbs, along with neighboring communities in southeastern Beaver County. This keeps the smaller towns and cities that make up Pittsburgh’s North and East Hills together, along with similarly sized former industrial towns in Beaver County.

IV. Considering All the Factors Together, the GMS Plan Is Best.

Taking all the constitutional and subordinate factors together, the GMS Plan is the best choice for the people of the Commonwealth. It optimizes performance on the full set of neutral criteria, while maximizing partisan fairness and equal opportunity for Pennsylvanians of all races and ethnicities. The Court need look no further than the data set forth in Attachments A and B to see this is true. Nevertheless, when evaluating the plans, it may be useful for the Court to consider

them in various categories. The chart below illustrates some categories that may aid the Court in evaluating the options:

Category	Plans
Plans that are inferior to the GMS Plan on nearly every redistricting metric	HB2146 House Democrats Senate Democrats 1
Plans with extreme Republican partisan bias	HB2146 Reschenthaler 1 Reschenthaler 2 Voters of PA
Plans with significant Republican partisan bias	Draw the Lines Ali Citizen-Voters Senate Democrats 1
Plans with more than 1-person population deviation	Ali Carter House Democrats
Plans nearly as fair to both major political parties as the GMS Plan, but inferior on other metrics	Carter Governor Senate Democrats 2

As noted, with respect to partisan fairness, the plans generally fall neatly into three categories: those that are fair, those exhibiting significant partisan bias, and those exhibiting extreme partisan bias. The below table groups the plans based on their performance on fairness metrics as measured by Dr. DeFord and the independent PlanScore.org website (*see also* Attachments A & B):

Partisan Fairness Metric <i>(closer to zero is better)</i>	Most Fair	Significant Partisan Bias	Extreme Partisan Bias
Dr. DeFord's Average Mean-Median (using all 18 elections from 2012 to 2020)	Sen. Dems 2 (-0.3%) GMS (-0.8%) House Dems (-0.9%) Governor (-1.0%) Draw the Lines (-1.2%)	Carter (-1.6%) Ali (-1.8%) Sen. Dems 1 (-1.9%) Citizen-Voters (-2.0%)	Reschenthaler 2 (-2.6%) Reschenthaler 1 (-2.7%) Voters of PA (-2.7%) HB2146 (-2.9%)
Dr. DeFord's Average Efficiency Gap (using the same 18 elections)	Carter (-0.4%) Governor (0.6%) GMS (0.8%) Sen. Dems 2 (1.0%)	Draw the Lines (-1.6%) Sen. Dems 1 (-2.5%) Citizen-Voters (-2.6%) Ali (-2.7%) House Dems (3.3%)	Voters of PA (-4.8%) HB2146 (-6.3%) Reschenthaler 1 (-7.8%) Reschenthaler 2 (-7.8%)
PlanScore Efficiency Gap	House Dems (1.2% D) GMS (1.4% R) Carter (1.8% R) Governor (1.9% R)	Ali (2.4% R) Sen. Dems 2 (2.4% R) Sen. Dems 1 (2.5% R) Draw the Lines (3.5% R) Citizen-Voters (4.6% R)	Reschenthaler 2 (6.3% R) Reschenthaler 1 (6.4% R) HB2146 (6.6% R) Voters of PA (6.8% R)
PlanScore Declination	GMS (0.03 R) House Dems (0.04 D) Carter (0.05 R) Governor (0.05 R)	Ali (0.07 R) Sen. Dems 1 (0.07 R) Sen. Dems 2 (0.07 R) Draw the Lines (0.10 R) Citizen-Voters (0.13 R)	Reschenthaler 2 (0.18 R) HB2146 (0.19 R) Reschenthaler 1 (0.19 R) Voters of PA (0.20 R)
PlanScore Partisan Bias	GMS (0.9% R) Governor (1.1% R) Carter (1.3% R) Sen. Dems 2 (1.5% R)	Sen. Dems 1 (1.8% R) Ali (1.9% R) House Dems (1.9% D) Draw the Lines (2.9% R)	Citizen-Voters (4.3% R) Reschenthaler 2 (5.9% R) Reschenthaler 1 (6.2% R) Voters of PA (6.5% R) HB2146 (6.3% R)
PlanScore Mean-Median Difference	GMS (0.4% R) Carter (0.4% R) Governor (0.4% R) Sen. Dems 2 (0.5% R)	Sen. Dems 1 (0.6% R) House Dems (0.7% D) Ali (0.7% R) Draw the Lines (1.0% R)	Citizen-Voters (1.7% R) Voters of PA (2.2% R) HB2146 (2.3% R) Reschenthaler 1 (2.4% R) Reschenthaler 2 (2.4% R)

Following this Court's mandate in *LWV I* to equalize Pennsylvanians' votes "to the greatest degree possible," 178 A.3d at 817, only three maps come close to the GMS Plan's consistently superior performance on all partisan-fairness metrics: Carter, the Governor, and Senate Democrats 2. But none of these plans is as strong on other metrics as the GMS Plan:

- The Carter Plan is less fair than the GMS Plan on most fairness metrics, albeit less substantially than other maps. But it also has a population deviation of more than one person; has more total splits and pieces, including two split cities when only one is “absolutely necessary”; is slightly less compact; pairs two incumbents seeking reelection compared to none in the GMS Plan; and has only two majority-minority districts compared to the GMS Plan’s three.¹⁰⁴
- The Governor’s Plan has substantially more political-subdivision splits than the GMS Plan—indeed, it has **the most total splits of all the parties’ maps**, and the third-most total splits of all the maps, including *amici*’s.¹⁰⁵ Those splits include unnecessarily bisecting Pittsburgh.¹⁰⁶ The Governor’s Plan also pairs four incumbents seeking reelection, moves Representative Cartwright into a substantially more Republican district, and has only two majority-minority districts.¹⁰⁷
- The Senate Democrats Plan 2 has slightly more splits than the GMS Plan, including the unnecessary splitting of Pittsburgh.¹⁰⁸ This plan also pairs four incumbents seeking reelection, when the GMS Plan pairs none.¹⁰⁹ And this

¹⁰⁴ DeFord Rebuttal, Tables 1, 3, 6, 7, 8, 14, & 15.

¹⁰⁵ *Id.* at Table 6 and App’x A, Table 6a.

¹⁰⁶ *Id.* at Table 4.

¹⁰⁷ *Id.* at Tables 14 & 15.

¹⁰⁸ *Id.* at Tables 6 & 6.

¹⁰⁹ *Id.* at Table 15.

plan has only two majority-minority districts compared to the GMS Plan's three.¹¹⁰

Thus, even the few plans that approach the GMS Plan's level of partisan fairness are inferior under the neutral criteria and other key measures of equal electoral opportunity.

V. The Court Should Reject the Special Master's Recommendation Because It Rests on Clearly Erroneous Findings and the Misapplication of Redistricting Law.

Despite the GMS Plan's clear superiority, the Special Master counseled this Court to adopt the vetoed HB2146. *See* Report 216. As summarized here and in the GMS Petitioners' Exceptions, the Special Master's Report is replete with errors of fact and law that wholly undermine its recommendation.

A. The Special Master Improperly Deferred to the General Assembly's Vetoed Plan.

At the outset, while the Special Master claimed she was not providing any "presumptive deference" to HB2146 and was instead applying "the same rigorous scrutiny" to that plan and all others, Report 208, only deference could explain selecting a plan that is so clearly inferior to the GMS Plan on all the neutral criteria and objective measures of partisan fairness, minority opportunity, and incumbent non-pairing. *See supra* page 11. The Special Master erroneously believed that "the

¹¹⁰ *Id.* at Table 14.

Court *must* find that the decisions and policy choices expressed by the legislative branch are *presumptively reasonable and legitimate*, absent a showing of an unconstitutional defect or deficiency.” Report 208–09 (emphasis added). So, without legal basis, the Special Master *presumed* that HB2146 ought to be adopted and improperly placed a burden on other parties to prove otherwise. *See id.* at 213–15.

The presumption that an unenacted, vetoed bill is entitled to judicial deference is a fatal legal error that infects the entire Report. HB2146 decidedly did not reflect “the will of the people,” *id.*, because it did not attract a single Democratic vote in the General Assembly, was vetoed by Governor Wolf, and did not become law. To adopt the Legislature’s proposed map on this basis would effect a judicial override of the Governor’s veto, in violation of the separation-of-powers doctrine. *Cf. Mental Health Ass’n in Pa. v. Corbett*, 54 A.3d 100, 104 (Commw. Ct. 2012) (citing *Sweeney v. Tucker*, 375 A.2d 698, 705 (Pa. 1977)).

For this reason, other courts addressing redistricting have overwhelmingly declined to defer to maps that made it only partway through the legislative process but failed to become law. *See, e.g., Johnson v. Wis. Elections Comm’n*, 967 N.W.2d 469, 490 n.8 (Wis. 2021); *Hippert v. Ritchie*, 813 N.W.2d 379, 380 n.6 (Minn. 2012); *Hartung v. Bradbury*, 33 P.3d 972, 979 (Or. 2001); *O’Sullivan v. Brier*, 540 F. Supp.

1200, 1202 (D. Kan. 1982) (three-judge court); *Carstens v. Lamm*, 543 F. Supp. 68, 79 (D. Colo. 1982) (three-judge court).

Ignoring this precedent, the Special Master instead relied on *Upham v. Seamon*, 456 U.S. 37, 41–42 (1982) (*per curiam*), cited in Report 208–09. But *Upham* concerned a plan that Texas actually *did enact*. See *id.* at 37–38. Although the plan had not yet received preclearance under then-applicable provisions of the Voting Rights Act, there was no dispute that the legislature passed it and the governor signed it into law. *Id.* So the Special Master disregarded the precedent affording no deference to vetoed plans and instead relied on a case in which the plan had been enacted. This Court should eschew that approach and evaluate all plans equally.

B. The Special Master Incorrectly Evaluated Political-Subdivision Splits.

The Special Master adopted a fundamentally flawed approach to evaluating political-subdivision splits. The Special Master claimed that she “accept[ed] the figures offered by each Party’s expert with respect to that Party’s plan” and, when no figure was provided, used the figures in Dr. Duchin’s and Dr. Barber’s reports because their numbers were “highly consistent” with one another. Report 142–43. But the Special Master acknowledged that the experts’ figures—including those from Dr. Duchin and Dr. Barber—were *not* fully consistent. See *id.* at 142 (noting that the numbers “do not always agree”). And what she termed “a few small

differences” (*id.*) were actually material inconsistencies in what each party deemed a “split.” As a result, the Special Master made apples-to-oranges comparisons that led her to incorrectly assess the number of political subdivisions each plan divides.

Dr. DeFord offered comprehensive data on the number of splits in all 13 plans from the parties and *amici* for all six political-subdivision types, all calculated the same way. His calculations show that the Special Master made the following errors:

- Some plans (but not the GMS Plan) split off into a separate district the discontiguous portion of Chester County. The Special Master counted this as a county split for the Governor’s Plan, the Senate Democrats Plan 1, the House Democrats Plan, the Ali Plan, and the Citizen-Voters Plan, but *not* the Carter Plan. *See* Report 143–45.
- The Special Master included municipalities split along county lines in reporting the GMS Plan’s total municipality splits, but *subtracted* municipalities split along county lines in reporting the total municipality splits for all other plans. *See* Report 143–46. This rendered erroneous all the rest of the Special Master’s findings related to municipality splits. *Compare id.*, with DeFord Rebuttal, Table 3 & App’x A, Table 3a.
- One of these errors, on which plans split the fewest municipalities, was particularly material: Contrary to what the Special Master erroneously reported, the GMS Plan is tied for splitting the *fewest* municipalities (19)

when including splits along county lines and is also *tied for the fewest* split municipalities (16) when excluding such splits. *Compare* Report 146, with DeFord Rebuttal, Table 3 & App’x A, Table 3a.

- The Special Master reported the wrong totals for split wards in the Carter Plan, Senate Democrats Plan 1, and the House Democrats Plan. *Compare* Report 143–44, with DeFord Rebuttal, Table 5.
- The Special Master reported the wrong totals for overall political-subdivision splits for the Senate Democrats Plan 2, HB2146, Citizen-Voters Plan, and Reschenthaler Plans 1 and 2. Report 147. This error was, again, material: While the Special Master erroneously found that the Senate Democrats Plan 2 split the fewest total political subdivisions and that HB2146 and the GMS Plan were tied for second, in reality the GMS Plan splits the *fewest* political subdivisions. *Compare id.*, with DeFord Rebuttal, Table 6 & App’x A, Table 6a.
- The Special Master mentioned, but failed to use, Dr. DeFord’s pieces metric. Report 67–69. This metric assesses how political subdivisions are split, revealing whether, for example, a plan minimizes the total number of split subdivisions yet heavily carves up those subdivisions it does split. On this metric the GMS Plan is tied for the best.¹¹¹

¹¹¹ DeFord Rebuttal, Table 7 and App’x a, Table 7A.

Individually and collectively, these errors demonstrate that the Court cannot rely on the Special Master’s proposed findings. Instead, the Court should evaluate the evidence in the record for itself—evidence that clearly demonstrates the superiority of the GMS Plan.

C. The Special Master Incorrectly Analyzed Partisan Fairness.

The Special Master’s analysis of partisan fairness similarly contains numerous factual errors,¹¹² but most fundamentally, it misapplies the holding of *LWV I*: that “the overarching objective” of the Constitution’s Free and Equal Elections Clause “is to prevent dilution of an individual’s vote by mandating that the power of his or her vote in the selection of representatives be equalized to the greatest degree possible with all other Pennsylvania citizens.” 178 A.3d at 817. Rather than comprehensively evaluate each plan in light of this objective, the Special Master instead operated from the erroneous premise that “Pennsylvania’s unique ‘political geography,’” which she found benefits Republicans, forecloses the possibility of a map that is truly fair and evenhanded to both parties’ voters. *See* Report 162–63. Indeed, the Special Master asserted that “[t]o overcome this natural geographic disadvantage, ‘Democrats would need a redistricting process that intentionally

¹¹² For example, the Special Master inexplicably faults Dr. DeFord for not including Lieutenant Governor races when he calculated partisan-fairness metrics. Report 167. But in general elections, candidates for Lieutenant Governor run on the same ticket as their party’s candidate for Governor, PA. CONST. art. IV, §4, and Dr. DeFord’s analysis included the general elections for Governor (and thus Lieutenant Governor) in both 2014 and 2018.

carved up large cities like pizza slices or spokes of a wheel, so as to combine some very Democratic urban neighborhoods with some Republican exurbs in an effort to spread Democrats more efficiently across districts.” *Id.* at 162–63 (quoting Republican Intervenors’ Br. at 23 n.20).

The GMS Plan proves that premise is false. The GMS Plan does not “carve up large cities like pizza slices.” Indeed, it has a perfect score for city integrity (including keeping Pittsburgh intact) and scores *better* on compactness and political-subdivision splits than the Special Master’s recommended map, while also outperforming that map on all measures of partisan fairness. *See* Parts I–II, *supra*. Both of those things could not be true in the same map if the Special Master was right about the constraints of Pennsylvania’s political geography. And this Court’s 2018 Plan further demonstrates that political geography does not dictate maps that favor Republicans to the degree that HB2146 does:

Metric	HB2146	2018 Plan
DeFord Antimajoritarian Outcomes	5 (all favoring R)	1 (favoring R)
DeFord Avg. Mean-Median	2.9% R	1.9% R
DeFord Avg. Efficiency Gap	6.3% R	2.6% R
PlanScore Mean-Median	2.3% R	0.8% R
PlanScore Efficiency Gap	6.6% R	2.9% R
PlanScore Partisan Bias	6.3% R	2.1% R

This same misunderstanding about Pennsylvania’s political geography led the Special Master to find, erroneously, that the GMS Plan “provides a partisan

advantage to the Democratic party in contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania.” Report 205. In fact, each of PlanScore’s partisan-fairness metrics shows that the GMS Plan, like the 2018 Plan, has a very slight *pro-Republican* tilt.¹¹³

The Special Master further erred in concluding that differences of “a few percentage points” in partisan-fairness metrics do not matter. *See* Report 172. That conclusion apparently rested on her erroneous assumption that expert evidence in *LWV* established specific ranges of “normal” or “acceptable” mean-median and efficiency-gap scores—0% to 4% for mean-median and plus-or-minus 10% for the efficiency gap. *Id.* at 166, 172. But that mean-median expert evidence was based on simulations conducted to demonstrate that the 2011 congressional map was a partisan gerrymander, and the efficiency-gap evidence was not specific to Pennsylvania. *See LWV I*, 178 A.3d at 774–75, 777–78. This Court did not adopt that evidence as setting a universal standard for mean-median and efficiency-gap scores going forward. *See id.* In any event, there is no basis to select HB2146, which bumps up against even the Special Master’s supposed “maximum” acceptable level of partisan bias, when there is an alternative map that *both* is demonstrably fairer on all metrics of partisan fairness *and* performs best on Pennsylvania’s neutral criteria.

¹¹³ DeFord Rebuttal, App’x D.

The Special Master also erred in relying on Dr. Barber’s testimony on partisan fairness. Despite never having published a single peer-reviewed article about redistricting,¹¹⁴ Dr. Barber purported to evaluate the fairness of each map by comparing it to the fairness of 50,000 maps generated by a computer-based methodology that he admitted on cross-examination had never been peer-reviewed or adopted by a court.¹¹⁵ His theory was that Pennsylvania’s political geography creates a natural Republican bias that flows from the spatial distribution of Democratic and Republican voters throughout the state.¹¹⁶ Accordingly, he opined that if a map is drawn with fidelity to the neutral redistricting criteria but nevertheless contains a partisan bias in favor of Republicans, that bias ought to be considered natural (and thus appropriate) rather than intentional (and thus improper).¹¹⁷

On cross-examination, however, Dr. Barber admitted that a skewed map harms voters regardless of whether the skew was intentional or unintentional.¹¹⁸

¹¹⁴ See Tr. 562:4–12; see also Chairman Mark Nordenberg, Opening Statement, Pa. Legis. Reapportionment Comm’n 16–18 (Feb. 4, 2022) (concluding that Dr. Barber’s testimony to the Commission was entitled to little or no weight).

¹¹⁵ See Barber Rebuttal at 13–14; Tr. 516:4–517:12, 598:21–600:11. In addition, other experts testified that Dr. Barber’s methodology was flawed. Tr. 388:23–390:10 (DeFord), 948:17–950:22, 952:16–24 (Caughey). And multiple courts have “concluded or found that [Dr. Barber’s] testimony should be given little weight or no credit.” Tr. 564:3–565:22 (Barber).

¹¹⁶ Barber Opening at 10.

¹¹⁷ Tr. 509:10–512:5.

¹¹⁸ *Id.* at 581:13–18.

Moreover, he acknowledged that courts generally should prefer an “atypical” map with low partisan bias to a “typical” map with more partisan bias—an admission that rendered his entire testimony largely pointless.¹¹⁹ Dr. Barber thus effectively conceded that the *LWV I* Court had it right that the “overarching objective” of redistricting in Pennsylvania is to prevent vote dilution. 178 A.3d at 817.

The Special Master erred in selecting a plan that treats voters less equally, when presented with the GMS Plan that treats voters more equally *and also* exceeds HB2146’s performance on all neutral redistricting criteria. The Special Master inexplicably asserted that the GMS Plan “was purposefully created using an algorithm that sought to optimize on partisan fairness.” Report 178, 205. But the “evidence” she cited to support this finding is page 14 of the GMS Petitioners’ opening brief, which says no such thing.¹²⁰ More fundamentally, the Special Master did not articulate any reason that a map that optimized partisan fairness would be invalid. As the U.S. Supreme Court has held, there is nothing wrong with designing a redistricting map to “achieve ‘political fairness’ between the political parties.” *Gaffney v. Cummings*, 412 U.S. 735, 735–36 (1973).

The Special Master’s flawed approach to partisan fairness is particularly evident from her selection of the four maps that she asserted best comply with the

¹¹⁹ *Id.* at 582:17–586:3.

¹²⁰ *See* GMS Opening Br. at 14; *see also* Tr. 277:11–278:23.

Free and Equal Elections Clause and the Constitution’s neutral redistricting criteria. *See* Report 207. Those four receive the most Republican-favoring scores of *all plans* across virtually all metrics of partisan fairness. *See supra* page 59.

D. The Special Master Incorrectly Analyzed the Communities-of-Interest Factor.

As explained, a congressional plan’s districts can be drawn to preserve communities of interest. *See* Part III, *supra*. But the Pennsylvania Constitution does not require that a plan preserve communities of interest, beyond those communities defined by the boundaries of political subdivisions, which should not be split “[u]nless absolutely necessary.” PA. CONST. art. II, §16. As this Court has explained, preservation of communities of interest is “wholly subordinate” to the neutral criteria and all other legal requirements. *LWV I*, 178 A.3d at 817.

Ignoring this Court’s guidance, the Special Master elevated the preservation of communities of interest from a permissible, but secondary, redistricting consideration, to a chief requirement. *See* Report 152 (“A common thread running through the Supreme Court’s opinion in *LWV II* is that, to the greatest degree practicable, a congressional redistricting plan should avoid dividing a community with shared interests and concerns.”).

The Special Master compounded this error by erroneously concluding that “the Gressman Petitioners did not adequately establish that they considered community interests when deciding to erect boundary lines across the

Commonwealth.” *Id.* at 155. To the contrary, the GMS Plan appropriately optimizes compliance with the neutral criteria and other legal requirements, while respecting communities of interest throughout the Commonwealth, as described above and conveyed in 15 pages of briefing to the Commonwealth Court.¹²¹

The Special Master further erred by giving undue weight to Dr. Keith Naughton’s testimony on communities of interest. *See* Report 154–55. Cross-examination revealed that Dr. Naughton’s opinions were based on *ipse dixit* rather than actual expertise.¹²² Dr. Naughton admitted he had no particular experience in redistricting;¹²³ had never published any peer-reviewed articles on redistricting;¹²⁴ had never tried to draw a congressional plan for the Commonwealth;¹²⁵ identified no

¹²¹ *See* GMS Opening Brief at 48–63. The Special Master credited Dr. Naughton’s testimony that Bucks County should not be split into two districts because “no other party put forth any evidence or expert opinion that refuted the veracity of his opinion.” Report 157. But in combining parts of Northeast Philadelphia and lower Bucks Counties, the GMS Plan puts together communities with similar interests and, as Dr. DeFord explained, results in a third, and historic, majority-minority district, with Latino adult citizens as the largest minority population. DeFord Opening ¶¶134–140.

¹²² As noted, the Special Master frequently credited Dr. Naughton’s opinion simply because “no other party put forth any evidence or expert opinion that refuted the veracity of his opinion.” *See, e.g.*, Report 154–55, 157. The parties, however, had no opportunity to “put forth any evidence or expert opinion” to refute Dr. Naughton, because his sole expert report was not filed until the final deadline for all expert *rebuttal* reports, less than 16 hours before the evidentiary hearing commenced; the Special Master refused to allow rebuttal witnesses; and the Special Master unilaterally decided the order of witnesses, with Dr. Naughton testifying next-to-last.

¹²³ Tr. 777:22–778:9.

¹²⁴ *Id.* 810:14–18.

¹²⁵ *Id.* 778:11–20.

polling on what communities in Pennsylvania want in redistricting;¹²⁶ used no particular methodology to arrive at his opinions on redistricting in Pennsylvania;¹²⁷ and cited no scholarly literature to support his opinions.¹²⁸ He admitted that his opinions were based simply on his experience and that he had spent his entire career working only for Republicans.¹²⁹ The Special Master's overreliance on a single biased witness's *personal opinions* about a consideration subordinate to the constitutional requirements for redistricting was one more in a string of factual and legal errors underpinning her recommendation of the inferior HB2146 Plan.

CONCLUSION

The Court should adopt the GMS Plan. It fully complies with all state and federal legal requirements, outperforms the other plans on nearly every metric, ensures that all voters will have an equal opportunity to translate votes into representation, expands electoral opportunities for minority voters, preserves numerous communities of interest, pits no incumbents against each other in the upcoming elections, and is fundamentally fair to all citizens of the Commonwealth.

Pennsylvania is entitled to not just a “good” map or even a “great” map to govern its congressional elections for the next decade but, rather, the very best and

¹²⁶ *Id.* 775:24–776:23.

¹²⁷ *Id.* at 779:12–17.

¹²⁸ *Id.* at 813:6–13.

¹²⁹ *Id.* at 698:12–20.

fairest map. Because the GMS Plan is that map, the GMS Petitioners respectfully ask this Court to adopt it for the people of the Commonwealth.

Dated: February 14, 2022

Respectfully submitted,

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CERTIFICATION OF WORD COUNT

Per Pa.R.A.P. 2135(a)(1), I hereby certify that this Brief contains 13,980 words, exclusive of the supplementary matter as defined by Pa.R.A.P. 2135(b).

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CERTIFICATE OF COMPLIANCE

I certify that this filing complies with the provisions of the *Case Records Public Access Policy of the Unified Judicial System of Pennsylvania* that require filing confidential information and documents differently than non-confidential information and documents.

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On February 14, 2022, I caused a copy of the foregoing to be served on all counsel of record via the electronic filing system, PACFile:

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ATTACHMENT A

Comparison of the Parties' Proposed Congressional Plans

REDISTRICTING PRINCIPLE	METRIC	GMS	CARTER	HB 2146	GOV'R	CONG. INTERV. 1	CONG. INTERV. 2	HOUSE DEMS.	SEN. DEMS. 1	SEN. DEMS. 2	2018 PLAN
Population Equality	Maximum Population Deviation	1 person	2 people	1 person	1 person	1 person	1 person	2 people	1 person	1 person	1 person
Contiguity	Non-Contiguous Districts	0	0	0	0	0	0	0	0	0	0
Compactness	Mean Polsby-Popper <i>(larger is more compact)</i>	0.33	0.31	0.31	0.37	0.35	0.34	0.27	0.30	0.32	0.32
	Mean Reock <i>(larger is more compact)</i>	0.40	0.41	0.38	0.40	0.43	0.41	0.39	0.37	0.38	0.43
Respect for Political Subdivisions*	Mean Convex Hull <i>(larger is more compact)</i>	0.80	0.78	0.78	0.81	0.81	0.80	0.75	0.77	0.79	0.79
	Cut Edges <i>(smaller is more compact)</i>	5,546	5,896	5,882	5,154	5,061	5,208	6,821	6,016	5,476	5,789
	Split Counties	15	14**	15	16**	13	13	16**	17**	16	14**
	Split Municipalities	19 (incl. 3 boroughs on county lines)	23 (incl. 3 boroughs on county lines)	21 (incl. 5 boroughs on county lines)	22 (incl. 4 boroughs on county lines)	20 (incl. 4 boroughs on county lines)	20 (incl. 4 boroughs on county lines)	24 (incl. 6 boroughs on county lines)	25 (incl. 6 boroughs on county lines)	21 (incl. 5 boroughs on county lines)	29 (incl. 6 boroughs on county lines)
	Split Wards	15	21	18	25	25	24	21	17	14	29***
Minority Electoral Opportunity	Total Splits	49	58	54	63	58	57	61	59	51	72
	County Pieces	17	17	18	19	16	16	18	19	18	20
	Municipality Pieces	17	21	18	19	17	17	19	20	17	24
	Ward Pieces	15	21	18	25	25	24	21	17	14	29***
	Total Pieces	49	59	54	63	58	57	58	56	49	73
	Split Cities	1	2	1	2	2	2	1	2	2	1
	Philadelphia Pieces	3	3	4	3	3	3	3	3	3	3
	Pittsburgh Pieces	1	1	1	2	1	1	1	2	2	1
	Majority-Minority Districts (MIMDs)	3	2	2	2	2	2	2	2	2	2
	MIMDs with Latino Citizens as the Largest Minority Group	1	0	0	0	0	0	0	0	0	0

REDISTRICTING PRINCIPLE	METRIC	GMS	CARTER	HB 2146	GOV'R	CONG. INTERV. 1	CONG. INTERV. 2	HOUSE DEMS.	SEN. DEMS. 1	SEN. DEMS. 2	2018 PLAN
Partisan Fairness	Majority Responsiveness <i>(closer to zero is better; equal split between the two parties is better)</i>	3 (1 D; 2 R)	3 (1 D; 2 R)	5 (all R)	4 (2 D; 2 R)	6 (all R)	6 (all R)	3 (1 D; 2 R)	3 (all R)	3 (2 D; 1 R)	1 (R)
	Potentially Competitive Districts <i>(larger is better; equal split between remaining districts is better)</i>	7 (remaining districts 5 D, 5 R)	8 (remaining districts 5 D, 4 R)	8 (remaining districts 5 D, 4 R)	7 (remaining districts 6 D, 4 R)	9 (remaining districts 5 D, 3 R)	9 (remaining districts 5 D, 3 R)	7 (remaining districts 6 D, 4 R)	7 (remaining districts 6 D, 4 R)	8 (remaining districts 5 D, 4 R)	8 (remaining districts 5 D, 5 R)
	Average Mean-Median <i>(closer to zero is better)</i>	-0.8%	-1.6%	-2.9%	-1.0%	-2.7%	-2.6%	-0.9%	-1.9%	-0.3%	-1.9%
	Average Efficiency Gap <i>(closer to zero is better)</i>	0.8%	-0.4%	-6.3%	0.6%	-7.8%	-7.8%	3.3%	-2.5%	1.0%	-2.6%
	Dr. Duchin's Eguia Metric <i>(closer to zero is better)</i>	-0.0486	-0.1663	-0.9898	-0.0486	-1.2251	-1.2251	0.0102	-0.4015	-0.0486	N/A
	PlanScore Efficiency Gap <i>(closer to zero is better)</i>	1.4% R	1.8% R	6.6% R	1.9% R	6.4% R	6.3% R	1.2% D	2.5% R	2.4% R	2.9% R
	PlanScore Declination <i>(closer to zero is better)</i>	0.03 R	0.05 R	0.19 R	0.05 R	0.19 R	0.18 R	0.04 D	0.07 R	0.07 R	0.08 R
	PlanScore Partisan Bias <i>(closer to zero is better)</i>	0.9% R	1.3% R	6.3% R	1.1% R	6.2% R	5.9% R	1.9% D	1.8% R	1.5% R	2.1% R
	PlanScore Mean-Median Difference <i>(closer to zero is better)</i>	0.4% R	0.4% R	2.3% R	0.4% R	2.4% R	2.4% R	0.7% D	0.6% R	0.5% R	0.8% R
Incumbent Pairings	Districts with Paired Incumbents Who Are Seeking Re-Election	0	1	1	2	2	1	2	1	2	N/A

All metrics are as calculated and reported by Dr. Daryl R. DeFord, except where expressly noted.

* With respect to the "pieces" metrics, if a political subdivision is wholly contained in one district, it has one piece; if a political subdivision is divided between two districts, it has two pieces; and so on. Dividing a municipality by drawing a district boundary along a county boundary does not create an additional piece. The pieces numbers subtract the minimum required pieces; for example, 67 county pieces are required because there are 67 counties in the Commonwealth.

** Includes a split of the discontinuous piece of Chester County.

*** This figure is from League of Women Voters materials and is based on ward boundaries at the time. Ward pieces assumes 4,310 wards existed at the time.

ATTACHMENT B

Comparison of the Gressman Proposed Congressional Plan and the Congressional Plans Proposed by Amici

REDISTRICTING PRINCIPLE	METRIC	GMS	DRAW THE LINES	CITIZEN VOTERS	ALI ET AL.	VOTERS OF PA	2018 PLAN
Population Equality	Maximum Population Deviation	1 person	1 person	1 person	8,676 people	1 person	1 person
Contiguity	Non-Contiguous Districts	0	0	0	0	0	0
Compactness	Mean Polsby-Popper <i>(larger is more compact)</i>	0.33	0.37	0.34	0.34	0.38	0.32
	Mean Reock <i>(larger is more compact)</i>	0.40	0.44	0.42	0.41	0.44	0.43
	Mean Convex Hull <i>(larger is more compact)</i>	0.80	0.79	0.79	0.79	0.79	0.79
	Cut Edges <i>(smaller is more compact)</i>	5,546	5,202	5,144	5,233	5,120	5,789
Respect for Political Subdivisions*	Split Counties	15	14	14**	16**	15	14**
	Split Municipalities	19 (incl. 3 boroughs on county lines)	22 (incl. 6 boroughs on county lines)	19 (incl. 3 boroughs on county lines)	24 (incl. 6 boroughs on county lines)	23 (incl. 5 boroughs on county lines)	29 (incl. 6 boroughs on county lines)
	Split Wards	15	16	21	33	41	29***
	Total Splits	49	52	54	73	79	72
	County Pieces	17	16	17	19	16	20
	Municipality Pieces	17	17	17	19	19	24
	Ward Pieces	15	16	21	33	41	29***
	Total Pieces	49	49	55	71	76	73
	Split Cities	1	2	2	2	2	1
	Philadelphia Pieces	3	3	3	3	3	3
	Pittsburgh Pieces	1	2	1	2	1	1
Minority Electoral Opportunity	Majority-Minority Districts (MMDs)	3	2	2	2	2	2
	MMDs with Latino Citizens as the Largest Minority Group	1	0	0	0	0	0

REDISTRICTING PRINCIPLE	METRIC	GMS	DRAW THE LINES	CITIZEN VOTERS	ALI ET AL.	VOTERS OF PA	2018 PLAN
Partisan Fairness	Majority Responsiveness <i>(closer to zero is better; equal split between the two parties is better)</i>	3 (1 D; 2 R)	2 (all R)	2 (all R)	3 (1 D; 2 R)	3 (all R)	1 (R)
	Potentially Competitive Districts <i>(larger is better; equal split between remaining districts is better)</i>	7 (remaining districts 5 D, 5 R)	9 (remaining districts 4 D, 4 R)	8 (remaining districts 5 D, 4 R)	8 (remaining districts 5 D, 4 R)	8 (remaining districts 5 D, 4 R)	8 (remaining districts 5 D, 5 R)
	Average Mean-Median <i>(closer to zero is better)</i>	-0.8%	-1.2%	-2.0%	-1.8%	-2.7%	-2.7%
	Average Efficiency Gap <i>(closer to zero is better)</i>	0.8%	-1.6%	-2.6%	-2.7%	-4.8%	-2.6%
	Dr. Duchin's Eguia Metric <i>(closer to zero is better)</i>	-0.0486	-0.3427	-0.5192	-0.4604	-0.6957	N/A
	PlanScore Efficiency Gap <i>(closer to zero is better)</i>	1.4% R	3.5% R	4.6% R	2.4% R	6.8% R	2.9% R
	PlanScore Declination <i>(closer to zero is better)</i>	0.03 R	0.10 R	0.13 R	0.07 R	0.20 R	0.08 R
	PlanScore Partisan Bias <i>(closer to zero is better)</i>	0.9% R	2.9% R	4.3% R	1.9% R	6.5% R	2.1% R
	PlanScore Mean-Median Difference <i>(closer to zero is better)</i>	0.4% R	1.0% R	1.7% R	0.7% R	2.2% R	0.8% R
	Incumbent Pairings	Districts with Paired Incumbents Who Are Seeking Re-Election	0	2	2	2	2

All metrics are as calculated and reported by Dr. Daryl R. DeFord, except where expressly noted.

* With respect to the "pieces" metrics, if a political subdivision is wholly contained in one district, it has one *piece*; if a political subdivision is divided between two districts, it has two *pieces*; and so on. Dividing a municipality by drawing a district boundary along a county boundary does not create an additional *piece*. The *pieces* numbers subtract the minimum required *pieces*; for example, 67 county *pieces* are required because there are 67 counties in the Commonwealth.

** Includes a split of the discontinuous *piece* of Chester County.

*** This figure is from *League of Women Voters* materials and is based on ward boundaries at the time. Ward *pieces* assumes 4,310 wards existed at the time.

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IN THE SUPREME COURT OF PENNSYLVANIA

No. 7 MM 2022

CAROL ANN CARTER *et al.*,
Petitioners,

v.

LEIGH M. CHAPMAN, *et al.*,
Respondents.

**RESPONDENTS' EXCEPTIONS REGARDING
THE SPECIAL MASTER'S PROPOSED REVISION TO THE
2022 ELECTION CALENDAR/SCHEDULE AND
INCORPORATED BRIEF IN SUPPORT THEREOF**

On Review of the Special Master's Proposed Findings of Fact and
Conclusions of Law, Nos. 464 M.D. 2021 and 465 M.D. 2021 (February 7, 2022)

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Respondents, the Acting Secretary of the Commonwealth and Director of the Bureau of Election Services and Notaries, respectfully submit these Exceptions to the Special Master's proposed revision to the 2022 election calendar. In support of these Exceptions, the Respondents submit and attach hereto the Affidavit of Jonathan Marks dated February 14, 2022 ("Marks II Aff.").

The Secretary of the Commonwealth is Pennsylvania's chief election official, and Respondents are both election administrators charged with ensuring that Pennsylvania's elections are conducted in a fair, lawful, and orderly manner. Thus, in this litigation, Respondents' roles are two-fold: (1) to provide the Court with information where necessary; and (2) to minimize disruption of the 2022 elections by keeping the Court and the other parties apprised of election schedules and potential alterations to those schedules.¹ In keeping with those roles, Respondents respectfully submit these Exceptions to assist the Court in determining what changes to the 2022 election calendar are feasible and necessary based on the existence of other deadlines and the demands of election administration.

Although the Special Master's February 7, 2022 Report recommended certain changes to the election calendar for the congressional primary election, the

¹ Respondents note that, although they have not proposed a congressional district plan in this litigation, Intervenor-Respondent Governor Wolf has proposed a plan for judicial adoption.

Report expressly “recognize[d]” that, “in light of the changed circumstances of this litigation prompted by [this] Court’s February 2, 2022 order, granting Petitioners’ Emergency Application for Extraordinary Relief and invoking its extraordinary jurisdiction, ... further and/or different changes to the election calendar ... may be necessary.”² Respondents agree that further changes are necessary and appropriate. In particular, the Special Master’s Report did not address the calendar for the statewide and state legislative elections. For the reasons discussed herein, Respondents respectfully request that this Court address the calendar for all primary elections at this time.

In summary, despite delays in the redistricting process for both congressional and state legislative elections, Respondents believe that it is feasible—and highly preferable—to conduct the primary election for all races on the currently scheduled date of May 17, 2022.

Given recent experience, there appears to be a substantial possibility that a state-court decision moving the date of the primary election for a federal office would be challenged under the Elections Clause, *see* U.S. CONST. art. I, § 4, cl. 1.³

² The Honorable Patricia A. McCullough, Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendation of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar Schedule at 222 (Feb. 7, 2022).

³ In *Pennsylvania Democratic Party v. Boockvar*, 283 A.3d 345 (Pa. 2020), at least one of the parties and counsel to the present proceeding (the “Present Participants”) filed an Elections Clause challenge to this Court’s decision to extend, by only three days, the statutory “received-

Irrespective of the merits and ultimate resolution of such litigation, its pendency would inject uncertainty into an election cycle that is already quite challenging for both election administrators and candidates.

Further, keeping the congressional primary on May 17 but changing the primary date for state legislative offices, *i.e.*, having separate primaries, would likely cause voter confusion, depress voter participation, and cost taxpayers tens of millions of dollars. It would also present county election offices with significant logistical challenges, including the recruitment of poll workers. Respondents believe that the county boards of elections, which are responsible for directly administering elections, would also like to avoid having two separate primary dates.

In Section II.A and B below, Respondents provide a proposed election calendar (one for the statewide and congressional elections, and another for the

by” deadline for mail-in ballots. The Court’s Order was based on its determination that enforcing the statutory deadline in the extraordinary circumstances of the 2020 general election—which took place during the height of the COVID-19 pandemic and was beset for mail delays—would disenfranchise voters in violation of the Pennsylvania Constitution’s Free and Equal Elections Clause. *Id.* at 369. Nonetheless, the Present Participants asked the Supreme Court of the United States to reverse this Court’s Order, contending that the Order violated the Elections Clause. *See* Emergency Application for a Stay Pending the Filing and Disposition of a Petition for a Writ of Certiorari, *Scarnati v. Pa. Democratic Party*, No. 20A53 (U.S. filed Sept. 28, 2020); Emergency Application for a Stay Pending Disposition of a Petition for a Writ of Certiorari, *Pa. Democratic Party v. Boockvar*, No. 20A54 (U.S. filed Sept. 28, 2020); *see also* *Scarnati v. Boockvar*, 141 S. Ct. 644 (U.S.) (denying application to stay this Court’s Order by a 4-4 vote); *Republican Party of Pa. v. Boockvar*, 141 S. Ct. 643 (same).

state legislative election) that would allow the primary election for all races to be held on May 17, 2022.

I. THE CURRENT ELECTION SCHEDULE

The current election schedule stands as follows:

Event	Deadline
The first day before the primary election to circulate and file nomination petitions (<i>see</i> 25 P.S. § 2868).	February 15, 2022
The last day before the primary election to circulate and file nomination petitions (<i>see</i> 25 P.S. § 2868).	March 8, 2022
The first day before the primary election to circulate and file nomination papers (<i>see</i> 25 P.S. § 2913(b)).	March 9, 2022
Deadline to file objections to nomination petitions (<i>see</i> 25 P.S. § 2937).	March 15, 2022
Last day that may be fixed by the Commonwealth Court for hearings on objections that have been filed to nomination petitions (<i>see</i> 25 P.S. § 2937).	March 18, 2022
The last day before the primary election for candidates who filed nomination petitions to withdraw their candidacy (<i>see</i> 25 P.S. § 2874).	March 23, 2022
Last day for the Commonwealth Court to render decisions in cases involving objections to nomination petitions (<i>see</i> 25 P.S. § 2937).	March 23, 2022
The last day before the primary election for the County Board of Elections to send remote military-overseas absentee ballots (<i>see</i> 25 Pa.C.S. § 3508(b)(1)).	March 28, 2022
The last day before the primary election for the County Board of Elections to send all remaining military-overseas absentee ballots (<i>see</i> 25 Pa.C.S. § 3508(a)(1); 52 U.S.C. § 20302(a)(8)(A)).	April 1/2, 2022 ⁴

⁴ Under state law, if this deadline falls on a Saturday, as it does this election cycle, the deadline is moved to the proceeding day. 25 Pa.C.S. § 3508(a)(1). Federal law does not have a similar rule, and the deadline stays the same even if it falls on the weekend. 52 U.S.C. § 20302(a)(8)(A). This means that under state law, the last day before the primary election for the County Board of Elections to send all remaining military-overseas absentee ballots is April 1, while the deadline under federal law is April 2.

Event	Deadline
The last day before the primary election for voters to register (<i>see</i> 25 P.S. § 3071).	May 2, 2022
The last day before the primary election to apply for a mail-in or civilian absentee ballot (<i>see</i> 25 P.S. § 3146.2a(a)).	May 10, 2022
The last day for County Boards of Elections to receive voted mail-in and civilian absentee ballots for the primary election (<i>see</i> 25 P.S. § 3146.6(a)).	May 17, 2022
Pennsylvania’s 2022 general primary election (<i>see</i> 25 P.S. § 2753(a)).	May 17, 2022
The last day for County Boards of Elections to receive voted military-overseas ballots for the primary election for the primary election (<i>see</i> 25 Pa.C.S. § 3511(a)).	May 24, 2022

II. PROPOSED MODIFICATIONS TO THE CURRENT ELECTION CALENDAR WITH MAY 17 PRIMARY

A. Proposed Modified Statewide and Congressional Calendar

Through a combination of internal administrative adjustments and Court-ordered date changes, it is possible to hold the statewide and congressional primaries on the scheduled May 17, 2022 date.

The current election schedule gives the Counties ten weeks to prepare for the primary election, between (1) the last date before the primary election for circulating and filing nomination petitions (currently March 8), and (2) the primary election date (May 17). Respondents believe that the Counties could fully prepare for the statewide and congressional primary elections in nine weeks.

To accommodate this slightly compressed schedule, the Court would need to order a period for circulating and filing nomination petitions that lasted two weeks,

instead of three; and the nominations period would need to start on March 1, spanning two weeks and ending on the recommended revised deadline of March 15. The Department and county boards of elections have typically had three weeks of preparation time before the first date for circulating and filing nomination petitions. During this period, the Department would update the Department's Elections and Campaign Finance system, and the counties would update the Statewide Uniform Registry of Electors ("SURE") system, to reflect the new districts.⁵ The Department previously represented that with the addition of staff and increased staff hours, it would be possible for the Department to complete its preparations in two weeks instead of three.⁶ Upon further review, the Department believes that, by using generic nomination petitions,⁷ the Department could complete its preparations for circulating and filing nomination petitions quickly

⁵ See Affidavit of Jonathan Marks ("Marks I Aff.") ¶ 15 (Jan. 28, 2022), which was admitted into evidence at the hearing conducted by the Special Master in this proceeding on January 27-28, 2022.

⁶ See *id.* ¶ 16.

⁷ Ideally, the Department and county boards of elections would have an opportunity, before the circulation and filing of nomination petitions begin, to fully update the Statewide Uniform Registry of Electors (SURE) system with information about the new districts. In that event, the computerized tool used to generate nomination petitions would allow candidates to pre-populate all the information needed on the Candidate's Affidavit, as well as the information needed in the preamble portion of the nomination petition page, based on the specific office the candidate is seeking. By contrast, with generic nomination petitions, candidates running in particular districts must manually fill in the District Number line on the Candidate's Affidavit and the District Number line and County of Signers lines at the top of each nomination petition page. These two lines will be blank when the petition forms are generated and printed. Nonetheless, the computerized tool used to generate the generic nomination petitions will still pre-populate the rest of the information for the candidate's review.

and in only a couple of days, by March 1, 2022. Although the use of generic nomination petitions is less than ideal, *see supra* note 6, it will allow for the election process to proceed in a timely manner, as necessitated under the unusual circumstances of the current election cycle.

Accordingly, if the first date for circulating and filing nomination petitions were moved from February 15 to March 1, the Department would need to have a final congressional plan in place by no later than **February 27, 2022**. However, the Department respectfully requests that the Court issue an Order establishing the calendar deadlines as early as possible, and before February 27, 2022, so that counties, candidates, and the Department have time to prepare for the commencement of petition filing.

The below chart illustrates the modifications proposed to the calendar for the statewide and congressional elections:

Event	Current Deadline for Statewide and Congressional Elections	Proposed Modified Deadline for Statewide and Congressional Elections
First day to circulate and file nomination petitions	February 15, 2022	<u>March 1, 2022</u>
Last day to circulate and file nomination petitions	March 8, 2022 <i>(three-week period for circulating and filing nomination petitions)</i>	<u>March 15, 2022</u> <i>(<u>two-week</u> period for circulating and filing nomination petitions)</i>
First day to circulate and file nomination papers	March 9, 2022	March 16, 2022

Event	Current Deadline for Statewide and Congressional Elections	Proposed Modified Deadline for Statewide and Congressional Elections
Deadline to file objections to nomination petitions	March 15, 2022 <i>(objections must be filed within 7 days)</i>	March 22, 2022
Last day that may be fixed by the Commonwealth Court for hearings on objections that have been filed to nomination petitions	March 18, 2022 <i>(not later than 10 days after the last day for filing nomination petitions)</i>	March 25, 2022
Last day for candidates who filed nomination petitions to withdraw their candidacy	March 23, 2022	[no deadline change]
Last day for the Commonwealth Court to render decisions in cases involving objections to nomination petitions	March 23, 2022 <i>(not later than 15 days after the last day for filing nomination petitions)</i>	March 30, 2022 ⁸
Last day for the County Board of Elections to send remote military-overseas absentee ballots	March 28, 2022	April 2, 2022 ⁹
Last day for the County Board of Elections to send all remaining military-overseas absentee ballots	April 1/2, 2022 ¹⁰	April 2, 2022
Last day for voters to register before the primary election	May 2, 2022	[no deadline change]

⁸ Following this chart, Respondents discuss the need for this Court to modify the 10-day period for appealing from the Commonwealth Court’s decisions resolving objections to nomination petitions.

⁹ See Marks II Aff. ¶ 21. Because the deadline for sending “remote” military-overseas absentee ballots is a function of state law rather than federal law, this Court has the power to move this deadline.

¹⁰ See *supra* note 4.

Event	Current Deadline for Statewide and Congressional Elections	Proposed Modified Deadline for Statewide and Congressional Elections
Last day before the primary election to apply for a mail-in or civilian absentee ballot	May 10, 2022	[no deadline change]
Last day for County Boards of Elections to receive voted mail-in and civilian absentee ballots for the primary election	May 17, 2022	[no deadline change]
Pennsylvania’s 2022 general primary election	May 17, 2022 <i>(ten weeks between last date for circulating and filing nomination petitions and primary election)</i>	[no deadline change] <i>(nine weeks between last date for circulating and filing nomination petitions and primary election)</i>
The last day for County Boards of Elections to receive voted military-overseas ballots for the primary election for the primary election	May 24, 2022	[no deadline change]

In conjunction with this proposal, Respondents wish to address a deadline that is not listed on the chart above—namely, the deadline for parties to appeal from the Commonwealth Court’s decisions resolving objections to nomination petitions. If the Court adopts the proposal above, the Commonwealth Court decisions will be due by March 30, 2022. Under the Rules of Appellate Procedure, any person aggrieved by such decisions would then have 10 days to appeal to this Court. *See* Pa.R.A.P. 803(c)(1)(ii); *In re Morgan*, 428 A.2d 1055, 1057 (Pa. Commw. Ct. 1981).

This Court has the power to shorten this deadline. *See* Pa.R.A.P. 105(a) (an appellate court may “disregard the requirements or provisions of any of these rules in a particular case on application of a party or on its own motion and may order proceedings in accordance with its direction”); *see also Holt v. 2011 Legislative Reapportionment Comm’n*, 38 A.3d 711, 721 n.10 (Pa. 2012) (“as it respects the judicial function, the Election’s Code deadlines [for resolving objections to nomination petitions] are understood . . . as ‘directory’” rather than mandatory). Respondents respectfully submit that the Court should do so here, and should require aggrieved parties to file any appeals within 3 days of the pertinent Commonwealth Court’s decision.

This shortened deadline is necessary and appropriate to ensure that ballots can be finalized in time for counties to send mail-in and absentee ballots to voters. Under the Election Code, counties must distribute ballots to electors who have applied for them no later than two weeks before the primary—here, May 3, 2022. *See* 25 P.S. § 3150.15. As a practical matter, however, given mail-delivery timelines and the need to process ballot applications submitted after May 3, 2022, counties will want to begin sending ballots at an earlier date. Respondents believe that, to ensure that any nomination-petition appeals can be resolved in sufficient time to finalize the mail-in and absentee ballots, the appeal period should be shortened to 3 days.

B. Proposed Modified Legislative Calendar with May 17 Primary

As the Court is aware, the Legislative Reapportionment Commission (“LRC”) adopted a Final Plan on February 4, 2022. That means that any aggrieved party has until March 7, 2022, to file an appeal. *See* PA. CONST. art. II, § 17(d); Pa.R.A.P. 903 official comment (where, as here, appeal period expires on a Sunday, any aggrieved person has until the following Monday to file an appeal). If this Court were to expedite any briefing¹¹ and argument on the appeals and enter a final ruling on the legislative Final Plan by **March 18, 2022**, the May 17 primary date could (if the Final Plan is determined to be lawful) also remain in place for the state legislative races under the proposed schedule below.

Event	Current Deadline for Legislative Election	Proposed Modified Deadline for Legislative Election
First day to circulate and file nomination petitions	February 15, 2022	March 20, 2022
Last day to circulate and file nomination petitions	March 8, 2022 <i>(three-week period for circulating and filing nomination petitions)</i>	March 29, 2022 <i>(<u>nine-day</u> period for circulating and filing nomination petitions)</i> ¹²

¹¹ This Court may wish to consider issuing an order now requiring that any brief filed in support of an appeal of the LRC’s Final Plan be submitted on or before March 8, 2022, and that the LRC file a response brief on or before March 11, 2022.

¹² In *Mellow v. Mitchell*, 607 A.2d 204 (Pa. 1992) this Court ordered a nine-day nomination-petition-circulation period for congressional candidates. *See id.* at 244. Notably, candidates for state legislative office require significantly fewer petition signatures than candidates for congressional office. *Compare* 25 P.S. § 2872.1(12) (1,000 signatures required for congressional candidate), *with id.* § 2871.1(13) (500 signatures requires for candidate for

Event	Current Deadline for Legislative Election	Proposed Modified Deadline for Legislative Election
First day to circulate and file nomination papers	March 9, 2022	March 30, 2022
Last day for candidates who filed nomination petitions to withdraw their candidacy	March 23, 2022	March 31, 2022
Last day for the County Board of Elections to send remote military-overseas absentee ballots	March 28, 2022	April 2, 2022 ¹³
Last day for the County Board of Elections to send all remaining military-overseas absentee ballots	April 1/2, 2022 ¹⁴	April 2, 2022
Deadline to file objections to nomination petitions	March 15, 2022 <i>(seven-day period for filing objections to nomination petitions)</i>	April 4, 2022 <i>(six-day period for filing objections to nomination petitions)</i> ¹⁵
Last day that may be fixed by the Commonwealth Court for hearings on objections that have been filed to nomination petitions	March 18, 2022 <i>(not later than 10 days after the last day for filing nomination petitions)</i>	April 7, 2022 <i>(not later than nine days after the last day for filing the nomination petitions)</i> ¹⁶

Pennsylvania Senate), *and id.* § 2871.14 (300 signatures required for candidate for Pennsylvania House of Representatives).

¹³ See Marks II Aff. ¶ 21.

¹⁴ See *supra* note 4.

¹⁵ This Court ordered a six-day objection period in *Mellow v. Mitchell*. See 706 A.2d at 244.

¹⁶ This Court may alter the deadlines governing the Commonwealth Court’s resolution of objections to nomination petitions. See *Holt*, 38 A.3d at 721 n.10 (“as it respects the judicial function, the Election’s Code deadlines [for resolving objections to nomination petitions] are understood ... as ‘directory’” rather than mandatory); *In re Bruno*, 101 A.3d 635, 678 (Pa. 2014) (“[t]he Supreme Court’s supervisory power over the Unified Judicial System is beyond question” and includes “authority ... over inferior tribunals”).

Event	Current Deadline for Legislative Election	Proposed Modified Deadline for Legislative Election
Last day for the Commonwealth Court to render decisions in cases involving objections to nomination petitions	March 23, 2022 <i>(not later than 15 days after the last day for filing nomination petitions)</i>	April 12, 2022 <i>(not later than 14 days after the last day for filing nomination petitions)¹⁷</i>
Last day for voters to register before the primary election	May 2, 2022	[no deadline change]
Last day to apply for a mail-in or civilian absentee ballot	May 10, 2022	[no deadline change]
Last day for County Boards of Elections to receive voted mail-in and civilian absentee ballots	May 17, 2022	[no deadline change]
Pennsylvania's 2022 primary election	May 17, 2022 <i>(ten weeks between last date for circulating and filing nomination petitions and primary election)</i>	[no deadline change] <i>(seven weeks between last date for circulating and filing nomination petitions and primary election)</i>
The last day for County Boards of Elections to receive voted military-overseas ballots for the primary election for the primary election	May 24, 2022	[no deadline change]

For the reasons discussed above, *see supra* pages 9-10, Respondents respectfully request that the Court shorten to 3 days the period for appealing from the Commonwealth Court's decisions resolving objections to nomination petitions.

The Department will, of course, make every effort to comply with any schedule that the Court puts in place. To the extent the Court deems it necessary or

¹⁷ *See supra* note 16.

appropriate, Respondents stand ready to provide testimony regarding appropriate and feasible changes to the 2022 primary election calendar, and to assist the Court in determining workable alternatives to the calendars proposed above.

Respectfully submitted,

HANGLEY ARONCHICK SEGAL
PUDLIN & SCHILLER

Dated: February 14, 2022

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CERTIFICATION REGARDING PUBLIC ACCESS POLICY

I certify that this filing complies with the provisions of the Public Access Policy of the Unified Judicial System of Pennsylvania: Case Records of the Appellate and Trial Courts that require filing confidential information and documents differently than non-confidential information and documents.

Dated: February 14, 2022

/s/ Robert A. Wiygul
Robert A. Wiygul

IN THE SUPREME COURT OF PENNSYLVANIA

CAROL ANN CARTER; et al.,

Petitioners,

v.

LEIGH M. CHAPMAN, in her official capacity as
the Acting Secretary of the Commonwealth of Pennsylvania;
JESSICA MATHIS, in her official capacity as Director for
the Pennsylvania Bureau of Election Services and Notaries,

Respondents.

No. 7 MM 2022

PHILIP T. GRESSMAN; et al.,

Petitioners,

v.

LEIGH M. CHAPMAN, in her official capacity as
the Acting Secretary of the Commonwealth of
Pennsylvania; JESSICA MATHIS, in her official capacity
as Director for the Pennsylvania Bureau of Election
Services and Notaries,

Respondents.

AFFIDAVIT OF JONATHAN MARKS

Jonathan Marks, being duly sworn, deposes and says:

1. I am the Deputy Secretary for Elections and Commissions for the Commonwealth's Department of State (the "Department").
2. I was appointed to the position of Deputy Secretary for Elections and Commissions in February 2019.

3. I have been with the Department since 1993.
4. Prior to being appointed Deputy Secretary for Elections and Commissions in 2019, I served as Commissioner of the Bureau of Commissions, Elections and Legislation (the “Bureau”) starting in October 2011.
5. From 2008 to 2011, I served as the Chief of the Division of the Statewide Uniform Registry of Electors.
6. Prior to that, from 2004 to 2008, I served as the Chief of the Division of Elections and Precinct Data with the Bureau.
7. In my current role, I am responsible for overseeing the day-to-day operations of election administration within the Department.
8. Since I became the Commissioner of the Bureau in 2011, I have supervised the administration of the Department’s duties in more than 20 regularly-scheduled elections and over 50 special elections.
9. The next primary for all offices—statewide, congressional, and state legislative—is scheduled for May 17, 2022.
10. The current timeline of deadlines leading up to and related to the May 17, 2022 primary is as follows:
 - a. The first day before the primary election to circulate and file nomination petitions is February 15, 2022. (*See* 25 P.S. § 2868.)
 - b. The last day before the primary election to circulate and file

- nomination petitions is March 8, 2022. (*See* 25 P.S. § 2868.)
- c. The first day before the primary election to circulate and file nomination papers is March 9, 2022. (*See* 25 P.S. § 2913(b).)
 - d. The Deadline to file objections to nomination petitions is March 15, 2022. (*See* 25 P.S. § 2937.)
 - e. The last day that may be fixed by the Commonwealth Court for hearings on objections that have been filed to nomination petitions is March 18, 2022. (*See* P.S. § 2937.)
 - f. The last day before the primary election for candidates who filed nomination petitions to withdraw their candidacy is March 23, 2022. (*See* 25 P.S. § 2874.)
 - g. The last day for the Commonwealth Court to render decisions involving objections to nomination petitions is March 23, 2022. (*See* 25 P.S. § 2937.)
 - h. The last day before the primary election for the County Boards of Elections to send remote military-overseas absentee ballots is March 28, 2022. (*See* 25 Pa.C.S. § 3508(b)(1).)
 - i. The last day before the primary election for the County Boards of Elections to send all remaining military-overseas absentee ballots is

April 1, 2022, under state law, *see* 25 Pa.C.S. § 3508(a)(1), and April 2, 2022, under federal law, *see* 52 U.S.C. § 20302(a)(8)(A).¹

- j. The last day before the primary election for voters to register is May 2, 2022. (*See* 25 P.S. § 3071.)
 - k. The last day before the primary election to apply for a mail-in or civilian absentee ballot is May 10, 2022. (*See* 25 P.S. § 3146.2a(a).)
 - l. The last day for County Boards of Elections to receive voted mail-in and civilian absentee ballots for the primary election is May 17, 2022. (*See* 25 P.S. § 3146.6(a).)
 - m. Pennsylvania's 2022 general primary election is scheduled for May 17, 2022. (*See* 25 P.S. § 2753(a).)
 - n. The last day for County Boards of Elections to receive voted military-overseas ballots for the primary election is May 24, 2022. (*See* 25 Pa.C.S. § 3511(a).)
11. All of the deadlines set forth above are required by federal or state law.

¹ As a practical matter, the majority of these military-overseas ballots would typically be sent out on Friday, April 1, 2022. County officials would then process any additional military-overseas ballot requests arriving on the 45th day, sending those ballots out on Saturday, April 2, 2022.

12. The current elections schedule gives the Counties ten weeks to prepare for the primary election, between (a) the last date before the primary election for circulating and filing nomination petitions (currently March 8); and (b) the primary election date (May 17).

13. Based on my experience, the Counties could fully prepare for the statewide and congressional primary election in nine weeks.

14. In order to accomplish this, the Court would need to order a time period for circulating and filing nomination petitions that lasted two weeks, instead of three; and the nominations period would need to start on March 1, spanning two weeks and ending on the recommended revised deadline of March 15.

15. Ideally, the Department and county boards of elections would have an opportunity, before the circulation and filing of nomination petitions begin, to fully update the Statewide Uniform Registry of Electors (SURE) system with information about the new districts. In that event, the computerized tool used to generate nomination petitions would allow candidates to pre-populate all the information needed on the Candidate's Affidavit, as well as the information needed in the preamble portion of the nomination petition page, based on the specific office the candidate is seeking. By contrast, with generic nomination petitions, candidates running in particular districts must manually fill in the District Number line on the Candidate's Affidavit and the District Number line and County of

Signers lines at the top of each nomination petition page. These two lines will be blank when the petition forms are generated and printed. Nonetheless, the computerized tool used to generate the generic nomination petitions will still pre-populate the rest of the information for the candidate's review.

16. The Department believes that, by using generic nomination petitions, the Department could complete its preparations for circulating and filing nomination petitions quickly and in only a couple of days, by March 1, 2022.

17. Although the use of generic nomination petitions is less than ideal, it will allow the election process to proceed in a timely manner, as necessitated under the unusual circumstances of the current election cycle.

18. If the first date for circulating and filing nomination petitions for statewide and congressional races were moved from February 15 to March 1, the Department would need to have a final congressional plan in place by no later than **February 27, 2022**.

19. The Legislative Reapportionment Commission ("LRC") adopted a Final Plan for the legislative districts on February 4, 2022. If this Court were to expedite any briefing and argument on the appeals and enter a final ruling on the legislative Final Plan by **March 18, 2022**, the May 17 primary date could (if the Final Plan is determined to be lawful) also remain in place for the state legislative races.

20. The Court would also need to order a period for circulating and filing nomination petitions that lasted nine days, instead of three weeks; and the nominations period would need to start on March 20, spanning nine days and ending on the recommended revised deadline of March 29.

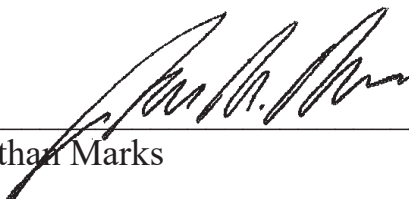
21. Finally, the Court would need to adjust the date by which the County Boards of Elections must send remote military-overseas absentee ballots from March 28, 2022 to April 2, 2022, to allow time for the Secretary to conduct the lottery to determine the position of candidate names and order in which the names will appear on the primary ballot before the remote military-overseas absentee ballots must go out. For administrative efficiencies and to align the calendars as much as possible, it would be preferable to have April 2, 2022, as the deadline for this task under the congressional calendar as well.

22. Having separate primaries would likely cause voter confusion, depress voter participation, and cost taxpayers tens of millions of dollars, and would present county election offices with significant logistical challenges, including the recruitment of poll workers.

23. Should the Court modify existing deadlines, the Department will make every effort to comply with any schedule that the Court puts in place.

The foregoing is true and correct to the best of my knowledge, information, and belief and is subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Date: February 14, 2022



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IN THE SUPREME COURT OF PENNSYLVANIA

No. 7 MM 2022

CAROL ANN CARTER *et al.*,
Petitioners,

v.

LEIGH M. CHAPMAN, *et al.*,
Respondents.

**INTERVENOR-RESPONDENT GOVERNOR THOMAS W. WOLF'S
EXCEPTIONS TO THE SPECIAL MASTER'S
PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW
AND INCORPORATED BRIEF IN SUPPORT THEREOF**

On Review of the Special Master's Proposed Findings of Fact and
Conclusions of Law, Nos. 464 M.D. 2021 and 465 M.D. 2021 (February 7, 2022)

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I. INTRODUCTION

Pursuant to this Court’s Order dated February 2, 2022, Intervenor-Respondent Governor Tom Wolf (the “Governor”) submits these exceptions to the Report of the Special Master, the Honorable Patricia A. McCullough. The Governor respectfully takes exception to the Special Master’s (1) recommendation that this Court adopt HB 2146¹ as Pennsylvania’s congressional district plan, as well as the proposed findings of fact and conclusions of law supporting that recommendation; and (2) proposed revision to the 2022 election calendar. *See* Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendation of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule (Feb. 7, 2022) (the “Report”).

As set out in more detail below, the Report’s proposed findings of fact and conclusions of law reflect critical errors. Accordingly, Governor Wolf respectfully requests that the Court decline to accept the Special Master’s recommendation and

¹ “HB 2146” is the proposed plan offered by the Speaker and Majority Leader of the Pennsylvania House of Representatives (the “House Republican Intervenor-Respondents”) and the President Pro Tempore and Majority Leader of the Pennsylvania State Senate (the “Senate Republican Intervenor-Respondents”) (collectively, the “Republican Legislative Intervenor-Respondents”). Although HB 2146 derived from a redistricting plan created by a citizen, Amanda Holt, it was altered during the legislative process. HB 2146 was first introduced in the General Assembly and referred to the State Government Committee on December 8, 2021, and then passed the House of Representatives on January 12, 2022. On January 24, 2022, the Senate gave HB 2416 third consideration and passed it. *See* Pennsylvania General Assembly, Bill Information – History, *House Bill 2146; Regular Session 2021-2022*, https://www.legis.state.pa.us/cfdocs/billInfo/bill_history.cfm?syear=2021&sind=0&body=H&type=B&bn=2146.

instead select the Governor’s Plan, or, in the alternative, select or enact another plan that provides all Pennsylvanians with an equal opportunity to elect the representative of their choice. As to the Special Master’s proposed revision to the 2022 election calendar, the Governor respectfully recommends that the Court modify certain election-calendar deadlines as specifically set forth in Respondents’ Exceptions to the 2022 Election Calendar/Schedule, which is being filed concurrently with these Exceptions.

At the evidentiary hearing conducted by the Special Master, compelling evidence showed that the Governor’s Plan was ideally suited to ensure “that the power of [each] vote in the selection of representatives [would] be equalized to the greatest degree possible with all other Pennsylvania citizens.” *League of Women Voters v. Commonwealth*, 178 A.3d 737, 817 (Pa. 2018) (“*LWV I*”). Yet the Special Master recommended that this Court select (and treat as presumptively reasonable and legitimate) HB 2146, which Governor Wolf vetoed after determining that it is fundamentally unfair. HB 2146 demonstrably falls below the bulk of the other proposed maps at both (1) step one of the *LWV I* analysis, which measures adherence to the “neutral criteria” of compactness, contiguity, population deviation, and keeping together political subdivisions; and (2) step two of the *LWV I* analysis, which assesses whether a plan “prevent[s] dilution of an individual’s vote” and gives “all voters ... an equal opportunity to translate their

votes into representation.” 178 A.3d at 804, 817. Under this Court’s decision in *LWW I* and its other redistricting precedents, this Court should reject HB 2146 and select the Governor’s Plan, which “comes closest to the constitutional standards in all pertinent respects.” *Mellow v. Mitchell*, 607 A.2d 204, 218 (Pa. 1992).

II. **BACKGROUND**

On January 24, 2022, rather than passing an evenhanded map commanding bipartisan support, the General Assembly rammed through, along mostly partisan lines,² a map that fundamentally fails the test of fairness. *See* HB 2146, 2021-2022 Reg. Sess.³ As the Governor made clear prior to final passage,⁴ that map is unacceptable; he could not, in good conscience, sign it into law. Accordingly, on January 26, 2022, the Governor vetoed the General Assembly’s bill for failing to

² The Pennsylvania Senate voted along party lines. *See* https://www.legis.state.pa.us/cfdocs/legis/RC/Public/rc_view_action2.cfm?sess_yr=2021&sess_ind=0&rc_body=S&rc_nbr=429. In the House of Representatives, all Democrats and two Republicans voted against HB 2146. *See* https://www.legis.state.pa.us/CFDOCS/Legis/RC/Public/rc_view_action2.cfm?sess_yr=2021&sess_ind=0&rc_body=H&rc_nbr=708.

³ When the Senate State Government Committee initially passed HB 2146, the Senate Republicans issued a Press Release acknowledging that HB 2146 was not bipartisan and was being advanced merely as a means to an end. The Press Release stated that the Committee had “move[d] this bill through the legislative process to meet the deadlines set by the Department of State, in order to avoid delaying the primary election,” but that “[b]ipartisan negotiations [we]re continuing in the hopes that a compromise can be reached.” Press Release, *Congressional District Map Advances to the Senate* (Jan. 18, 2022), <https://www.pasenategop.com/blog/congressional-district-map-advances-to-the-senate/>.

⁴ *See, e.g.*, Letter from Governor Tom Wolf to Speaker and Majority Leader of Pennsylvania House of Representatives (Dec. 28, 2021), <https://www.governor.pa.gov/wp-content/uploads/2021/12/12.28.21-TWW-Cutler-Benninghoff-HB-2146-Final.pdf>.

“deliver on the Pennsylvania Constitution’s guarantee of free and equal elections.”⁵ Given these developments, it was clear that the executive and legislative branches had reached an impasse, and that the judiciary would need to adopt a new congressional districting plan.

On January 14, 2022, the Special Master ordered the parties (including those permitted to intervene, *see* Report at 12-13) to submit no more than two proposed 17-district congressional redistricting plans and a supporting brief and/or expert report by January 24, 2022, and responsive briefs and/or expert reports (addressing the other parties’ January 24 submissions) by January 26, 2022.⁶ On January 27 and 28, 2022, the Special Master held a two-day evidentiary hearing, during which the parties presented expert witnesses who testified in support of the parties’ respective maps.⁷

On February 7, 2022, the Special Master issued a Report containing proposed findings of fact and conclusions of law; recommending that this Court adopt HB 2146, one of the 13 plans that had been submitted for the Special

⁵ *See* Veto Message, Office of the Governor of the Commonwealth of Pennsylvania (Jan. 26, 2022), <https://www.governor.pa.gov/wp-content/uploads/2022/01/20220126-HB-2146-Veto-Message.pdf>.

⁶ All *amicus* participants were permitted to submit to the Commonwealth Court one proposed plan, and a supporting brief and/or expert report, by January 24, 2022.

⁷ The *amicus* participants were not permitted to participate in the evidentiary hearing.

Master’s consideration; and recommending certain modifications to the pre-primary congressional election calendar.

III. THIS COURT’S *DE NOVO* STANDARD OF REVIEW

“[I]n matters such as these where [this Court] ha[s] exercised plenary jurisdiction and ha[s] not relinquished that jurisdiction to the tribunal which is ... acting as a special master for this Court, [the Court’s] review must be *de novo*.” *Annenberg v. Commonwealth*, 757 A.2d 338, 342–43 (Pa. 2000) (emphasis added); *LWV I*, 178 A.3d at 802 n.62 (“Given that this case is before us following our grant of extraordinary jurisdiction, our standard of review is *de novo*.”).

When addressing a special master’s factual findings, the Court “will afford them due consideration,” but they “are not binding.” *Annenberg*, 757 A.2d at 343.⁸ This Court has the authority to reject the Special Master’s recommendation of HB 2146 and to either (1) select one of the other congressional district plans submitted for consideration in the proceedings below or (2) assume itself the responsibility for drafting a new plan. *See, e.g., League of Women Voters v. Commonwealth*, 181 A.3d 1083, 1084-88 (Pa. 2018) (“*LWV II*”).

⁸ As the Commonwealth Court stated in its Report, once this Court exercised extraordinary jurisdiction, the Commonwealth Court “proceed[ed] on the assumption that its credibility and weight determinations and other rulings are not entitled to any form of deference by the Supreme Court, which may substitute its judgment for that of this Court at will.” Report at 16 n.26.

IV. THE LEAGUE OF WOMEN VOTERS FRAMEWORK

As crystallized by the evidentiary hearing conducted by the Commonwealth Court, this case presents important constitutional issues that *LWVI* expressly anticipated but did not need to resolve. This case provides an important opportunity for this Court to further develop the *LWVI* framework, to assist future legislatures' and governors' consideration of districting plans and to help guide courts traversing the "rough terrain" of judicial redistricting. *Carter v. Chapman*, 7 MM 2022, 2022 WL 304580, at *3 (Pa. Feb. 2, 2022) (Dougherty, J., concurring).

LWVI held that the Pennsylvania Constitution's Free and Equal Elections Clause "mandates that all voters have an equal opportunity to translate their votes into representation." 178 A.3d at 804; *see also id.* at 814 (explaining that the Clause "provides the people of this Commonwealth an equally effective power to select the representative of [their] choice, and bars the dilution of the people's power to do so"). Conversely, if "all voters do not have an equal opportunity to translate their votes into representation[,] [t]his is the antithesis of a healthy representative democracy." *Id.*

To help advance the Pennsylvania Constitution's guarantee of "fair and equal elections for all of our Commonwealth's voters," this Court has identified well-established "neutral criteria"—"compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among

congressional districts”—that “provide a ‘floor’ of protection for an individual against the dilution of his or her vote in the creation of such districts.” *Id.* at 816-17. But these criteria are just that—a floor. *LWV I* recognized that a district plan could satisfy these criteria and “nevertheless operate to unfairly dilute the power of a particular group’s vote for a congressional representative,” such as by entrenching partisan advantage. *Id.* at 817.

Because *LWV I* could “be resolved solely on the basis of consideration of the degree to which neutral criteria were subordinated to the pursuit of partisan political advantage,” the Court did not have to “address at th[at] juncture the possibility” of a map that satisfied the traditional floor criteria but nonetheless entrenched a structural partisan bias, thereby failing to provide all voters an equal opportunity to elect their representative of choice. *Id.* at 817. But the *LWV I* Court

foresaw the day when this floor might require additional construction. [The Court] emphasized “the overarching objective ... of our constitution is to prevent dilution of an individual’s vote by mandating that the power of his or her vote in the selection of representatives be equalized to the greatest degree possible with all other Pennsylvania citizens.”

Carter, 2022 WL 304580, at *5 (Dougherty, J., concurring) (quoting *LWV I*, 178 A.3d at 817).

The day has now come for the Court to build on the foundation that *LWV I* erected. In that case, the Court was considering whether to invalidate an enacted plan on the grounds that it violated the Free and Equal Elections Clause of the

Pennsylvania Constitution. Here, by contrast, there is no enacted plan; rather, the Court is reviewing many plans with the goal of adopting a map that *best* realizes “the constitutional standards in all pertinent respects.” *Mellow*, 607 A.2d at 218. “[A]dopting or creating a judicial redistricting plan is a far different beast than assessing the constitutionality of an existing legislative plan; the latter is guided by a set of ‘neutral criteria’ that [this Court has] said ‘provide a ‘floor’ of protection’”; this Court, however, “ha[s] yet to establish how, in the former scenario, a court is to select a particular plan in a vacuum, especially where multiple proposals may meet the constitutional floor.” *Carter*, 2022 WL 304580, at *4 (Dougherty, J., concurring) (quoting *LWW I*, 178 A.3d at 817).

Although *LWW I* does not explicitly state how courts should proceed in these circumstances, the Court did provide a roadmap for the appropriate inquiry. **First**, the Court should eliminate any proposed plan that does not comport with the *LWW I* “neutral ‘floor’ criteria.” 178 A.3d at 817. **Second**, because “congressional districting maps, ... although minimally comporting with the[] neutral ‘floor’ criteria, [may] nevertheless operate to unfairly dilute the power of a particular group’s vote for a congressional representative,” *id.*, the Court should then select, among the remaining candidates, the plan that best “prevent[s] dilution of an individual’s vote by [ensuring] that the power of his or her vote in the selection of

representatives [is] equalized to the greatest degree possible with all other Pennsylvania citizens,” *id.*

LWV I provides ample instruction about how courts should, at step one of their analysis, narrow the field of proposed redistricting plans to those that satisfy the “floor” criteria. *See* 178 A.3d at 817. But that is only half of the task here. At the second step of their review, courts should select the proposed plan that is most likely to provide voters an equal opportunity to translate their votes into representation, and that is least likely to cause systematic vote dilution. *See id.* As this Court’s precedents and other courts’ approaches demonstrate, a key to protecting against vote dilution is to ensure that a map does not entrench a structural partisan advantage, which creates a situation in which one party, when receiving less than 50% of the votes, will systematically tend to obtain more than 50% of the representation.

In *Mellow*, the Court assessed whether a proposed map was “politically fair” before ultimately selecting a map that “result[ed] in a politically fair balance in the Pennsylvania delegation between Democrats and Republicans.” 607 A.2d at 210. And in *LWV I*, even after concluding that the at-issue 2011 Plan failed to satisfy the “floor” criteria, the Court further assessed the Plan’s dilutive “unfair partisan advantage” by looking to statistical measures of partisan fairness, like the Plan’s “mean-median vote gap” and “efficiency gap.” 178 A.3d at 820. Relying on those

additional partisan fairness metrics, the Court reaffirmed its conclusion that the “the 2011 Plan consistently work[ed] toward and accomplishe[d] the concentration of the power of historically-Republican voters and, conversely, the corresponding dilution of [voters]’ power to elect their chosen representatives.” *Id.*

Other courts across the country have likewise relied on the same or similar metrics, including mean-median score and efficiency gap, to ensure partisan fairness in redistricting. *See, e.g., Harper v. Hall*, 413PA21, 2022 WL 343025, at *2 (N.C. Feb. 4, 2022) (advocating for use of “mean-median difference analysis, efficiency gap analysis, close-votes, close seats analysis, and partisan symmetry analysis,” and stating that “[i]f some combination of these metrics demonstrates there is a significant likelihood that the districting plan will give the voters of all political parties substantially equal opportunity to translate votes into seats across the plan, then the plan is presumptively constitutional”); *see also Adams v. DeWine*, --- N.E.3d ---, 2022 WL 129092, *14 (Ohio Jan. 14, 2022) (using “efficiency gap,” “mean-median gap,” and “partisan symmetry” to measure fairness of proposed plan). Thus, at step two of selecting a redistricting plan, the Court should conduct a partisan fairness analysis to determine which maps are fairest and most likely to prevent vote dilution.

This approach is consonant with Pennsylvania precedent. In 2018, this Court reviewed the 2011 Plan. First, the Court determined that that the 2011 Plan

“subordinate[d] the traditional redistricting criteria in the service of partisan advantage[.]” *LWV I*, 178 A.3d at 818. And second, after applying the neutral criteria, the Court looked at additional metrics measuring the 2011 Plan’s partisan fairness, concluding that a “multitude of evidence”—such as the plan’s “mean-median vote gap” and “efficiency gap” scores—established that the 2011 Plan “consistently work[ed] toward and accomplishe[d] the concentration of the power of historically-Republican voters and, conversely, the corresponding dilution of Petitioners’ power to elect their chosen representatives.” *Id.* at 820. In other words, even if the 2011 Plan had satisfied the floor criteria at *LWV I* step one, it would have failed the partisan fairness test at *LWV II* step two.

In sum, this case requires the Court to resolve constitutional questions with profound implications for the health of Pennsylvania’s democracy and the responsiveness and accountability of Pennsylvanians’ elected representatives. As the Court observed in *LWV I*, “[i]t is a core principle of our republican form of government ‘that the voters should choose their representatives, not the other way around.’” 178 A.3d at 740-41 (citation omitted). To ensure that Pennsylvania’s new congressional map embodies that principle, the Court should eliminate any proposed redistricting plan that does not meet the *LWV I* floor, and select the remaining plan that best realizes the goals of the Free and Equal Elections Clause.

V. GOVERNOR WOLF’S PROPOSED REDISTRICTING PLAN

A. Creation of the Governor’s Plan

As the only party to this litigation who has a constituency of, and thus represents the interests of, all Pennsylvania voters, the Governor has played an active role in advocating for a fair and transparent redistricting process. In September 2021, the Governor issued an Executive Order creating the Pennsylvania Redistricting Advisory Council, a six-member council comprised of experts in various disciplines relevant to redistricting, from law to political science to mathematics, which was formed to provide guidance to the Governor and assist his review of any congressional redistricting plan passed by the General Assembly.⁹

At the same time, Governor Wolf announced the opening of a redistricting public comment portal website, for members of the public to submit proposed maps, outline communities of interest, and provide comments to help shape the outcome of this critical part of our democratic process.¹⁰ The Redistricting Council

⁹ Commonwealth of Pennsylvania Governor’s Office, Executive Order 2021-05 (Sept. 13, 2021), <https://www.governor.pa.gov/wp-content/uploads/2021/09/20210913-EO-2021-05-Redistricting-Advisory-Council.pdf>; see also Press Release, Office of Governor Tom Wolf, *Governor Wolf Creates Redistricting Advisory Council to Help Evaluate Fairness in Upcoming Congressional Redistricting Map* (Sept. 13, 2021), <https://www.governor.pa.gov/newsroom/governor-wolf-creates-redistricting-advisory-council-to-help-evaluate-fairness-in-upcoming-congressional-redistricting-map/>.

¹⁰ Press Release, Office of Governor Tom Wolf, *Governor Wolf Creates Redistricting Advisory Council to Help Evaluate Fairness in Upcoming Congressional Redistricting Map*

held nine hearings throughout the state to accept testimony from the public on a set of Redistricting Principles to help guide the Governor's review of any congressional district plan passed by the General Assembly. Derived from Pennsylvania and U.S. Supreme Court precedent, these Redistricting Principles were finalized by the Council and made public by the Governor on November 24, 2021¹¹:

- **Legal Principles**

- Each district should be as nearly equal in population as practicable;
- All territory within a district should connect to the rest of the district, and the plan should disfavor a district with territory only connected at a narrow single point;
- The plan should provide geographic compactness unless dispersion is required to advance another positive districting principle;
- The plan should prioritize fewer subdivision splits unless necessary to preserve a cohesive—and clearly identified—community of interest;
- The General Assembly should consider whether the Voting Rights Act requires the creation of proposed majority-minority districts.

- **Principles of Representation**

- The plan should maintain communities of interest,
- Composition of the congressional delegation under the plan should be proportional to statewide voter preference;

(Sept. 13, 2021), <https://www.governor.pa.gov/newsroom/governor-wolf-creates-redistricting-advisory-council-to-help-evaluate-fairness-in-upcoming-congressional-redistricting-map/>.

¹¹ See Press Release, *Gov. Wolf Announces Pennsylvania Redistricting Advisory Council's Redistricting Principles* (Nov. 24, 2021), <https://www.governor.pa.gov/newsroom/gov-wolf-announces-pennsylvania-redistricting-advisory-councils-redistricting-principles/>.

- The plan should yield election results responsive to changing voter preference.

- **Principles of Process**

- The General Assembly’s proposal should include an explanation of specific decisions, such as the communities of interest and how they were defined and the factors that led to the creation of a majority-minority districts.

Further, during the General Assembly’s deliberations, the Governor provided public feedback on proposed maps,¹² and publicly disclosed and highlighted the Governor’s Plan as an example of new congressional district boundaries that are consistent with the Redistricting Principles, free of gerrymandering, and in full accord with United States and Pennsylvania Supreme Court precedent.¹³

B. The Governor’s Plan Exemplifies the Principles Discussed in *LWV I*

Now that the Governor’s Plan has been subjected to close expert scrutiny, the evidence shows that the Governor’s Plan is a standout choice among the 13 plans submitted for consideration. As demonstrated through the proceedings before the Special Master, Pennsylvanians can—and should—have a congressional districting plan that (1) satisfies the neutral “floor” criteria; and (2) exemplifies

¹² See note 4, *supra*.

¹³ See Governor Tom Wolf, *Congressional Districts Map Proposals* (Jan. 15, 2022), <https://www.governor.pa.gov/congressional-districts-map-proposals/>.

partisan fairness, providing all Pennsylvanians an equal opportunity to “select the congressional representative of his or her choice.” *LWV I*, 178 A.3d at 816. *See, e.g.*, Report at 73 (FF104); Tr. 319:1-8, 382:7-11, 385:1-20. The Governor’s plan does both, as the evidence—including the testimony of the Governor’s expert, Dr. Moon Duchin, a renowned mathematician and leading redistricting expert—clearly showed: The Governor’s Plan (1) does an excellent job of satisfying the traditional criteria (both the neutral “floor” criteria and the other traditional criteria noted in *LWV I*), while also (2) achieving partisan fairness. *See, e.g.*, Report at 79-83 (FF138, FF148, FF158-59); Tr. 338:19-24, 349:15-350:7, 385:1-20. Indeed, it is the only plan submitted by any party to be in the top tier for both sets of metrics.

1. The Governor’s Plan Satisfies the “Floor” Criteria

Considered at “step one” of the *LWV I* framework (*see* § IV, *supra*), the Governor’s Plan is one of the best plans on the traditional criteria of compactness, contiguity, population equality, and maintaining political subdivisions. *See* **Ex. 1**, Duchin Report at 5-9; **Ex. 2**, Duchin Response Report at 2-3; Tr. 334:15-335:10, 337:12-338:5, 493:5-15. Specifically, based on her quantitative analysis, Dr. Duchin concluded that the Governor’s Plan merited placement in the top tier of proposed plans, based on its adherence to the traditional criteria. **Ex. 2**, Duchin Response Report at 3. Although all proposed plans maintain population equality and are contiguous, Dr. Duchin concluded that the Governor’s Plan achieved

exemplary compactness while still maintaining political subdivisions, making it one of the very best plans when assessed under the traditional criteria:

Compactness			
	block cut edges (lower is better)	average Polsby-Popper (higher is better)	average Reock (higher is better)
GovPlan	5185	0.381	0.431
CitizensPlan	5266	0.376	0.451
HB-2146	5907	0.321	0.409
	average Schwartzberg (higher is better)	average convex hull (higher is better)	average pop. polygon (higher is better)
GovPlan	1.653	0.826	0.783
CitizensPlan	1.669	0.812	0.772
HB-2146	1.820	0.799	0.752

Ex. 1, Duchin Report at 9, Table 3.

Table 1: Comparison of compactness and splitting metrics.

name	mean Polsby	mean Schwartz	mean Reock	mean ConvHull	mean PopPoly	cut edges	split counties	county pieces	split munis	muni pieces
GovPlan	0.3808	1.6534	0.4313	0.8257	0.7834	5185	16	35	18	37
CitizensPlan	0.3785	1.6625	0.4512	0.8120	0.7725	5237	14	30	16	33
HB-2146	0.3212	1.8197	0.4087	0.7987	0.7524	5907	15	33	16	34
Carter	0.3214	1.8103	0.4499	0.7922	0.7416	5926	14	31	20	41
Gressman/GMS	0.3478	1.7351	0.4261	0.8176	0.7582	5582	15	32	16	33
HouseDemCaucus	0.2787	1.9693	0.4286	0.7717	0.7205	6853	16	34	18	37
SenateDemCaucus1	0.3147	1.8144	0.4137	0.7918	0.7519	6047	17	36	19	39
SenateDemCaucus2	0.3346	1.7478	0.4146	0.8153	0.7601	5505	16	34	16	33
Resenthaler1	0.3629	1.6859	0.4347	0.8238	0.7737	5090	13	29	16	33
Resenthaler2	0.3524	1.7127	0.4231	0.8161	0.7658	5237	13	29	16	33
CitizenVoters	0.3490	1.7133	0.4412	0.8082	0.7575	5173	14	31	16	33
VotersOfPA	0.3965	1.6069	0.4697	0.8209	0.7681	5052	15	31	18	37
KhalifAli	0.3523	1.7204	0.4448	0.8111	0.7456	5266	16	35	18	37

Ex. 2, Duchin Response Report at 2, Table 1.

As all the experts who testified at the hearing agreed, there are inherent trade-offs among the various floor criteria in redistricting; there is no “perfect map.”¹⁴ See also Section VI(C)(3), *infra*. But the evidence showed that the

¹⁴ See Tr. 94:25-95:13, 106:1-6 (Rodden); *id.* at 211:11-212:9, 215:17-216:9 (DeFord); *id.* at 338:6-18, 339:12-342:11 (Duchin); *id.* at 627:13-628:13 (Barber); *id.* at 764:25-765:13, 829:19-830:3 (Naughton).

Governor’s Plan does an excellent job of balancing those trade-offs.¹⁵ This evidence was by no means limited to Dr. Duchin’s testimony. The analysis of other experts underscored that the Governor’s Plan amply satisfied—indeed, excelled under—the traditional redistricting criteria.¹⁶ (By contrast, HB 2146 should be eliminated from consideration at this stage, as it is the same as or worse than other maps, such as the Citizens/Draw the Lines Plan, on every metric in the above Table 1.)

2. The Governor’s Plan Achieves Partisan Fairness

As described above, the Court must be mindful that “congressional districting maps, ... although minimally comporting with the[] neutral ‘floor’ criteria, [may] nevertheless operate to unfairly dilute the power of a particular group’s vote for a congressional representative.” *LWVI*, 178 A.3d at 817. As a result, at “step two” of the *LWVI* framework for selecting a redistricting plan (*see* § IV, *supra*), the Court should conclude that, of the remaining proposed plans, the Governor’s Plan best achieves partisan fairness and promotes accountability and

¹⁵ The Governor’s Plan also performs on a high level with respect to the other “traditional” criteria identified in *LWVI* as secondary to the “floor” criteria—*i.e.*, the principles of “least change,” protection of incumbents, and communities of interest. *See* Ex. 1, Duchin Report at 6-12; Tr. 342:12-343:11, 347:7-23-349:7.

¹⁶ *See, e.g.*, Barber Rebuttal Report at 8, Table 1 (Governor’s Plan had second best Polsby-Popper compactness score of all plans); DeFord Rebuttal Report at 9 (Governor’s Plan had two best, one second best, and one fourth best score on compactness); Rodden Response Report at 2 (districts in Governor’s Plan retain the fourth highest population share compared to the 2018 Remedial Plan).

responsiveness to voters, thereby making good on the promise of the Free and Equal Elections Clause to “provide[] the people of this Commonwealth an equally effective power to select the representative of his or her choice, and bar[] the dilution of the people’s power to do so.” *Id.* at 814.

Evaluated at “step two” of the *LMVI* framework, the Governor’s Plan ranks among the top plans based on various statistical measures of partisan fairness, including the “mean-median” and “efficiency gap” scores relied on by this Court in *LWVI* and by other courts across the country. As Dr. Duchin explained, the closer each of these four scores are to zero, the better (and more fair) the plan; negative scores reflect Republican advantage, and positive scores reflect Democratic advantage. Tr. 371:18-24; *see also* Ex. 1, Duchin Report at 17.

Table 3: Comparison of all plans under four metrics of fairness in the economics and political science literature.

	total efficiency gap	total Eguia metric	total mean-median	total partisan bias
GovPlan	0.1007	-0.0486	-0.0077	-0.1176
CitizensPlan	-0.1678	-0.3427	-0.1042	-0.6471
HB-2146	-0.8336	-0.9898	-0.2927	-1.2353
Carter	-0.0058	-0.1663	-0.113	-0.5294
Gressman/GMS	0.1394	-0.0486	-0.0385	-0.2353
HouseDemCaucus	0.1814	0.0102	-0.0071	0.1765
SenateDemCaucus1	-0.2601	-0.4015	-0.1382	-0.7059
SenateDemCaucus2	0.1221	-0.0486	0.0106	0.1176
Resenthaler1	-1.1024	-1.2251	-0.2524	-1.1176
Resenthaler2 2	-1.1042	-1.2251	-0.2534	-1.0588
CitizenVoters	-0.4074	-0.5192	-0.1847	-0.6471
VotersOfPA	-0.5686	-0.6957	-0.2734	-0.8824
KhalifAli	-0.3166	-0.4604	-0.1209	-0.4706
ensemble mean	-0.6755	-0.8451	-0.2872	-1.1437

Ex. 2, Duchin Response Report at 4, Table 3;¹⁷ *see also* **Ex. 1**, Duchin Report at 13-19; Tr. 369:3-375:11.

Dr. Duchin explained that, when it came to metrics measuring fairness, the Governor’s Plan was “excellent across the board,” and that “in all four of the [fairness] metrics” Dr. Duchin reported in Table 3 above, the Plan “gives scores that are either the closest or nearly the closest to zero.” Tr. 372:3-8. In other words, the Governor’s Plan is on the “*Pareto frontier*” of the dataset on the fairness metrics, given that, in assessing how the 13 plans optimize multiple objectives, the Governor’s Plan “dominates” (is equal to or better than in every metric) ten plans and is in a trade-off position with the other two. *See* **Ex. 2**, Duchin Response Report at 4; Tr. 372:19-374:5. Other experts recognized the excellence of Dr. Duchin’s analysis,¹⁸ and to the extent the other parties’ experts conducted credible statistical analyses comparing the plans, their analyses confirm the exemplary

¹⁷ Dr. Duchin quantified each map’s (1) “efficiency gap,” which is “based on the idea of wasted votes, defined as any winning votes in excess of 50%, or any losing votes at all”; (2) “Eguia’s artificial partisan advantage,” which “compares the outcomes under districted plurality elections to the outcomes under ostensibly neutral political subdivisions, such as counties”; (3) “mean-median score,” which indicates “how much of the vote in a state is needed to capture half of the representation”; and (4) “partisan bias score,” or “how much of the representation would be captured by each party if the election underwent a uniform partisan swing to a 50-50 share.” **Ex. 1**, Duchin Report at 17.

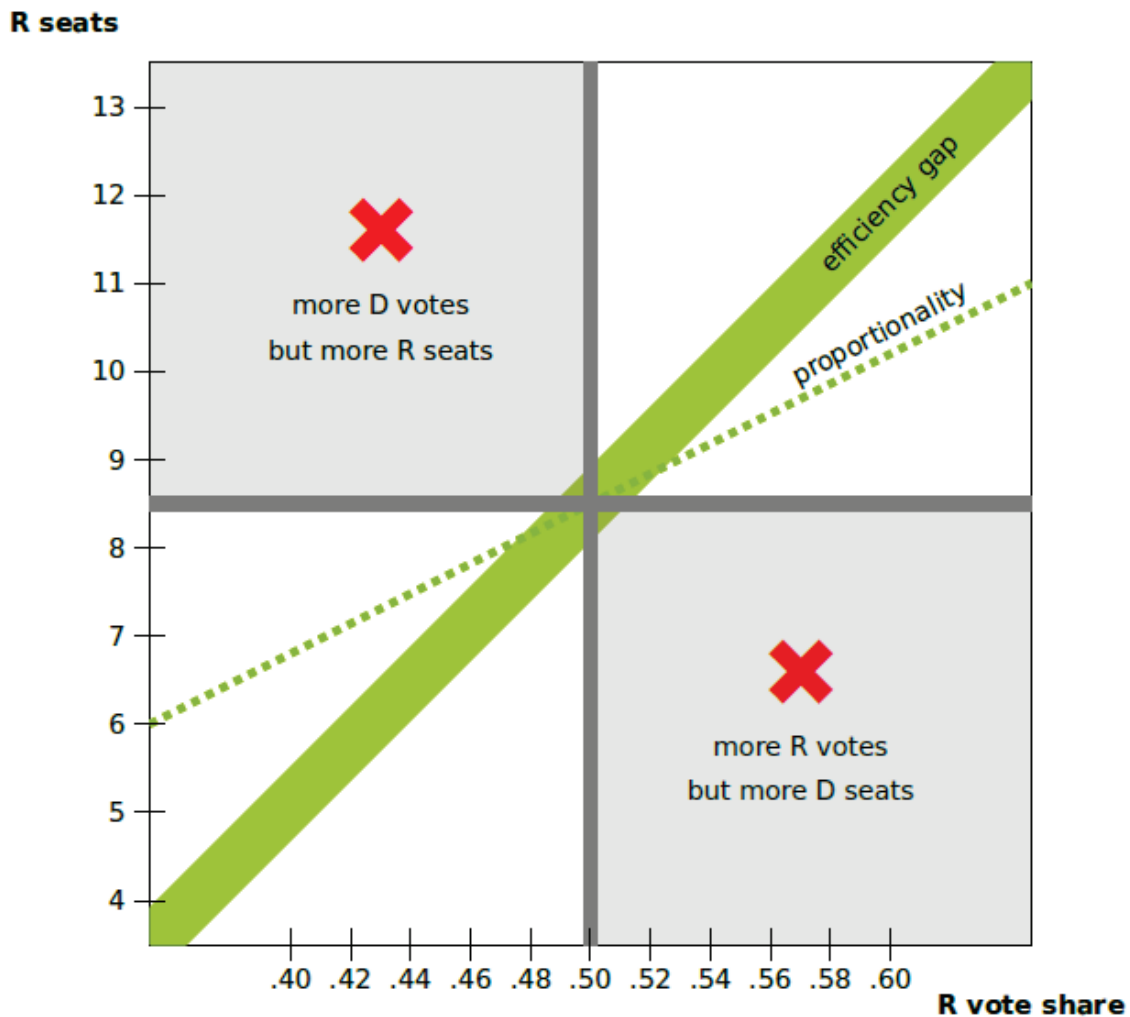
¹⁸ *See* Tr. 981:12-17 (Professor Devin Caughey testified: “the reports that I’ve seen and the testimony that I saw from other experts, especially from . . . Moon Duchin, was excellent, and I have no reason to doubt anything that she said”).

fairness of the Governor’s Plan.¹⁹ Moreover, as shown in Table 3 above, not only is the Governor’s Plan one of the (if not the) fairest proposals, but the proposal recommended by the Special Master, HB 2146, is the least fair proposal, scoring worse than even the “ensemble” mean (meaning HB 2146 is less fair than the average of 100,000 randomly-drawn districting plans that already show inherent Republican bias). **Ex. 2**, Duchin Response Report at 4, Table 3.

In addition to the partisan fairness metrics discussed above, Dr. Duchin also employed an “overlay” method, in which she overlaid several plans, including the Governor’s Plan and HB 2146, on a sequence of statewide elections in Pennsylvania to assess whether close vote margins resulted in a close split in the number of seats won (the “Close-Votes-Close-Seats Principle”). **Ex. 1**, Duchin Report at 13.²⁰ As depicted in the figure below, if an election is near even (placing it horizontally near the center of the plot), then the corresponding data point should, from a fairness perspective, tend to fall at the bulls-eye in the middle of the plot rather than falling consistently above or below the target.

¹⁹ *See, e.g.*, Tr. 266:14-21 (Dr. DeFord testifying that the Governor’s Plan and the Carter Plan are the “best performing maps” using the mean efficiency gap score for partisan fairness); *id.* at 972:8-18 (Professor Caughey testifying that the Governor’s Plan rated “very similarly on partisan fairness metrics” to the 2018 Remedial Plan adopted by the Pennsylvania Supreme Court); Caughey Response Report at 2 (concluding that the Governor’s Plan is “by far” more fair than HB 2146).

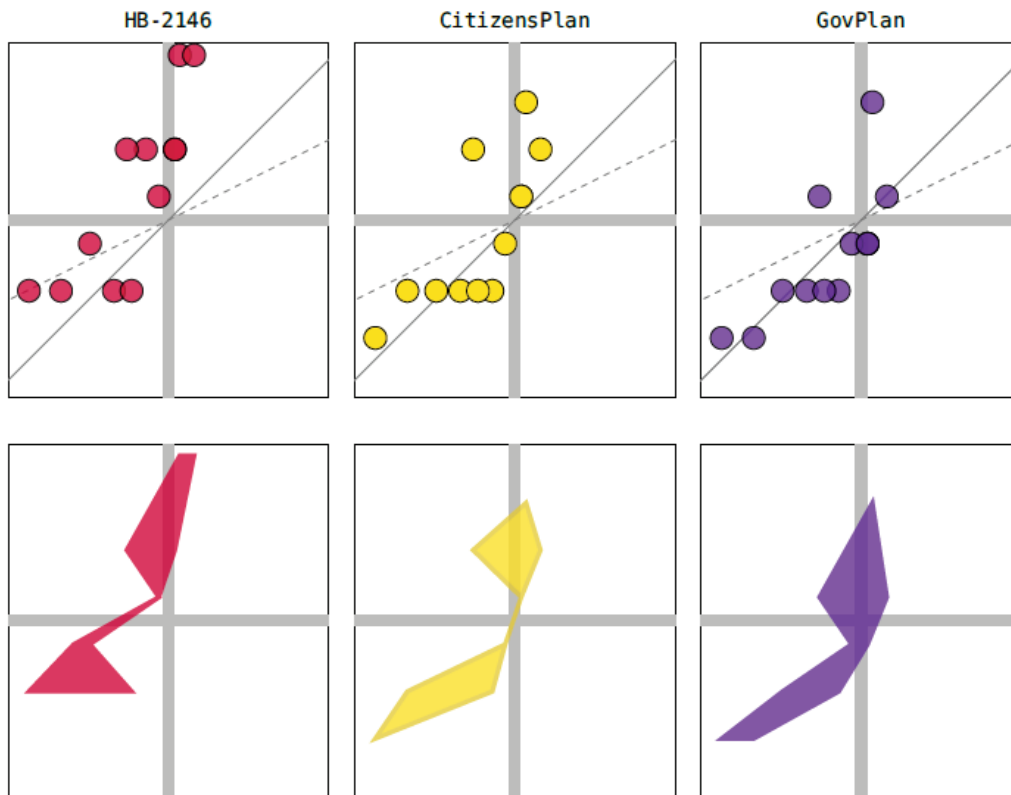
²⁰ As noted above, the North Carolina Supreme Court recently voiced its support for Dr. Duchin’s “Close-Votes-Close-Seats Principle.” *Harper*, 2022 WL 343025, at *2.



Ex. 1, Duchin Report at 14, Figure 4.

Applying these principles to the plans, Dr. Duchin demonstrated that HB 2146 nearly always misses the bulls-eye, while the Governor’s Plan generally hits and tightly circles the bulls-eye. *Id.* at 16. Dr. Duchin summarized HB 2146’s performance as “consistently converting close elections to heavy Republican representational advantages”; by contrast, the Governor’s Plan “does an excellent job of hitting that [bulls-eye] target.” Tr. 364:20-365:9.

Figure 6: This time, the three new proposed plans are overlaid on the same elections. HB-2146 entrenches a Republican advantage, while CitizensPlan and especially GovPlan are far superior at leveling the partisan playing field.



Ex. 1, Duchin Report at 16, Figure 6. (The “CitizensPlan” graph depicts the results of elections under a version of a plan submitted by Draw the Lines PA.)

3. The Governor’s Plan Is in the Top Tier on *Both* the Neutral Floor Criteria and Partisan Fairness

As Dr. Duchin concluded, only the Governor’s Plan is in the top tier of the proposed plans at *LWV I* step one, *i.e.*, satisfies the floor criteria even if the floor is set very high, *and* is in the top tier of plans at *LWV I* step two, by demonstrating excellent partisan fairness. *See Ex. 2*, Duchin Response Report at 5. If the concept of tiers is employed—with the top tier of plans being on the “Pareto frontier,” *i.e.*, plans that manage the tradeoffs as well as or better than any other option—then it

is reasonable to ask which plans are in the top tier for both the traditional principles and for partisan fairness metrics. As Dr. Duchin testified, “it turns out there’s only one map in both sets, and that’s the Governor’s plan.” Tr. 393:18-25. Put differently, the Governor’s Plan meets and then rises above the floor set by *LWV I*: it provides Pennsylvanians with an equal opportunity to translate their political preferences into representation, thus ensuring that the Commonwealth’s elected representatives will be responsive and accountable to the Commonwealth’s voters.

In sum, the evidence shows that the Governor’s Plan best realizes the goals set forth by this Court in *LWV I*, guaranteeing “that the power of [a Pennsylvanian’s] vote in the selection of representatives [is] equalized to the greatest degree possible with all other Pennsylvania citizens,” *LWV I*, 178 A.3d at 817. Particularly in light of the deep flaws in the Special’s Master’s recommendation of HB 2146 discussed below, Governor Wolf respectfully requests that the Court adopt the Governor’s Plan.

VI. EXCEPTIONS TO THE SPECIAL MASTERS’ PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

A. Overview of Exceptions

When assessed using the neutral criteria and principles of fairness set forth in *LWV I*, HB 2146 is a demonstrably poor performer. Among the 13 plans submitted in these proceedings, HB 2146 consistently ranks at or near the bottom

of the pack under all metrics. In selecting HB 2146 in spite of its measureable, pervasive weaknesses, the Special Master made two categorical errors.

First, the Special Master incorrectly determined which elements of expert testimony to credit and which to discount. That error was endemic, tainting all of the Special Master's conclusions and, in particular, the Report's assessment of the proposed plans' performance using partisan fairness metrics.

Second, as reflected in the chart below, the Special Master systematically discarded the better and fairer plans—one by one—in reliance on a misunderstanding of what *LWV I* and the Free and Equal Elections Clause endeavor to protect (namely, fundamental fairness and equal participation in the electoral process).

Summary of Special Master’s Analysis

No.	Proposed Plan	Special Master’s Reasons for Criticizing / Disqualifying Plan
1	<p>Carter Plan</p> <p>(Plan offered by Carter Petitioners, developed by Dr. Jonathan Rodden)</p>	<ul style="list-style-type: none"> • <u>Population Equality</u>: Results in districts with a two-person deviation (Report at 192 ¶ 18, 204) • <u>Incumbent Pairings</u>: Includes two Republicans in one district (<i>id.</i> at 195 ¶ 32, 204-05)²¹ • <u>Least Change</u>: Employs a “least change” approach based on a prior court-made plan (<i>id.</i> at 195 ¶¶ 34-36, 204) • <u>Unfair Partisan Gerrymandering</u>: Purportedly yields a partisan advantage to Democratic Party based on efficiency gap score (<i>id.</i> at 197 ¶¶ 40-43, 205)
2	<p>Gressman Plan</p> <p>(Plan offered by Gressman Petitioners, developed through mathematical optimization techniques)</p>	<ul style="list-style-type: none"> • <u>Communities of Interest</u>: Fails to consider communities of interest (<i>id.</i> at 156 (FF10), 205) • <u>Proportionality/Partisan Fairness</u>: Was purposefully created with algorithm designed to optimize partisan fairness (<i>id.</i> at 178 (FF2), 205) • <u>Unfair Partisan Gerrymandering</u>: Purportedly yields a partisan advantage to Democratic Party based on efficiency gap and mean-median scores (<i>id.</i> at 197 ¶¶ 40-43, 205)

²¹ On the topic of incumbent pairings, the final “Recommendations” section of the Special Master’s Report criticized *only* the Senate Democratic Caucus Plan 1 and the Carter Plan for “including two Republican incumbents in one congressional district.” *See* Report § VI at 195 ¶ 32. By contrast, in its Findings of Fact Section (Section V), the Report concluded that, while the Senate Democratic Caucus Plan 1 and the Carter Plans each have only *one* significant incumbent pairing, five *other* plans (the Reschenthaler 1, Citizens Voters, Draw the Lines, Senate Democratic Caucus 2, and House Democratic Caucus plans) fare worse by having *two* significant incumbent pairings. For those five plans, the Commonwealth Court concluded in its Findings of Fact that because they pair *three* incumbents of one party, but only *one* incumbent of the other party, they “will be given less weight in this regard.” *Id.* at 180-83 (FF16-28). The Report does not mention in its final Recommendations section, however, the fact that these other five plans include *two* significant incumbent pairings.

No.	Proposed Plan	Special Master's Reasons for Criticizing / Disqualifying Plan
3	<p>Governor's Plan</p> <p>(Plan offered by the Governor, developed by the Governor's office and taking account of submissions to a public portal)</p>	<ul style="list-style-type: none"> • <u>Political Subdivision Splits</u>: Divides Pittsburgh and Bucks County into two congressional districts (<i>id.</i> at 194-95 ¶¶ 25-31, 200) • <u>Compactness</u>: Plan's excellent compactness score should be discounted due to split of Pittsburgh (<i>id.</i> at 148 (FF4; CL)) • <u>Unfair Partisan Gerrymandering</u>: Purportedly yields a partisan advantage to Democratic Party based on efficiency gap score (<i>id.</i> at 197 ¶¶ 40-43, 201)
4	<p>Senate Democratic Caucus Plan 1</p> <p>(First plan offered by the Senate Democratic Caucus)</p>	<ul style="list-style-type: none"> • <u>Political Subdivision Splits</u>: Divides Pittsburgh into two congressional districts (<i>id.</i> at 194-95 ¶¶ 25-30, 202) • <u>Incumbent Pairings</u>: Includes two Republicans in one district (<i>id.</i> at 195 ¶ 32, 202)²²
5	<p>Senate Democratic Caucus Plan 2</p> <p>(Second plan offered by the Senate Democratic Caucus)</p>	<ul style="list-style-type: none"> • <u>Political Subdivision Splits</u>: Divides Pittsburgh into two congressional districts (<i>id.</i> at 194-95 ¶¶ 25-30, 202) • <u>Unfair Partisan Gerrymandering</u>: Purportedly yields a partisan advantage to Democratic Party based on efficiency gap score (<i>id.</i> at 197 ¶¶ 40-43, 202)²³
6	<p>House Democratic Caucus Plan</p> <p>(Plan offered by the House Democratic Caucus)</p>	<ul style="list-style-type: none"> • <u>Population Equality</u>: Results in districts with a two-person deviation (<i>id.</i> at 192 ¶ 18, 203) • <u>"Oddly Shaped" District</u>: Draws an oddly shaped "Freddy-Krueger like claw" district in Allegheny County (<i>id.</i> at 203) • <u>Unfair Partisan Gerrymandering</u>: Purportedly yields a partisan advantage to Democratic Party based on efficiency gap and mean-median scores (<i>id.</i> at 197 ¶¶ 40-43, 203)²⁴

²² *But see* note 21, *supra*. Additionally, notwithstanding that the Report did not find that Senate Democratic Caucus Plan 1 provides a Democratic advantage based on its efficiency score (and it does not), the Report incorrectly stated that it does so in its Recommendations section, grouping Senate Democratic Caucus Plan 1 with Senate Democratic Caucus Plan 2. Report at 201-02 no. 5.

²³ *See also* note 21, *supra*.

²⁴ *See also* note 21, *supra*.

No.	Proposed Plan	Special Master's Reasons for Criticizing / Disqualifying Plan
7	<p>Draw the Lines Plan</p> <p>(Plan offered by amicus participants Draw the Lines PA project affiliates, derived from citizen-submitted contest entries in Draw the Lines PA competition)</p>	<ul style="list-style-type: none"> • <u>Political Subdivision Splits</u>: Divides Pittsburgh into two congressional districts (<i>id.</i> at 194-95 ¶¶ 25-30, 201) • <u>Proportionality/Partisan Fairness</u>: Splits Pittsburgh to “maximize political competitiveness” (<i>id.</i> at 178 (FF3), 201) • <u>Unfair Partisan Gerrymandering</u>: Purportedly yields a partisan advantage to Democratic Party based on efficiency gap score (<i>id.</i> at 197 ¶¶ 40-43, 201)²⁵
8	<p>Ali Plan</p> <p>(Plan offered by amicus participants Khalif Ali et al., on behalf of the Public Interest Law Center)</p>	<ul style="list-style-type: none"> • <u>Population Equality</u>: Relies on prisoner-adjusted population data set (<i>id.</i> at 192-93 ¶¶ 19-21, 199) • <u>Political Subdivision Splits</u>: Divides Pittsburgh into two congressional districts (<i>id.</i> at 194-95 ¶¶ 25-30, 199-200)
9	<p>HB 2146</p> <p>(Plan offered by the Republican Legislative Intervenor-Respondents; derived from plan by citizen Amanda Holt; was modified and then passed by the House of Representatives, then passed by the Senate)</p>	<i>No issues identified</i>
10	<p>Resenthaler Plan 1</p> <p>(First plan offered by Congressman Resenthaler et al.)</p>	<i>No issues identified</i> ²⁶
11	<p>Resenthaler Plan 2</p> <p>(Second plan offered by Congressman Resenthaler et al.)</p>	<i>No issues identified</i>

²⁵ See also note 21, *supra*.

²⁶ See also note 21, *supra*.

No.	Proposed Plan	Special Master's Reasons for Criticizing / Disqualifying Plan
12	Voters of PA Plan (Plan offered by “Voters of the Commonwealth of Pennsylvania” amicus participants, Pennsylvania residents who intend to support Republican candidates in the 2022 elections)	<i>No issues identified</i>
13	Citizens Voters Plan (Plan offered by “Citizens Voters” amicus participants)	<ul style="list-style-type: none"> • <u>Communities of Interest</u>: Fails to show that the plan preserved communities of interest (<i>id.</i> at 156 (FF11), 204) • <u>Population Equality</u>: Results in districts with a two-person deviation (<i>id.</i> at 204)²⁷

1. The Special Master Selectively Applied the Neutral Criteria and Partisan Fairness Metrics to Disqualify the Statistically Best-Performing, Most Fair Plans

In disqualifying plans seriatim, the Special Master misapplied specific redistricting criteria (often taking an inconsistent approach with each plan) to critique or eliminate various proposals. Perhaps most notably, although the Special Master initially purported to give “less weight” to plans that split Pittsburgh, *see* Report at 151-52 (FF19), in practice the Special Master appears to have treated splitting Pittsburgh (and Bucks County) as *per se* disqualifying. Report at 195 ¶¶ 30-31. That was error: (1) almost all experts recognized that line-drawing in redistricting plans necessarily involves trade-offs among the various neutral

²⁷ The Citizens Voters Plan was not, however, one of the plans identified as having a two-person deviation in the Findings of Fact section of the Report. Report at 192 ¶ 18. *See also* note 21, *supra*.

criteria; and (2) not one of the other parties or amici sought to justify *every* political subdivision split in their proposed map—indeed, there is no legal requirement to do so. (To take just one example, the Republican Legislative Intervenor-Respondents provided no justification for HB 2146’s split of Washington County, which the Governor’s Plan keeps together.) Further, the Report inconsistently applied partisan fairness metrics to eliminate plans broadly acknowledged to have high marks on partisan fairness, including the Governor’s Plan.

2. The Special Master Recommended Adoption of HB 2146 Despite Its Being One of the Least Compact Plans, with the Worst Marks on Partisan Fairness

Following the Special Master’s process of elimination reflected in the above chart, four plans remained: HB 2146, both Reschenthaler plans, and the Voters of PA Plan. *See* Report at 207-08 ¶¶ 57-59. The Special Master concluded that these plans “are consistent with the Free and Equal Elections Clause of the Pennsylvania Constitution, the aspirations and ideals expressed by that constitutional provision as pronounced by the Court in *LWV II* due to their *compactness, degree of partisan fairness*, and specific development of congressional districts.” *Id.* at 207 ¶ 57 (emphasis added).

In fact, and as further detailed below, HB 2146 is plainly inferior on both compactness and partisan fairness:

- ***HB 2146 consistently scores in the bottom four plans for compactness.*** Its mean Polsby Popper score is 11th out of 13, its mean Schwartz score is 12th out of 13, its mean Reock score is last out of 13, its mean Convex Hull score is 10th out of 13, its mean Population Polygon score is 9th of 13, and its cut edges score is 10th of 13. **Ex. 2**, Duchin Response Report at 2.²⁸
- ***HB 2146 consistently converts close votes to a marked Republican seat advantage, and HB 2146 consistently scores as the most biased plan or one of the three most biased plans*** on the four metrics Dr. Duchin employed to measure the partisan fairness of the proposed plans. Specifically, its total efficiency gap score is 11th out of 13, its total Eguia metric score is 11th out of 13, its total mean-median score is last out of 13, and its total partisan bias score is last out of 13. **Ex. 2**, Duchin Response Report at 4; *see also* **Ex. 1**, Duchin Report at 17 (describing various partisan fairness metrics).²⁹

In support of its recommendation, the Report stated that the plans “proposed by Voters of PA *Amici*, Reschenthaler 1, and HB 2146 comply with the various experts’ universal recognition that the surface areas comprising the district should be in accord with the natural, political, and structural geography of those areas.” Report at 207 ¶ 58. But this conclusion not only misstates the testimony provided at the hearing; it is also untethered to the legal framework set out by *LWV I*. The Report then proceeded to give impermissible deference to HB 2146 based on its

²⁸ The Special Master found Dr. Duchin’s opinion on the compactness of the 13 plans “to be credible.” Report at 147 (FF1-3).

²⁹ Other experts likewise found that HB 2146 performs at the bottom of the pack according to partisan fairness metrics. *See* DeFord Response Report at 15 (reporting HB 2146’s mean-median score as last out of the nine plans submitted by parties, and its average efficiency gap score as 7th out of those nine plans); Caughey Response Report at 22, Table 6 (reporting HB 2146’s mean-median and efficiency gap scores as the worst between it, the Governor’s Plan, and the Senate Democratic Caucus Plans 1 and 2). *See also* § VI(E)(3), *infra*.

passage by both chambers of the General Assembly, in spite of its ultimate veto by the Governor. *Id.* at 213-17. At the conclusion of this chain of reasoning, the Report formally recommended HB 2146 for adoption. *Id.* at 216-17 ¶ 97.

As detailed below, the fundamental flaws in the Report’s analysis fatally compromise its ultimate recommendation.

B. Exception One – The Special Master’s Report Committed Numerous Errors in Its Treatment of Expert Analysis and Testimony

As with its analysis of the proposed redistricting plans, the Report’s assessment of the parties’ expert witnesses included significant missteps. Because the Special Master discredited experts whose testimony was plainly reliable and relied on experts who were unqualified and whose methodology was flawed, the Special Master’s conclusions are fundamentally compromised.

The Special Master’s findings of fact regarding expert testimony are entitled to due consideration but are not binding on this Court. *See Annenberg*, 757 A.2d at 343. For an expert to be qualified, he or she must demonstrate “knowledge, skill, experience, training, or education.” *See* Pa. R. Evid. 702. And although special training or experience is a necessary condition for qualification as an expert witness, it is not sufficient; the expert’s testimony must be also “known to him *because of* his special training and experience.” *Steele v. Shepperd*, 192 A.2d 397, 398 (Pa. 1963) (emphasis added). Further, the expert may only provide testimony

that: “is beyond that possessed by the average layperson”; “will help the trier of fact to understand the evidence or to determine a fact in issue”; and uses a “methodology . . . generally accepted in the relevant field.” Pa. R. Evid. 702; *see also Grady v. Frito-Lay, Inc.*, 839 A.2d 1038, 1043–44 (Pa. 2003) (“[N]ovel scientific evidence is admissible if the methodology that underlies the evidence has general acceptance in the relevant scientific community.” (citing *Commonwealth v. Blasioli*, 713 A.2d 1117, 1119 (Pa. 1998))). “[T]he proponent of expert scientific evidence bears the burden of establishing all of the elements for its admission under Pa.R.E. 702.” *Grady*, 839 A.2d at 1045.

Here, there are significant errors in the Report’s proposed findings about the experts. First, the Report incorrectly rejected two individual conclusions by Dr. Moon Duchin (the Governor’s expert) based on the Special Master’s error of arithmetic in interpreting Dr. Duchin’s calculations—and despite heavily relying on Dr. Duchin’s other conclusions in nearly every other facet of the Report. Second and third, the Report ignored disqualifying flaws in the qualifications and methodologies of two experts: Dr. Michael Barber and Dr. Keith Naughton. And fourth, the Report determined the declaration of Pittsburgh City Controller Michael Lamb was “unpersuasive” because of its purported reliance on “personal” experience, ignoring that Controller Lamb’s declaration was offered based on his *professional* experience as Controller of the City of Pittsburgh. As discussed

below, the Court should give no credit or weight to the testimony of Dr. Barber and Dr. Naughton and should give full credit and weight to the testimony of Dr. Duchin and Controller Lamb.

1. The Report Erred in Discrediting Two Scores Reported by Dr. Duchin Based on an Error of Arithmetic in Comparing the Scores

As a general matter, the Special Master relied heavily on Dr. Duchin's testimony. From the Report's very first conclusion of law, Report at 137 (CL1), the Report credited Dr. Duchin's analysis at least 36 times.³⁰ The Special Master accepted or adopted Dr. Duchin's analysis on the following topics:

- Contiguity, Report at 137 (CL1);
- Political Subdivision Splits, *id.* at 142-43 (FF3-4);
- Compactness, *id.* at 147-48 (FF1-3);
- Communities of Interest, *id.* at 155 (FF6-7);
- Partisan Geography, *id.* at 164 (FF9-10); and
- Protection of Incumbents, *id.* 178-79 (FF1-3).

While generally recognizing Dr. Duchin's careful and credible analysis, the Special Master misunderstood two of Dr. Duchin's calculations of partisan fairness scores. Reviewing Dr. Duchin's "mean-median numbers" against other experts'

³⁰ See Report at 137 (CL1); 141 (FF1-4); 142-43 (FF3-4); 143 (FF12); 144 (FF16); 145 (FF28); 146 (FF31); 147 (FF42); 147-48 (FF1-4); 149 (FF7); 155 (FF6-7); 164 (FF9-10); 178-79 (FF1-3); 182 (FF3); 193 ¶ 22; 196-97 ¶ 38; and 206-07 ¶¶ 50-54.

conclusions, the Special Master concluded that Dr. Duchin's totals were "extreme outliers" and thus "not credible." *Id.* at 172 (FF26). The Special Master similarly rejected Dr. Duchin's "efficiency gap numbers" as "extreme outliers." *Id.* at 175 (FF17). But the undisputed evidence demonstrates that the Special Master misinterpreted Dr. Duchin's calculations.

Other than Dr. Duchin, the experts who conducted mean-median and efficiency gap analyses reported values as an average over the elections that they considered. It appears that the Special Master did not appreciate that Dr. Duchin's mean-median and efficiency gap calculations, as clearly identified in her response report, were presented as sum totals across all elections Dr. Duchin analyzed, rather than per-election average calculations. *See Ex. 2*, Duchin Response Report at 4, Table 3 (identifying "*total* mean-median" and "*total* efficiency gap") (emphasis added). In other words, for each proposed plan that she analyzed, Dr. Duchin *summed* her mean-median calculations based on results from 12 elections, and *summed* her efficiency-gap calculations based on results from 12 elections. As Dr. Duchin explained in her testimony:

A. [I]f you wanted to turn these into something comparable to an individual election, you'd need to divide by 12 because this is the sum over 12 elections.

Q. So if you divide by 12, you get a percent?

A. Yes. Then you can interpret it that way.

Tr. 456:4-12.

Understanding the above, doing the simple arithmetic of dividing by 12 makes clear that Dr. Duchin's calculations were not outliers when compared to other experts' scoring. The following chart shows the Special Master's summary of various experts' mean-median differences, calculated for HB 2146:

Summary of Mean-Median Differences: HB 2146
(Report at 169 (FF14))

Expert	Mean-Median Difference (0 is most fair)
Dr. Barber (per election average)	-.015 (1.5% Republican advantage)
Dr. DeFord (per election average)	-.029 (2.9% Republican advantage)
Dr. Rodden (per election average)	-.024 (2.4% Republican advantage)
<u>Dr. Duchin (sum total)</u>	<u>-.2927</u>

After dividing Dr. Duchin's calculation by 12 to convert her total mean-median calculation into a per-election average, Dr. Duchin's mean median score is well within the other experts' range of scores:

Expert	Mean-Median Difference (0 is most fair)
Dr. Barber (per election average)	-.015 (1.5% Republican advantage)
Dr. DeFord (per election average)	-.029 (2.9% Republican advantage)
Dr. Rodden (per election average)	-.024 (2.4% Republican advantage)
<u>Dr. Duchin (per election average)</u>	<u>-.024 (2.4% Republican advantage)</u>

Repeating the same process using the Special Master's summary of various experts' efficiency-gap scores for HB 2146 yields the same results:

Summary of Efficiency Gap: HB 2146
(Report at 173 (FF7))

Expert	Efficiency Gap (0 is most fair)
Dr. Barber (per election average)	-.025 (2.5% Republican advantage)
Dr. DeFord (per election average)	-.063 (6.3% Republican advantage)
Dr. Caughey (per election average)	-.066 (6.6% Republican advantage)
<u>Dr. Duchin (sum total)</u>	<u>-.8336</u>

Dividing Dr. Duchin’s efficiency gap score by 12 again converts a sum total into a per election average, consistent with the other experts’ calculations:

Expert	Efficiency Gap (0 is most fair)
Dr. Barber (per election average)	-.025 (2.5% Republican advantage)
Dr. DeFord (per election average)	-.063 (6.3% Republican advantage)
Dr. Caughey (per election average)	-.066 (6.6% Republican advantage)
<u>Dr. Duchin (per election average)</u>	<u>-.069 (6.9% Republican advantage)</u>

That simple adjustment (dividing by 12) converts Dr. Duchin’s total mean-median and total efficiency gap calculations to a format that is readily comparable to the other experts’ analyses, belying the Special Master’s conclusion that Dr. Duchin’s mean-median difference and efficiency gap calculations were outliers. Indeed, these charts show that it is *Dr. Barber’s* scores, not Dr. Duchin’s, that are outliers.³¹ *See infra* Section VI(E)(3).

³¹ Among Dr. Duchin, Dr. DeFord, Dr. Rodden, and Dr. Caughey, the small discrepancies are easily accounted for by the slightly different timespan of elections under consideration.

As a final note, the legal conclusions section of the Special Master’s Report fails to acknowledge Dr. Duchin’s use of two other metrics, the total Eguia metric and total partisan bias calculation. The Report’s overview of the “Plans Presented to the Parties and *Amicus* Participants” notes that Dr. Duchin computed the proposed plans’ partisan fairness using each measure. Report at 82-83 (FF153, FF155, FF157), 123. Those calculations, identified above (*see* § V(B)(2) *supra*), resoundingly demonstrate the excellent partisan fairness of the Governor’s Plan. But the Report includes no conclusion addressing the total Eguia metric and total partisan bias calculation. Because no expert rebutted these metrics or calculations, the Court should rely on them as further evidence that the Governor’s Plan epitomizes partisan fairness.

In sum, the Governor respectfully submits that this Court should accept and give significant weight to all of Dr. Duchin’s opinions and testimony.

2. This Court Should Not Rely on the Opinion of Dr. Barber Because He Is Unqualified in the Area in Which He Opined, His Methodology Is Not Generally Accepted, and His Analysis Had Serious Flaws

- (a) Dr. Barber’s Opinions Should Receive Little or No Weight Because He Was Unqualified to Give Them

Dr. Barber’s testimony should garner little if any credit because he offered expert testimony that was beyond the scope of his special training and experience.

Accordingly, the Court should not credit the Special Master's reliance on his opinions.

The Special Master "credit[ed] the opinions and methodology of Dr. Barber" based on his status as "an associate professor of political science at Brigham Young University and faculty fellow at the Center for the Study of Elections and Democracy in Provo, Utah, who received his PhD in political science from Princeton University in 2014 with emphasis in American politics and quantitative methods/statistical analyses." Report at 165 (FF8).

But Dr. Barber was not offered as a general expert on political science or American politics. Rather, as shown by Dr. Barber's opening report, he was "asked by counsel to review [HB 2146] ... and compare it to a set of simulated redistricting plans across a number of factors commonly considered in the redistricting process and in redistricting litigation." Barber Report at 3. To do this, Dr. Barber "implement[ed] a publicly available and peer-reviewed redistricting simulation algorithm to generate 50,000 simulated district maps, each containing 17 congressional districts." *Id.* Dr. Barber then "compare[d] the simulated plans against [HB 2146] using a number of commonly used redistricting criteria to assess whether [HB 2146] is consistent with what one would expect to see in a redistricting plan composed without reference to any racial or partisan considerations." *Id.*

Dr. Barber was not qualified to offer expert testimony on reapportionment and partisan influence in the redistricting process, nor was he qualified to use an algorithm to generate simulated redistricting maps. Dr. Barber has not published “on these particular topics,” and his “academic work has not focused on redistricting.” Tr. 561:17-25. Indeed, although Dr. Barber’s CV boasts publications on many *other* topics, he has never been published “in the area of redistricting” at all, let alone on the subject of “partisan influence in the redistricting process.” *Id.* at 562:4-12. Dr. Barber also agreed that none of his publications “involve[d] simulated redistricting analyses.” *Id.* at 562:13-16. Additionally, Dr. Barber testified that prior to his work in Pennsylvania this year and the very recent North Carolina redistricting trial, Dr. Barber had never used “any algorithm to generate simulated district maps.” *Id.* at 562:25-563:24; *see also id.* at 561:4-12. Nor was Dr. Barber involved in writing or testing the algorithm that he used. *Id.* at 512:15-22, 596:18-22.

“An expert may express his opinion only on matters which are within his or her scientific training and experience.” *Commonwealth v. Crawford*, 364 A.2d 660, 664 (Pa. 1976) (citation omitted); *see also Steele*, 192 A.2d at 398 (affirming disqualification of expert who did not have experience doing the specific task at issue); *Wilson v. Woods*, 163 F.3d 935, 937 (5th Cir. 1999) (affirming disqualification of expert who has “recently shifted his professional emphasis” to

expertise for which he was offered). “The problem in this case is that the testimony was ... beyond the range of the training, knowledge, intelligence, and experience of” Dr. Barber. *Crawford*, 364 A.2d at 664.

This Court would not be alone in concluding that Dr. Barber is unqualified to testify about the topics on which he opined. As noted, Dr. Barber testified that he had used his current methodology in only two other instances, each very recent. Tr. 561:4-12. One of those was to analyze the Pennsylvania state legislative plan under consideration by the Pennsylvania Legislative Reapportionment Commission (“LRC”). *Id.* Earlier this month, Professor Mark Nordenberg, Chair of the LRC, concluded that Dr. Barber was unqualified to use the very same methodology to analyze the state legislative plan: “When I reviewed the resume of the young faculty member called as an expert by the House Republican caucus, ... what really caught my attention is that this academic expert has not published a single academic article in the areas for which his expert testimony was being presented.”³²

³² Statement of Professor Nordenberg at 17-18, Meeting of the Pennsylvania Legislative Reapportionment Commission Approval of a Final Plan (Feb. 4, 2022) (“Nordenberg Statement”) <https://www.redistricting.state.pa.us/resources/Press/2022-02-04%20Chairmans%20Statement.pdf>.

The Court can take judicial notice of Professor Nordenberg’s statement as published on the LRC’s state-run website. *See, e.g., In re Dawkins*, 98 A.3d 755, 759 (Pa. Commw. Ct. 2014) (taking judicial notice of Department of State website); *accord Hill v. Dept. of Corrections*, 64 A.3d 1159, 1165 n.3 (Pa. Commw. Ct. 2013) (taking judicial notice of Department of Corrections website); *Williams v. City of Philadelphia*, 188 A.3d 421, 439 n.5 (Pa. 2018)

Because Dr. Barber’s testimony exceeded his qualifications and experience, his opinions should be afforded little or no credit.

(b) Dr. Barber’s Testimony Should Receive Little or No Weight Because His Methodology Is Not Generally Accepted

Dr. Barber’s testimony was also improper (or should receive little weight) for the independent reason that Dr. Barber’s methodology has not “achieved ‘general acceptance’ in the relevant scientific community.” *Blum ex rel. Blum v. Merrell Dow Pharm., Inc.*, 764 A.2d 1, 2 (Pa. 2000).

As Dr. Barber testified, he used a “sequential Monte Carlo analysis,” which he described as “a very new algorithm,” to create the maps he relied on for the simulation analysis he performed. Tr. 598:21-599:24. Dr. Barber conceded that this Sequential Monte Carlo (“SMC”) analysis methodology is not yet peer-reviewed, *id.* at 599:25-600:10, and that the papers he cited in support of the analysis he used were in fact describing a *different methodology altogether*, the Markov Chain Monte Carlo (“MCMC”) method, *id.* at 596:22-599:24. Because Dr. Barber’s methodology has not been peer-reviewed and has not been adequately tested, it is not generally accepted.

(Wecht, J., dissenting) (taking judicial notice of Philadelphia City Council committee meeting transcripts available on council’s website).

(c) Dr. Barber’s Testimony Should Receive Little or No Weight Because of Significant Flaws in His Analysis

Beyond the fact that Dr. Barber is unqualified, and that his methodology is not generally accepted, Dr. Barber’s execution of his methodology was also fundamentally flawed.

In Dr. Barber’s opening report, he described his “methods” as follows:

To gauge the degree to which the HB2146 plan is a partisan gerrymander, I conduct simulated districting analyses to allow me to produce a large number of districting plans that follow traditional redistricting criteria using small geographic units as building blocks for hypothetical legislative districts. This simulation process ignores all partisan and racial considerations when drawing districts. Instead, the computer simulations are programmed to create districting plans that follow traditional districting goals without paying attention to partisanship, race, the location of incumbent legislators, or other political factors. This set of simulated districts is helpful because it provides a set of maps to which we can compare the HB2146 map that also accounts for the geographic distribution of voters.

Barber Report at 11. Dr. Barber further agreed that to validly compare the proposed redistricting plans with a control set, he would need to create sample maps “under the same conditions” as the proposed plans being compared. Tr. 567:12-25. But as Dr. Barber conceded during his testimony, the map simulations he relied upon in forming his conclusions—*i.e.*, that were the entire basis for his opinions and testimony—were fundamentally dissimilar to the proposed redistricting plans at-issue in this case.

First, Dr. Barber testified that in his simulation set of maps, he allowed no more than one split municipality (Philadelphia), even though every one of the maps before the Court, including the HB 2146 map, splits *at least 16 municipalities*. *Id.* at 570:17-571:18; **Ex. 2**, Duchin Response Report at 2, Table 1.

Further, other experts testified that they were unable to confirm Dr. Barber's analysis. Dr. Duchin, for example, testified that "[s]ome of the expert reports provide you enough detail to see the results election by election.... [F]rom my review, it's my understanding in particular that Doctor Barber's reports do not." Tr. 367:13-22. "[I]t was much harder to audit and spot – check some of Doctor Barber's findings because there's so much averaging happening. But in the instances where I was able to, I found some clear errors of calculation." *Id.* at 368:12-18; *see also id.* at 446:6-447:14. Dr. Duchin explained: "[I]n a few cases where I was able to check an outcome, I think he may be systematically off by a seat [for Democrats or Republicans]. And when he's reporting his averages and making a big difference about 9/8 [Democratic seat advantage] versus 8/9, being off by a seat can really matter." *Id.* at 389:18-25.

Additionally, Dr. Barber's opening report demonstrates that he did not study elections individually, instead only using a blended or averaged election index with a non-standard methodology. Dr. Barber stated that he conducted his analysis using "all statewide [non-judicial] elections conducted between 2012 and 2020." Barber

Report at 15. This dataset consists of four contests from 2020, two from 2018, five from 2016, one from 2014, and five from 2012. *Id.* at 15 n.14; *see also* Tr. 588:5-8. This makes 17 elections in all. Whereas the common methodology in election analysis would be either to study the elections individually or to average them with equal weight, *see* Tr. 365:21-367:5, Dr. Barber instead summed the votes over all the elections, thereby giving far greater weight to the elections from years with a presidential contest, relative to midterm years, *see id.* at 586:19-591:5. Dr. Barber acknowledged this limitation of his methodology in his testimony, *id.*, and his reports cited no published work in political science or data science that uses this unconventional averaging methodology. This flawed methodology is another possible explanation for Dr. Barber's numbers so significantly diverging from those of other experts, (*see* § VI(B)(1), *supra*), and it adds to the many indications that his quantitative conclusions regarding "Democratic leaning seats" should be regarded as highly unreliable.

The Court should afford little weight to Dr. Barber's approach.

(d) Numerous Other Bodies Have Rejected or Discounted
Similar Testimony from Dr. Barber

Other tribunals' skepticism of Dr. Barber's testimony further calls into question the Special Master's wholesale acceptance of his opinions.

Most telling is the criticism of Dr. Barber's methodology by Professor Nordenberg, Chair of the LRC. As noted above, Dr. Barber's analysis for the LRC

is one of the only instances in which he previously used the same algorithm that he used to form his opinions here, (*see* § VI(B)(2)(a) *supra*). Professor Nordenberg stated that in the LRC proceedings, the Commission also heard testimony from Professor Kosuke Imai, the Harvard professor who “actually developed the algorithm used by [Dr. Barber] to analyze” the LRC plan and proposed congressional redistricting plans.³³ According to Professor Nordenberg, when Professor Imai scrutinized Dr. Barber’s conclusions about the LRC plan: “(1) [Professor Imai] could not replicate the results, which raises questions; [and] (2) when [Professor Imai] used the algorithm that he had developed to assess the preliminary plan himself, he found that plan to be less of a statistical outlier than the House Republicans [and Dr. Barber] had claimed[.]”³⁴ This criticism is particularly noteworthy because during Dr. Barber’s testimony in this case, Dr. Barber pointed to Professor Imai’s use of the algorithm in the LRC proceedings to demonstrate its reliability. *See* Tr. 663:8-23.³⁵ Professor Imai’s rejection of Dr. Barber’s findings in the LRC proceedings underscores that, even putting aside his choice of the algorithm itself, Dr. Barber’s use of the algorithm is highly

³³ *See* note 33, *supra*, Nordenberg Statement at 18.

³⁴ *Id.*

³⁵ Due to a scrivener’s error, the transcript of the evidentiary hearing in the Commonwealth Court incorrectly refer to Professor Imai as Khalif Ali; Khalif Ali is one of the amici in this case.

questionable and his results should not be regarded as reliable, especially when they conflict with the findings of the other experts, who are indisputably leaders in this area.

Other courts have reached similar conclusions discounting the reliability of Dr. Barber's analysis. In at least two other cases, Dr. Barber has testified, as he did here, about the effect of various states' political geography on apportionment. *See, e.g., id.* at 506:15-509:9. Most recently, in *Adams v. DeWine*, --- N.E.3d ----, Nos. 2021-1428 and 2021-1449, 2022 WL 129092 (Oh. Jan. 14, 2022), the Ohio Supreme Court rejected Dr. Barber's political geography testimony, holding "that the body of petitioners' various expert evidence significantly outweighs the evidence offered by [Barber and the other respondents' experts] as to both sufficiency and credibility." *Id.* at *11. In other jurisdictions, the criticism of Dr. Barber has been even more pointed. In *Common Cause v. Lewis*, No. 18 CVS 014001, 2019 WL 4569584 (N.C. Super Ct. Sept. 3, 2019), again in the context of testimony about political geography, the court identified a litany of "shortcomings in Dr. Barber's analysis," and, as a result gave "little weight to his testimony." *Id.* at *94-95.³⁶

³⁶ Dr. Barber also provided testimony in *Jones v. DeSantis*, 462 F. Supp. 3d 1196 (N.D. Fla. 2020), on a subject not related to his opinions in this case. (*Jones* was later reversed and vacated on grounds unrelated to Dr. Barber's testimony.) The district court's criticism of Dr. Barber's testimony is scathing. The court stated: "I do not credit the testimony. Indeed, one in

Given the many issues with Dr. Barber’s qualifications and methodology, the Court should not credit his testimony.

3. This Court Should Not Rely on the Opinion of Dr. Keith Naughton Because He Lacks Sufficient Experience, Employed No Methodology, and Is Unfamiliar with the Legal Framework for Assessing Proposed Plans

The Special Master also erred in crediting the opinion of Dr. Keith Naughton, who testified on behalf of the Reschenthaler Intervenor-Respondents.

Dr. Naughton’s opinions lack credibility and should be discounted because (1) he is a partisan political operative with no demonstrated experience in redistricting; (2) his opinion is just that—his own opinion—unsupported by any particular methodology, evidence, data analysis, or authority; and (3) he testified that he has never read this Court’s *League of Women Voters* precedential opinion from 2018, nor did he factor its mandate or guiding principles into the opinions he offered in this case.

First, as to his lack of relevant experience, Dr. Naughton testified that “much of [his] professional career has been dedicated to helping Republican candidates in Pennsylvania win their seats.” Tr. 769:19-770:4; *see also* Report at 94 (FF218). Dr. Naughton conceded that he is not a mathematician; further, he agreed that his CV identifies “no particular experience in redistricting,” and that he has never served

search of a textbook dismantling of unfounded expert testimony would look long and hard to find a better example than the cross-examination of this expert.” *Id.* at 1246-47.

as an expert in redistricting litigation before. Tr. 777:17-778:9, 792:3-5; *see also* Report at 93 (FF215). As to his purported opinions on “the community interests undergirding the Free and Equal Elections Clause,” Report at 94 (FF221), his testimony in no way established sufficient experience with or knowledge about each of the vast number of areas in Pennsylvania he testified about; accordingly, his claim to be able to speak to the desires of those communities should not be credited. *See, e.g.*, Tr. 690:11-22 (asserting only that Dr. Naughton has “been in all 67 counties,” and has “experience in all 67 counties” during his 15 years of running campaigns for Republican candidates).

Second, Dr. Naughton agreed that his report “does not identify any particular methodology” that he used to arrive at his conclusions, and does not “cite any authority or particular evidence for [his] opinions.” Tr. 779:12-21, 813:5-22; *see also* Report at 94 (FF219). Moreover, Dr. Naughton conceded that he provided no quantitative analysis of how any of the proposed plans perform on the neutral redistricting criteria. Tr. 792:13-22, *see also* Report at 94 (FF220). Dr. Naughton further testified that he did not “consider vote dilution in [his] analysis to reach the conclusions [he] reached.” Tr. 861:13-16.

Third, considering his testimony that he has never read even a summary of the *LWV I* opinion, Dr. Naughton certainly did not factor its mandate or guiding principles into his assessment of the maps offered here. Specifically, Dr. Naughton

testified that while he “may have seen a citation to” the *LWV I* decision from 2018, he has never read the opinion or even a summary of it. *Id.* at 816:10-817:24. He further testified that he was not aware, even vaguely, that *LWV I* held that there were such things as unconstitutional gerrymanders, or had invalidated a map on that basis. *Id.* at 822:18-824:10. Even more problematically, in an article entitled “Gerrymandering Merry-Go Round” published in PA Townhall.com on February 14, 2018 (one week after the *LWV I* decision), Dr. Naughton wrote: “Those who shake their fists at gerrymandering and clog the courts with their lawsuits are really announcing their own rigidity and intellectual bankruptcy to the world.”³⁷ Tr. 818:19-821:3.

Puzzlingly, despite these severe credibility issues, the Special Master appeared to give Dr. Naughton *special* credit based on his status as the sole non-mathematician or data scientist who testified at the hearing, finding that he provided a “unique” perspective. *See* Report at 94, FF220-21, FF225 (while Dr. Naughton “provided no quantitative analysis of how any of the proposed plans perform on the neutral redistricting criteria,” his testimony was “unique in this regard as no other expert was offered to opine on the community interests

³⁷ The existence and timing of this article call into question the veracity of Dr. Naughton’s testimony that he was wholly ignorant of *LWV I*. *See* Keith Naughton, *Gerrymandering Merry-Go-Round*, PA TownHall.com (Feb. 14, 2018), <https://www.patownhall.com/gerrymandering-merry-go-round/>.

undergirding the Free and Equal Elections Clause”). As explained above, however, his opinions lack any credible foundation—they are nothing more than *ipse dixit*—and should carry little, if any, weight with this Court. *Cf. Gen. Elec. Co. v. Joiner*, 522 U.S. 136, (1997) (“[N]othing in ... the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert.”); *accord Walsh Est. of Walsh v. BASF Corp.*, 234 A.3d 446, 466 (Pa. 2020) (“[W]e can agree with the United States Supreme Court that, in assessing the admissibility of an expert’s testimony, a court should not turn a blind eye when an expert connects his method to his conclusion only by the because-I-said-so of his ‘*ipse dixit*[.]’”).

4. The Special Master Erred by Discrediting the Report of Michael Lamb, Pittsburgh City Controller

The Special Master further erred in finding that the Declaration of Michael Lamb was not “particularly useful or credible.” Report at 150 (FF13).

At the hearing, the Senate Democratic Intervenors submitted into evidence a report by Michael Lamb, the Pittsburgh City Controller. *See Assessment of Reapportionment Plan as Submitted by Pennsylvania Senate Democratic Caucus as it relates to Pittsburgh and its Southern and Western Neighborhoods* (Jan. 24, 2022) (the “Lamb Report”). Mr. Lamb’s Report sets out his extensive professional and personal background and involvement in the Pittsburgh community, establishing that he (1) is currently the elected City Controller of Pittsburgh,

serving in his fourth term; (2) has lived in the south hills of Pittsburgh his whole life; (3) was previously elected county wide as the Allegheny County Prothonotary; and (4) previously worked in Pittsburgh City Council. *Id.* at 1. Mr. Lamb opines that splitting Pittsburgh into two different congressional districts is the best solution for long-established communities, citing “clear dissimilarities among the[] southern and western communities of interest and the rest of Pittsburgh.” *Id.* at 1-2.

Yet the Special Master rejected Mr. Lamb’s opinion in a single paragraph, finding his declaration “unpersuasive because it is based on Mr. Lamb’s life and subjective **personal** experiences, which the Court does not find particularly useful or credible.” Report at 150 (FF13) (emphasis in original). The Special Master further stated that Mr. Lamb “was not presented as an expert and his declaration does not address why it is absolutely necessary to split the City of Pittsburgh to achieve population equality in any congressional district.”³⁸ *Id.* (FF13).

Inconsistently, however, the Special Master found Dr. Naughton’s testimony regarding communities of interest to be “credible” based on his “professional **and personal** experience.” *Id.* at 154 (FF3) (emphasis added). Mr. Lamb’s statements, which are undoubtedly based on both his personal and professional experience as

³⁸ As is explained in Section VI(C)(3)(b), *infra*, there is simply no requirement that each proposed plan address, for each political subdivision split, why it was “absolutely necessary” to do so to achieve population equality.

the elected Pittsburgh City Controller, are certainly more credible than Dr. Naughton's, given that Mr. Lamb opines exclusively about Pittsburgh communities, and his constituents consist *entirely* of Pittsburgh residents from *both* political parties as well as those unaffiliated with any party. Accordingly, the Court should credit the opinions provided by Mr. Lamb in the Lamb Report.

C. Exception Two – The Special Master Disqualified the Maps Least Likely to Cause Systematic Vote Dilution Due to a Fundamental Misunderstanding of the Free and Equal Elections Clause

1. District Maps Should Be Fair, Meaning That They Should Provide Voters an Equal Opportunity to Elect the Representatives of Their Choice, and They Should Not Entrench a Structural Partisan Advantage

The Special Master improperly placed a thumb on the scales in favor of plans that deliver a partisan advantage to one political party, out of misguided veneration of blindly drawn maps, couched as deference to Pennsylvania's purported "political geography." In assessing partisan fairness, the Report stressed the Special Master's view that the "natural state of political voting behavior and tendencies in the entirety of the Commonwealth" benefits Republican candidates. Report at 196-97 ¶ 39. The Report concluded that because the resultant "most typical outcome" in randomly drawn redistricting plans in Pennsylvania is Republican advantage, *id.* at 84 (FF166), any proposed plan that pursued partisan fairness in the face of Pennsylvania's "natural and undisputed Republican tilt" would be engaged in "a subspecies of unfair partisan gerrymandering." *Id.* at 197 ¶

40. Consequently, the Report gave less weight to any proposed redistricting plan that yielded what the Special Master called “partisan advantage to the Democratic Party” according to the plan’s mean-median scores or efficiency gap scores. *Id.* at 197 ¶¶ 41-42.

This approach was victim to, as Dr. Duchin testified, “a frequent conceptual mistake that people make with ensemble analysis, and that mistake is that typical is best. If you were drawing plans and you looked at a range of compactness scores, you wouldn’t want a typical compactness score, you’d want a good one. And the same princi[ple] is operative here” with partisan fairness.” Tr. 379:10-19. Partisan fairness does not extol typicality; it ensures that elected representatives are responsive and accountable, and that all voters have an equal opportunity, to the greatest degree possible, to elect the candidates of their choice. *See* Tr. 449:21-450:16.

Even Dr. Barber, the expert for the Republican Legislative Intervenor-Respondents, conceded that a *fairer* map is better than a *typical* map. Posed with a colorful hypothetical in which “a million monkeys in front of typewriters...banged out two redistricting plans[,]” Dr. Barber was given a choice: *Either* (1) a plan that “looks a whole lot like the median plan, the middle plan, the average plan in [Dr. Barber’s] simulation. So it’s completely unbiased in that first sense, but it’s very biased in the second sense in that it’ll result in one party’s voters getting a lot

fewer seats out of their votes than the other”; *or* (2) a plan that “does the opposite. They get rid of the bias that harms the voter, so the voters are treated equally but they’ve created an outlier compared to [Dr. Barber’s] simulated maps.” *Id.* 582:17-584:01, *Dr. Barber, tellingly, chose the second, fairer map*: “[H]olding all other factors equal, and you have the choice between these two plans, then I think you could pick the one that was less biased.” *Id.* at 585:20-24.

Nothing about Dr. Barber’s admission that typical is not always best should be surprising. The Special Master’s charge, as put succinctly by Dr. Duchin, was to “choose an excellent plan.” *Id.* at 450:16. In reapportionment, as in literature,³⁹ fine art,⁴⁰ and science,⁴¹ there is no rule “that requires that we pick the most typical.” Tr. 450:14-15. Under mean-median scores, efficiency gap scores, and other comparable partisan fairness metrics, an ideally “fair” plan—a plan that provides no structural advantage to either party—will receive a score of zero. *Id.* at 369:3-371:24; *see also* **Ex. 1**, Duchin Report at 17 (“zero is ideal”). Therefore, when analyzing partisan fairness metrics, the Special Master erred in focusing solely on

³⁹ *See Commonwealth v. Neely*, 561 A.2d 1, 2 (Pa. 1989) (quoting Shakespeare and Cervantes).

⁴⁰ *See Commonwealth v. Barnes Found.*, 159 A.2d 500, 501 (Pa. 1960) (identifying the works of “Renoir, Cezanne, Manet, Degas, Seurat, Rousseau, Picasso, [and] Matisse” as “treasures”).

⁴¹ *See Potter Title & Tr. Co. v. Knox*, 113 A.2d 549, 554 (Pa. 1955) (Musmanno, J., dissenting) (describing “the monumental truths” of “Sir Isaac Newton and Nicholas Copernicus”).

whether the proposed plans have positive or negative scores (which the Special Master equated with Republican and Democratic advantage). Instead, to determine a proposed plan's fairness, the key is to assess the magnitude of each score, *i.e.*, how near it comes to a score of zero. Because the Special Master did not properly apply partisan fairness metrics, this Court should not adopt the Report's partisan fairness findings or conclusions.

2. The Special Master Overlooked that the Neutral Redistricting Criteria Are a Means to Ensuring Free and Equal Elections

In applying the *LWV I* neutral criteria, the Special Master employed an overly rigid approach that appears, at least at times, to have been more a process of elimination than an application of the principles animating the criteria, *i.e.*, ensuring Free and Equal Elections and avoiding “unfairly dilut[ing] the power of a particular group’s vote for a congressional representative.” 178 A.3d at 817. For example, the Report’s analysis selectively focused on individual criteria, rather than holistically assessing how the plans fared across *all* criteria. *See generally* Report at 137-61. This approach risked allowing individual metrics to dominate, while overlooking that, as the parties’ experts broadly agreed, reapportionment and line-drawing necessarily entail trade-offs.⁴² At bottom, the Report lost sight of the

⁴² *See* Tr. 94:25-95:13, 106:1-6 (Rodden); *id.* at 211:11-212:9, 215:17-216:9 (DeFord); *id.* at 338:6-18, 339:12-342:11 (Duchin); *id.* at 627:13-628:13 (Barber); *id.* at 764:25-765:13, 829:19-830:3 (Naughton).

fundamental purpose of the neutral criteria, which is to help ensure that equal opportunity is provided to individuals to translate their political preferences into representation. The true shibboleth of “Free and Equal Elections” is each voter’s “equally effective power to select the representative of his or her choice.” *LWV I*, 178 A.3d at 814.

3. The Special Master Improperly Applied the Criterion of Respecting Political Subdivision Boundaries

In particular, the Special Master committed a significant error by improperly elevating one of the *LWV I* neutral criteria—the principle of keeping political subdivisions together—over the others, and in an unmistakably selective way. Most notably, without justification or support in the law, the Special Master disqualified five plans, including the Governor’s Plan, for dividing the city of Pittsburgh across two districts. *See* Report at 194-95 ¶¶ 26-30. (The Special Master also disqualified the Governor’s Plan for dividing Bucks County across two districts, *id.* ¶ 31, which is discussed further below in Section VI(D)(1).)

The Special Master faulted the plans that proposed to divide Pittsburgh for (1) “fail[ing] to present any credible evidence as to why it was ‘necessary’ to split the second largest city in Pennsylvania in order to achieve equal population”; and (2) fail[ing to] preserve the shared interest of the communities in the Pittsburgh area and the distinctive cultural fabric that has been shaped and formed within the city’s limits.” Report at 194-95 ¶¶ 27, 29, 30. Inconsistently, the Special Master

applied stringent and legally unfounded standards to these particular splits without imposing the same requirements on *any split in any of other proposed plans*— including any of the 15 county splits or 19 municipality splits in HB 2146.

- (a) Contrary to the Implication of the Special Master’s Report, Redistricting Plans Are Not Required to Justify Every Split and Cannot Be Required to Preserve Every Community of Interest

There is simply no legal basis for the Special Master’s decision to disqualify proposed plans for dividing a specific alleged community of interest or for failing to expressly justify each proposed split with a community-of-interest analysis. As almost all testifying experts recognized, there are inherent trade-offs involved among the traditional criteria when drawing a map, countless ways to satisfy the neutral redistricting criteria in a proposed plan, and no possibility of a “perfect” or “best” map:

- **Dr. Rodden** testified that “in general the idea is to not split these jurisdictions, but there are trade-offs between different jurisdictions,” and noted “an example of a place where there’s a trade-off where an redistricting expert has to face, between – between splits in different places and also involving compactness.” Tr. 94:25-95:3, 106:1-6.
- **Dr. DeFord** testified that “in redistricting there’s lots of examples of potential trade-offs between the metrics and between the criteria. And in a situation like this one where many of the plans are preserving lots of political boundaries, the compactness measures that are measuring sort of the external perimeters of those boundaries are to a large extent sort of controlled by the municipal boundaries themselves, because they [con]form the outer boundaries of the districts. And so given that, there can be some tension between these, depending on the shapes of the municipal boundaries

that are preserved.” *Id.* at 215:17-216:9; *see also* Report at 70 (FF81).

- **Dr. Duchin** testified: “We’ve heard people talking today about absolute[] minimization of these numbers, and to that I would just remind you it’s minimization in view of ... the other properties and criteria that must be maintained. So everyone who thinks about these numbers understands that there are trade-offs, and that perhaps if you split one more county you can get a better compactness score and so on. So these all reflect decisions about those trade offs.” Tr. 338:6-18; *see also* Report at 78 (FF131).

Indeed, on this point, even Dr. Barber and Dr. Naughton agreed with the consensus. *See* Tr. 627:13-628:13; *see also* Report at 93 (FF213); Tr. 765:10-766:22, 829:19-830:3; *see also* Report at 97 (FF236).

Relatedly, no individual neutral redistricting criterion, such as respecting political subdivision boundaries—let alone the preservation of one particular community of interest—should be pursued at all costs, no matter the effect on the plan as a whole. As Dr. Duchin testified, splitting a particular political subdivision among congressional districts can sometimes be viewed as a positive factor by the relevant communities. She provided the example of a New York redistricting plan that made a change to keep Buffalo together in one congressional district, which was criticized based on the fact that Buffalo would therefore lose a representative. *See* Tr. 339:15-341:21.

Moreover, no party or amicus in this case satisfies the “justify all splits” standard fashioned by the Special Master. For example, HB 2146 splits

Washington County, without explanation or justification (something that Governor Wolf’s Plan does not do). As the Governor explained, his proposed District 13

combines the major energy-producing counties of Washington, Greene, Fayette, Somerset and Westmoreland into one compact district in the southwest with their shared industries of gas exploration and mining. The district unites businesses and families of the Mon Valley communities—with common interests and history with communities to the east and west.

Gov. Opening Br. at 16 (Jan. 24, 2022). HB 2146, by splitting Washington County and combining it with Beaver County and Allegheny County, separated Washington County’s community of interest and forced it together with less similar communities, ignoring the “clear line of demarcation between Beaver County and Washington County” that the Governor identified when reviewing public submissions in preparing his proposed map. *Id.* at 17.

(b) The Special Master Misconstrued the Direction to Avoid Splits Except Where “Necessary to Ensure Equality of Population”

The Special Master also erred by misconstruing—and then inconsistently applying—language from *LWV I* cautioning against “divid[ing] any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population.” *LWV I*, 178 A.3d at 816-17; *see also* Report at 24. Under the Special Master’s interpretation, the only relevant criteria would be equality of population and the number of split divisions, and the only permissible maps would be those that achieved the absolute mathematical minimum of splits consistent with

population equality. But under that view, none of the proposed plans in this case—including HB 2146—is compliant (nor would be the 2018 Remedial Plan adopted by this Court in *LWV II*).

Illustrating this very point is the report of Dr. John H. Memmi, which was submitted by the Senate Republican Legislative Intervenor-Respondents. The Special Master cited Dr. Memmi’s report for the proposition that “splits are only necessary when the total population of a [political subdivision] is greater than one district.” Report at 103 (FF271) (citing Memmi Report at 3). The implication of that proposition, as reflected in Dr. Memmi’s report, is that the only political subdivisions that may be split in a proposed plan are Philadelphia, Allegheny, and Montgomery Counties (as the only political subdivisions with populations larger than the total population of Pennsylvania divided equally into 17 districts). Memmi Report at 3. But HB 2146 splits 15 counties out of 67, and 19 municipalities out of out of 2,572 (including 3 split by county lines). *See* Memmi Report at 3; *see also* **Ex. 1**, Duchin Report at 8, Table 2. According to the Special Master’s reasoning, the majority of those splits are not “necessary to ensure equal population.” Indeed, the Republican Legislative Intervenor-Respondents made no such assertions of necessity.

In fact, each map proponent in this case understood the legal framework regarding splits in essentially the same way; each endeavored to keep split

numbers low while balancing splits against the other criteria. Disregarding the propriety of that approach, the Special Master adopted an overly rigid interpretation of *LWV I*'s "except where necessary" language and then employed that interpretation inconsistently, using it to disqualify only the maps that split Pittsburgh or Bucks County. But, as described above, HB 2146 splits Washington County and the Governor's Plan does not; this demonstrates that splitting Washington County is not necessary to achieve equal population.

On all fronts, the Special Master misapplied the "maintaining political subdivisions" criterion, exalting it over the other neutral criteria and haphazardly imposing a burden of justification for some, but not all, splits, none of which finds support in the Pennsylvania Constitution or *LWV I*.

D. Exception Three – The Special Master Improperly Disqualified the Governor's Plan

1. As With Its Treatment of Pittsburgh, the Special Master's Report Erred in Criticizing the Governor's Plan for Splitting Bucks County

The Special Master erred in disqualifying the Governor's Map based on the fact that it divides Bucks County between two congressional districts. *See* Report at 195 ¶ 31, 200. First, this was error for all the same reasons discussed above regarding Pittsburgh (*see* § VI(C)(3), *supra*). Second, even assuming that the Governor *was* required to specifically justify each decision regarding political subdivision splits (though he was not), he did so as to Bucks County. The

Governor explained the line-drawing decisions evidenced in his map, including regarding Bucks County, and the efforts made to preserve relevant communities of interest:

District 1 — Greater Bucks County: Includes all communities of Bucks County outside of those immediately adjacent to Northeast Philadelphia and connects them with similar communities in Montgomery County. These communities include similar economic traits and are experiencing increased population. This district in Montgomery County has grown slightly to adjust for needed population in Bucks County. Numerous comments on the Redistricting Public Comment Portal noted that Bucks County is a swing district and that it should continue to maintain its competitiveness. The minimal shifts in the boundaries of District 1 will continue to make it a competitive district going forward.

Gov. Wolf’s Brief in Support of Proposed 17-District Congressional Redistricting Plan at 12-13 (Jan. 24, 2022). Yet rather than credit the Governor’s reasoned decision-making, the Special Master relied *only* on Dr. Naughton’s conclusory and unsupported statements that Bucks County should be entirely within one district to conclude that the Governor’s Plan embodied improper partisan motivations. *See, e.g.,* Report at 157-58 (FF 15-16) (quoting Dr. Naughton’s opinion that “[t]he right Bucks County district would have Bucks in its entirety”). The Special Master’s Report did not adequately justify its decision to afford “great weight” to Dr. Naughton’s baseless opinions about Bucks County (*see* Report at 195 ¶ 31) while failing to acknowledge the reasoned explanation offered by the Governor.

2. There Is No Evidence Supporting the Special Master’s Finding that the Governor’s Plan Splits Pittsburgh “Solely for Partisan Gain”

While the Special Master disqualified five of the 13 proposed plans for splitting Pittsburgh, the Special Master singled out the Governor’s Plan as the only proposed plan it found to split Pittsburgh “*solely for partisan gain* by creating another Democratic district.” Report at 200 (emphasis added).⁴³ But such a finding as to the subjective motivations behind this particular decision made in drawing the Governor’s Plan lacks any evidentiary support in the record, and should not be credited by this Court.

The Governor has explained the rationales behind the make-up of the various districts proposed in the plan, including how they minimize splits while preserving communities of interest. *See* Gov. Wolf’s Brief in Support of Proposed Plan at 12-18 (Jan. 24, 2022). Regarding Districts 16 and 17 (which each contain a portion of Pittsburgh), the Governor noted, for example, that (1) proposed District 16 is “[r]ich with a history in manufacturing along the Ohio River and throughout the region” and is “transforming with smaller manufacturing and service

⁴³ *Compare with id.* at 201 (concluding the Draw the Lines Plan split Pittsburgh “without any convincing or credible expert explanation as to why this was absolutely necessary to achieve population equality or to refute other expert opinions that the City of Pittsburgh does not need to be split in order to achieve population equality between districts”) and *id.* at 202 (concluding the Senate Democratic Caucus Plans split Pittsburgh “in order to create another Democratic congressional district *which appears to be* solely for partisan gain by creating another Democratic district”) (emphasis added).

industries”; and (2) proposed District 17 “recognizes the decades-long economic connection of these communities and the area’s evolving technology sector along with strong educational and medical institutions.” *Id.* at 17-18.

Pittsburgh City Controller Lamb’s Report gives further credence to the decision of the Governor’s Plan to split Pittsburgh. The Lamb Report demonstrates that there are *various* communities of interest within Pittsburgh, and that splitting Pittsburgh into two districts is the best solution for long-established communities due to “clear dissimilarities among the[] southern and western communities of interest and the rest of Pittsburgh.” Lamb Report at 1-2. (As explained above, the Special Master erred in finding this declaration not to be “useful or credible,” (*see* § VI(B)(4), *supra*.)

It appears that the sole basis for the Special Master’s “finding” regarding the Governor’s Plan’s treatment of Pittsburgh is the unsupported opinions of Dr. Barber and Dr. Naughton, the former opining, without any support, that Pittsburgh need not and should not be divided (and that any decision otherwise is suspect). *See* Report at 91 (FF 205-06) (citing Barber testimony and Barber Rebuttal Report at 8, Table 1, 23); *see* Barber Rebuttal Report at 22-23 (“Six of the plans . . . subvert the non-partisan criteria to avoid municipal splits unnecessarily by intentionally dividing Pittsburgh for partisan gain.”); Report at 155 (FF5) (crediting Dr. Naughton’s opinion that Pittsburgh should be in one congressional

district). Notably, Dr. Barber undermined these very opinions that Pittsburgh should not be split by acknowledging that keeping Pittsburgh whole could be viewed as “packing . . . clearly gerrymandering.” Tr. 627:13-628-22 (further acknowledging that “these cracking and packing concepts can occur intentionally or by accident,” and “with ill-will or not ill-will”). For these reasons, and as set forth above, the Special Master erred in crediting Dr. Barber’s and Dr. Naughton’s unsupported (and self-contradictory) statements—without acknowledging the Governor’s explanations to the contrary—as grounds for its finding that the Governor’s Plan divides Pittsburgh “solely for partisan gain.” Report at 200.

3. The Special Master Erred in Determining that the Governor’s Plan’s Compactness Was “Compromised”

The Special Master erred in concluding that, because Dr. Duchin acknowledged that the erratic municipal boundary of Pittsburgh might lower the compactness of a whole-Pittsburgh district, the Governor’s Plan’s compactness scores were thus “compromise[d]” and “not comparable to other maps” that did not split Pittsburgh. *See* Report at 148 (FF4, CL). As previously noted, (*see supra* § VI(C)(3)(a)), all experts in this action recognized that map-drawing inherently involves trade-offs among the redistricting criteria, including between the criteria

of minimizing political subdivision splits and maintaining compactness.⁴⁴ And that was all that Dr. Duchin acknowledged—that the splitting of Pittsburgh was “one of the many factors that contribute[d] to” the high compactness score of the Governor’s Plan. Tr. 436:3-9. The Special Master erred in finding that the Governor’s Plan’s high compactness scores were “compromised” simply because they were, of course, affected by the countless trade-offs among the traditional redistricting criteria necessarily involved in any map-drawing process.

E. Exception Four – The Special Master Erred in Recommending the HB 2146 Plan, and This Court Should Not Adopt It

1. HB 2146 Should Not Have Been and Is Not Entitled to Any Presumption of Reasonableness or Legitimacy

Although the Special Master’s Report initially purported to reject the Republican Legislative Intervenor-Respondents’ request that the Special Master “provide some degree of presumptive deference to HB 2146,” Report at 208 ¶ 61, the Report ultimately treated HB 2146 as “presumptively reasonable and legitimate,” *id.* at 213 ¶¶ 89-90. This was clear error.

First, the conclusion that HB 2146 is presumptively reasonable was premised on incorrect findings of fact. The Report mischaracterizes Governor Wolf’s veto of HB 2146 as lacking “any cognizable legal objection to the

⁴⁴ See Tr. 94:25-95:13, 106:1-6 (Rodden); *id.* at 211:11-212:9, 215:17-216:9 (DeFord); *id.* at 338:6-18, 339:12-342:11 (Duchin); *id.* at 627:13-628:13 (Barber); *id.* at 764:25-765:13, 829:19-830:3 (Naughton).

constitutionality of the congressional districts contained therein.” *Id.* at 213 ¶ 91.

But as the Governor explained, HB 2146 was fundamentally unfair to

Pennsylvania voters:

This legislation fails the test of fundamental fairness. The result of a partisan political process, HB 2146 does not deliver on the Pennsylvania Constitution’s guarantee of free and equal elections. The people of Pennsylvania deserve a fair election map that promotes accountability and responsiveness to voters and is drawn in an open and honest way. Instead, HB 2146 adopts a map selected by politicians to take advantage of the process and choose their own voters. This directly contravenes a “core principle of our republican form of government” identified by the Pennsylvania Supreme Court: “that the voters should choose their representatives, not the other way around.” *League of Women Voters v. Commonwealth*, 178 A.3d 737, 740-41 (Pa. 2018).⁴⁵

As shown below, (*see infra* § VI(E)(2)-(3)), the Governor’s objections to HB 2146 were well-founded. Not only is HB 2146 an unfair redistricting plan, it is the one of the most unfair plans—if not *the most* unfair plan—of all the plans submitted to this Court, (*see infra* § (VI)(E)(3)). Accordingly, as a factual matter, it was unreasonable for the Special Master to disregard the Governor’s veto to apply a presumption in favor of HB 2146.

⁴⁵ Veto Message, Office of the Governor of the Commonwealth of Pennsylvania (Jan. 26, 2022), <https://www.governor.pa.gov/wp-content/uploads/2022/01/20220126-HB-2146-Veto-Message.pdf>; *accord, e.g.*, Letter from Governor Tom Wolf to Speaker and Majority Leader of Pennsylvania House of Representatives (Dec. 28, 2021), <https://www.governor.pa.gov/wp-content/uploads/2021/12/12.28.21-TWW-Cutler-Benninghoff-HB-2146-Final.pdf>.

Second, as a matter of law, state supreme courts and the U.S. Supreme Court have flatly rejected the presumption applied by the Special Master.

Most importantly, the U.S. Supreme Court has stated that a legislature's vetoed reapportionment plan does not warrant anything more than "thoughtful consideration[.]" *Sixty-Seventh Minnesota State Sen. v. Beens*, 406 U.S. 187, 197 (1972) (distinguishing between "the *State's* policy" on districting, on the one hand, and the legislature's vetoed reapportionment plan, on the other hand, which "represented *only* the legislature's proffered current policy." (emphasis added)).

Just months ago, in November 2021, the Wisconsin Supreme Court also expressly dismissed the argument that vetoed reapportionment plans receive special weight or consideration: "The legislature asks us to use the maps it passed during this redistricting cycle as a starting point, characterizing them as an expression of 'the policies and preferences of the State[.]' The legislature's argument fails because the recent legislation did not survive the political process." *Johnson v. Wisconsin Elections Commn.*, 967 N.W.2d 469, 490 n.8 (Wis. 2021) (internal citation omitted). Other state high courts agree. *See, e.g., Hartung v. Bradbury*, 33 P.3d 972, 979 (Or. 2001) (rejecting argument that Oregon Secretary of State, who as matter of statute conducts reapportionment after impasse between legislature and governor, "should have deferred to the Legislative Assembly's plan of reapportionment, even though the Governor vetoed that plan"); *Wilson v. Eu*,

823 P.2d 545, 576 (Cal. 1992) (rejecting argument that “special deference be given to the various plans passed by the Legislature but vetoed by the Governor”).

Additionally, *Carstens v. Lamm*, 543 F. Supp. 68 (D. Colo. 1982), which factored heavily in Judge Craig’s Findings, Recommended Decision, and Form of Order in *Mellow*,⁴⁶ refused to employ the approach followed by the Special Master here:

Both the Governor and the General Assembly are integral and indispensable parts of the legislative process. To take the [Special Master’s] position to its logical conclusion, a partisan state legislature could simply pass any bill it wanted, wait for a gubernatorial veto, file suit on the issue and have the Court defer to their proposal. This Court will not override the Governor’s veto when the General Assembly did not do so.

543 F. Supp. at 79; accord *O’Sullivan v. Brier*, 540 F. Supp. 1200, 1202 (D. Kan. 1982) (“[W]e are not required to defer to any plan that has not survived the full legislative process to become law.” (citing *Beens*, 406 U.S. at 197)).

Without citation or reference to the overwhelming weight of authority, the Special Master relied primarily on *Upham v. Seamon*, 456 U.S. 37 (1982), which is easily distinguishable and does not support the proposition espoused by the Special Master. In *Upham*, the U.S. Supreme Court reviewed a three-judge panel’s decision invalidating a *lawfully enacted* redistricting plan and drafting its own plan. *Id.* at 38. Thus, *Upham*, unlike this case, involved a *fully-enacted plan* that

⁴⁶ See *Mellow*, 607 A.2d at 208 n.1; see also *id.* at 215, 219.

was *not vetoed by the Governor*. *See id.* (“Senate Bill No. 1 (SB1), was enacted on August 14, 1981.”). Contrary to the conclusion of the Special Master, vetoed HB 2146 plainly does not represent “the policies and preference” of the Commonwealth of Pennsylvania. Report at 214-16 ¶¶ 93-97.

Indeed, where, as in Pennsylvania, a governor has the authority under the state constitution to veto redistricting plans, the U.S. Supreme Court has concluded that, under the U.S. Constitution’s Elections Clause, “legislative action in districting the state for congressional elections shall be subject to the veto power of the Governor as in other cases of the exercise of the lawmaking power.” *Smiley v. Holm*, 285 U.S. 355, 373 (1932). The Court reaffirmed *Smiley* in *Arizona State Legis. v. Arizona Independent Redistricting Commission*, 576 U.S. 787 (2015): “[T]he Legislature’ [as that term is used in the Elections Clause] comprises ... the Governor’s veto in the context of regulating congressional elections.” *Id.* at 808 (quoting *Smiley*, 285 U.S. at 373).

Accordingly, HB 2146 “cannot be sustained by virtue of any authority conferred by the Federal Constitution upon the Legislature ... to create congressional districts independently of the participation of the Governor as required by the state Constitution with respect to the enactment of laws.” *Smiley*,

285 U.S. 373. As a matter of law, HB 2146 was not and is not entitled to any presumption of reasonableness or legitimacy.⁴⁷

2. The Special Master Should Have Eliminated HB 2146 Based on the Traditional Redistricting Principles

The Special Master should have removed HB 2146 from consideration when applying the traditional redistricting principles, because it is literally dominated by other maps, as shown in Table 1 below:

Table 1: Comparison of compactness and splitting metrics.

name	mean Polsby	mean Schwartz	mean Reock	mean ConvHull	mean PopPoly	cut edges	split counties	county pieces	split munis	muni pieces
GovPlan	0.3808	1.6534	0.4313	0.8257	0.7834	5185	16	35	18	37
CitizensPlan	0.3785	1.6625	0.4512	0.8120	0.7725	5237	14	30	16	33
HB-2146	0.3212	1.8197	0.4087	0.7987	0.7524	5907	15	33	16	34
Carter	0.3214	1.8103	0.4499	0.7922	0.7416	5926	14	31	20	41
Gressman/GMS	0.3478	1.7351	0.4261	0.8176	0.7582	5582	15	32	16	33
HouseDemCaucus	0.2787	1.9693	0.4286	0.7717	0.7205	6853	16	34	18	37
SenateDemCaucus1	0.3147	1.8144	0.4137	0.7918	0.7519	6047	17	36	19	39
SenateDemCaucus2	0.3346	1.7478	0.4146	0.8153	0.7601	5505	16	34	16	33
Resenthaler1	0.3629	1.6859	0.4347	0.8238	0.7737	5090	13	29	16	33
Resenthaler2	0.3524	1.7127	0.4231	0.8161	0.7658	5237	13	29	16	33
CitizenVoters	0.3490	1.7133	0.4412	0.8082	0.7575	5173	14	31	16	33
VotersOfPA	0.3965	1.6069	0.4697	0.8209	0.7681	5052	15	31	18	37
KhalifAli	0.3523	1.7204	0.4448	0.8111	0.7456	5266	16	35	18	37

Ex. 2, Duchin Response Report at 2, Table 1. HB 2146 is dominated (*i.e.*, worse or equal on all metrics measuring compactness and splitting) when compared, for example, to the Citizens/Draw the Lines Plan. That alone should have been sufficient to remove HB 2146 from consideration.

⁴⁷ To the extent the Court finds that HB 2146 is entitled to some deference, the Governor’s Plan—submitted by a coequal branch of government that is an equally “integral and indispensable part[] of the legislative process”—is entitled to the same deference. *Carstens*, 543 F. Supp. at 79 (explaining that the map passed by the legislative branch “cannot represent current state policy any more than the Governor’s proposal,” and that the Court “regarded the plans submitted by both the Legislature and the Governor as ‘proffered current [state] policy’”).

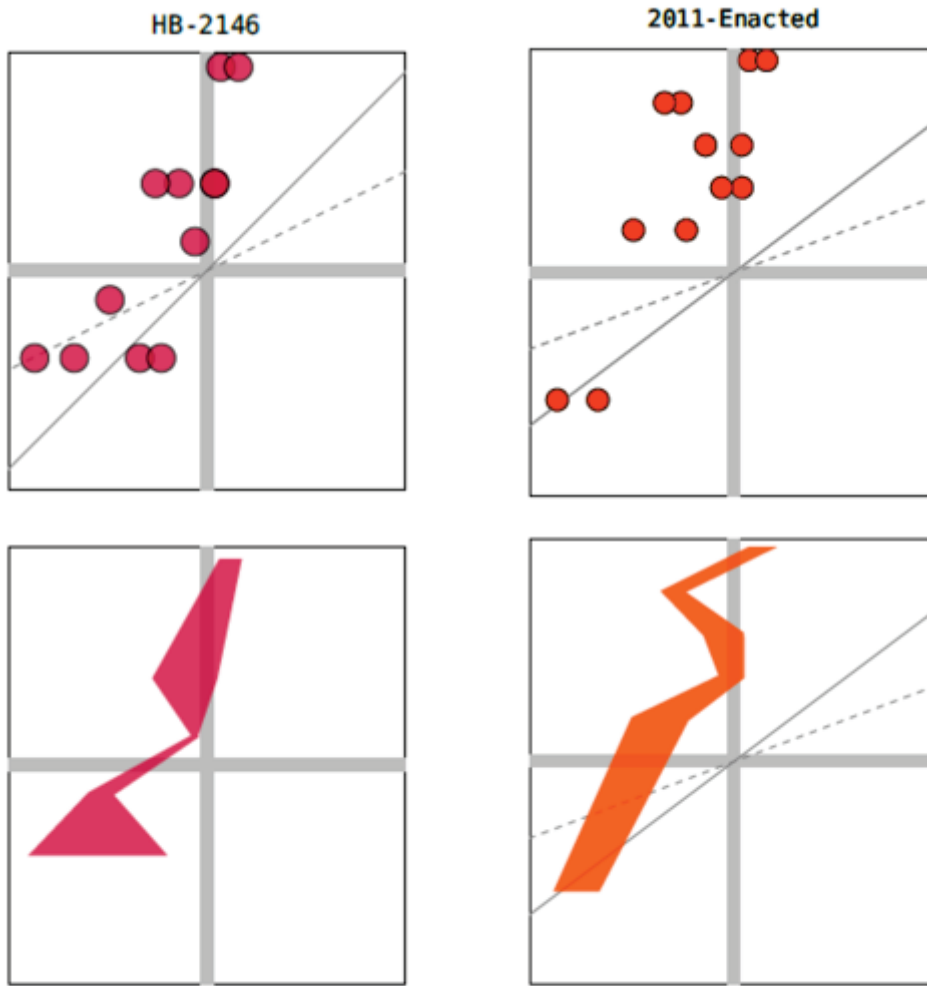
3. The Special Master Erred in Finding That HB 2146 Achieves Partisan Fairness

The Special Master erred in concluding that HB 2146 exhibits partisan fairness, in reliance on Dr. Barber’s opinions that HB 2146 is more Democratic-leaning than a typical computer-drawn map. *See* Report at 191 ¶ 12, 211 ¶¶ 78-79; *see also id.* at 88 (FF188).

First, the Special Master improperly accepted Dr. Barber’s invitation to assess HB 2146’s partisan fairness in comparison to “typical” maps—*i.e.*, Dr. Barber’s ensemble of blindly drawn, computer-generated maps. Rather, as explained by Dr. Duchin, the proper (and broadly accepted) barometers for partisan fairness are (1) a holistic consideration of whether a plan upholds Close-Votes-Close-Seats and allows majority preferences to typically secure majority representation; and (2) supporting evidence from simplified partisan fairness metrics, including the efficiency gap and mean-median scores cited approvingly by this Court in *LWV I*, 178 A.3d at 820, which aim to identify neutral maps that do not entrench a structural advantage in favor of any political party. Tr. 351:1-354:4, 369:11-371:1.⁴⁸

⁴⁸ *See also* Tr. 383:17-23 (Dr. Duchin testifying: “I would caution against the conceptual mistake that typical is necessarily fair. Blind is not necessarily fair. Sometimes we have a benchmark such as with compactness. You want to be more compact. And I think with fairness, you want to be more fair.”).

Second, the Special Master erred in failing to discuss the big picture of whether close votes tend to be converted to close seats under a given redistricting plan. But as Dr. Duchin’s opening report shows, *see* **Ex. 1**, Duchin Report at 16, the voting patterns in every single one of the closest statewide races since 2014 would be converted by HB 2146 into a Republican majority in the Congressional delegation. Indeed, when comparing HB 2146 to the 2011 Plan that this Court rejected as “an unconstitutional partisan gerrymander,” *LWVI*, 178 A.3d at 741, the two plans perform remarkably similarly in their conversion of close seats to a Republican majority. (In the below figures, the top left quadrant reflects more Democratic votes but more Republican Seats; the bottom right quadrant reflects more Republican votes but more Democratic seats. *See* **Ex. 1**, Duchin Report at 14.)



Ex. 1, Duchin Report at 16

Ex. 1, Duchin Report at 15

Third, the Special Master erred by relying on the partisan fairness scores for HB 2146 offered by Dr. Barber. *See* Report at 212 ¶¶ 82-83; *see also id.* at 89-90 (FF192-95). As stated above, those scores are not reliable, as they are conspicuous outliers when compared to Dr. DeFord’s, Dr. Rodden’s, Dr. Caughey’s, and Dr. Duchin’s mean-median and efficiency gap calculations, (*see* § VI(B)(1), *supra*). As a result, the partisan metric scores Dr. Barber assigned to HB 2146 should be, at a minimum, significantly discounted, if not outright rejected.

Fourth, Dr. Barber’s prediction that HB 2146 will result “in 9 Democratic-leaning seats and 8 Republican-leaning seats” (Report at 88-89)—treated by the Special Master as “credible evidence of record” (*id.* at 211 ¶ 78)—is simply not sound. Indeed, Dr. Duchin’s analysis confirms that HB 2146’s total mean-median and total efficiency gap scores are in fact more biased toward *Republicans* than the mean of her 100,000 ensemble of computer-generated maps, not “more favorable to Democrats” as Dr. Barber contends (*id.*). See **Ex. 2**, Duchin Response Report at 4, Table 3 (reflecting negative total mean-median and efficiency gap scores for HB 2146 that are farther from zero, and thus even more biased towards Republicans, than the ensemble mean); see also **Ex. 1**, Duchin Report at 18-19, Figures 7 and 8 (showing that HB 2146 is typically more Republican favoring than most blind maps across many elections).

When assessing mean-median score and efficiency gap metrics, it is crucial to understand that the *closer a partisan fairness score is to zero* (whether positive and thus Democrat-favoring, or negative and thus Republican-favoring), the *more fair and less biased the plan*. See **Ex. 1**, Duchin Report at 17; Barber Report at 27-34; DeFord Report at 33. As a result, to determine whether HB 2146 displays partisan fairness, the Special Master should have examined how closely HB 2146’s partisan fairness metric scores were to *zero* in comparison with the other proposed plans.

As shown by Dr. Duchin's analysis, among the 13 plans presented to the Court, HB 2146 consistently ranks as the *most biased plan or one of the three most biased plans* on the four partisan metrics employed to measure the partisan fairness of the proposed plans:

- Efficiency gap score – *11th of 13*;
- Total Eguia metric score – *11th of 13*;
- Total mean-median score – *13th of 13*;
- Total partisan bias score – *13th of 13*.

Ex. 2, Duchin Response Report; *see also* **Ex. 1**, Duchin Report at 17 (describing various partisan fairness metrics).

The other experts were in agreement. Dr. DeFord, the expert for the Gressman Petitioners, and Dr. Caughey, the expert for the Senate Democratic Caucus Intervenor-Respondents, *likewise found that HB 2146 performs at the bottom of the pack according to partisan fairness metrics.*⁴⁹ Indeed, on cross-examination, Dr. Barber himself conceded that all plans other the Reschenthaler plans have mean-median scores closer to zero and are thus less biased than HB 2146. Tr. 577:18-578:22; *see also* Report at 92 (FF211).

⁴⁹ *See* DeFord Response Report at 15; Caughey Response Report at 22, Table 6.

Worse still, even applying the Special Master’s own flawed “typicality is best” standard, HB 2146 is the *only* proposed plan that is more biased than a typical blindly drawn map across all partisan fairness metrics. *See Ex. 2*, Duchin Response Report at 4, Table 3 (reflecting that HB 2146 is the only proposed plan with partisan fairness scores that are in all instances farther from zero, and thus more biased, than the ensemble mean).

Because the Special Master’s finding that HB 2146 reflects partisan fairness is based on (1) a misunderstanding of how partisan fairness may reliably be assessed; and (2) outlier partisan fairness scores and inaccurate data, it should be rejected by this Court.

F. Exception Five – The Election Calendar Should Be Modified in Accordance with Respondents’ Submission

The Governor respectfully incorporates by reference Respondents’ Exceptions Regarding the Special Master’s Proposed Revision to the 2022 Election Calendar/Schedule.

VII. CONCLUSION

For the foregoing reasons, the Governor respectfully requests that the Court (1) decline to follow the Special Master’s recommendation that the Court adopt the HB 2146 Plan; (2) instead, select the Governor’s Plan, or, alternatively, another plan that both satisfies the traditional redistricting criteria and provides all

Pennsylvanians an equal opportunity to elect the representatives of their choice;
and (3) modify the election calendar in accordance with Respondents' submission.

Respectfully submitted,

HANGLEY ARONCHICK SEGAL
PUDLIN & SCHILLER

Dated: February 14, 2022

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CERTIFICATION

Public Access Policy. I certify that this filing complies with the provisions of the Public Access Policy of the Unified Judicial System of Pennsylvania: Case Records of the Appellate and Trial Courts that require filing confidential information and documents differently than non-confidential information and documents.

/s/ Robert A. Wiygul
Robert A. Wiygul

Exhibit 1

Comparison of Congressional Districting Plans in Pennsylvania

Moon Duchin
Professor of Mathematics, Tufts
University Senior Fellow, Tisch College of
Civic Life

January 24, 2022

Comparison of Congressional Districting Plans in Pennsylvania

Moon Duchin
Professor of Mathematics, Tufts University
Senior Fellow, Tisch College of Civic Life

January 24, 2022

1 Assignment and qualifications

I am a Professor of Mathematics and a Senior Fellow in the Jonathan M. Tisch College of Civic Life at Tufts University. At Tisch College, I am the principal investigator of an interdisciplinary research lab focused on geometric and computational aspects of redistricting. I was recently awarded a major grant from the National Science Foundation to study *Network Science of Census Data*. My areas of research and teaching include the structure of census data, the design and implementation of randomized algorithms for generating districting plans, and the analysis of partisan fairness and of redistricting more broadly.

I was asked to evaluate several maps that have been proposed as alternatives for Congressional redistricting in Pennsylvania, and particularly to compare them in terms of traditional districting principles and partisan fairness.

I personally conducted all work in this report, supported by research assistants working under my direct supervision. A full copy of my CV is attached to this report.

1.1 Materials

- The largest single source of data is the U.S. Census Bureau. I principally use the Decennial Census release, together with supporting data products like the American Community Survey and the TIGER/Line geographical shapefiles. I have also made use of the datasets released by the Pennsylvania Legislative Reapportionment Commission at redistricting.state.pa.us/maps/#census.
- Language governing the guidelines for Congressional redistricting was drawn from the published principles of the Pennsylvania Redistricting Advisory Council [3].
- I extensively consulted the Court Order and the majority opinion from the 2018 case *LWV vs. Pennsylvania* [2, 1].
- I compared districting plans defined by block equivalency files. The Governor's plan is publicly posted at portal.pennsylvania-mapping.org/plans; the Citizens' Plan is posted at drawthelinespa.org/pa-citizens-map; and the data for HB-2146 was provided to me by counsel.

2 Executive summary

In 2018, the Pennsylvania Supreme Court described four "neutral criteria" that collectively "provide a 'floor' of protection for an individual against the dilution of his or her vote": population balance, contiguity, compactness, and respect for political boundaries [1]. This gives initial points of comparison for the plans discussed in this report. The Congressional districting plan passed by the Pennsylvania House of Representatives (HB-2146) is population-balanced and contiguous, shows strong respect for political boundaries, and is reasonably compact. In this report, I compare the plan to two alternative plans called GovPlan and CitizensPlan. I find that these are also population-balanced and contiguous and have comparably strong respect for political boundaries but, crucially, each is markedly more compact than the House's proposed plan. In other words, I find that the Governor's Plan and the Citizens' Plan do a better job overall at accounting for the neutral criteria of redistricting.

In addition to the alternative plans outperforming the House Plan on neutral criteria, the maps differ significantly in their partisan fairness properties. HB-2146 can be seen to systematically advantage the candidates of one major party over the other, when overlaid with a range of recent elections in Pennsylvania. In large part this is due to the "political geography" of Pennsylvania, in which the current patterns of concentration in electoral preferences create a landscape that is tilted towards Republicans. My analysis leads me to conclude that the Citizens' Plan, and especially the Governor's Plan, overcome this structural tilt to make fairer maps for the people of Pennsylvania—treating the parties even-handedly while still behaving responsively to shifts in voter preference—with no cost at all in the neutral criteria.

3 Introduction

The Commonwealth of Pennsylvania saw its population grow from 12,702,379 in the 2010 Decennial Census to 13,002,700 with the release of new numbers from 2020. Despite providing a boost from the 6th to the 5th largest state in the nation, the growth did not keep pace with the country as a whole, and Pennsylvania's congressional apportionment dropped from 18 districts to 17 for this cycle.

In the last ten-plus years, there has been a surge of citizen interest in redistricting around the nation, and many members of the public have tried their hands at drawing districts for the first time. One of those active citizens is Amanda Holt, who has been described in news reports as "a piano teacher from Upper Macungie" [7]. In its 2021-22 session, the Pennsylvania House of Representatives chose one of a collection of maps prepared by Holt and modified it to create the Congressional map that has now been passed as House Bill 2146.

In this report, I will be examining the design of Congressional districts in Pennsylvania. I will discuss the two enacted 18-district plans from the previous cycle (the legislative plan 2011-Enacted from 2011 and the court's remedial plan 2018-Remedial from 2018) alongside three proposed 17-district plans for the current cycle: the Governor's plan GovPlan, the public plan CitizensPlan, and the House's Holt-derived plan HB-2146.

I will use two main tools to study Pennsylvania Congressional redistricting. The first is a simple "overlay method" where districting plans are superimposed on actual recently observed voting patterns to record the plans' performance in a range of electoral conditions. The second is the "ensemble method" of generating large samples of legally valid redistricting plans that take the rules and criteria into account. I will use algorithmic ensembles to illustrate that partisan-blind redistricting in Pennsylvania does not tend to achieve partisan fairness. However, computational methods can also exhibit that there is a nearly inexhaustible supply of fairer maps that still obtain sterling scores on traditional criteria.

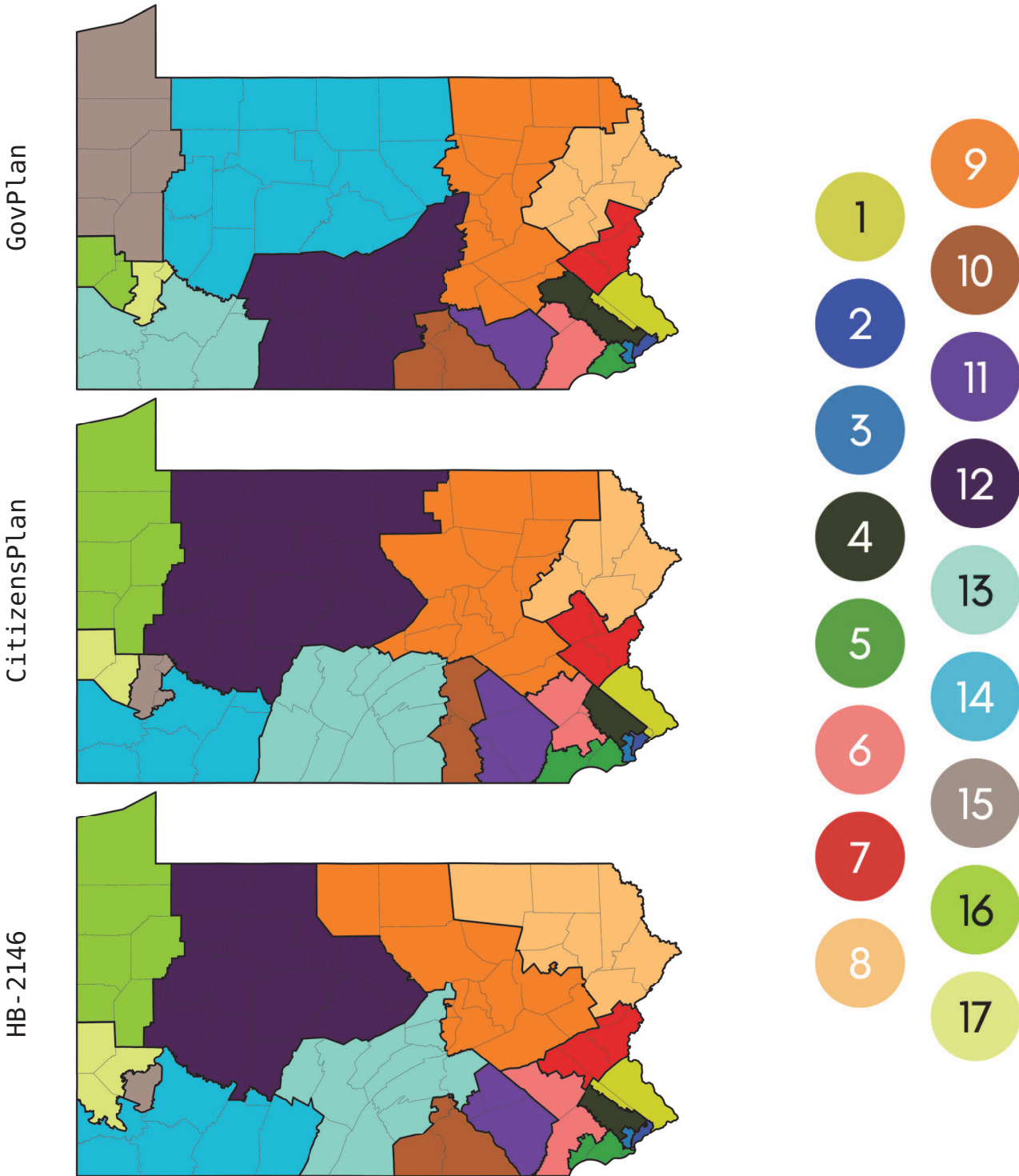


Figure 1: The three plans being compared in this report.

4 Review of redistricting criteria

Congressional redistricting for Pennsylvania is a matter of dividing up the 13,002,700 residents into 17 geographical subdivisions of the state. In doing so, we must balance a long and sometimes competing list of rules and priorities.

In 2018, the Pennsylvania Supreme Court struck down the congressional districts established in 2011 ("2011-Enacted ") and ordered them to be replaced with a remedial plan drawn by a court-appointed expert ("2018-Remedial "). Justice Todd, writing for the majority in that decision, emphasized the roles of four major criteria for the design and adoption of a districting plan: population balance, compactness, contiguity, and respect for political boundaries. Quoting the opinion:

Because these factors are deeply rooted in the organic law of our Commonwealth, and continue to be the foundational requirements which state legislative districts must meet under the Pennsylvania Constitution, we find these neutral benchmarks to be particularly suitable as a measure in assessing whether a congressional districting plan dilutes the potency of an individual's ability to select the congressional representative of his or her choice, and thereby violates the Free and Equal Elections Clause. [1]

These four considerations, as well as the federal requirement to safeguard electoral opportunity for minority groups, are echoed in the Redistricting Principles of the Governor's Advisory Council (henceforth, the "Principles"). Therefore these five criteria will be considered primary for this analysis.

4.1 Federal requirements

4.1.1 Population balance

Since the Reapportionment Revolution of the 1960s and 70s, courts have required serious attention to balancing the population across electoral districts in a plan, under a norm called *One Person, One Vote*. Over the decades, this has evolved to the tightest possible standard in practice: in most U.S. states, Congressional districts are fine-tuned so that their total population deviates by no more than one person from any district to any other.

Across the nation, the default dataset used to balance population is the Decennial Census release known as the PL94-171 data, named after the Public Law that mandated its publication. However, in Pennsylvania there is an alternative available: the Legislative Reapportionment Commission has released an adjusted block-level dataset known as LRC2, in which incarcerated people are geographically re-assigned to their communities of origin.¹ In the figures below, I will present the population balance of the plans with both the PL dataset and the LRC2 prison-adjusted alternative.

¹The LRC also released LRC1, which corrects and updates some geographical definitions of precincts. The population figures reported here with respect to Census data were confirmed to be unchanged with the passage to the LRC1 dataset.

4.1.2 Minority opportunity to elect

Both the Voting Rights Act of 1965 and the U.S. Constitution protect against the denial, abridgement, or dilution of the vote for minority groups across the nation. For Congressional districting in Pennsylvania, this is of particular salience in Philadelphia, where people of color make up a majority of the voting age population and are collectively more numerous than the population of a district.²

In the previous cycle, the 2018-Remedial map contained one majority-Black district (CD3 in Philadelphia) and a second majority-minority district. All three of the plans compared in this report retain the majority-Black character of CD3 and the majority-minority character of CD2. At the same time, the law clearly acknowledges that numerical majorities (50% plus one of voting age population) are neither necessary nor sufficient to provide effective opportunity to elect candidates of choice. Effectiveness of the comparison plans is discussed further in Section 6.

As a partial indicator of effective electoral opportunity, I considered recent at-large Philadelphia city council elections: the primary and general elections of 2015 and 2019. In 2015, Blondell Reynolds Brown and Derek S. Green were the candidates of choice for Black voters, according to an ecological inference analysis of voting polarization. In 2019, Green and Isaiah Thomas were the Black candidates of choice. Since all of these candidates ran city-wide, I can examine whether any district that intersects with Philadelphia had vote totals that supported these candidates.

4.2 Neutral criteria

4.2.1 Contiguity

Contiguity requires that, for each district, it is possible to transit from any part of the district to any other part, staying inside the district. That is, contiguity is the requirement that each district be composed of a single connected piece. In technical terms, for districts made from census blocks, the standard "rook-contiguity" definition holds that the connecting paths should pass through a sequence of census blocks that share boundary segments of positive length (and not through blocks that meet at corners).

4.2.2 Compactness

The two compactness metrics most commonly appearing in redistricting are the *Polsby-Popper score* and the *Reock score*. Polsby-Popper is a recent name for a metric from ancient mathematics: the isoperimetric ratio comparing a region's area to its perimeter via the formula $4\pi A/P^2$. Higher scores are considered more compact, with circles uniquely achieving the optimum score of 1. Reock is a different measurement of how much a shape differs from a circle: it is computed as the ratio of a region's area to that of its circumcircle, defined as the smallest circle in which the region can be circumscribed. From this definition, it is clear that it too is optimized at a value of 1, which is achieved only by circles. In addition, the 2018 Court Order specified three more metrics—*Schwartzberg*, *Convex Hull*, and *Population Polygon*—that should be reported for every plan.³

²Philadelphia White non-Hispanic VAP: 37.8%, Black VAP: 39.8%, Hispanic VAP: 13.1%, Asian VAP: 9.4%. Lehigh and Monroe counties have people of color making up 30-40% of voting age population, while the range is 20-30% in many other counties (namely, Allegheny, Berks, Chester, Forest, Montgomery, and Northampton).

³Schwartzberg is $P/2\sqrt{\pi A}$. Convex Hull is the ratio of the district's area to that of its convex hull, or "rubber-band enclosure." And Population Polygon is the ratio of the district's population to the state's population within the convex hull. All parties submitting maps to the Court were required to report these five scores for each district in the plan, but the Court did not specify how these numbers would be compared across plans.

All five of these scores depend on the contours of a district and have been criticized as being too dependent on map projections or on cartographic resolution [4, 5]. Recently, mathematicians have argued for using discrete compactness scores, taking into account the units of Census geography from which the district is built. The most commonly cited discrete score for districts is the *cut edges score*, which counts how many adjacent pairs of geographical units receive different district assignments. In other words, cut edges measures the "scissors complexity" of the districting plan: how much work would have to be done to separate the districts from each other? Plans with a very intricate boundary would require many separations. This score improves on the contour-based scores by better controlling for factors like coastline and other natural boundaries, and by focusing on the units actually available to redistricters rather than treating districts like free-form Rorschach blots.

4.2.3 Respect for political boundaries

One of the most common redistricting principles active in laws and guidelines for redistricting is the respect for political subdivisions: counties, cities, and other relevant political and administrative geographies should be kept intact in districts as much as practicable.

In Pennsylvania, there are 67 counties, further subdivided into 2572 municipalities.⁴

4.3 Other traditional principles

The LWV opinion from 2018 continues by identifying three more that can reasonably be considered once the fundamental principles are in place.

We recognize that other factors have historically played a role in the drawing of legislative districts, such as the preservation of **prior district lines**, protection of **incumbents**, or the maintenance of the **political balance** which existed after the prior reapportionment. See, e.g., Holt I, 38 A.3d at 1235. However, we view these factors to be wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts. These neutral criteria provide a "floor" of protection for an individual against the dilution of his or her vote in the creation of such districts. [1, emph. added]

The Principles of the Governor's council spell out a version of political balance in their reference to "partisan fairness and proportionality" as well as "responsiveness and competitiveness." They also cite the traditional principle of respect for **communities of interest**. I will defer the political balance considerations to Section 7 but will briefly outline the other criteria here.

⁴The Census Bureau publishes these in its COUSUB file; Pennsylvania is one of the states in which county subdivisions are equivalent to minor civil divisions in the Census nomenclature. These are further classified as cities, towns, townships, and boroughs. As a technical note, 12 of the COUSUBs are split across counties, so 2572 is the number after dividing them to nest inside counties.

4.3.1 Least change

In 2018, the Pennsylvania Supreme Court ordered that the Congressional districts enacted in 2011 be replaced with a map that was deemed to better uphold traditional principles as well as the Free and Equal Elections Clause in the state constitution. This 18-district remedial plan, drawn by a court-appointed expert, has now been in place for two Congressional elections, those of 2018 and 2020. As the Court's opinion makes clear, it would be reasonable to prefer a plan that is least disruptive to the 2018-Remedial plan. The identification of a least-change plan is made somewhat challenging in Pennsylvania by the loss of a district; still, it is possible, for each district in a new plan, to see which 2018-Remedial district contains the largest share of its population and add up the number of people who are *not* assigned to that target district. For example, all three plans under discussion (GovPlan, CitizensPlan, and HB-2146) have in common that CD 3 in the new plan has its largest overlap with the one labeled CD 3 in the previous plan; that district is currently represented by Dwight Evans. That means the displacement score for the new plans will count the number of people who are now assigned to District 3 but were not previously represented by Dwight Evans. It is reasonable to prefer plans with lower displacement from the remedial plan, given that it was put in place by the Court as a model of fair districting.

4.3.2 Incumbency

Relatedly, we can compare the plans' consideration of incumbency by considering whether new districts are drawn so as to force current incumbents to compete—this usually goes by the name of "double-bunking." Some states encourage line-drawers to minimize double-bunking, while other states require that incumbent addresses not be considered. I will report double-bunking statistics below, but make no assumption that less double-bunking is necessarily better.

4.3.3 Communities of interest

Finally, a conceptually important traditional principle that has often been hard to measure is respect for *communities of interest*, or "COIs." In past census cycles, though line-drawing bodies have often solicited public comment at hearings and in writing, the redistricting community has generally lacked a systematic mechanism for connecting public testimony to mapping format. In this cycle, free web tools have emerged that have made it possible for community input to be visible in the line-drawing process. COIs are discussed further in Section [6](#).

5 Comparison of metrics for proposed Congressional plans

In this section, I review some quantitative comparisons to establish the conformance of the plans under consideration to the neutral criteria identified as being of primary importance. First, all three plans attain *de minimis* population deviation with respect to the official Census data.⁵

With respect to the prisoner-adjusted allocations found in LRC2, the plans have slightly higher levels of observed deviation, with the Governor's plan slightly tighter than the other two.

Table 1: Comparison of the population deviation across plans.

Population deviation – Census			
	max positive deviation	max negative deviation	top-to-bottom deviation
GovPlan	–	–1	1
CitizensPlan	–	–1	1
HB-2146	–	–1	1

Population deviation – Prisoner-adjusted			
	max positive deviation	max negative deviation	top-to-bottom deviation
GovPlan	3686	–4863	8549
CitizensPlan	3875	–5021	8896
HB-2146	3933	–4932	8865

Next, I enumerate the number of counties that are split across multiple districts in the respective plans. When a county is split, I record its number of pieces (the number of districts that it touches). All three plans have strong respect for political boundaries, splitting 14-16 of the state's 67 counties and only 16-18 of over 2500 municipalities.

Table 2: Comparing the plans' conformance to political boundaries.

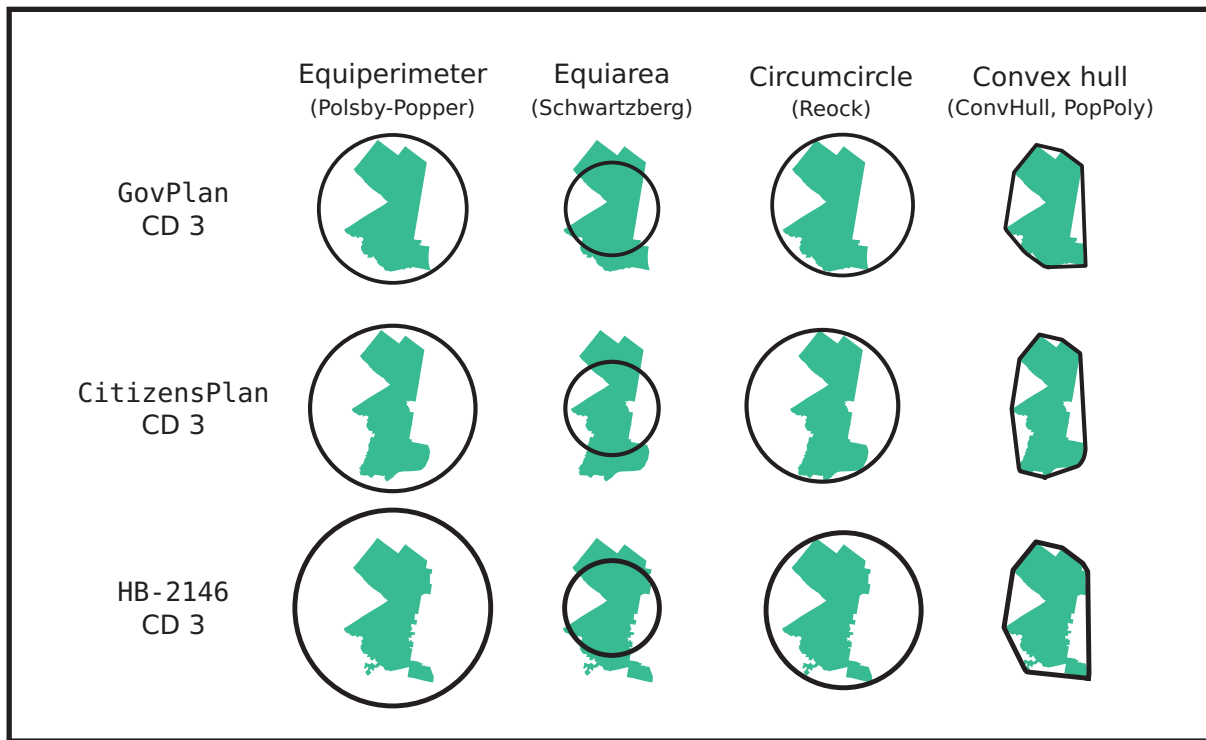
Political boundaries				
	county splits (out of 67)	county pieces	muni splits (out of 2572)	muni pieces
GovPlan	16	35	18	37
CitizensPlan	14	30	16	33
HB-2146	15	33	16	34

⁵The same one-person deviation is maintained if the dataset shifts to the adjusted LRC1 data referenced above.

Another fundamental redistricting principle is compactness, which can be measured by a huge variety of metrics. Here, I provide six different ways of scoring a plan, defined in the previous section. The Governor’s Plan rates most compact in five of these six metrics, with the Citizens’ Plan slightly more compact on Reock. HB-2146 is the least compact across the board, often by a significant margin.

Table 3: Comparing compactness scores via one discrete and five contour-based metrics. Each contour-based metric works by comparing the shape to an associated contour. The comparison is illustrated on CD 3 from each of the plans under discussion.

Compactness			
	block cut edges (lower is better)	average Polsby-Popper (higher is better)	average Reock (higher is better)
GovPlan	5185	0.381	0.431
CitizensPlan	5266	0.376	0.451
HB-2146	5907	0.321	0.409
	average Schwartzberg (higher is better)	average convex hull (higher is better)	average pop. polygon (higher is better)
GovPlan	1.653	0.826	0.783
CitizensPlan	1.669	0.812	0.772
HB-2146	1.820	0.799	0.752



Using the least-change metric described in the last section, we can see that GovPlan keeps the districts intact to the greatest extent of these three alternatives.

Table 4: In this table, maps are compared by finding a matching (i.e., a correspondence) from the new districts to their best fit in the previous map. The displacement score is then computed by adding up the people who don't share that previous district assignment. Under this metric, the Governor's Plan most closely resembles the court's remedial map.

Least change		
	relabeling	displacement
GovPlan	(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18)	2,438,850
CitizensPlan	(1, 2, 3, 4, 5, 6, 7, 8, 12, 10, 11, 15, 13, 14, 18, 16, 17)	2,755,864
HB-2146	(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 15, 13, 14, 18, 16, 17)	2,797,612

Finally, I describe the division of incumbent addresses among the districts in the three plans under discussion, using the most accurate addresses I have been able to obtain. Given that an 18-district plan is contracting to just 17 districts, it is inevitable that some incumbents be paired. Each of the three plans under discussion has the same level of incumbent pairing.

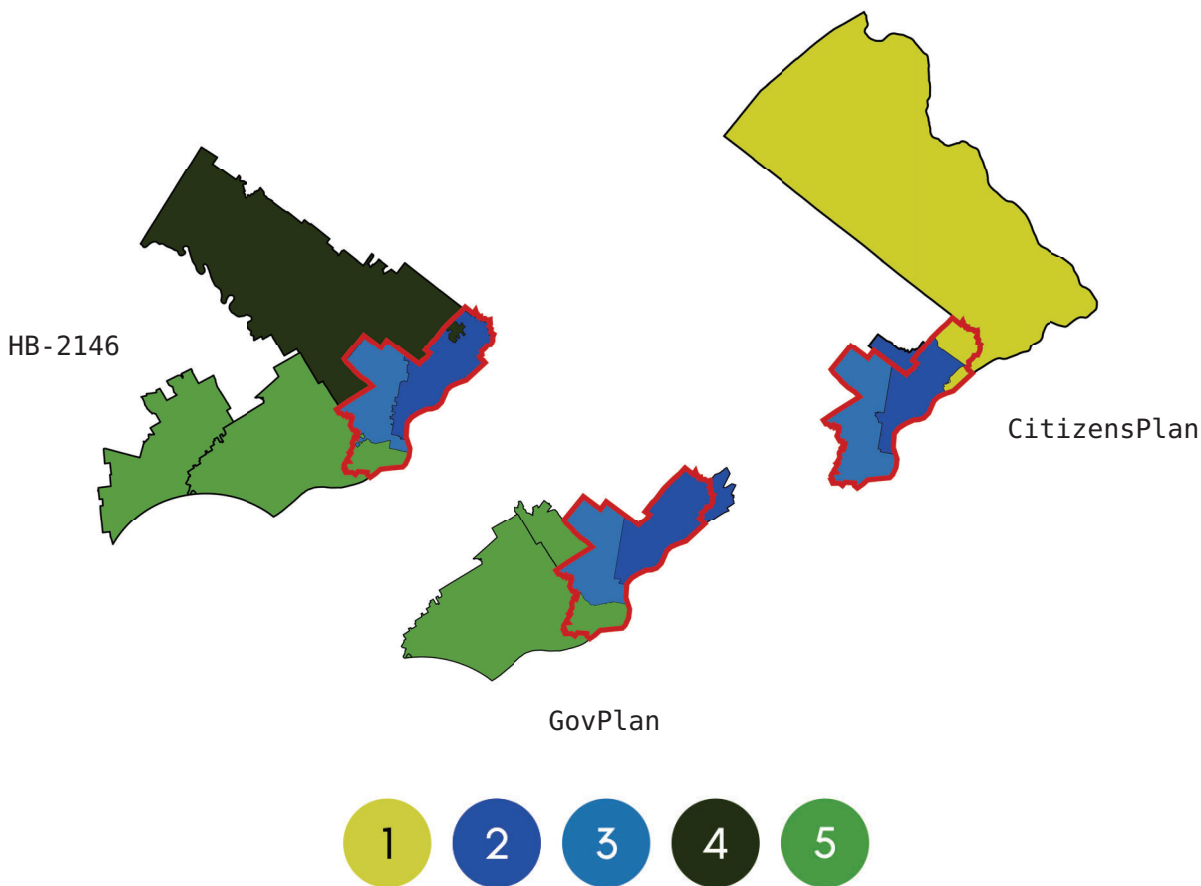
Table 5: Each of the three plans has two districts that pair incumbents and one district with no incumbent.

Incumbents by district			
CD	GovPlan	CitizensPlan	HB-2146
1	Fitzpatrick	Fitzpatrick, Boyle	Fitzpatrick
2	Boyle	—	Boyle
3	Evans	Evans	Evans
4	—	Dean	Dean
5	Dean, Scanlon	Scanlon	Scanlon
6	Houlahan	Houlahan	Houlahan
7	Wild	Wild	Wild
8	Cartwright	Cartwright	Meuser, Cartwright
9	Meuser	Meuser, Keller	Keller
10	Perry	Perry	Perry
11	Smucker	Smucker	Smucker
12	Joyce, Keller	Thompson	Thompson
13	Resenthaler	Joyce	Joyce
14	Thompson	Resenthaler	Resenthaler
15	Kelly	Doyle	Lamb, Doyle
16	Lamb	Kelly	Kelly
17	Doyle	Lamb	—

6 Communities of interest and minority opportunity to elect

Both GovPlan and CitizensPlan were drawn after a robust public input process and in view of hundreds of collected comments and suggestions. By contrast, my understanding is that the Holt map was based on a metric-centered process that began with a single person working in isolation. To illustrate some of the differences that these origin stories suggest, I will focus on Philadelphia, which was both the location of the densest public commentary (see Figure 3) and is the city most salient for VRA consideration—for Black voters in particular, who are the plurality racial group—in the context of Congressional redistricting.

Figure 2: Comparing the districts that touch Philadelphia (red outline) in the three plans. Other county lines are also shown.



Philadelphia has enough total population for roughly 2.1 Congressional districts, and its residents share a set of broad interests in addition to exhibiting great diversity. This suggests that the city should contain all or most of two districts and a small portion of a third, if the criteria of political boundaries and COIs are paramount. In the plans under consideration, GovPlan has three districts (CD 2, 3, 5) touching Philadelphia, and CitizensPlan has three (CD 1, 2, and 3). The House’s Holt-derived plan HB-2146 has four districts that touch the city (CD 2, 3, 4, 5)—with district 4 taking a trident-shaped scoop out of North Philadelphia and district 5 weaving across city lines in two different places in the Southwest.

One way to measure whether the Philadelphia districts effectively secure electoral opportu-

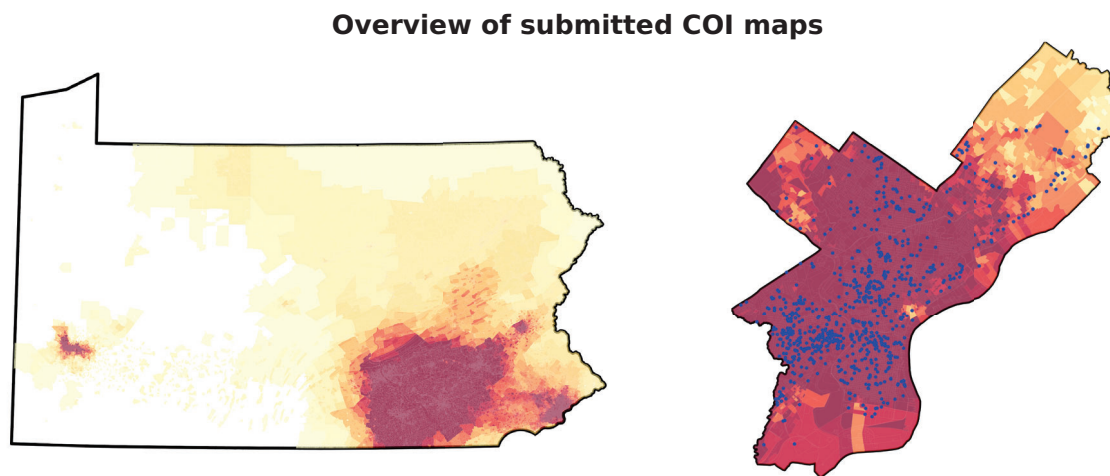
nity is to examine the vote totals from the at-large City Council elections of 2015 (where Black candidates of choice were B.Brown and D.Green) and 2019 (where Black candidates of choice were D.Green and I.Thomas). In these elections, voters could select up to five candidates, and five were ultimately elected.

With respect to the 2015 elections, GovPlan has D.Green as a top-two finisher in all three of its Philadelphia districts, with B.Brown essentially tied in CD 3. CitizensPlan has very strong outcomes for both Brown and Green in its CD 3, but districts 1 and 2 do not have either one in the top two finishers. In HB-2146 as well, only CD 3 has Brown and Green as the top two, while White-preferred candidates do better in districts 2 and 4, and district 5 has a mixed outcome.

In the 2019 outcomes, the GovPlan districts in Philadelphia all have strong showings for Green and Thomas as well as for city-wide progressive favorite Helen Gym. This is true in two out of three CitizensPlan districts that touch the city, while the story is more mixed in HB-2146, where in particular district 4 is way out of line with the city as a whole.

A possible explanation for these indications of more effective opportunity districts in GovPlan is a robust process for collecting public input in the lead-up to line-drawing. The Governor's office set up a website (portal.pennsylvania-mapping.org) to accept comments and maps from the public. One option for submitters was to include a map paired with narrative comments describing their communities of interest. Active from September to December of 2021, the portal received 126 COI submissions. In addition, grassroots organizations like Pennsylvania Voice (pennsylvaniavoice.org) collected hundreds of additional submissions through the same online mapping platform, called Districtr.

Figure 3: This heatmap shows 962 areas mapped by public commenters through the Districtr tool to show their communities of interest. Redder areas received more coverage, with the darkest areas in the heatmap indicating that ≥ 20 submitters described overlapping neighborhood and community areas in that location. The Philadelphia inset also shows (with blue dots) the locations of hundreds of landmarks, or points of interest, placed by those commenters as locations that anchor their communities.



By drawing lines in view of public testimony and the local definitions of community, GovPlan is able to create three Philadelphia-heavy districts (two that are over 90% city districts and a third with over 100,000 Philadelphians) where voting behavior comports with the city overall, better amplifying the voices of city residents. The fact that these districts are better aligned with local preferences of Black voters than in HB-2146, despite having similar shares of Black voting age population, shows that electoral opportunity is a matter of aligning community and not just targeting demographic metrics.

7 Partisan fairness

7.1 Theories of partisan fairness

There are numerous notions of partisan fairness that can be found in the scholarly literature and in redistricting practitioner guides and software. Many of them are numerical, in the sense that they address *how a certain quantitative share of the vote should be translated to a quantitative share of the seats* in a state legislature or Congressional delegation. Others are symmetry-based and deal with ideas of role-reversal between the parties.

The numerical notions and the symmetry notions of partisan fairness all tend to agree on one central point: an electoral climate with a roughly 50-50 split in partisan preference should produce a roughly 50-50 representational split. I will call this the *Close-Votes-Close-Seats* principle. Recent Pennsylvania statewide elections often have voting that is close to even between the two major parties, but the HB-2146 plan approved by the House of Representatives can be seen to systematically convert even voting patterns to a significant Republican advantage in the Congressional delegation.

Importantly, *Close-Votes-Close-Seats* is not tantamount to a requirement for proportionality. Rather, it is closely related to the principle of *Majority Rule*: a party or group with more than half of the votes should be able to secure more than half of the seats. In fact, *Close-Votes-Close-Seats* is essentially a corollary (or byproduct) of *Majority Rule*, making it a centrally important small-d democratic principle. It is not practicable to design a map that *always* attains these properties, but by contrast a map that *consistently thwarts* them should be closely scrutinized and usually rejected.

Unlike proportionality, neither *Close-Votes-Close-Seats* nor *Majority Rule* has any bearing on the preferred representational outcome when one party has a significant voting advantage: these principles are silent about whether 70% vote share should secure 70% of the seats, as proportionality would dictate, or 90% of the seats, as supporters of the efficiency gap would prefer. The size of the "winner's bonus" is not at all prescribed by a *Close-Votes-Close-Seats* norm.

7.2 The limitations of political geography

Some scholars have argued that all numerical ideals, including *Close-Votes-Close-Seats*, ignore the crucial *political geography*—this school of thought reminds us that the location of votes for each party, and not just the aggregate preferences, has a major impact on redistricting outcomes. In [6], my co-authors and I gave a vivid demonstration of the impacts of political geography in Massachusetts: we showed that for a ten-year span of observed voting patterns, even though Republicans tended to get over one-third of the statewide vote, it was impossible to draw a single Congressional district with a Republican majority. That is, the geography of Massachusetts Republicans locked them out of Congressional representation. It is therefore not reasonable to charge the Massachusetts legislature with gerrymandering for having produced maps which yielded all-Democratic delegations; they could not have done otherwise.

In Pennsylvania, this is not the case. The alternative plans demonstrate that it is possible to produce maps that give the two major parties a roughly equal opportunity to elect their candidates. These plans are just examples among many thousands of plausible maps that convert voter preferences to far more even representation by party. In Congressional redistricting, present-day Pennsylvania geography is easily conducive to a seat share squarely in line with the vote share.

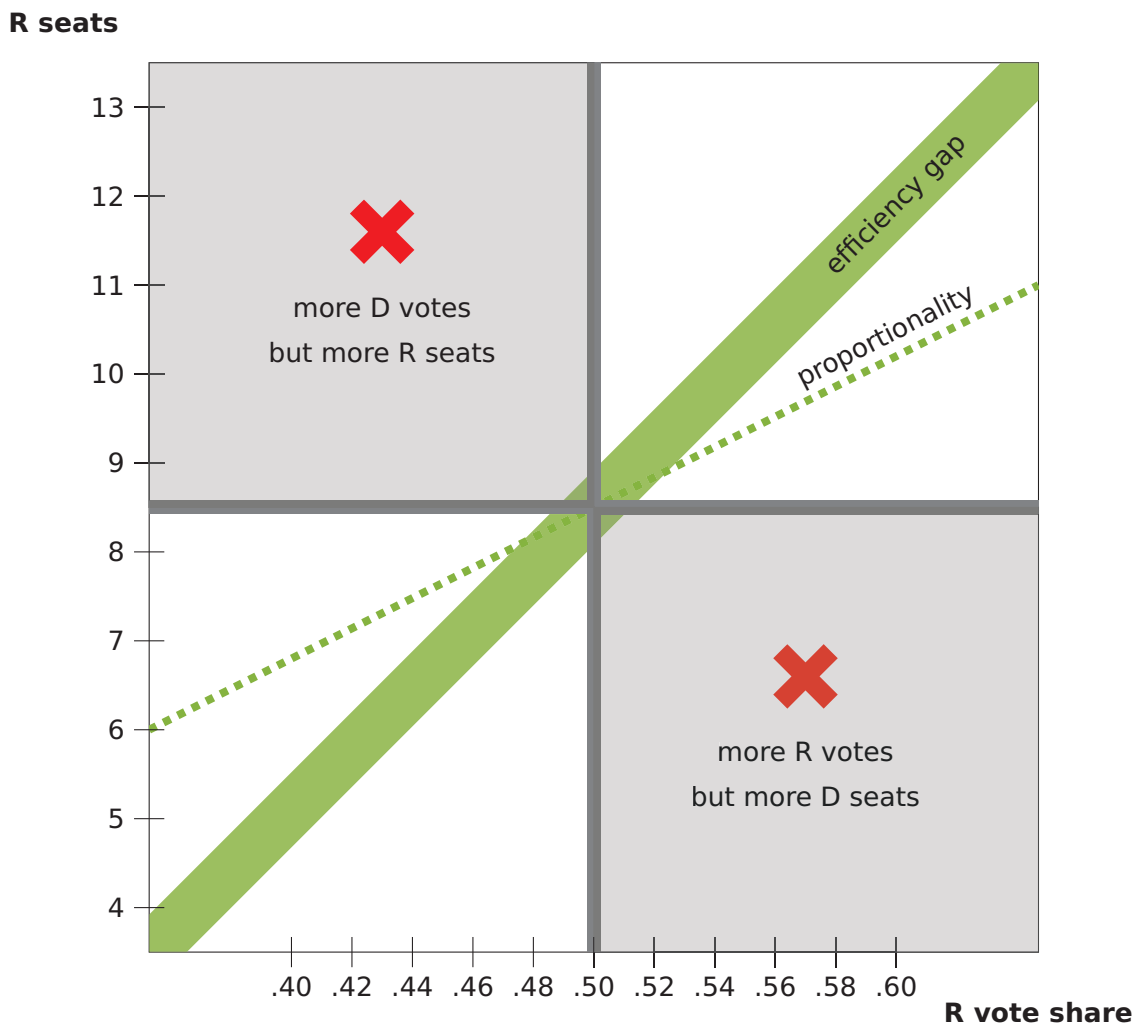
The clear conclusion is that the political geography of Pennsylvania today does not obstruct the selection of a map that treats Democratic and Republican voters fairly and even-handedly.

8 Votes versus seats

To illustrate Close-Votes-Close-Seats, Majority Rule, and other norms of partisan fairness, it is helpful to examine a plot that shows vote shares on one axis and seat outcomes on the other. A plan can be overlaid with a vote pattern to see how the seat share relates to the vote share for that election. Repeating this across a range of different kinds of elections provides a robust view of the performance of the plan.

Majority Rule, then, translates to the idea that the Southeast and Northwest quadrants should be avoided. Close-Votes-Close-Seats now says that if an election is near even placing it horizontally near the center of the plot, then the vertical position should be aimed at the bulls-eye in the middle of the plot rather than falling consistently above or below the target. And many other ideals of fairness, like proportionality and the efficiency gap, can be realized as lines or zones in the plot. This is summarized in Figure 4.

Figure 4: A seats-versus-votes plot. Below, we will plot the results from overlaying a districting plan on a series of elections. The x-coordinate is the vote share for Republicans in that election. The y-coordinate is the number of Republican seats. The figure is set up to show the 50-50 mark as a "bulls-eye" target in the center, meaning that a close vote produced even representation.



8.1 Overlaying the plans on recent elections

To see how a map performs, we can overlay the elections in our dataset and observe how the points fill out the seats-votes plot.

Figure 5: In this figure, the top row shows the outcomes when 2011-Enacted and 2018-Remedial are serially overlaid on recent Pennsylvania elections. We see that the overturned plan consistently converts close voting to a Republican representational advantage, while the court's remedial plan maintains electoral responsiveness while upholding Close-Votes-Close-Seats.

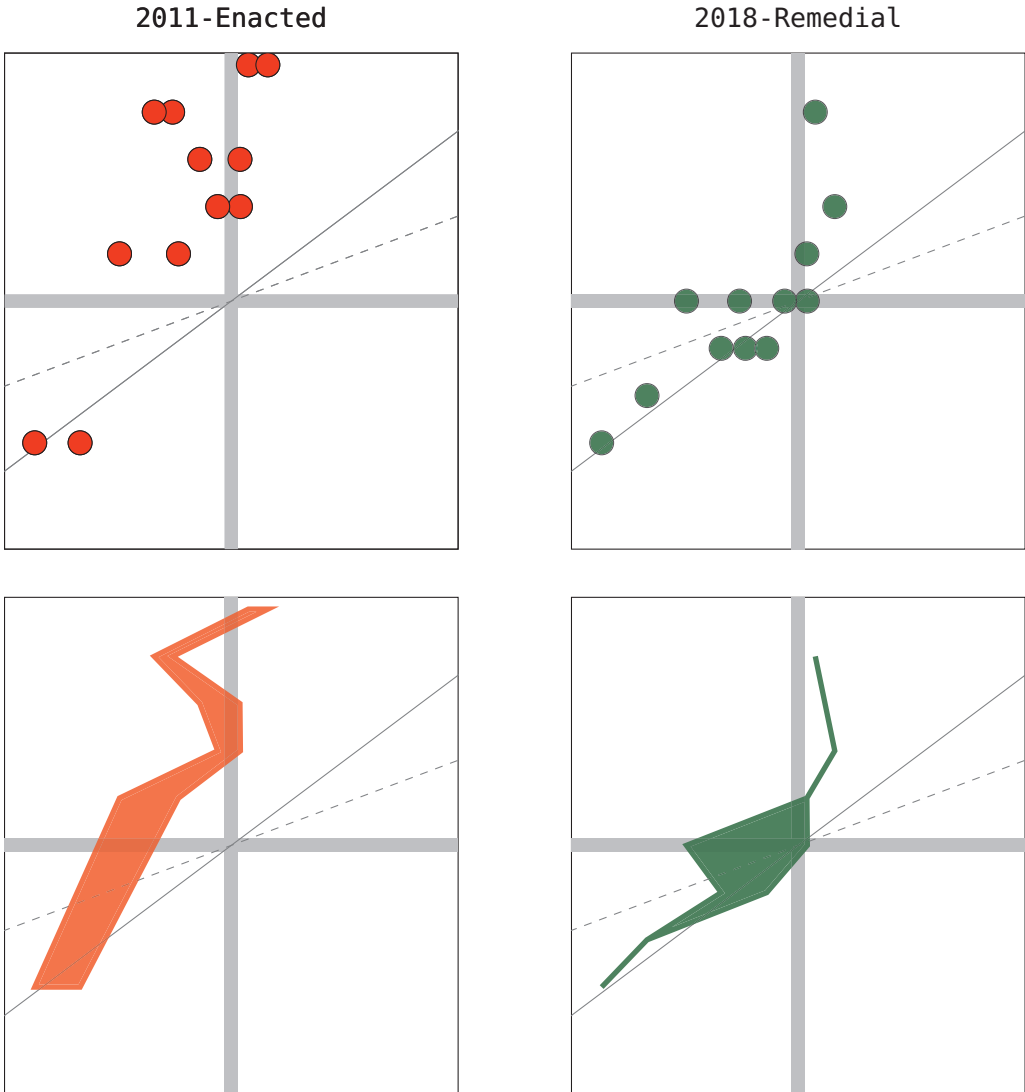
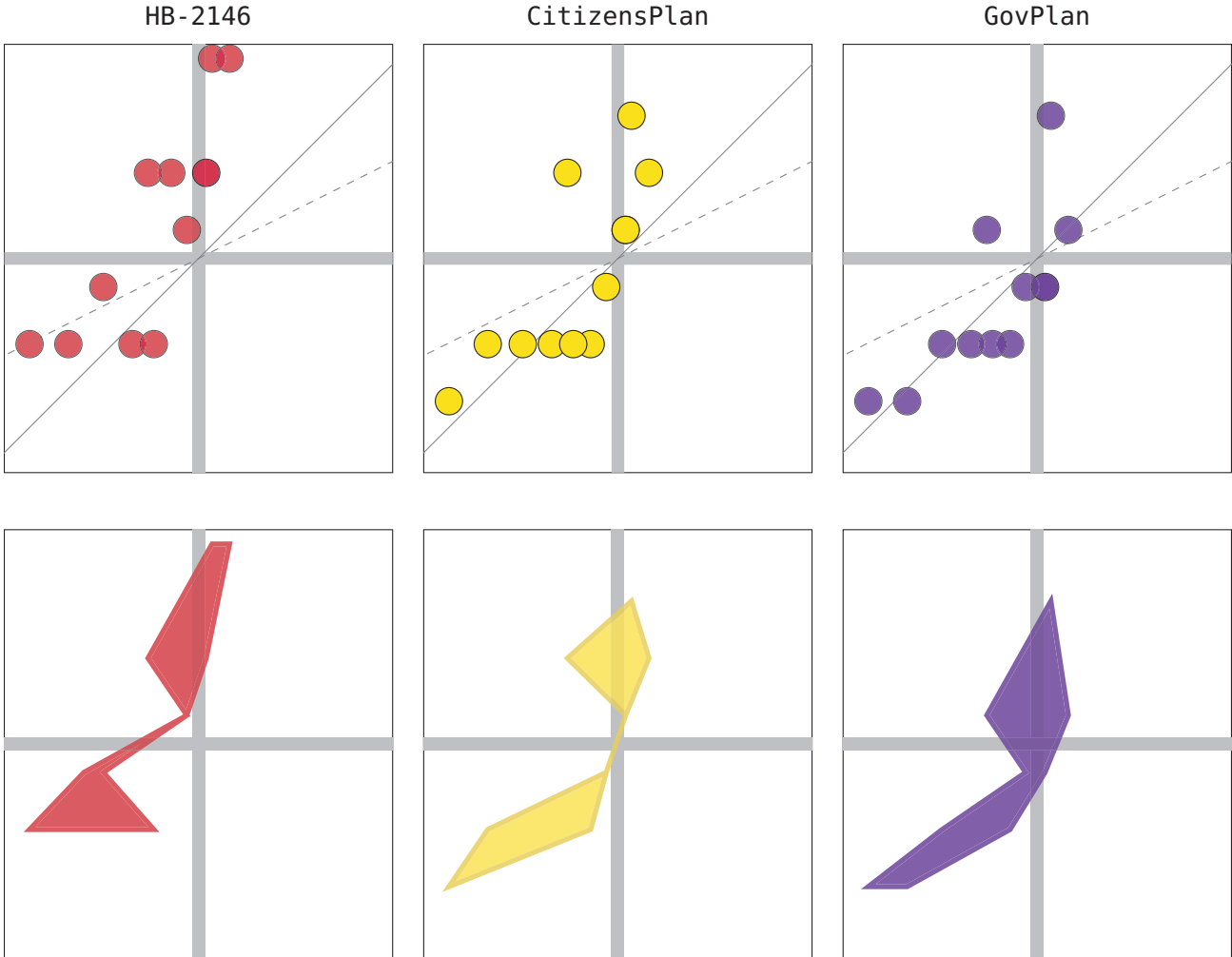


Figure 6: This time, the three new proposed plans are overlaid on the same elections. HB-2146 entrenches a Republican advantage, while CitizensPlan and especially GovPlan are far superior at leveling the partisan playing field.



Just as in 2018, there is no need to accept a plan that provides for a marked partisan tilt; options are available to the court that maintain excellent adherence to the traditional districting principles while treating the parties equally and even-handedly in terms of electoral opportunity. The 2018 remedial plan corrected the bias in its predecessor, and that same pattern is visible in the maps being compared today.

8.2 Partisan fairness metrics

In this section, I present a series of images that reinforce the theme elaborated above: the political geography of Pennsylvania creates a districting landscape that is tilted toward Republican advantage. Thus, blindly drawn Pennsylvania Congressional plans are not conducive to partisan fairness under any partisan metric that I have examined.

However, it is possible to level out this tilted playing field and produce a plan that is far more fair while still upholding the traditional principles. This is illustrated by both GovPlan and CitizensPlan, in contrast to HB-2146.

The metrics seen here can be briefly defined as follows. Without endorsing any of these as normatively correct, we will see that they all report consistent findings about the performance of the three plans considered here.

- *Efficiency gap* is based on the idea of wasted votes, defined as any winning votes in excess of 50%, or any losing votes at all. The EG score is computed by taking total Republican wasted votes minus total Democratic wasted votes, divided by total votes. If the EG score has a magnitude of greater than 8 percentage points, that flags a presumptive gerrymander [8].
- Eguia’s artificial partisan advantage [9] compares the outcomes under districted plurality elections to the outcomes under ostensibly neutral political subdivisions, such as counties. It is calculated here by taking counties as the fundamental territorial subdivision of the state: the baseline for political performance for Democrats is the share of the population that lives in counties won by Democrats in a particular election. If the Democratic seat share outperforms that baseline, the metric is positive; otherwise, it is negative.
- The mean-median score is calculated by taking the mean Republican vote share in a district minus the median [10]. It is described as indicating how much of the vote in a state is needed to capture half of the representation.
- The partisan bias score calculates how much of the representation would be captured by each party if the election underwent a uniform partisan swing to a 50-50 share [10]. This is meant to approximate the counterfactual of exactly even voting, and is measured against the presumption that even voting should secure even representation.

Each of the four metrics presented here is signed, and in each of the three plots, the positive direction indicates Democratic advantage and the negative direction indicates Republican advantage. Therefore it can be useful to sum the metrics over all twelve elections in this dataset; this way, it is easy to distinguish overall whether the advantage always tends to favor the same party.

Table 6: Summary of partisan metrics, summed over the twelve elections in the dataset. In each case, zero is ideal, positive scores indicate overall Democratic advantage, and negative scores indicate overall Republican advantage.

	total efficiency gap	total Eguia metric	total mean-median	total partisan bias
GovPlan	+0.10	-0.05	-0.01	-0.18
CitizensPlan	-0.17	-0.34	-0.10	-0.65
HB-2146	-0.83	-0.99	-0.29	-1.23

The playing field itself is illustrated by the violin plots in Figures 7-8, which show in gray the values achieved by the plans in the ensemble. The colored dots show the plan performance for each of the three proposed plans against the voting pattern in the indicated elections.

Figure 7: Here, an ensemble of 100,000 randomly drawn districting plans (shown in gray) is scored on the *efficiency gap* metric and on Egua’s county-based metric of *artificial partisan advantage*. Random plans tend to exhibit pronounced advantage to Republicans across this full suite of recent elections. GovPlan and CitizensPlan are seen to correct this tendency.

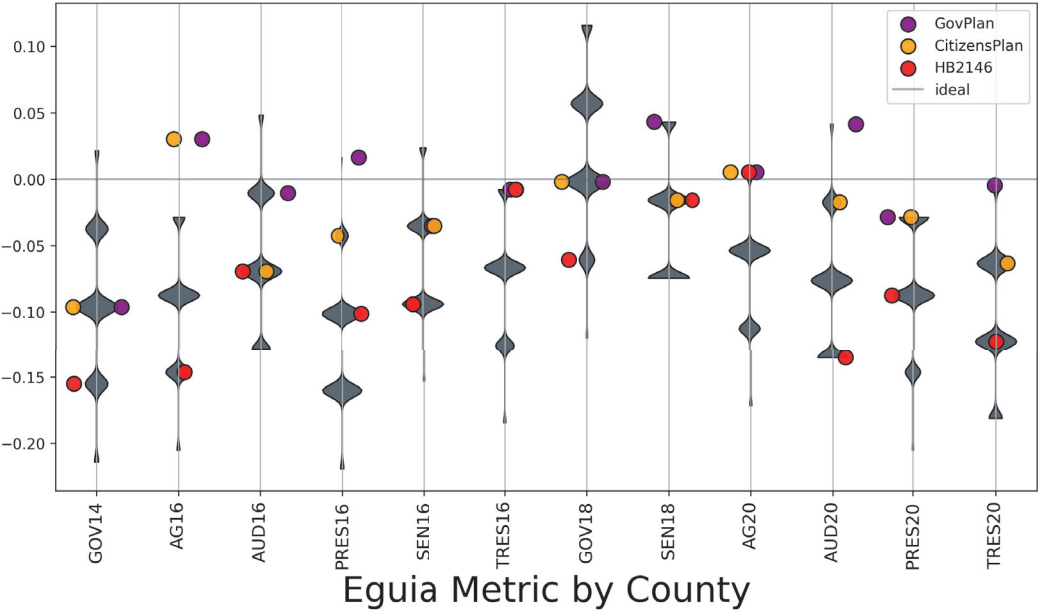
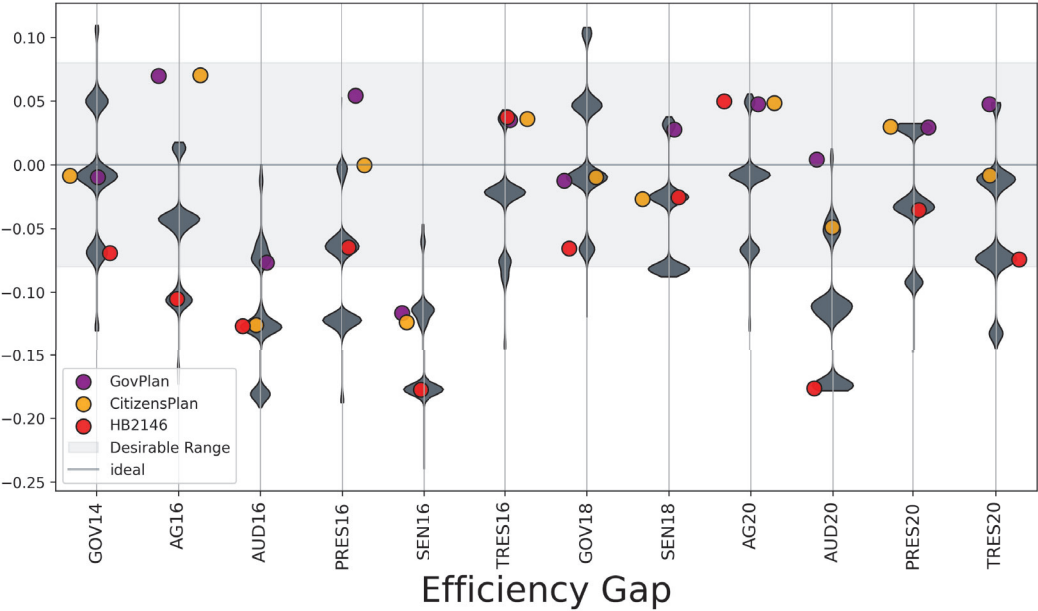
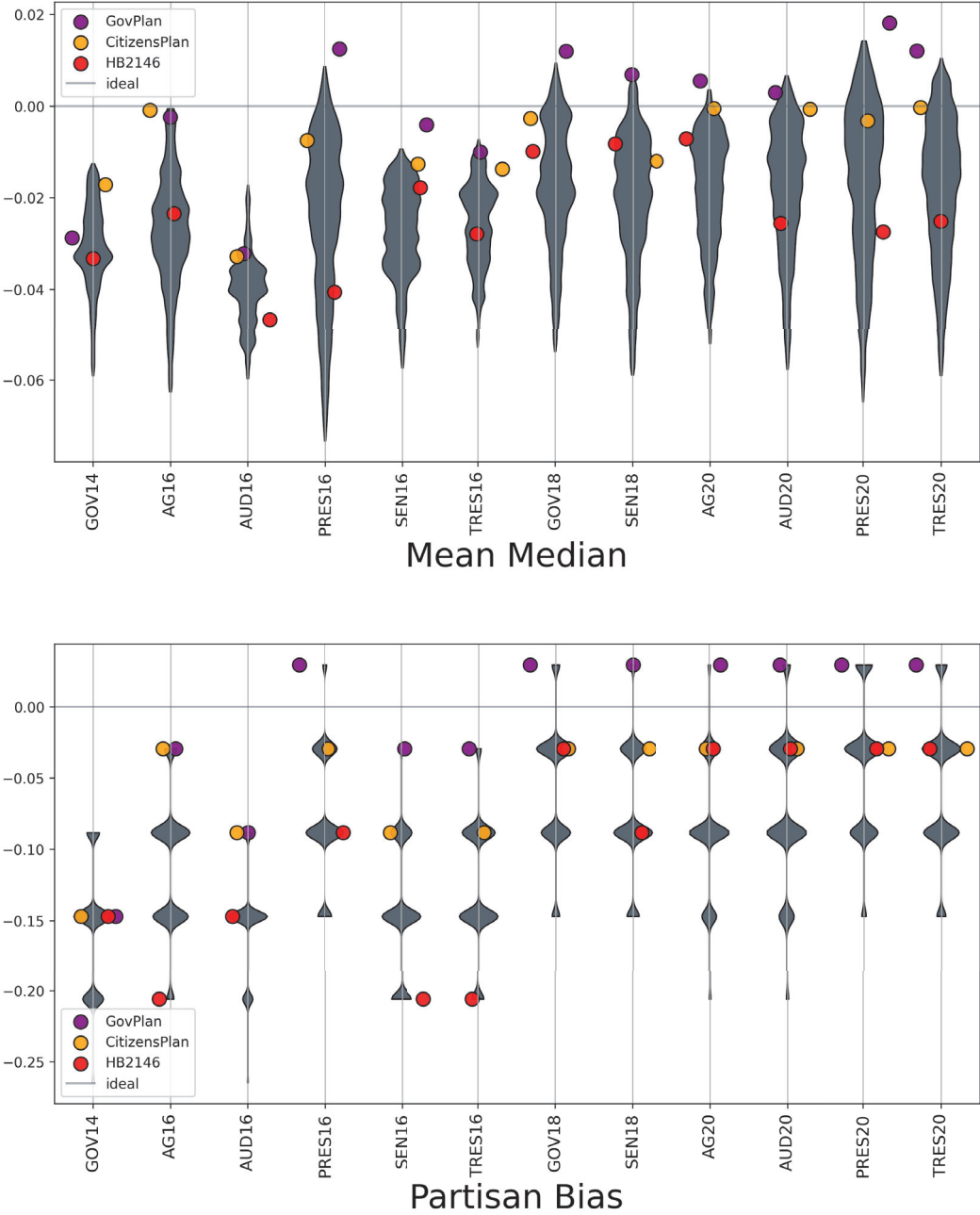


Figure 8: This time, the metrics are from the *partisan symmetry* family, namely the *mean-median score* and the *partisan bias score*. Once again, random plans favor Republicans, while GovPlan and CitizensPlan temper that tendency.



9 Conclusion

To summarize my findings, I will first return to the majority opinion of the Pennsylvania Supreme Court from 2018 as a touchstone. Justice Todd, having described the potential of computational redistricting to gerrymander, then strikes a more optimistic note.

We are confident, however, that, technology can also be employed to aid in the expeditious development of districting maps, the boundaries of which are drawn to scrupulously adhere to neutral criteria. Indeed, as this Court highlighted in *Holt I*, “the development of computer technology appears to have substantially allayed the initial, extraordinary difficulties in” meeting such criteria. *Holt I*, 38 A.3d at 760; see also *id.* At 750 (noting that, since 1991, technology has provided tools allowing mapmakers to “achieve increasingly ‘ideal’ districts”) (citing *Gormley, Legislative Reapportionment*, at 26–27, 45–47); see also *Larios v. Cox*, 305 F.Supp.2d. 1335, 1342 (N.D. Ga. 2004) (“given recent advances in computer technology, constitutional plans can be crafted in as short a period as one day”). As this Court views the record in this case, in the context of the computer technology of 2018, this thesis has clearly been proven.


These words ring true in 2022. Indeed, the science of computational redistricting has made great strides even in the last four years, and it is now possible to use algorithmic assistance not only to understand the universe of possibility created by the rules and priorities of redistricting, but to find novel combinations and configurations of geography that would have been very difficult to discover in previous census cycles. However, we do not need to outsource our line-drawing to the machines. Plans made with careful consideration of public input, like the Citizens’ Plan and the Governor’s Plan, can make good on the promise of computational redistricting while centering human geography and shared community interests. These plans reflect the voices of people across the state, secure excellent foundational scores on traditional criteria, and neutralize the tendency for blindly drawn plans to exhibit significant partisan bias. Thus, while protecting all of the good-government principles at play, we can secure a map that treats the parties even-handedly and safeguards the accountability of the representatives to the voters.

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I declare under penalty of perjury that the foregoing is true and correct.

Executed this 24th day of January, 2021.



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Education

University of Chicago Mathematics Advisor: Alex Eskin	Dissertation: <i>Geodesics track random walks in Teichmüller space</i>	MS 1999, PhD 2005
Harvard University Mathematics and Women's Studies		BA 1998

Appointments

Tufts University Professor of Mathematics Assistant Professor, Associate Professor		2021— 2011–2021
<i>Director</i> Program in Science, Technology, & Society (on leave 2018–2019)		2015–2021
<i>Principal Investigator</i> MGGG Redistricting Lab		2017—
<i>Senior Fellow</i> Tisch College of Civic Life		2017—
University of Michigan Assistant Professor (postdoctoral)		2008–2011
University of California, Davis NSF VIGRE Postdoctoral Fellow		2005–2008

Research Interests

Data science for civil rights, computation and governance, elections, geometry and redistricting.
 Science, technology, and society, science policy, technology and law.
 Random walks and Markov chains, random groups, random constructions in geometry.
 Large-scale geometry, metric geometry, isoperimetric inequalities.
 Geometric group theory, growth of groups, nilpotent groups, dynamics of group actions.
 Geometric topology, hyperbolicity, Teichmüller theory.

Awards & Distinctions

Research Professor - MSRI Program in Analysis and Geometry of Random Spaces	Spring 2022
Guggenheim Fellow	2018
Radcliffe Fellow - Evelyn Green Davis Fellowship	2018–2019
Fellow of the American Mathematical Society	elected 2017
NSF C-ACCEL (PI) - Harnessing the Data Revolution: Network science of Census data	2019–2020
NSF grants (PI) - CAREER grant and three standard Topology grants	2009–2022
Professor of the Year , Tufts Math Society	2012–2013
AAUW Dissertation Fellowship	2004–2005
NSF Graduate Fellowship	1998–2002
Lawrence and Josephine Graves Prize for Excellence in Teaching (U Chicago)	2002
Robert Fletcher Rogers Prize (Harvard Mathematics)	1995–1996

Mathematics Publications & Preprints

The (homological) persistence of gerrymandering

Foundations of Data Science, online first. (with Thomas Needham and Thomas Weighill)

You can hear the shape of a billiard table: Symbolic dynamics and rigidity for flat surfaces

Commentarii Mathematici Helvetici, to appear. arXiv:1804.05690

(with Viveka Erlandsson, Christopher Leininger, and Chandrika Sadanand)

Conjugation curvature for Cayley graphs

Journal of Topology and Analysis, online first. (with Assaf Bar-Natan and Robert Kropholler)

A reversible recombination chain for graph partitions

Preprint. (with Sarah Cannon, Dana Randall, and Parker Rule)

Recombination: A family of Markov chains for redistricting

Harvard Data Science Review. Issue 3.1, Winter 2021. online. (with Daryl DeFord and Justin Solomon)

Census TopDown: The impact of differential privacy on redistricting

2nd Symposium on Foundations of Responsible Computing (FORC 2021), 5:1–5:22. online.

(with Aloni Cohen, JN Matthews, and Bhushan Suwal)

Stars at infinity in Teichmüller space

Geometriae Dedicata, Volume 213, 531–545 (2021). (with Nate Fisher) arXiv:2004.04321

Random walks and redistricting: New applications of Markov chain Monte Carlo

(with Daryl DeFord) For edited volume, Political Geometry. Under contract with Birkhäuser.

Mathematics of nested districts: The case of Alaska

Statistics and Public Policy. Vol 7, No 1 (2020), 39–51. (w/ Sophia Caldera, Daryl DeFord, Sam Gutekunst, & Cara Nix)

A computational approach to measuring vote elasticity and competitiveness

Statistics and Public Policy. Vol 7, No 1 (2020), 69–86. (with Daryl DeFord and Justin Solomon)

The Heisenberg group is pan-rational

Advances in Mathematics **346** (2019), 219–263. (with Michael Shapiro)

Random nilpotent groups I

IMRN, Vol 2018, Issue 7 (2018), 1921–1953. (with Matthew Cordes, Yen Duong, Meng-Che Ho, and Ayla Sánchez)

Hyperbolic groups

chapter in *Office Hours with a Geometric Group Theorist*, eds. M.Clay, D.Margalit, Princeton U Press (2017), 177–203.

Counting in groups: Fine asymptotic geometry

Notices of the American Mathematical Society **63**, No. 8 (2016), 871–874.

A sharper threshold for random groups at density one-half

Groups, Geometry, and Dynamics **10**, No. 3 (2016), 985–1005.

(with Katarzyna Jankiewicz, Shelby Kilmer, Samuel Lelièvre, John M. Mackay, and Ayla Sánchez)

Equations in nilpotent groups

Proceedings of the American Mathematical Society **143** (2015), 4723–4731. (with Hao Liang and Michael Shapiro)

Statistical hyperbolicity in Teichmüller space

Geometric and Functional Analysis, Volume 24, Issue 3 (2014), 748–795. (with Howard Masur and Spencer Dowdall)

Fine asymptotic geometry of the Heisenberg group

Indiana University Mathematics Journal 63 No. 3 (2014), 885–916. (with Christopher Mooney)

Pushing fillings in right-angled Artin groups

Journal of the LMS, Vol 87, Issue 3 (2013), 663–688. (with Aaron Abrams, Noel Brady, Pallavi Dani, and Robert Young)

Spheres in the curve complex

In the Tradition of Ahlfors and Bers VI, Contemp. Math. **590** (2013), 1–8. (with Howard Masur and Spencer Dowdall)

The sprawl conjecture for convex bodies

Experimental Mathematics, Volume 22, Issue 2 (2013), 113–122. (with Samuel Lelièvre and Christopher Mooney)

Filling loops at infinity in the mapping class group

Michigan Math. J., Vol 61, Issue 4 (2012), 867–874. (with Aaron Abrams, Noel Brady, Pallavi Dani, and Robert Young)

The geometry of spheres in free abelian groups

Geometriae Dedicata, Volume 161, Issue 1 (2012), 169–187. (with Samuel Lelièvre and Christopher Mooney)

Statistical hyperbolicity in groups

Algebraic and Geometric Topology **12** (2012) 1–18. (with Samuel Lelièvre and Christopher Mooney)

Length spectra and degeneration of flat metrics

Inventiones Mathematicae, Volume 182, Issue 2 (2010), 231–277. (with Christopher Leininger and Kasra Rafi)

Divergence of geodesics in Teichmüller space and the mapping class group

Geometric and Functional Analysis, Volume 19, Issue 3 (2009), 722–742. (with Kasra Rafi)

Curvature, stretchiness, and dynamics

In the Tradition of Ahlfors and Bers IV, Contemp. Math. **432** (2007), 19–30.

Geodesics track random walks in Teichmüller space

PhD Dissertation, University of Chicago 2005.

Science, Technology, Law, and Policy Publications & Preprints

Models, Race, and the Law

Yale Law Journal Forum, Vol. 130 (March 2021). Available online. (with Doug Spencer)

Computational Redistricting and the Voting Rights Act

Election Law Journal, Available online. (with Amariah Becker, Dara Gold, and Sam Hirsch)

Discrete geometry for electoral geography

Preprint. (with Bridget Eileen Tenner) arXiv:1808.05860

Implementing partisan symmetry: Problems and paradoxes

Political Analysis, to appear. (with Daryl DeFord, Natasha Dhamankar, Mackenzie McPike, Gabe Schoenbach, and Ki-Wan Sim) arXiv:2008:06930

Clustering propensity: A mathematical framework for measuring segregation

Preprint. (with Emilia Alvarez, Everett Meike, and Marshall Mueller; appendix by Tyler Piazza)

Locating the representational baseline: Republicans in Massachusetts

Election Law Journal, Volume 18, Number 4, 2019, 388–401.

(with Taissa Gladkova, Eugene Henninger-Voss, Ben Klingensmith, Heather Newman, and Hannah Wheelen)

Redistricting reform in Virginia: Districting criteria in context

Virginia Policy Review, Volume XII, Issue II, Spring 2019, 120–146. (with Daryl DeFord)

Geometry v. Gerrymandering

The Best Writing on Mathematics 2019, ed. Mircea Pitici. Princeton University Press.

reprinted from Scientific American, November 2018, 48–53.

Gerrymandering metrics: How to measure? What's the baseline?

Bulletin of the American Academy for Arts and Sciences, Vol. LXII, No. 2 (Winter 2018), 54–58.

Rebooting the mathematics of gerrymandering: How can geometry track with our political values?

The Conversation (online magazine), October 2017. (with Peter Levine)

A formula goes to court: Partisan gerrymandering and the efficiency gap

Notices of the American Mathematical Society **64** No. 9 (2017), 1020–1024. (with Mira Bernstein)

International mobility and U.S. mathematics

Notices of the American Mathematical Society **64**, No. 7 (2017), 682–683.

Graduate Advising in Mathematics

Nate Fisher (PhD 2021), Sunrose Shrestha (PhD 2020), Ayla Sánchez (PhD 2017),
Kevin Buckles (PhD 2015), Mai Mansouri (MS 2014)

Outside committee member for Chris Coscia (PhD 2020), Dartmouth College

Postdoctoral Advising in Mathematics

Principal supervisor Thomas Weighill (2019–2020)

Co-supervisor Daryl DeFord (MIT 2018–2020), Rob Kropholler (2017–2020), Hao Liang (2013–2016)

Teaching

Courses Developed or Customized

Mathematics of Social Choice | sites.tufts.edu/socialchoice

Voting theory, impossibility theorems, redistricting, theory of representative democracy, metrics of fairness.

History of Mathematics | sites.tufts.edu/histmath

Social history of mathematics, organized around episodes from antiquity to present. Themes include materials and technologies of creation and dissemination, axioms, authority, credibility, and professionalization. In-depth treatment of mathematical content from numeration to cardinal arithmetic to Galois theory.

Reading Lab: Mathematical Models in Social Context | sites.tufts.edu/models

One hr/wk discussion seminar of short but close reading on topics in mathematical modeling, including history of psychometrics; algorithmic bias; philosophy of statistics; problems of model explanation and interpretation.

Geometric Literacy

Module-based graduate topics course. Modules have included: p -adic numbers, hyperbolic geometry, nilpotent geometry, Lie groups, convex geometry and analysis, the complex of curves, ergodic theory, the Gauss circle problem.

Markov Chains (graduate topics course)

Teichmüller Theory (graduate topics course)

Fuchsian Groups (graduate topics course)

Continued Fractions and Geometric Coding (undergraduate topics course)

Mathematics for Elementary School Teachers

Standard Courses

Discrete Mathematics, Calculus I-II-III, Intro to Proofs, Linear Algebra, Complex Analysis, Differential Geometry, Abstract Algebra, Graduate Real Analysis, Mathematical Modeling and Computation

Weekly Seminars Organized

- Geometric Group Theory and Topology
- Science, Technology, and Society Lunch Seminar

Selected Talks and Lectures

Distinguished Plenary Lecture 75th Anniversary Meeting of Canadian Mathematical Society, Ottawa, Ontario	June 2021 <i>online (COVID)</i>
BMC/BAMC Public Lecture Joint British Mathematics/Applied Mathematics Colloquium, Glasgow, Scotland	April 2021 <i>online (COVID)</i>
AMS Einstein Public Lecture in Mathematics Southeastern Sectional Meeting of the AMS, Charlottesville, VA	[March 2020] <i>postponed</i>
Gerald and Judith Porter Public Lecture AMS-MAA-SIAM, Joint Mathematics Meetings, San Diego, CA	January 2018
Mathematical Association of America Distinguished Lecture MAA Carriage House, Washington, DC	October 2016
American Mathematical Society Invited Address AMS Eastern Sectional Meeting, Brunswick, ME	September 2016

Named University Lectures

- Parsons Lecture UNC Asheville	October 2020
- Loeb Lectures in Mathematics Washington University in St. Louis	[March 2020]
- Math, Stats, CS, and Society Macalester College	October 2019
- MRC Public Lecture Stanford University	May 2019
- Freedman Memorial Colloquium Boston University	March 2019
- Julian Clancy Frazier Colloquium Lecture U.S. Naval Academy	January 2019
- Barnett Lecture University of Cincinnati	October 2018
- School of Science Colloquium Series The College of New Jersey	March 2018
- Kieval Lecture Cornell University	February 2018
- G. Milton Wing Lectures University of Rochester	October 2017
- Norman Johnson Lecture Wheaton College	September 2017
- Dan E. Christie Lecture Bowdoin College	September 2017

Math/Computer Science Department Colloquia

- Reed College	Dec 2020	- Université de Neuchâtel	Jun 2016
- Georgetown (CS)	Sept 2020	- Brandeis University	Mar 2016
- Santa Fe Institute	July 2020	- Swarthmore College	Oct 2015
- UC Berkeley	Sept 2018	- Bowling Green	May 2015
- Brandeis-Harvard-MIT-NEU	Mar 2018	- City College of New York	Feb 2015
- Northwestern University	Oct 2017	- Indiana University	Nov 2014
- University of Illinois	Sept 2017	- the Technion	Oct 2014
- University of Utah	Aug 2017	- Wisconsin-Madison	Sept 2014
- Wesleyan	Dec 2016	- Stony Brook	March 2013
- Worcester Polytechnic Inst.	Dec 2016		

Minicourses

- Integer programming and combinatorial optimization (two talks) | Georgia Tech May 2021
- Workshop in geometric topology (main speaker, three talks) | Provo, UT June 2017
- Growth in groups (two talks) | MSRI, Berkeley, CA August 2016
- Hyperbolicity in Teichmüller space (three talks) | Université de Grenoble May 2016
- Counting and growth (four talks) | IAS Women's Program, Princeton May 2016
- Nilpotent groups (three talks) | Seoul National University October 2014
- Sub-Finsler geometry of nilpotent groups (five talks) | Galatasaray Univ., Istanbul April 2014

Science, Technology, and Society

- The Mathematics of Accountability | Sawyer Seminar, Anthropology, Johns Hopkins February 2020
- STS Circle | Harvard Kennedy School of Government September 2019
- Data, Classification, and Everyday Life Symposium | Rutgers Center for Cultural Analysis January 2019
- Science Studies Colloquium | UC San Diego January 2019
- Arthur Miller Lecture on Science and Ethics | MIT Program in Science, Tech, and Society November 2018

Data Science, Computer Science, Quantitative Social Science

- Data Science for Social Good Workshop (DS4SG) | Georgia Tech (virtual) November 2020
- Privacy Tools Project Retreat | Harvard (virtual) May 2020
- Women in Data Science Conference | Microsoft Research New England March 2020
- Quantitative Research Methods Workshop | Yale Center for the Study of American Politics February 2020
- Societal Concerns in Algorithms and Data Analysis | Weizmann Institute December 2018
- Quantitative Collaborative | University of Virginia March 2018
- Quantitative Social Science | Dartmouth College September 2017
- Data for Black Lives Conference | MIT November 2017

Political Science, Geography, Law, Democracy, Fairness

- The Long 19th Amendment: Women, Voting, and American Democracy | Radcliffe Institute Nov-Dec 2020
- "The New Math" for Civil Rights | Social Justice Speaker Series, Davidson College November 2020
- Math, Law, and Racial Fairness | Justice Speaker Series, University of South Carolina November 2020
- Voting Rights Conference | Northeastern Public Interest Law Program September 2020
- Political Analysis Workshop | Indiana University November 2019
- Program in Public Law Panel | Duke Law School October 2019
- Redistricting 2021 Seminar | University of Chicago Institute of Politics May 2019
- Geography of Redistricting Conference Keynote | Harvard Center for Geographic Analysis May 2019
- Political Analytics Conference | Harvard University November 2018
- Cyber Security, Law, and Society Alliance | Boston University September 2018
- Clough Center for the Study of Constitutional Democracy | Boston College November 2017
- Tech/Law Colloquium Series | Cornell Tech November 2017
- Constitution Day Lecture | Rockefeller Center for Public Policy, Dartmouth College September 2017

Editorial Boards

Harvard Data Science Review

Associate Editor since 2019

Advances in Mathematics

Member, Editorial Board since 2018

Selected Professional and Public Service

Amicus Brief of Mathematicians, Law Professors, and Students <i>principal co-authors: Guy-Uriel Charles and Moon Duchin</i> Supreme Court of the United States, in Rucho v. Common Cause - cited in dissent	2019
Committee on Science Policy American Mathematical Society	2020–2023
Program Committee Symposium on Foundations of Responsible Computing	2020–2021
Presenter on Public Mapping, Statistical Modeling National Conference of State Legislatures	2019, 2020
Committee on the Human Rights of Mathematicians American Mathematical Society	2016–2019
Committee on The Future of Voting: Accessible, Reliable, Verifiable Technology National Academies of Science, Engineering, and Medicine	2017–2018

Visiting Positions and Residential Fellowships

Visiting Professor Department of Mathematics Boston College Chestnut Hill, MA	Fall 2021
Fellow Radcliffe Institute for Advanced Study Harvard University Cambridge, MA	2018–19
Member Center of Mathematical Sciences and Applications Harvard University Cambridge, MA	2018–19
Visitor Microsoft Research Lab MSR New England Cambridge, MA	2018–19
Research Member Geometric Group Theory program Mathematical Sciences Research Institute Berkeley, CA	Fall 2016
Research Member Random Walks and Asymptotic Geometry of Groups program Institut Henri Poincaré Paris, France	Spring 2014
Research Member Low-dimensional Topology, Geometry, and Dynamics program Institute for Computational and Experimental Research in Mathematics Providence, RI	Fall 2013
Research Member Geometric and Analytic Aspects of Group Theory program Institut Mittag-Leffler Stockholm, Sweden	May 2012
Research Member Quantitative Geometry program Mathematical Sciences Research Institute Berkeley, CA	Fall 2011
Postdoctoral Fellow Teichmüller "project blanc" Agence Nationale de la Recherche (Collège de France) Paris, France	Spring 2009

Exhibit 2

Response Report on Congressional Districting Plans in Pennsylvania

Moon Duchin

**Professor of Mathematics, Tufts
University Senior Fellow, Tisch College of
Civic Life**

January 26, 2022

Response Report on Congressional Districting Plans in Pennsylvania

Moon Duchin
Professor of Mathematics, Tufts University
Senior Fellow, Tisch College of Civic Life

January 26, 2022

1 Assignment and qualifications

I am a Professor of Mathematics and a Senior Fellow in the Jonathan M. Tisch College of Civic Life at Tufts University. At Tisch College, I am the principal investigator of an interdisciplinary research lab focused on geometric and computational aspects of redistricting. I was recently awarded a major grant from the National Science Foundation to study *Network Science of Census Data*. My areas of research and teaching include the structure of census data, the design and implementation of randomized algorithms for generating districting plans, and the analysis of partisan fairness and of redistricting more broadly.

I have previously submitted a report in this case, and this report is in response to the filings of January 24, 2022.

2 Overview of plans

In my previous report, I compared three 17-district plans:

- HB-2146– derived from a plan by Amanda Holt, modified and then passed by the House of Representatives on Jan 12, 2022 and now by the Senate on Jan 24, 2022;
- CitizensPlan– derived from citizen-submitted contest entries in the Draw the Lines PA competition; and
- GovPlan– developed by the Governor’s office, derived from submissions to a public portal.

To these I will add ten other plans that were submitted to the Commonwealth Court on January 24, 2022.

- Carter– plan by Carter petitioner group, developed by Dr. Jonathan Rodden using a least-change principle;
- Gressman/GMS– plan by Gressman petitioner group, developed through mathematical optimization techniques;
- HouseDemCaucus– plan by House Democratic Caucus;
- SenateDemCaucus1– first plan by Senate Democratic Caucus;
- SenateDemCaucus2– second plan by Senate Democratic Caucus;
- Resenthaler1– first plan by Congressman Resenthaler et al.;

- Reschenthaler2– second plan by Congressman Reschenthaler et al.;
- CitizenVoters– plan by "Citizen Voters" amici;
- VotersOfPA– plan by "Voters of the Commonwealth of Pennsylvania" amici;
- KhalifAli– plan by Khalif Ali et al. on behalf of the Public Interest Law Center.

3 An excellence standard for traditional criteria

Redistricting is not a literal optimization problem; if one plan splits an additional county with respect to another, it need not be disqualified, because plans are made in view of many legitimate, competing, and sometimes qualitative goals.¹ Even if we desired to seek literal optimization, there is no standard or universal way to optimize several factors at once. And even if we wanted to prioritize, say, compactness, we are still left with dozens of different compactness metrics and a question of how to aggregate them over a 17-district plan. The quantitative metrics describing traditional redistricting principles are helpful but not dispositive in our search for the best and fairest plan available.

Rather, the traditional/neutral principles serve as "a 'floor' of protection," in the words of the LWV decision. This means that if we can identify a level that constitutes *excellent* alignment with traditional principles, we should treat this as a threshold after which we may legitimately consider other aspects of a plan in coming to an ultimate selection.

3.1 Plans meeting the excellence standard for traditional criteria

All 13 plans are contiguous, and all 13 plans are closely population-balanced for either Census PL population or prisoner-adjusted population. This means that the neutral criteria most relevant for distinguishing the plans are **compactness** and **respect for counties and municipalities**.

I have based my review of six compactness metrics: five contour-based metrics named by the Court in 2018 and one discrete metric.

Table 1: Comparison of compactness and splitting metrics.

name	mean Polsby	mean Schwartz	mean Reock	mean ConvHull	mean PopPoly	cut edges	split counties	county pieces	split munis	muni pieces
GovPlan	0.3808	1.6534	0.4313	0.8257	0.7834	5185	16	35	18	37
CitizensPlan	0.3785	1.6625	0.4512	0.8120	0.7725	5237	14	30	16	33
HB-2146	0.3212	1.8197	0.4087	0.7987	0.7524	5907	15	33	16	34
Carter	0.3214	1.8103	0.4499	0.7922	0.7416	5926	14	31	20	41
Gressman/GMS	0.3478	1.7351	0.4261	0.8176	0.7582	5582	15	32	16	33
HouseDemCaucus	0.2787	1.9693	0.4286	0.7717	0.7205	6853	16	34	18	37
SenateDemCaucus1	0.3147	1.8144	0.4137	0.7918	0.7519	6047	17	36	19	39
SenateDemCaucus2	0.3346	1.7478	0.4146	0.8153	0.7601	5505	16	34	16	33
Reschenthaler1	0.3629	1.6859	0.4347	0.8238	0.7737	5090	13	29	16	33
Reschenthaler2	0.3524	1.7127	0.4231	0.8161	0.7658	5237	13	29	16	33
CitizenVoters	0.3490	1.7133	0.4412	0.8082	0.7575	5173	14	31	16	33
VotersOfPA	0.3965	1.6069	0.4697	0.8209	0.7681	5052	15	31	18	37
KhalifAli	0.3523	1.7204	0.4448	0.8111	0.7456	5266	16	35	18	37

By far the two most compact plans, considering these metrics overall, are VotersOfPA and GovPlan. The next two, some ways behind the leaders, are Reschenthaler1 and CitizensPlan.

When it comes to splits, I judge all of the plans to be excellent, with the possible exception of Carter and SenateDemCaucus1. All eleven others have 13-16 county splits and 16-18 municipality splits, which may be close to optimal for reasonable 17-district plans in Pennsylvania (though it is computationally intractable to prove this rigorously).

¹Optimization techniques may, of course, still be highly helpful for finding valuable examples of plans.

Therefore I judge that plans that meet a high excellence standard for traditional criteria are

- GovPlan
- VotersOfPA
- Reschenthaler1
- CitizensPlan

The next tier of plans meeting an excellence standard for traditional criteria are

- KhalifAli
- Reschenthaler2

4 Partisan fairness does not require loosening neutral criteria

4.1 Using election data

To understand partisan fairness in the context of the range of electoral conditions in Pennsylvania, it is crucial to observe a range of voting behavior in the state. This is why creating a "voting index" or "election blend" is highly inadvisable. To illustrate this, consider for example a state like Massachusetts, in which Senate and Presidential elections are strongly Democratic (with something like a 2-to-1 ratio) and Governor elections are sometimes strongly Republican (approaching a 2-to-1 ratio in the other direction). If you simply averaged these, you would produce an index that looks "purple," with many precincts evenly split between a Democratic and Republican preference—a pattern that never actually occurs in the state.

This means that there are two options for a responsible modeler: either show observed elections serially, one at a time and not averaged, so that the local effects of incumbency and office and national climate can be considered in assessing the pattern, or study how and whether the Congressional voting patterns do in fact resemble a statewide average, and how they differ. Of the expert reports assessing partisan fairness, I have taken the former approach, along with Daryl DeFord, and Jonathan Rodden has taken the latter approach.

Michael Barber's report does neither, basing the bulk of his analysis on a blend of elections and even applying a swing to the election mix rather than regarding the actual observed elections serially.²

²A corollary of this blending approach, especially under the time constraints of a compressed court schedule, is that the accuracy of his results is harder to audit. But in at least one case he is clearly in error. Dr. Barber reports that CD 16 (Erie) in HB-2146 is a swing district—that is, it is sometimes won by the Democrat and sometimes by the Republican across the 11 elections in his principal dataset. This is false—this district went for the Republican in 11 out of 11 elections. Even in the Governor's race of 2018, in which the Democratic candidate achieved nearly 59% share statewide, this district had more votes for the Republican. Since this is one of only a few cases in which there was enough information to audit Dr. Barber's report for accuracy, I assume there are many similar errors in the handling of electoral data.

4.2 Overview of partisan performance by election

Table 2: Partisan outcomes (number of D seats) by election.

Plan	GOV14	AG16	AUD16	PRES16	SEN16	TRES16	GOV18	SEN18	AG20	AUD20	PRES20	TRES20
GovPlan	10	10	8	9	6	10	11	11	10	8	9	9
CitizensPlan	10	10	7	8	6	10	11	10	10	7	9	8
HB-2146	9	7	7	7	5	10	10	10	10	5	8	7
Carter	10	10	8	8	6	10	11	11	10	7	9	9
Gressman/GMS	10	10	8	8	9	10	11	10	10	8	9	8
HouseDemCaucus	10	10	8	8	6	10	11	11	11	8	10	9
SenateDemCaucus1	10	9	8	7	7	9	11	11	10	7	9	7
SenateDemCaucus2	10	10	8	9	7	10	11	10	10	8	9	9
Resenthaler1	9	6	7	7	5	8	10	9	9	6	8	7
Resenthaler2	9	6	7	7	5	8	10	9	9	6	8	7
CitizenVoters	9	9	8	8	5	10	11	10	10	7	8	8
VotersOfPA	9	8	8	8	5	10	11	9	10	6	8	8
KhalifAli	9	8	9	7	7	10	11	11	10	6	9	7

4.3 Plans dominating the field under partisan fairness metrics

Table 3: Comparison of all plans under four metrics of fairness in the economics and political science literature.

	total efficiency gap	total Eguia metric	total mean-median	total partisan bias
GovPlan	0.1007	-0.0486	-0.0077	-0.1176
CitizensPlan	-0.1678	-0.3427	-0.1042	-0.6471
HB-2146	-0.8336	-0.9898	-0.2927	-1.2353
Carter	-0.0058	-0.1663	-0.113	-0.5294
Gressman/GMS	0.1394	-0.0486	-0.0385	-0.2353
HouseDemCaucus	0.1814	0.0102	-0.0071	0.1765
SenateDemCaucus1	-0.2601	-0.4015	-0.1382	-0.7059
SenateDemCaucus2	0.1221	-0.0486	0.0106	0.1176
Resenthaler1	-1.1024	-1.2251	-0.2524	-1.1176
Resenthaler2 2	-1.1042	-1.2251	-0.2534	-1.0588
CitizenVoters	-0.4074	-0.5192	-0.1847	-0.6471
VotersOfPA	-0.5686	-0.6957	-0.2734	-0.8824
KhalifAli	-0.3166	-0.4604	-0.1209	-0.4706
ensemble mean	-0.6755	-0.8451	-0.2872	-1.1437

In the study of optimizing multiple objectives, we say that one data point **dominates** another if it is equal or better in every metric. A data point that is not dominated by any other is on the *Pareto frontier* of the dataset.

Of the twelve other plans, the Governor's Plan dominates 10 and is in a trade-off position with the other two (Carter and HouseDemCaucus). No plan dominates the Governor's plan. From this "Pareto frontier" perspective, the Governor's plan is the strongest in the field.³

³Of these four metrics, three have been subjected to much more scrutiny in the peer-reviewed literature, with Eguia's metric being newer and less tested. If you throw out the Eguia metric and restrict to the three better-established ones, the list of dominating plans is unchanged.

5 Conclusion

Most of the plans before the court are very good on the traditional districting principles and would be well over the line to be considered for adoption under normal circumstances. Even if a standard of *excellence* is imposed on the neutral criteria, I find four plans (GovPlan, VotersOfPA, Reschenthaler1, and CitizensPlan) to be in the top tier, followed by two more (KhalifAli, Reschenthaler2). Many of the others, I emphasize, are also very strong.

But among those that meet the quality standards for the neutral criteria, we are not required to choose by a beauty contest of numerical optimization. Instead, we should rightly consider factors like whether community input was meaningfully incorporated into the plan design and whether the ultimate effect of the plan will be one of treating the political parties fairly and even-handedly.

In partisan terms, a multi-optimization framework applied to traditional scores of partisan fairness would identify three plans—GovPlan, Carter, and HouseDemCaucus—as dominating the field.

Therefore it is my conclusion that the Governor's plan is an excellent choice (though not the only reasonable choice) as the best plan before the Court.

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7 MM 2022

**IN THE SUPREME COURT OF PENNSYLVANIA
MIDDLE DISTRICT**

7 MM 2022

CAROL ANN CARTER, MONICA PARRILLA, REBECCA POYOUROW,
WILLIAM TUNG, ROSEANNE MILAZZO, BURT SIEGEL, SUSAN
CASSANELLI, LEE CASSANELLI, LYNN WACHMAN, MICHAEL
GUTTMAN, MAYA FONKEU, BRADY HILL, MARY ELLEN BALCHUNIS,
TOM DEWALL, STEPHANIE MCNULTY AND JANET TEMIN,
Petitioners

v.

LEIGH M. CHAPMAN, IN HER OFFICIAL CAPACITY AS THE ACTING
SECRETARY OF THE COMMONWEALTH OF PENNSYLVANIA;
JESSICA MATHIS, IN HER OFFICIAL CAPACITY AS DIRECTOR FOR
THE PENNSYLVANIA BUREAU OF ELECTION SERVICES AND
NOTARIES,
Respondents

**EXCEPTIONS OF SENATOR JAY COSTA AND THE SENATE
DEMOCRATIC CAUCUS TO THE FEBRUARY 7, 2022 REPORT OF THE
SPECIAL MASTER**

Proceedings Following Exercise of Extraordinary Jurisdiction Over
Petitioners' Petition for Review and Action Previously Filed at
Commonwealth Court of Pennsylvania Docket No. 464 M.D. 2021 and the
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Senator Jay Costa, Et Al. (Senate Democratic Caucus)

**EXCEPTIONS OF SENATOR JAY COSTA AND THE SENATE
DEMOCRATIC CAUCUS TO THE FEBRUARY 7, 2022 REPORT OF THE
SPECIAL MASTER**

With a February 2, 2022 Order, this Court granted an application to assume extraordinary jurisdiction over the proposed Congressional redistricting process that had been initiated in the Commonwealth Court. With the same order, the Court designated Judge Patricia A. McCullough, who had been conducting the Commonwealth Court proceedings, to serve as the Special Master for the Court. It directed her to file recommended findings of fact and conclusions of law, with a recommended redistricting plan and proposed changes to the elections calendar, by February 7, 2022. The Court allowed any party or *amicus curiae* to file any exceptions to the Special Master's Report, with any supporting brief, by February 14, 2022. *See id.*

In accordance with the Court's order, Senator Jay Costa and the Senate Democratic Caucus submit their Exceptions to the February 7, 2022 Report of the Special Master. Their brief in support of the exceptions is being contemporaneously filed.

EXCEPTIONS TO THE FEBRUARY 2, 2022 REPORT

As further explained in the accompanying Brief in Support of the Exceptions, Senator Jay Costa and the Senate Democratic Caucus except to the Special Master's February 2, 2022 Report for the following reasons:

1. The Special Master fundamentally misinterpreted and misapplied this Court's decision in *League of Women Voters v. Com.*, 178 A.3d 737 (Pa. 2018).
2. The Special Master improperly conflated the distinct concepts of symmetry and proportionality.
3. The Special Master erred in making a finding of credibility with respect to two witnesses, Dr. Michael Barber and Dr. Keith Naughton, contrary to the record evidence and the witnesses' admissions.
4. The Special Master erred as a matter of law in incorrectly concluding that the City of Pittsburgh may never be divided into multiple Congressional districts.
5. The Special Master concluded, contrary to this Court's decision in *League of Women Voters*, that "political geography" justifies vote dilution.
6. The Special Master erred in affording deference to a redistricting plan that had passed through the General Assembly but which the Governor vetoed, instead of concluding it was a failed legislative enactment that cannot be afforded any deference without violating the separation of powers.
7. The Special Master erred in proposing an election calendar that ignores the realities of other election-related matters before this Court, particularly the Legislative Reapportionment Commission's recent approval of a Final Plan for the State House and State Senate districts.

For these reasons and for the reasons set forth in their supporting Brief, Senator Jay Costa and the Senate Democratic Caucus ask this Court to adopt one of the plans that the Senate Democratic Caucus submitted or, at a minimum, to reject the Special Master's recommendation of the map identified as HB 2146. They also ask the Court to adopt a schedule for the

2022 Primary Election and pre-Primary calendar that provides for a single, unified Primary Election involving both state and federal elections. With appropriate consideration of the other proceedings before this Court, it may be possible to preserve the May 17, 2022 Primary Election date.

Respectfully Submitted:

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Dated: February 14, 2022

*On Behalf of Counsel for Intervenors
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CERTIFICATE OF COMPLIANCE

I certify that this filing complies with the provisions of the *Public Access Policy of the Unified Judicial System of Pennsylvania: Case Records of the Appellate and Trial Courts* that require filing confidential information and documents differently than non-confidential information and documents.

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing document was served via PACfile Proof of Service, this 14th day of February, 2022, upon all counsel.

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**IN THE SUPREME COURT OF PENNSYLVANIA
MIDDLE DISTRICT**

7 MM 2022

CAROL ANN CARTER, MONICA PARRILLA, REBECCA POYOUROW,
WILLIAM TUNG, ROSEANNE MILAZZO, BURT SIEGEL, SUSAN
CASSANELLI, LEE CASSANELLI, LYNN WACHMAN, MICHAEL
GUTTMAN, MAYA FONKEU, BRADY HILL, MARY ELLEN BALCHUNIS,
TOM DEWALL, STEPHANIE MCNULTY AND JANET TEMIN,
Petitioners

v.

LEIGH M. CHAPMAN, IN HER OFFICIAL CAPACITY AS THE ACTING
SECRETARY OF THE COMMONWEALTH OF PENNSYLVANIA;
JESSICA MATHIS, IN HER OFFICIAL CAPACITY AS DIRECTOR FOR
THE PENNSYLVANIA BUREAU OF ELECTION SERVICES AND
NOTARIES,
Respondents

**BRIEF OF INTERVENORS, SENATOR JAY COSTA AND THE SENATE
DEMOCRATIC CAUCUS, IN SUPPORT OF THEIR EXCEPTIONS TO
THE FEBRUARY 7, 2022 REPORT OF THE SPECIAL MASTER**

Proceedings Following Exercise of Extraordinary Jurisdiction Over
Petitioners' Petition for Review and Action Previously Filed at
Commonwealth Court of Pennsylvania Docket No. 464 M.D. 2021 and the
February 7, 2022 Special Master's Report

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STATEMENT OF JURISDICTION

This Court has jurisdiction over these consolidated actions pursuant to 42 Pa.C.S. § 726 (providing this Court with authority to exercise extraordinary jurisdiction over any matter in Pennsylvania's courts), and its February 2, 2022 Order exercising extraordinary jurisdiction, see February 2, 2022 Order at 1.

INTRODUCTION

In 2018, this Court held that the Free and Equal Elections Clause of the Pennsylvania Constitution requires a Congressional redistricting plan to “create representational districts that both maintain the geographical and social cohesion of the communities in which people live and conduct that majority of their day-to-day affairs, and accord equal weight to the votes of residents in each of the various districts in determining the ultimate composition of the [federal] legislature.” *League of Woman Voters v. Commonwealth*, 178 A.3d 737, 814 (Pa. 2018). Consistent with these principles, the Court invalidated the existing plan and crafted a remedial one, which satisfied the constitutional requirements and which was used in the 2018 and 2020 Congressional elections.

Following the completion of the 2020 Census, the number of congressional seats allotted to Pennsylvania has been reduced from 18 to 17, precluding use of the 2018 remedial plan. With Congressional elections now pending, the political branches have failed to agree upon a new redistricting plan. This matter invokes this Court’s jurisdiction to resolve the impasse and to adopt a new remedial plan.

With its exercise of jurisdiction over this matter, the Court appointed Commonwealth Court Judge Patricia McCullough as a special master,

directing her to prepare a report with recommended findings of fact, conclusions of law and a recommended plan by February 7, 2022. The report that Judge McCullough issued (“Report”)¹ is marred by a number of significant factual and legal errors. These include:

- A fundamental misinterpretation of *League of Women Voters*;
- An improper conflation of the concepts of symmetry and proportionality;
- Flawed credibility determinations;
- An unsupported conclusion that the City of Pittsburgh may never be divided into multiple Congressional districts;
- An unsupportable conclusion that “political geography” justifies vote dilution;
- A flawed conclusion that a redistricting plan, which passed through the General Assembly and which the Governor vetoed, could be afforded deference and not viewed as the failed redistricting plan it was; and
- A proposed election calendar that ignores the realities of other election-related matters before this Court.

Based on her flawed understanding of the controlling law, the Special Master ultimately recommended a plan that fails to honor this Court’s dictate in *League of Women Voters* that equal weight must be accorded to the votes of residents in each of the various districts in determining the

¹ See February 2, 2022 Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendation of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule.

ultimate composition of the Pennsylvania's delegation to the United States House of Representatives.

This Court must now conduct its own review; adopt a plan that complies with constitutional dictates; and ensure the orderly administration of the 2022 elections in Pennsylvania.

STATEMENT OF THE CASE

A. Controlling Principles Of Redistricting

As this Court understood and explained in *League of Women Voters*, in developing a constitutionally sound Congressional map, Article I, Section 5 of the Pennsylvania Constitution forbids the dilution of voters' voices on the basis their membership in a particular group: "It is axiomatic that a diluted vote is not an equal vote, as all voters do not have an equal opportunity to translate their votes into representation." *League of Women Voters*, 178 A.3d at 814. Vote dilution can take the form of "lessening the power of an individual's vote based on the geographical area in which the individual resides" and is "impermissible" under Article I, Section 5. *Id.* at 816.

To avoid the unconstitutional dilution of votes, the Court is to look to the traditional neutral redistricting criteria drawn from the Constitution's Article II, Section 16, which governs the creation of state legislative

districts: districts must be compact, contiguous, and, where concerns Congressional districts, equal in population. *League of Women Voters*, 178 A.3d at 815 (citing Pa. Const. art. II, § 16). Counties, cities, incorporated towns, boroughs, townships, and wards should not be divided unless “absolutely necessary.” Pa. Const. art. II, § 16.

Adherence to these neutral criteria, in and of themselves, is not the objective. The “utility of these requirements [is] to prevent vote dilution.” *Id.* Failure to adhere to these neutral criteria “is not the exclusive means by which a violation of Article I, Section 5 may be established.” In *League of Women Voters*, this Court recognized the possibility that “advances in map drawing technology and analytical software can potentially allow mapmakers, in the future, to engineer congressional district maps, which, although minimally comports with these neutral ‘floor’ criteria, nevertheless operate to unfairly dilute the power of a particular group’s vote for a Congressional representative.” *Id.* at 817. The future that the Court anticipated has arrived.

B. Relevant Procedural Background

1. Parties To The Proceeding Before The Commonwealth Court

The Carter Petitioners and the Gressman Petitioners filed separate petitions with the Commonwealth Court, asking the court to select a

Congressional map.² Both sets of petitioners generally alleged that the political process would not produce a valid map in time for the 2022 Primary Election to be administered.

Several parties sought leave to intervene in the Commonwealth Court proceeding, and, following a hearing before Judge McCullough, the court allowed participation as follows:

Intervenors	<i>Amici Curiae</i>
Representative Kerry Benninghoff and Senator Jake Corman (“Republican Legislative Intervenors”)	Voters of the Commonwealth of Pennsylvania
Representative Joanna E. McClinton et al. (“House Democratic Caucus”)	Citizen-Voters
Senator Jay Costa et al. (“Senate Democratic Caucus”)	Draw the Lines - PA
Governor Tom Wolf	Khalif Ali, et al.
Congressman Guy Reschenthaler, et al. (“Congressional Republican Intervenors”)	

² The Carter Petitioners, a group of individual Pennsylvania voters, are: Carol Ann Carter, Monica Parilla, Rebecca Poyourow, William Tung, Roseanne Milazzo, Burt Ziegel, Susan Cassanelli, Lee Cassanelli, Lynn Wachman, Michael Guttman, Maya Fonekeu, Brady Hill, Mary Ellen Balchunis, Tom DeWall, Stephany McNulty, and Janet Temin. The Gressman Petitioners, a group of math and science professors in Pennsylvania, are: Philip T. Gressman, Ron Y. Donagi; Kristopher R. Tapp, Pamela Gorkin, David P. Marsh, James L. Rosenberger, Amy Myers, Eugene Bowman, Gary Gordon, Liz McMahon, Timothy G. Feeman, and Garth Isaak. With a December 20, 2021 order, the Commonwealth Court consolidated these cases.

See Order, 464 M.D. 2021 & 465 M.D. 2021 (filed Jan. 14, 2022).

2. Submissions To The Commonwealth Court

The Commonwealth Court directed the parties to submit, by January 24, 2022, proposed redistricting plans, with any supporting expert reports and/or briefs. Responsive expert reports and/or briefs were to be submitted by January 26, 2022. See *id.* The court scheduled an evidentiary hearing, which commenced on January 27, 2022. See *id.* The purpose of the hearing was to allow the parties to offer the testimony of their expert witnesses in support of their proposed maps and to give the parties the opportunity to cross-examine the expert witnesses.

a. Senate Democratic Caucus Maps³

The Senate Democratic Caucus submitted two maps, which are similar, but which contain three areas that reflect different perspectives on communities of interest:

- **Harrisburg:** Both maps keep Greater Harrisburg connected to the City of York and extend into its West Shore suburbs of Cumberland County. In Senate Democratic Caucus Map 1, the remainder of Dauphin County is included; and in Senate Democratic Caucus Map 2, the remainder of York County is

³ Many other parties submitted maps, including the Carter Petitioners, the Gressman Petitioners, Governor Wolf, the Republican Congressional Intervenors (who submitted two maps), the House Democratic Caucus, and several amici.

included. Both maps also keep together major areas of South-Central Pennsylvania.

- **Northeastern Pennsylvania:** The two maps make slight changes in the Pocono and Lehigh Valley regions. Senate Democratic Caucus Map 1 keeps the Lehigh Valley whole and includes Carbon County and the southernmost part of Monroe County. Senate Democratic Caucus Map 2 adds Carbon County and northern Lehigh County to Schuylkill, Montour, Columbia, and Northumberland Counties, keeping Monroe County whole. This map connects the majority of the Lehigh Valley with upper Bucks County.
- **Southeastern Pennsylvania:** The two maps present different divisions with respect to Montgomery County and the City of Philadelphia. Senate Democratic Caucus Map 1 keeps most of Bucks County whole and adds upper Montgomery County and southeastern Berks County. This map then places the remainder of Montgomery County wholly within its own district. In Senate Democratic Caucus Map 2, District 2 includes the northeast Philadelphia neighborhoods, the river wards, Center City, and lower Bucks County. District 3 incorporates portions of north and West Philadelphia in with portions of Center City. District 5 contains south Philadelphia and portions of Delaware County.

b. Republican Legislative Intervenors' Map

The Republican Legislative Intervenors (House and Senate) submitted a joint map, referred to as "HB 2146."⁴ HB 2146 was initiated as a House Bill, which both houses of the General Assembly passed and which Governor Wolf vetoed. Report at 30. HB 2146 took two currently

⁴ Although they submitted a joint map and relied on the same expert, the Special Master permitted the House Republican Legislative Intervenors and the Senate Republican Intervenors to otherwise operate separately, notably allowing them to give separate opening and closing statements.

Democratic districts in Allegheny County and created one solidly Democratic district and one solidly Republican district. In the Harrisburg area, HB 2146 separated the City of Harrisburg from the rest of Dauphin County, adding Adams County and York County.

In Northeastern Pennsylvania, HB 2146 drew the Poconos and the Scranton-Wilkes Barre area together with highly rural and Republican populations in Bradford, Wyoming, and Susquehanna Counties. The decisions reflected in HB 2146 demonstrate a lack of priority placed on creating competitive districts.

C. Selected Evidence Presented To The Special Master

1. Reports and Testimony of Dr. Devin Caughey (Witness on Behalf of the Senate Democratic Caucus)

The Senate Democratic Caucus offered the reports and testimony of Dr. Devin Caughey, Associate Professor in the Department of Political Science at the Massachusetts Institute of Technology, to assess the partisan fairness of the Senate Democratic Caucus maps, the Governor's Map, HB 2146, and Reschenthaler Map 2. Dr. Caughey is an expert in American politics, statistics, and issues of elections and representation. 1/28/2022 Tr. at 894. He has published academic articles on gerrymandering and has a forthcoming book on the topic. *Id.* at 894-95. He has also offered testimony in other redistricting cases. *Id.* at 895.

a. Partisan Fairness/Vote Dilution

In his pre-submitted reports and his testimony, Dr. Caughey discussed partisan fairness and vote dilution. He outlined four measures of partisan fairness, all designed to determine whether a map has been designed to “maximize one party’s prospects.” Supplemental Report at 3. Dr. Caughey calculated partisan symmetry, efficiency gap, mean-median difference, and declination differences for the 2018 Map drawn by this Court, Senate Democratic Caucus Maps 1 and 2, the Governor’s Map, HB 2146, and Reschenthaler Map 2. Dr. Caughey confirmed the partisan fairness of the 2018 Map and prudently applied his accepted methodology to the 2018 Map to ensure its reliability.

Dr. Caughey provided the following overall assessment of several of the maps, as reproduced from his Supplemental Report:

Metric	Current	Governor	HB 2146	SDC 1	SDC 2
Partisan Bias	2.1%	2.9%	6.3%	1.8%	1.5%
Efficiency Gap	2.9%	3.5%	6.6%	2.3%	2.4%
Mean-Median	0.8%	1.0%	2.3%	0.7%	0.5%
Declination	0.08	0.1	0.19	0.06	0.07

Caughey Supplemental Report at 22. Dr. Caughey testified that all of these metrics “are trying to tap into the same thing, which is how much does this map deviate from partisan fairness.” 1/28/2022 Tr. at 927.

b. Partisan Symmetry

As Dr. Caughey explained, partisan symmetry “is grounded in the idea that under a fair redistricting plan, the translation of votes into seats is neutral with respect to party.” Caughey Supplemental Report at 4. The parties should be treated equally with respect to the winner’s bonus either party receives by winning a majority of statewide votes: if a 51% Republican win translates into a 55% share of the seats, a 51% Democratic win should also translate into a 55% share of the seats. This concept is distinct from the concept of proportionality, which requires that a 51% vote share translate into exactly 51% of the seats. Dr. Caughey noted that, because the United States does not have a proportional electoral system, so-called “winner’s bonuses” are commonplace, where a vote share over 50% results in a super-proportional share of seats. *Id.* Partisan symmetry simply requires that the winner’s bonus be party-neutral. *Id.* This means that the winner’s bonus should yield the same percentage of seats regardless of whether the Democratic Party or Republican Party receives a majority of votes statewide.

As Dr. Caughey made clear, if a map awards a larger winner's bonus to one party than the other, that is evidence that that map dilutes votes.

Dr. Caughey testified that, under the Republicans' HB 2146, the winner's bonus for Republicans was "quite large[]," and that when Republicans win 51% of the votes, they would net out 58% of the seats. *Id.* at 934. He also testified that the map did not award the same size winner's bonus in the event of a Democratic win. *Id.* at 940. The partisan bias score of HB 2146 is triple that of the 2018 Map.

Dr. Caughey carefully distinguished the concepts of partisan symmetry and proportionality. Supplemental Report at 4. Proportional systems award parties the same proportion of seats as votes earned; this is not the same as insisting that a map award a winner's bonus to one party in circumstances in which it would award the same winner's bonus to the other. *See id.* Symmetry between the way the parties are treated "need not be proportional so long as seats-votes function is equally disproportionate for all parties." *Id.* To illustrate, a map in which a 51% win results in a 55% vote share for both Democrats and Republicans is symmetrical but not proportional. Dr. Caughey's unrefuted testimony established that these concepts are plainly distinct analytically.

2. Dr. Moon Duchin (Expert Witness on Behalf of Governor Wolf)

Dr. Moon Duchin, who is a Professor of Mathematics and Senior Fellow at the College of Civic Life at Tufts University and who has published extensively on redistricting analysis, testified on behalf of Governor Wolf. 1/27/2022 Tr. at 325. Like Dr. Caughey, Dr. Duchin discussed multiple metrics for assessing the partisan fairness of a map. She offered support for the Governor's Map.

Dr. Duchin testified that measures of partisan fairness allow for the assessment of whether a particular map engages in vote dilution. *Id.* at 328-29. The concept of partisan fairness, she said, "is about giving votes equal weight." *Id.* at 329. She concluded that all of the plans "are quite tightly population balanced." *Id.* at 331. She confirmed that all of the submitted plans were contiguous. *Id.* at 333. When assessing compactness, she indicated that all of the maps "are quite good" across different traditional metrics, but that some of the maps were more compact, including the Governor's Map. *Id.* at 334. By contrast, Dr. Duchin characterized HB 2146 as "one of the least compact" of the submitted maps. *Id.* at 335.

Dr. Duchin further explained that all of the maps did very well at minimizing splits, *id.* at 337, and that "absolute minimization" of splits was not the end goal of producing a map, since there are other required criteria

that must be met; the entire exercise “reflect decisions about those trade offs.” *Id.* at 338.

In terms of partisan fairness, Dr. Duchin commended the “agreement from the experts” that when assessing a plan, the partisan fairness of a plan reflects “how well it upholds the norms and ideals of representative democracy. You really want to see that the plan has the ability to translate more votes into more seats.” *Id.* at 351. She stated that HB 2146 misses the mark on partisan fairness and is not responsive to voter preferences. *Id.* at 364.

Dr. Duchin also discussed the political geography in Pennsylvania. She noted that the distribution of voters across the Commonwealth “manifestly doesn’t prevent you from drawing a fair map.” *Id.* at 380. Partisan fairness in Pennsylvania can be achieved, according to Dr. Duchin, “at no cost at all to the traditional [redistricting] principles.” *Id.* at 382. The Carter Petitioners’ expert, Dr. Jonathan Rodden, confirmed this point, testifying that a “good share” of simulated maps exhibit partisan fairness, and that there is “no evidence. . . whatsoever” that “the human geography in Pennsylvania somehow requires that we draw unfair districts.” *Id.* at 192-93.

3. Dr. Michael Barber (Expert Witness in Support of HB 2146)

Other parties offered testimony that attempted to discount the significance of vote dilution. The House Republican expert, Dr. Michael Barber, asserted that Republicans had a natural advantage in redistricting because they are not concentrated in urban areas and therefore “waste fewer votes.” *Id.* at 509-10. In his opinion, this disadvantage for Democrats can only be overcome “if you ignore” traditional redistricting criteria. *Id.* at 510. Yet, Dr. Barber also claimed that HB 2146 resulted in nine Democratic seats and eight Republican seats, an advantage to Democrats. *Id.* at 533. Dr. Barber indicated that he had conducted his “sequential Monte Carlo analysis” over a set of 50,000 simulated maps and asserted that the advantage of his method was that his simulated maps allowed him to compare “apples to apples” between the proposed maps and the simulated maps. *Id.* at 517-18. Later, however, Dr. Barber conceded that his “sequential Monte Carlo methodology,” has not been peer-reviewed. *Id.* at 598.

Further, on cross-examination, Dr. Barber admitted that his simulated maps contained population deviations of up to 3,800 people, which is not comparable to the deviation found in HB 2146. *Id.* at 568-69. Dr. Barber

testified that he had assessed partisan fairness metrics for the various maps. He admitted that, of the maps he had reviewed, HB 2146 was the worst map on the mean-median measurement of partisan fairness, with the exceptions of the two Reschenthaler plans. Report at 92, 1/27/2022 Tr. at 576.

Many of the parties challenged Dr. Barber's credibility. Dr. Barber acknowledged that he had not published any scholarship in the areas of redistricting, partisan influence in redistricting, or simulated redistricting analysis. 1/27/2022 Tr. at 562-63. He confirmed that he had previously testified in court in *Common Cause v. Lewis*, No. 18-cvs-014001, 2019 WL 4569584 (N.C. Super. 2019) and *Jones v. Desantis*, 462 F. Supp. 3d 1196 (N.D. Fl. 2020). 1/27/2022 Tr. at 564-65. He conceded that, in *Lewis*, the judge had concluded that because of "shortcomings" in his testimony, it would be given "little weight." 1/27/2022 Tr. at 565; see also e.g., *Lewis*, 2019 WL 4569584 at *93-94 ("At the outset, the Court notes that none of Dr. Barber's academic research or published articles concern redistricting. . . ."). Dr. Barber also conceded that, in *Jones*, the court had also declined to give his testimony any weight. 1/27/2022 Tr. at 565; see also e.g., *Jones*, 462 F. Supp. 3d at 1246-47 ("I do not credit the testimony [of Dr. Barber]. Indeed, one in search of a textbook dismantling of unfounded expert testimony would look long and hard to find a better example than the cross-examination of

this expert”). Mark Nordenberg, Chairman of the LRC, where Dr. Barber was also presented as an expert witness, concluded that Dr. Barber’s testimony should be afforded little weight because Dr. Barber offered “general and unsupported conclusions about the dilution of the voting influence of minority groups.”⁵ He further noted that Dr. Barber has “not published a single article in the areas for which his expert testimony was being presented.” *Id.* at 18.

4. Dr. Keith Naughton (Expert Witness in Support of the Reschenthaler Maps)

The Congressional Republican Intervenors offered Dr. Keith Naughton to support their maps. Dr. Naughton has a PhD in Public Policy, but he is not a political scientist or mathematician. 1/27/2022 Tr. at 688. Instead of identifying any relevant expertise, he identified the two years he spent “reading about congressional politics” and noted that “a dissertation is a very challenging thing.” *Id.* The primary credential Dr. Naughton offered, however, was his experience with campaigns. *Id.* at 689-90. Dr. Naughton acknowledged that he worked exclusively for Republican candidates. 1/28/2022 Tr. at 769. He conceded that his opinions were not based on

⁵ Chairman Nordenberg’s remarks, delivered at the February 4, 2022 meeting at which the LRC approved its Final Plan, are attached here as Exhibit A and can be found at <https://www.redistricting.state.pa.us/commission/article/1096>. The Senate Democratic Caucus asks the Court to take judicial notice of Chairman Nordenberg’s remarks, part of the public record in the LRC process, as yet another context in which Dr. Barber’s proffered expertise was deemed not to be credible.

academic research or public opinion polling. *Id.* at 776. He has never appeared as an expert witness in a redistricting case before this one, and he has had no experience in redistricting. *Id.* at 777-78. He confirmed that his opinions were not based on any particular methodology. *Id.* at 779.

Dr. Naughton primarily testified on his opinions concerning communities of interest in Pennsylvania. His testimony tracked largely with a partisan preference for reducing the number of Democratic districts in Allegheny County by packing Democratic voters into a single district. See *id.* at 713-15. Additionally, he expressed his opinion that Bucks County shared no community of interest with northeast Philadelphia but provided only vague and general justification for such a view. *Id.* at 715-16; 844-46. He admitted he was “not good on the city neighborhoods.” *Id.* at 845.

5. Evidence Concerning the City of Pittsburgh

Several parties offered specific evidence as to whether and under what circumstances the City of Pittsburgh could be divided between multiple Congressional districts. Dr. Barber and Dr. Naughton explained why, from their perspectives, the proposed splits of the City of Pittsburgh were inappropriate. Dr. Barber concluded that splitting Pittsburgh could only be supported on the basis of partisan advantage. 1/27/2022 Tr. at 526. Dr. Naughton opined that dividing Pittsburgh would be inappropriate under the

Constitutional directive not to split municipalities unless absolutely necessary 1/28/2022 Tr. at 713. Dr. Naughton characterized splitting Pittsburgh as “a terrible idea” because Pittsburgh is a “political unit” that “vote[s] for the same elected officials.” *Id.* Splitting the city, he said, “dilutes the vote for the city” because candidates might ignore the City if portions were paired with the suburbs. *Id.* at 713-14. Dr. Naughton cited to no authority for any of the opinions he offered as testimony. He conceded, however, that a split of the City of Pittsburgh into two Congressional representatives could be beneficial to the entire City. *Id.* at 877. He also admitted that he did not fully analyze the voting patterns of City residents, and he had not taken into consideration the 2021 Mayoral Election in which the northern and southern parts of the City supported different candidates. *Id.* at 878.

In contrast, Dr. Duchin testified that she considered the split of the City of Pittsburgh to be a “reasonable choice[]” based on the relevant communities of interest analysis. *Id.* at 341. The Senate Democratic Caucus submitted an analysis that Michael Lamb, Pittsburgh’s City Controller, conducted. Controller Lamb, who has been elected to multiple offices in the City of Pittsburgh and has extensive campaign experience both in Allegheny County and statewide, noted that Pittsburgh contains multiple, identifiable communities of interest within the City of Pittsburgh. Lamb Report at 1. He

noted that Pittsburgh’s neighborhoods were historically formed by “natural topography and industrial history” rather than by any sort of central planning effort. *Id.* These neighborhoods follow natural geographic boundaries, such as hills and rivers; the Monongahela River is a particularly salient natural geographic boundary. *Id.* Controller Lamb noted that Pittsburgh’s community south of the Monongahela River shares more common interests and culture with their neighboring southern suburban communities than with the city communities north of the river. *Id.* at 2. Pittsburgh’s southern neighborhoods share a public transportation system, the “T,” with the southern suburbs of Dormont, Castle Shannon, Mount Lebanon, and Bethel Park. *Id.* According to Lamb, it is often difficult to know when you are in the City and when you are in the surrounding southern suburbs because of the “spider-like” City boundary. *Id.*

6. Considerations Concerning the Election Calendar

The Secretary offered the affidavit of Jonathan Marks, Deputy Secretary for Elections, which discussed the Legislative Reapportionment Committee’s (“LRC’s”) timeline for producing final maps for the General Assembly to lay out the timeline the Secretary needs to properly administer the 2022 Primary Election. 1/28/2022 Transcript at 1019. Judge McCullough sustained a relevance objection and struck the paragraphs in the affidavit

concerning the LRC. *Id.* at 1022-23. She thus did not consider the schedule for final approval for the state legislative maps when crafting her proposed calendar for the 2022 Primary Election.

7. Post-Hearing Submissions

Following the hearing before the Special Master, the court allowed the parties to make post-hearing submissions by January 29, 2022. On January 29, 2022, however, the Carter Petitioners filed an application to this Court and asked the Court to assume extraordinary jurisdiction. *See* Order, 2/2/22. With its February 2, 2022 Order, this Court granted the application. The Court designated Judge McCullough as the Special Master and directed her to file recommended findings of fact and conclusions of law, with a recommended redistricting plan, and proposed changes to the elections calendar, by February 7, 2022. The Court also ordered that any party or *amicus curiae* is permitted to file any exceptions to the Special Master's Report, with any supporting brief, by February 14, 2022. *See id.*

D. The Special Master's February 7, 2022 Report

As directed, the Special Master filed her report on February 7, 2022. *See generally* Report. In the Report, the Special Master interpreted *League of Women Voters* as "constitutionalizing" traditional redistricting criteria for their own sake, rather than in service of avoiding partisan vote dilution. *See*

id. at 20-29. Despite this Court’s admonitions in that case that voters should have an equal opportunity to transform their votes into representation, she concluded that:

the constitutional criteria for legislative redistricting. . . . [do] not impose a requirement of balancing the representation of the political parties; it does not protect the ‘integrity’ of any party’s political expectations. Rather, the construct speaks of the ‘integrity’ of political subdivisions, which bespeaks history and geography, not party affiliation or expectations.’

Report at 176.⁶

In comparing the various plans proposed, the Special Master primarily relied on the decades-old *Mellow Mellow v. Mitchell*, 607 A.2d 204 (Pa. 1992), limiting her review to the criteria set forth in that case. She apparently disregarded how this Court modified the appropriate inquiry with its decision in *League of Women Voters*. See *id.* at 29-43.

The Special Master rejected both of the Senate Democratic Caucus’ plans based principally on her unsupported presumption that the City of Pittsburgh may never be divided into multiple Congressional districts, and it could not be divided to improve a plan’s overall avoidance of vote dilution.

⁶ The Special Master quoted from this Court’s decision in *Holt v. 2011 Legislative Reapportionment Commission*, 67 A.3d 1213 (Pa. 2013), a *state* legislative redistricting case that discussed *different* constitutional provisions and had been decided five years before *League of Women Voters*.

She clearly viewed Republican dominance as a “natural” component of Pennsylvania’s political geography. *See id.* at 202.

Despite their lack of any relevant experience or credibility, the Special Master relied heavily on the reports and testimony of the Republicans’ witnesses, Dr. Barber and Dr. Naughton, in finding that the Republican-supported HB 2146 best satisfied traditional redistricting criteria. *See id.* at 203-14. The primary reason she offered for this conclusion was the fact that HB 2146 had passed through the legislature, but she disregarded the fact that Governor Wolf vetoed it. According to the Special Master, the vetoed HB 2146 reflected “the voice and will of the People,” which “should be honored and respected by all means necessary.” *See id.* at 214. Thus, the Special Master recommended HB 2146’s adoption as a remedial plan. *See id.* at 216.

The Special Master, who only considered matters in this case, included in her Report a recommendation for a modified elections calendar, with an initial petition circulation date of March 1, 2022. *See id.* at 221-22.

The Special Master’s recommendation of HB 2146 reflects significant errors of both law and fact, which include:

- **Prohibition against vote dilution:** The Special Master erred in classifying the clear prohibition against vote dilution as an “extra-constitutional consideration” (Report at 171);

- **Vote dilution and proportionality:** The Special Master improperly conflated the distinct concepts of “vote dilution” and “proportionality” (Report at 176);
- **Non-credible experts:** The Special Master erred in concluding that Dr. Barber and Dr. Naughton had provided credible testimony.
- **City of Pittsburgh Splits:** The Special Master concluded, contrary to the evidence, that, in several maps, the City of Pittsburgh had been split for partisan advantage (Report at 194);
- **Calendar:** The Special Master erred in proposing a calendar for the 2022 Primary Election that did not take into account parallel proceedings of the LRC and other election-related constraints.

The Senate Democratic Caucus ask this Court to reject the Special Master’s Report and recommended map, as set forth in their exceptions and supporting brief.

SUMMARY OF ARGUMENT

The Pennsylvania Constitution forbids the use of election laws, including redistricting plans, to reinforce a dominant political faction's political power by diluting its opponents' supporters' ability to translate votes into representation. Once a redistricting plan has satisfied federal law, it must employ traditional redistricting criteria in a way that optimizes the avoidance of partisan vote dilution. Both of the Senate Democratic Caucus' plans, which the Special Master rejected, comply with the established criteria by virtually neutralizing artificial, structural partisan advantage as measured by every metric.

The Special Master's recommendation of the Republican-supported HB 2146 rests on myriad factual and legal errors, including basic misapprehensions of evidence of record and erroneous legal conclusions. The Special Master misinterpreted this Court's holdings in *League of Women Voters* and asserted that avoidance of vote dilution is somehow an "extra-constitutional consideration." She relied on testimony from two witnesses who were manifestly not credible. She concluded that the City of Pittsburgh may never be divided into multiple Congressional districts. She also afforded deference to a bill that was never enacted. The Special Master also erred in

proposing an election calendar without considering this Court's review of the final plan that the LRC produced.

This Court has properly exercised its jurisdiction and must adopt a plan that protects Pennsylvanian voters' right to equally translate their votes into representation. The Senate Democratic Caucus' plans protect that right, and HB 2146 does not. The Senate Democratic Caucus thus ask this Court to adopt one of the Senate Democratic Caucus' plans, and, at a minimum, to reject HB 2146. The Senate Democratic Caucus also asks the Court to adopt a schedule for the 2022 Primary Election and pre-Primary calendar that provides for a single, unified Primary Election and accounts for the timeline of other proceedings before this Court.

STATEMENT OF THE STANDARD AND SCOPE OF REVIEW

This action was previously an action in the original jurisdiction of the Commonwealth Court and is now before this Court pursuant to its exercise of extraordinary jurisdiction; accordingly, the standard of review is *de novo* and the scope of review is plenary. See *League of Women Voters*, 178 A.3d at 801 n.62; *accord* Report at 16 n.26 (noting that this Court may substitute its judgment for the Special Master’s “at will” and that the Special Master’s credibility and weight-of-the-evidence determinations are not entitled to deference).

ARGUMENT

A. THE PENNSYLVANIA CONSTITUTION FORBIDS THE USE OF ELECTION LAWS, INCLUDING REDISTRICTING PLANS, TO DILUTE VOTES ON THE BASIS OF POLITICAL VIEWPOINT.

This Court most recently and comprehensively discussed the legal standard governing Congressional redistricting in *League of Women Voters*. In that case, this Court considered whether the 2011 Congressional redistricting plan had amounted to a Republican partisan gerrymander that violated the Free and Equal Elections Clause of the Pennsylvania Constitution by diluting the power of their votes for Democratic candidates. *See generally id.* In holding that the restricting plan was unconstitutional, the Court provided a thorough discussion of the Commonwealth's history of the use of election laws to further entrench the power of dominant political factions through the disenfranchisement of their opponents' supporters. This Court explained that the adoption of the Free and Equal Elections Clause provided a means to end that practice and to end partisan gerrymandering and vote dilution. The Court concluded that the 2011 plan violated the Clause by entrenching Republican power through the creation of districts that diluted Democrats' votes. *See generally id.*

In *League of Women Voters*, this Court cogently detailed the requirements under Pennsylvania law for a Congressional redistricting plan.

Preliminarily, a Congressional redistricting plan must comply with federal law. See *id.* at 817 n. 72 (noting that reference to state-law requirements was not “intended to suggest that congressional district maps not also comply with federal law”). A Congressional redistricting plan in this regard must comply with the federal constitutional requirement of equal population from district to district, see U.S. Const., art. I, § 2; *Wesberry v. Sanders*, 376 U.S. 1 (1964); *Karcher v. Daggett*, 462 U.S. 725, 732-33 (1983) (“[W]e have required that absolute population equality be the paramount objective in . . . the case of congressional districts.”),⁷ and also comply with federal statutory law governing redistricting, including, most saliently, the Voting Rights Act of 1965, see *League*, 178 A.3d at 817 n.72 (referring to the Voting Rights Act).

Once a redistricting plan complies with federal law, it must also comply with Pennsylvania’s constitutional requirements: namely, the Free and Equal Elections Clause. In interpreting the proper scope of the Clause in *League of Women Voters*, this Court first noted that the Clause’s language requiring that all elections be “equal,” at its core, prohibits partisan gerrymandering via partisan vote dilution: “the actual and plain language of [the Clause] mandates that all voters have an equal opportunity to translate their votes

⁷ Obviously, if a state’s number of Congressional districts is not a factor of its total population, a district-to-district deviation becomes mathematically necessary.

into representation.” *Id.* at 804. Holding that “a diluted vote is not an equal vote,” the Court singled out partisan gerrymandering as “dilut[ing] the votes of those who in prior elections voted for the party not in power to give the party in power a lasting electoral advantage.” *Id.* at 814.

The Court reviewed the history of the Clause’s adoption and its intent as a means to end – “once and for all” – the practice of vote dilution, including the vote dilution that can be accomplished through partisan gerrymandering. *Id.* at 808; *see also id.* at 804-08 (providing a lengthy discussion of Colonial-era internecine factional and coalitional disputes that led to the Clause’s adoption). The Court further explained that the prohibition on vote dilution is consistent with its application of the Clause in its body of precedent. *See id.* at 809-13 (citing, *inter alia*, *Patterson v. Barlow*, 60 Pa. 564 (Pa. 1869); *Winston v. Moore*, 91 A. 520 (Pa. 1914); *In re: New Britain Borough Sch. Dist.*, 145 A. 597 (Pa. 1929)).

The Court described the salutary effects of banning partisan vote dilution, holding that enforcement of the ban serves not only to avoid partisan takeovers of the levers of state government without voter consent, but also to reinforce the fundamental legitimacy of state government and promote citizens’ confidence in and engagement in representative democracy. *See id.* at 813-14.

Having identified the Clause’s chief objective – to prevent the violation of Pennsylvanians’ constitutional rights by diluting their votes – this Court articulated the means to accomplish that goal. *See id.* at 814-18. First, the Court explained that a plan that subordinates traditional redistricting criteria – specifically, “compactness, contiguity, and the maintenance of the integrity of the boundaries of political subdivisions” except where to achieve equal population of districts – “to extraneous considerations,” like partisan advantage, violates the Clause by diluting voters’ ability to translate their votes into representation. *Id.* at 815-17.⁸

The Court did not, however, substitute traditional redistricting criteria in and of themselves for the avoidance of vote dilution. The Court contemplated that a plan that used those traditional factors might, nevertheless, violate the Clause by diluting Pennsylvanians’ votes, which is the overarching, paramount inquiry. *See id.* It noted that “there exists the possibility that . . . mapmakers, in the future, [could] engineer [C]ongressional districting maps, which, although minimally comporting with these neutral ‘floor’ criteria, nevertheless operate to unfairly dilute the power of a particular

⁸ Applying these principles, this Court explained that the 2011 Plan did, in fact, subordinate these traditional redistricting criteria to the extraneous consideration of Republican partisan advantage, noting, *inter alia*, expert testimony demonstrating that the 2011 Plan was so far outside the normal distribution of random maps using those criteria that it could not have primarily considered, much less prioritized, those criteria over partisan advantage. *See League of Women Voters*, 178 A.3d at 818-21.

group's vote for a [C]ongressional representative." *Id.* This prediction has been borne out with the situation now presented to the Court.

A political faction violates the Clause when it draws districts that sprawl geographically throughout the Commonwealth, unnecessarily dividing political subdivisions, and thereby minimizing an opposing faction's ability to translate votes into representation. However, it is not the meandering nature of the districts as drawn, but the minimization, that constitutes a violation. Even facially compact, contiguous districts that preserve political subdivisions may lead to the vote dilution, which, as the Court held in *League of Women Voters*, must be avoided. Following that case, a Congressional redistricting plan must not only employ traditional redistricting criteria, but must employ them in a way that *avoids* vote dilution.

The matter at issue here is procedurally and analytically distinct from *League of Women Voters* in only one way. The petitioners in that case challenged a duly enacted redistricting plan. Here, by contrast, the parties are faced with a political "impasse," and are asking the Court to adopt an appropriate remedial plan. *Accord Mellow*, 607 A.2d (involving the last political impasse over Congressional redistricting). The distinction is meaningful because this Court is not faced with an enacted law that any presumption of constitutionality would protect. The Court is not required to

determine whether one or other of the proposed plans is an unconstitutional partisan gerrymander to reject it. Rather, the Court is free to select, *ab initio*, a plan that complies with federal law and truly honors the Pennsylvania Constitution's prohibition on vote dilution by optimizing the avoidance of partisan vote dilution.

B. IN DISTINCT CONTRAST TO THE REPUBLICAN-SUPPORTED HB 2146 PLAN, THE PLANS THAT THE SENATE DEMOCRATIC CAUCUS AND SEVERAL OTHERS OFFER AVOID THE DILUTION OF PENNSYLVANIANS' VOTES.

This Court has been presented with numerous proposed plans. All of the experts who testified before the Special Master agreed that the Senate Democratic Caucus Maps, as well as other submitted maps, adhered to the traditional redistricting criteria of contiguity, compactness, and minimal splits of political subdivisions. See, e.g., the testimony of Dr. Duchin that none of the submitted plans “can be said to ignore the traditional principles.” 1/27/2022 Tr. at 494. The various maps do, however, “make trade-offs and some manage those trade-offs somewhat more effectively than others.” *Id.*

The inquiry here is not simply a mechanistic “which-map-contains-the-fewest-splits” question. The traditional redistricting criteria create a “floor” of protection against vote dilution and are indicia as to whether a particular map dilutes votes on the basis of political viewpoint. If a plan wholly ignores traditional redistricting criteria, it was likely drafted in service of some other

extraneous consideration. When all of the submissions meet this “floor,” as here, whether vote dilution is occurring can be determined by looking at the partisan fairness of the maps.

The reports and testimony of the Senate Democratic Caucus’ expert, Dr. Caughey, are instructive. Dr. Caughey provided extensive explanations of partisan fairness measures, which indicate whether partisan vote dilution has taken place. See, e.g., Caughey Supplemental Report at 3-6. The Senate Democratic Caucus Maps both scored significantly better than HB 2146 across all metrics that measure partisan fairness, as clearly demonstrated with Dr. Caughey’s calculations:

Metric	Current	Governor	HB 2146	SDC 1	SDC 2
Partisan Bias	2.1%	2.9%	6.3%	1.8%	1.5%
Efficiency Gap	2.9%	3.5%	6.6%	2.3%	2.4%
Mean-Median	0.8%	1.0%	2.3%	0.7%	0.5%
Declination	0.08	0.1	0.19	0.06	0.07

Caughey Supplemental Report at 22. This summary of Dr. Caughey’s findings clearly indicates that the Senate Democratic Caucus Maps and the Governor’s Map all significantly outperform HB 2146 across all partisan fairness metrics. Thus, these maps have, pursuant to this Court’s direction

in *League of Women Voters*, optimized the avoidance of vote dilution. HB 2146 quite plainly has not.

Dr. Caughey's discussion of partisan *symmetry* deserves special emphasis. HB 2146 has a partisan bias (symmetry) score of 6.3%, which is more than double that of the Governor's Map and more than triple those of the current map and both Senate Democratic Caucus Maps. This means that the "winner's bonus" for Republicans, which the Republicans promote with HB 2146, is grossly asymmetric, and results in a partisan skew that palpably dilutes Democratic votes. Not only does HB 2146 favor Republicans more than another in close elections, but it also favors them *more* in less competitive elections.

Senate Democratic Caucus Maps 1 and 2, and the Governor's Map, all performed well on all metrics assessing partisan fairness, indicating that these maps do not dilute votes on the basis of the political viewpoint of the Commonwealth's voters. Despite its obvious flaws, chiefly that HB 2146 performs markedly less well and would unconstitutionally dilute the votes of Pennsylvanians, the Special Master recommended the adoption of HB 2146. Based on the substantial and credible record evidence and following the dictates of *League of Women Voters*, this Court must reject that recommendation.

C. THE SPECIAL MASTER BASED HER RECOMMENDATION OF HB 2146 ON MYRIAD FACTUAL AND LEGAL ERRORS.

1. The Special Master Misinterpreted *League of Women Voters*.

In her Report, the Special Master relied extensively on principles that turn *League of Women Voters* on its head. Most alarmingly, the Special Master repeatedly found that “partisan fairness,” or, more properly termed, the avoidance of vote dilution, was subordinate to traditional redistricting criteria, and even an “extra-constitutional consideration” or equivalent to proportional representation systems. Report at 161, 172, 198-99, 212-13. Yet, the Pennsylvania Constitution’s Free and Equal Elections Clause incorporates “traditional redistricting criteria” only as a means to an end: they are *benchmarks* for determining whether a dominant political faction has subordinated its task to solidifying its advantage by using state power to dilute its opponents’ supporters’ votes. A plan’s failure to minimally comport with traditional redistricting criteria is *evidence* that it is diluting votes and is a prophylactic consideration. The Constitution’s actual ban is on vote dilution.

2. The Special Master conflated the concepts of “symmetry” and “proportionality.”

The Special Master’s apparent presumption that prohibiting an in-power faction from using the law to solidify its power could somehow be

construed as the equivalent of proportional representation is flatly wrong. Paying attention to the partisan symmetry of a map merely equalizes the degree to which the winner of a particular electoral contest is able to capitalize on incremental increases in popular support. As Dr. Caughey cogently explained in his report:

Symmetry is not the same as *proportionality*, which requires that a party's expected seat share is equal to its vote share. Due to the well-known "winner's bonus" in majoritarian electoral systems, the majority party in a state usually wins a super-proportional share of seats unless the map is biased strongly against it. How much seat share changes as a function of a change in vote share—*i.e.*, the steepness of the seats-votes function—is called its *responsiveness*. . . . A symmetrical districting scheme need not be proportional so long as seats-votes function is equally disproportionate for all parties, and reasonable arguments can be made for various degrees of responsiveness.

Caughey Supplemental Report at 3-5; see *also* 1/28/22 Tr. at 211-66. The minimization of vote dilution does not eliminate a party's advantages gained by winning a first-past-the-post election; it eliminates a party's advantages gained by artificially drawing district lines that inflate its supporters' ability to translate votes into representation and diminish its opponents' supporters' ability to do the same.

On this basis alone, this Court should decline to adopt the Special Master's recommendations, should conduct its own analysis, and make its own decision *de novo* as to the appropriate remedial plan.

3. The Special Master further erred in concluding that the witnesses that the House Republicans and the Congressional Republican Intervenors offered are “credible.”

The Special Master’s disregard for this Court’s directives with regard to avoidance of vote dilution provides sufficient basis, alone, to reject the Special Master’s Report. Several other aspects of the Report that lack factual and/or legal support should also be noted.

The Special Master erred in determining that the House Republican expert, Dr. Barber, was credible. Dr. Barber offered inconsistent and conflicting testimony. He testified that the natural advantage Republicans have due to their diffuse population could not be overcome without ignoring traditional redistricting criteria. 1/27/2022 Tr. at 510. He somehow reached this conclusion while examining maps that did better on partisan fairness scores than HB 2146, while also doing better at the traditional criteria. *See., e.g.,* Barber Supplemental Report at 21. Further, he testified in support of a map that he claimed had created nine Democratic and eight Republican seats, but, he maintained, managed somehow to also adhere to the traditional redistricting criteria. *Id.* at 533. He conceded on cross-examination that the “sequential Monte Carlo methodology” that he had employed to reach this strained conclusion had not yet been peer-reviewed. *Id.* at 598.

Further, other courts have rejected Dr. Barber's testimony regarding elections maps because it was simply not credible. See *Common Cause v. Lewis*, No. 18-cvs-014001, 2019 WL 4569584 (N.C. Super. 2019); *Jones v. Desantis*, 462 F. Supp. 3d 1196 (N.D. Fl. 2020). 1/27/2022 Tr. at 564-65. LRC Chairman Nordenberg also concluded that Dr. Barber's testimony should be afforded little weight because Dr. Barber offered "general and unsupported conclusions about the dilution of the voting influence of minority groups." Nordenberg Remarks at 17. He further remarked that Dr. Barber has "not published a single article in the areas for which his expert testimony was being presented." *Id.* at 18.

Despite these repeated findings of his lack of credibility and lack of legitimate expert opinion foundation, even Dr. Barber admitted that HB 2146 was the worst map on the mean-median measurement of partisan fairness, with the exceptions of the somehow-more-partisan Reschenthaler plans. Report at 92, 1/27/2022 Tr. at 576. The Special Master's reliance on Dr. Barber's testimony ignored both his lack of credibility and this significant admission.

The Special Master also erred in crediting throughout her Report the testimony of Dr. Keith Naughton, who is not a political scientist and whose opinions are not supported by any academic research or public opinion

polling. *Id.* at 776. Dr. Naughton conceded that he has never appeared as an expert witness in a redistricting case before this one, and he has no experience in redistricting. *Id.* at 777-78.

Dr. Naughton is not an expert with any credentials regarding the drawing of maps. He admitted that he is a Republican campaign operative and conceded on cross-examination that he worked exclusively for Republican candidates. His perspective is purely partisan. 1/28/2022 Tr. at 769. He identified no methodology to support his opinions, which are based solely on his subjective experience as a political operative in Pennsylvania Republican politics.

Although the Special Master accepted, without any reasonable basis, Dr. Naughton's testimony, she discredited the opinions of City Controller Michael Lamb, who is a respected elected official of long standing in the City of Pittsburgh and has significant professional experience in elections. The Special Master dismissed Controller Lamb's testimony as "subjective personal experiences." Report at 150. In contrast to Dr. Naughton, Controller Lamb has experience representing members of both parties as an elected official. Dr. Naughton's opinions should have been rejected for what they truly were: partisan-motivated lay opinions. The Special Master clearly erred in finding any evidentiary merit in his opinions.

4. No authority supports the Special Master’s determination that redistricting plan may not divide the City of Pittsburgh.

The Special Master erred when she concluded that the proponents of splitting the City of Pittsburgh had “failed to present any credible evidence as to why it was ‘necessary’ to split the second largest city in Pennsylvania in order to achieve equal population. . . .” Report at 194. This conclusion misunderstands the endeavor of redistricting as a whole. To achieve equal population, even the House Republican expert, Dr. Barber, conceded that Allegheny County can contain two municipal splits.⁹ 1/27/2022 Tr. at 649; see *League*, 178 A.3d at 816-17. The dispute then, is over whether Pittsburgh itself, the largest municipality in Allegheny County, can permissibly be one of municipalities that is split.

Splits are to be avoided because splitting a political subdivision can destroy that subdivision’s voting power. This is particularly true of smaller subdivisions, like wards, which are more likely to be politically cohesive. As the second-largest city in the Commonwealth, (Report at 151) the City of Pittsburgh is “a diverse city” with “lots of different interests.” Testimony of Dr. Naughton, 1/28/2022 Tr. at 713. Dr. Duchin testified that there is no

⁹ The map that this Court developed in *League of Women Voters* contained two municipal splits in Allegheny County.

“traditional preference” that only small municipalities be split, and that vote dilution has to be a consideration when determining which splits to make. 1/27/2022 Tr. at 481. Splitting Pittsburgh into two districts, which would both be the largest components of the two resulting districts, would not reduce but would amplify the voting power of the residents of the City of Pittsburgh. Splitting the City would also prevent the split of smaller municipalities where the split would reduce that smaller municipality’s voting power.¹⁰ Viewed in this way, the split of the City of Pittsburgh is absolutely necessary to achieve equal population and is also the split that does the least damage to the voices of the Commonwealth’s voters.

Dr. Naughton’s unsupported opinion testimony to the contrary was singularly unpersuasive. He stated that he thought splitting Pittsburgh was “a terrible idea” for reasons that amounted reductively to Pittsburgh being a municipality: Pittsburgh voters vote “for the same elected officials.”

¹⁰ The population of the City of Pittsburgh, the largest municipality in Allegheny County, is 302,971. See <https://www.census.gov/quickfacts/pittsburghcitypennsylvania>. In contrast, the next-largest municipalities in Allegheny County (Penn Hills, Mount Lebanon, Bethel Park, Ross, and Monroeville, range from 29,640 to 41,059. See <https://www.census.gov/quickfacts/fact/table/monroevillemunicipalitypennsylvania,rosstownshipalleghenycountypennsylvania,bethelparkmunicipalitypennsylvania,mountlebanontownshipalleghenycountypennsylvania,pennhillstownshipalleghenycountypennsylvania,pittsburghcitypennsylvania/POP010220>. A split of one of these smaller municipalities has a far more serious effect on that municipality’s voting power because splitting the City of Pittsburgh in half still results in a voting bloc over three times the size of the next largest municipality.

1/28/2022 Tr. at 713. They are “within this municipality unit [which] gives them a series of common interests.” *Id.* These are not specific arguments; these are merely biased assertions about splitting a municipality.

Dr. Naughton also opined that putting sections of Pittsburgh with neighboring suburban areas would dilute the voice of the City. *Id.* at 714-15. To the contrary, both Senate Democratic Caucus maps split the City of Pittsburgh to give voice to different communities of interest within Pittsburgh. As the Lamb Analysis demonstrates, identifiable communities of interest exist within the City of Pittsburgh: the neighborhoods in Pittsburgh were historically formed by “natural topography and industrial history” and not through any sort of central planning effort. Lamb Report at 1. The Monongahela River is a particularly salient natural geographic boundary. *Id.* The city community south of the Monongahela River shares more common interests and culture with their neighboring suburban communities than with the city communities north of the river. *Id.* at 2. Not so long ago, many of the southern and western hilltop neighborhoods and the industrial valley communities were their own distinct municipalities.¹¹ *Id.* The natural geographic divide of the Monongahela River, which has been in place much

¹¹ It is noteworthy that Mt. Oliver Borough continues to operate as its own municipality, despite being completely surrounded geographically by various south City of Pittsburgh neighborhoods. *Id.*

longer than the current City of Pittsburgh geographic borders and has exerted a more meaningful and lasting influence on the distinct cultural habits and community connections than the meandering city municipal borders, should be given consideration when determining the multiple communities of interest that make up the City of Pittsburgh.

Contrary to these unrefuted facts, the Special Master also erroneously concluded that the split of the City of Pittsburgh was done to achieve “impermissible partisan advantage” by creating two Democratic districts in the west. Report at 194. To reach this conclusion, the Special Master was required to ignore the fact that two Democratic districts already exist in Allegheny County: one held by Representative Mike Doyle and one held by Representative Conor Lamb, a fact that Dr. Barber acknowledged. 1/27/2022 Tr. at 655. Congressman Lamb’s district is sufficiently Democratic without the City of Pittsburgh for him to have won reelection there twice. Democrats simply do not need to split the City of Pittsburgh to maintain two Democratic districts in Allegheny County.

The Senate Democratic Caucus posits that which municipalities split matters, and that the proposed split of the City of Pittsburgh respects communities of interest and actually increases the voices of the voters of the City by pairing them with closely identifying suburban communities. This split

also preserves the voices of voters in smaller municipalities by sparing them from being split. The decisions of which municipalities to split should be a holistic inquiry that takes into consideration vote dilution and communities of interest.

5. No record evidence or authority supports the Special Master’s presumption that “political geography” could somehow validate vote dilution.

In her Report, the Special Master repeatedly refers to what amounts to “natural” political geography that creates “natural” vote dilution. She even suggests that overriding a “natural” political advantage would violate the Free and Equal Elections Clause. See, e.g., Report at 198 (“[O]ne of the overriding constitutional precepts applied in redistricting cases is that any map that prioritizes proportional election outcomes, for example, by negating the natural geographic disadvantage to achieve proportionality at the expense of traditional redistricting criteria, violates the Pennsylvania Constitution’s Free and Equal Elections Clause.”).

The Special Master expressly stated that she would not select a map that does not impermissibly advantage Republican at the expense of Democratic voters (Report at 197). The Special Master cited no authority for this proposition other than *League of Women Voters*, which, far from supporting, clearly rejects this view. The Special Master was unable to cite

any other authority – because none exists. The Free and Equal Elections Clause forbids the use of election laws, including redistricting plans, to reinforce political power by diluting their opponents’ supporters’ equal ability to translate votes into representation. Contrary to the Special Master’s conception, this Court explained in *League of Women Voters* that the Free and Equal Elections expressly contemplated that, even in the circumstance that a future proposed plan *does* comport with traditional redistricting criteria, it may nevertheless dilute votes. *League of Women Voters*, 178 A.3d at 815-817 (“[M]apmakers, in the future, [could] engineer [C]ongressional districting maps, which, although minimally comporting with these neutral ‘floor’ criteria, nevertheless operate to unfairly dilute the power of a particular group’s vote for a [C]ongressional representative.”). A plan may respect “natural” political geography, but if it nevertheless serves to dilute votes, it offends our Constitution and is illegal. Thus, to the extent that the Special Master seemed to find otherwise, she clearly erred.

6. The Special Master’s conclusion that a legislative enactment never became law should be accorded deference is unsupported and unsupportable where the sovereign power is divided into legislative, executive and judicial branches.

Before the Special Master, Republican Legislative Intervenors argued that their proposed plan was worthy of “special consideration,” or deference,” because it tracked a legislative enactment that passed in the General

Assembly. See Republican House Leaders Brief, 1/24/22, at 9- Republican Senate Leaders Brief at 10-12.

In her Report, the Special Master agreed by finding that the Republican Legislative Intervenors' plan represents "the policies and preference of the state" and "constitutes a profound depiction of what the voters in the Commonwealth of Pennsylvania desire." Report at 214.

The underlying conceit, that the Legislature unapproved bill should be given more deference than the Governor's veto, offends centuries-old principles that have, like *League of Women Voters*, protected individual citizens' rights against the transient power of an ambitious majoritarian faction. Most of the decisions that the Republican Legislative Intervenors cited and on which the Special Master apparently relied are extra-jurisdictional and nonbinding. Further, none support their claim that a court charged with considering remedial plans should afford deference or special consideration to a failed legislative enactment. See, e.g., *Tallahassee Branch of NAACP v. Leon Cnty.*, 827 F.2d 1436 (11th Cir. 1987) (involving question of whether a plan was legislatively or judicially adopted to determine the level of deference required in assessing whether governing law required

single-member districts).¹² The two decisions that do seem to support that proposition lack any meaningful analysis. See *Donnelly, supra* (adopting a party-proposed plan that slightly modified a legislatively enacted plan, without reliance on precedent or analysis, on the ground that the fact it only slightly modified a legislatively enacted plan was a “tiebreaker” of sorts); *Skolnick, supra* (adopting a party-proposed plan that passed one chamber of the state legislative house without any explanation as to the fact’s relevance).

The claim that a failed legislative enactment could be accorded any deference at all promotes a vision of legislative supremacy that contradicts the bedrock constitutional principle of separation of powers. Presentment to the executive is a fundamental part of enacting legislation, and has been since the founding of the Nation. Secretary Hamilton wrote in *The Federalist*:

It not only serves as a shield to the Executive, but it furnishes an additional security against the enactment of improper laws. It establishes a salutary check upon the legislative body, calculated to guard the community against the effects of faction, precipitancy, or of any impulse unfriendly to the public good, which may happen to influence a majority of that body.

¹² See also *In re Ross Twp. Election Dist. Reapportionment Commn.*, 67 A.3d 1211 (Pa. 2013) (involving duly enacted local reapportionment plan); *Newbold v. Osser*, 230 A.2d 54 (Pa. 1967); *Cook v. Lockett*, 725 F.2d 912 (5th Cir. 1984) (involving challenge and modification to duly enacted reapportionment plan); *Upham v. Seamon*, 456 U.S. 37 (1982) (involving challenge to duly enacted redistricting plan); *White v. Weiser*, 412 U.S. 783 (1973) (same); *Whitcomb v. Chavis*, 403 U.S. 124 (1971) (same).

The Federalist No. 78 (Hamilton); see also *id.* (“The propriety of the thing does not turn upon the supposition of superior wisdom or virtue in the Executive, but upon the supposition that the legislature will not be infallible; that the love of power may sometimes betray it into a disposition to encroach upon the rights of other members of the government; that a spirit of faction may sometimes pervert its deliberations; that impressions of the moment may sometimes hurry it into measures which itself, on maturer reflection, would condemn.”); The Federalist No. 47 (J. Madison) (noting that the accumulation of all powers of government “in the same hands . . . may justly be pronounced the very definition of tyranny”).

The argument for deference to an unadopted legislative bill rests on highly dubious precepts. It assumes that policy preferences of a majority of each house of the General Assembly adequately reflect the Commonwealth’s political will.¹³ These majorities represent a series of constituencies across the Commonwealth, that representatives of other constituencies have opposed the plan, and that the Governor, who vetoed the failed legislative enactment, is the only public official with a statewide

¹³ Many, including the former Republican local official whose plan provided the basis for the failed enactment at issue, have argued that the existing state legislative districts that provide for those majorities are themselves grotesquely gerrymandered, see *Holt v. 2011 Legislative Reapportionment Commission*, 67 A.3d 1211 (Pa. 2013),

constituency who has addressed it. Under these circumstances, it could also be argued that the Governor's veto authority was appropriately employed to "guard the community against the effects of faction."

Accepting the Special Master's presumption of deference to an unadopted legislative bill would pervert the redistricting process every time it occurs. At present, where the political branches are divided, they have a significant incentive to work together to find consensus on how redistricting should be accomplished. Accepting any degree of deference for unadopted bills eliminates any incentive for future legislatures to even attempt to find consensus and they would be free to adopt a self-serving plan, submit it for a preordained veto, and rely on "deference" to do outside ordinary constitutional bounds what they cannot do within them. That simply cannot be the law.

7. The Special Master erred in proposing a calendar for the 2022 Primary Election that ignored essential related matters.

It is absolutely essential for this Court to craft a schedule for the 2022 Primary Election that provides sufficient time for the Secretary and the Department of State to administer the election in an efficient and effective way but also, importantly, keeps the primary unitary and allows, subject to this Court's review and approval, the State House and State Senate maps, which the LRC approved by a bipartisan vote of 4-1 on February 4, 2022, to

go into effect. The 2022 Primary Election is currently scheduled for May 17, 2022. Report at 221.

In the LRC process, the Commission has replaced the old, gerrymandered state legislative maps with maps that do not dilute votes on a partisan basis.¹⁴ The gerrymandered nature of the old maps is evidenced by the election results obtained under them:

Prior to General Election in November, 2014	Republican-27	Democrat-23	Republican percentage: 54%
General Election in November, 2014	Republican-30	Democrat-20	Republican percentage: 60%
General Election in November, 2016	Republican-34	Democrat-16	Republican percentage: 68%
General Election in November, 2018	Republican-29	Democrat-21	Republican percentage: 58%

¹⁴ The Senate Democratic Caucus respectfully requests that this Court take judicial notice of the elections results, which are publicly available and can be found at <https://www.electionreturns.pa.gov/General/SummaryResults?ElectionID=41&ElectionType=G&IsActive=0> (2014); <https://www.electionreturns.pa.gov/General/SummaryResults?ElectionID=54&ElectionType=G&IsActive=0> (2016); <https://www.electionreturns.pa.gov/General/SummaryResults?ElectionID=63&ElectionType=G&IsActive=0> (2018); and <https://www.electionreturns.pa.gov/General/SummaryResults?ElectionID=83&ElectionType=G&IsActive=0> (2020).

General Election in November, 2020	Republican-29 ¹⁵	Democrat-21	Republican percentage: 58%
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As is evident from these figures, the current Senate lines are not responsive to statewide voter preference and unconstitutionally dilute votes under this Court's standard in *League of Women Voters*. The LRC has approved a Final Plan, on a bipartisan basis, to rectify this vote dilution and increase the partisan fairness of the state legislative maps. These maps now meet the standards set out in *League* for avoiding partisan vote dilution. It is essential that these maps go into effect to prevent another two years of unconstitutional state legislative maps. Accordingly, the 2022 Primary Election as a whole must be moved back to accommodate not only the Congressional map process, but also the LRC apportionment process.

In her Report, the Special Master recommended keeping the 2022 Primary Election on its currently scheduled date. Report at 221. Instead of moving the primary, Judge McCullough recommended setting the first day for the collection of nomination petitions as March 1, 2022, the last day for the circulating of nomination petitions as March 15, 2022, and the last day to file objections to nomination petitions as March 22, 2022. *Id.* In doing so,

¹⁵ Includes one Independent who caucuses with Republicans.

Judge McCullough explicitly refused to consider the parallel process of the LRC: at trial, the Secretary offered the affidavit of Jonathan Marks, Deputy Secretary for Elections, which discussed the LRC's timeline. 1/28/2022 Transcript at 1019. Judge McCullough sustained a relevance objection and struck the paragraphs in the affidavit concerning the LRC. *Id.* at 1022-23.

Judge McCullough erred when she refused to consider the LRC timeline, and consider how it would relate to and be integrated within a compressed Primary Election calendar. As noted, the LRC voted to approve a final plan on February 4, 2022. These maps are subject to a constitutionally mandated 30-day appeal period. Pa. Const. art. II, sec. 17(d). That means this Court will not be able to consider challenges to the LRC's final plan until March 7, 2022. Thus, Judge McCullough's refusal to consider the timing associated with this Court's resolution of the LRC appeals clearly creates needless confusion as to the upcoming election calendar and fails to address how the LRC process can be incorporated into the calendar.

Additionally, Judge McCullough failed to consider that challenges to nominating petitions must be *resolved* before ballots can be printed. Recent challenges to nomination petitions indicate that the time to resolve these challenges will vary, depending on the scope of the evidentiary hearing and

whether the unsuccessful party files an appeal to this Court. See, e.g., *In re Nomination Petition of Farnese*, 945 A.2d 276 (Pa. Commw. Ct. 2008), *aff'd in part sub nom. In re Farnese*, 989 A.2d 1274 (2008) (six weeks to resolve, including a Supreme Court appeal); *In re Beyer*, 115 A.3d 835 (Pa. 2015) (seven weeks to resolve, including a Supreme Court appeal); *In re Makhija*, 136 A.3d 539 (Pa. Commw. Ct. 2016) (three and a half weeks to resolve, without a Supreme Court appeal); *In re Nomination Petitions of Smith*, 182 A.3d 12 (Pa. Commw. Ct. 2018) (two and a half weeks to resolve, without a Supreme Court appeal); *In re Scroggin*, 237 A.3d 1006 (Pa. 2020) (five and a half weeks to resolve, including a Supreme Court appeal). This often lengthy process cannot even begin until the collection period for nomination petitions closes.

In addition to the LRC timeline, this Court will also be considering the constitutionality of Act 77. See *McLinko v. Dept of State, et al.*, 14 MAP 2022; *Bonner v. Dept of State, et al.*, 15 MAP 2022. That oral argument is set for March 8, 2022. Whether mail-in balloting can proceed for the 2022 Primary Election will have implications for the timeline, as mail-in ballots must be prepared (with multiple permutations) at the county level and distributed to voters at least two weeks prior to the Primary election.

In considering adjustments to the Primary Election calendar, and in evaluating Judge McCullough's proposal, it is first appropriate consider the fact that Jonathan Marks, Deputy Secretary for Elections, has indicated that the Department of State requires a minimum of two weeks to prepare for the petition period. Affidavit of Jonathan Marks, ¶ 15. Conceivably, in respect to the LRC's Final Plan, such preparation could be undertaken in anticipation of this Court's consideration of the likely appeals.

A generic summary of the calendar requirements set forth in the Election Code, as provided in weeks, is as follows:¹⁶

Generic Election Calendar Schedule

Weeks 1-3	Period to circulate and file nomination petitions
Week 4	Period to challenge nomination petitions
Weeks 5-8	Estimated period for courts to consider and resolve challenges
Weeks 9-10	Preparation of ballots by county boards
Weeks 10-11	Mailing ballots oversees and to absentee and mail in voters
Week 13	Primary Election

The Senate Democratic Caucus is aware that the Department of State is presenting a proposed schedule that seeks to compress the normal 13-

¹⁶ See, e.g., 25 P.S. §§ 2868, 2937, 3146(b)(1).

week schedule into a 9-week schedule by reducing the time for certain functions. Of course, these assumptions involve decisions that the judiciary must resolve, including when this Court will (1) select a Congressional map; (2) make a final determination as to the LRC's Final Plan; and, with the Commonwealth Court, (3) resolve the various challenges to the nomination petitions.

The Senate Democratic Caucus, however, emphatically requests that, subject to this court's approval, the 2022 State Senate races be conducted under the Final Plan that the LRC adopted on February 4, 2022, and that a single Primary Election be conducted involving both federal and state races. Anything other than a single Primary Election would create confusion, needless cost of taxpayer monies, and potentially unforeseen administrative difficulties in reusing old voting machines throughout the Commonwealth on a compressed time frame.

For the very reasons set forth in *League of Women Voters*, the voters of Pennsylvania are entitled to exercise their voice for representation in the Pennsylvania General Assembly under maps that comport with the Free and Equal Elections Clause of the Pennsylvania Constitution.

D. In any event, this Court retains the authority to craft its own map.

Finally on the subject of remedy, in *League*, this Honorable Court ultimately found that none of the proposed plans were appropriate for adoption, and instead fashioned its own remedial plan, which it noted was superior to all proposed plans. *League of Women Voters v. Com.*, 181 A.3d 1083 (Pa. 2018) (per curiam). To the extent that this Honorable Court is inclined to craft a remedial plan of its own herein, it remains free to do so.

CONCLUSION

This Court is called upon to adopt a plan that protects Pennsylvanian voters' right to translate their votes into representation. The Senate Democratic Caucus' Maps protect that right, and HB 2146 does not. Accordingly, this Court should adopt one of the Senate Democratic Caucus' plans, and, at a minimum, should not under any circumstances adopt HB 2146. Furthermore, this Court should adopt a schedule for the 2022 Primary Election and pre-Primary calendar that provides for a single, unified Primary Election and accounts for the timeline of other proceedings before this Court.

Respectfully submitted,

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CERTIFICATE OF LENGTH

Pursuant to Pennsylvania Rule of Appellate Procedure 2135(a), I hereby certify that this brief has a word count of 11,631, as counted by Microsoft Word's word count tool.

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CERTIFICATE OF COMPLIANCE

I certify that this filing complies with the provisions of the *Public Access Policy of the Unified Judicial System of Pennsylvania: Case Records of the Appellate and Trial Courts* that require filing confidential information and documents differently than non-confidential information and documents.

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing document was served via PACfile Proof of Service, this 14th day of February, 2022, upon all counsel.

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Dated: February 14, 2022

EXHIBIT A

Meeting of the Pennsylvania Legislative Reapportionment Commission

Approval of a Final Plan; Senate Hearing Room #1; February 4, 2022

Good afternoon. My name is Mark Nordenberg. As Chair of the Pennsylvania Legislative Reapportionment Commission, it is my privilege to call this meeting to order. It has been my habit to welcome those in attendance, either here in the Capitol or through our livestream, not only for myself but for the distinguished legislative leaders who serve as members of the Commission. They are: Senator Kim Ward, the Senate Majority Leader; Senator Jay Costa, the Democratic Leader of the Senate; Representative Kerry Benninghoff, the Majority Leader of the House of Representatives; and Representative Joanna McClinton, the Democratic Leader of the House. Today, I also want to take this opportunity to thank them, both for all that they have contributed to this effort and for the many courtesies that they each have extended to me.

I also want to thank the talented and dedicated members of their caucus teams, people I have come to know and respect and with whom I have enjoyed working. Of course, we never would have reached this point in the process except for the work of the Commission's own team, which includes: Rob Byer, our Chief Counsel; Jonathan Cervas, our Redistricting Consultant; Renny Clark, our Executive Director; Ann-Marie Sweeney, our Director of Administration; and Cheri Mizdail, our Administrative Assistant. Also indispensable to so much of

what we have accomplished are Brent McClintock, the Executive Director of the Legislative Data Processing Center and Leah Mintz – who, like Rob Byer, is an attorney with the Duane Morris law firm. Without going into more detail, let me simply describe this team as both talented and tireless.

Though the other Commission members had done some work before then, it might be said that the journey that the five of us have made together began at our Organizational Meeting on May 26, 2021. Since that time, we have conducted seven public meetings and hosted sixteen public hearings. At those hearings, we heard from thirty-six invited witnesses, typically experts, and from 145 citizen-witnesses, who offered both perspectives on this process and information about their home communities. We created a website portal to receive citizen comments, which attracted 5,856 submissions. We also received 155 submissions that came to us through mail or email, for a grand total of more than 6,000 submissions. All of them were read by at least two members of the Commission team, and they were organized to make them accessible to us as we moved forward with our work.

As I have indicated in past meetings, a Legislative Reapportionment Commission is convened every ten years to redraw Pennsylvania House and Senate districts in ways that reflect population changes as revealed in census data, that comply with constitutional and statutory requirements and that advance the democratic ideal of one person / one vote. The

most significant changes revealed by the most recent census were: declining population in Pennsylvania’s rural areas; substantial population growth in the Commonwealth’s urban areas, particularly in the Southeast; and a marked increase in our state’s non-white population.

On December 16, 2021, the Commission met to vote on its preliminary plan. Though we will vote on our proposed final plan as a whole today, consistent both with past practice and with the language of the state Constitution, in that session we took separate votes on the preliminary House map, which passed by a 3 – 2 majority, and the preliminary Senate map, which was approved on a 5 – 0 vote. Today, I plan to provide an overview of the current state of both maps, including a comparison to the 2012 plan, which was found by the Pennsylvania Supreme Court to meet constitutional standards.

In doing so, let me begin with an overarching statement. In drafting the preliminary and final reapportionment plans for the House of Representatives and Senate, our predominant purpose has been to create districts that comply in all respects with the requirements of the Pennsylvania Constitution, most notably, Article II, Section 16 (which sets forth requirements for legislative districts); Article I, Section 5 (also known as the “Free and Equal Elections” clause); and Article I, Section 29 (the racial and ethnic equality clause). Of course, we also were attentive to the requirements of the 14th Amendment to the United States Constitution and the Federal Voting Rights Act. In fact,

we heard from a sizable array of experts about the Voting Rights Act, both before and after we approved the preliminary plan.

When circumstances permitted us to do so, and after ensuring compliance with state and federal law, we fashioned districts to create additional opportunities beyond the minimum requirements of the Voting Rights Act, positioning voters in racial and ethnic minority groups to influence the election of candidates of their choice. Going beyond those minimum requirements not only is consistent with the Voting Rights Act but is consistent with, and possibly required by, both the Free and Equal Elections clause and the Racial and Ethnic Equality Clause of the Pennsylvania Constitution.

Where we were able to do so, we drew those minority opportunity and influence districts without an incumbent, thereby providing the greatest potential for racial and ethnic minority voters to influence the election of candidates of their choice. Again, we did so while being mindful of the traditional redistricting criteria of Article II, Section 16 and other constitutional mandates.

Measuring the Maps

My starting point in this presentation, then, is the same starting point that we used in all of our work, the language of Article II, Section 16 of the Pennsylvania Constitution, which provides:

The Commonwealth shall be divided into 50 senatorial and 203 representative districts, which shall be composed of compact and contiguous territory as nearly equal in population as practicable. . . . Unless absolutely necessary no county, city, incorporated town, borough, township or ward shall be divided in forming either a senatorial or a representative district.

That seemingly simple, straightforward language actually frames a daunting task. There are 2,560 municipalities in Pennsylvania, and when the assignment is to draw 253 House and Senate district lines through them, there are boundaries that will need to be cut. And even though school districts are not listed in the Constitution, they often function as communities of interest that also may be entitled to a level of deference. Since there are 500 school districts within the Commonwealth, that further complicates the process.

Plan Comparisons

	Current House	LRC-H-Final	Current Senate	LRC-S-Final
<i>Counties Split</i>	50	45	25	23
<i>Number of County Splits</i>	221	186	53	47
<i>Municipalities Splits</i>	77	54	2	4
<i>Number of Municipality Splits</i>	124	92	11	10
<i>Reock</i>	0.39	0.42	0.38	0.39
<i>Polsby-Popper</i>	0.28	0.35	0.27	0.33
<i>Overall Deviation</i>	7.87%	8.65%	7.96%	8.11%
<i>Average Deviation</i>	2.0%	2.1%	2.3%	2.1%

The chart now on the screen displays the relevant comparisons between the plan being considered today and the plan that was approved by the Pennsylvania Supreme Court in 2012. As you will see, both our House and Senate maps compare very favorably to that 2021 map.

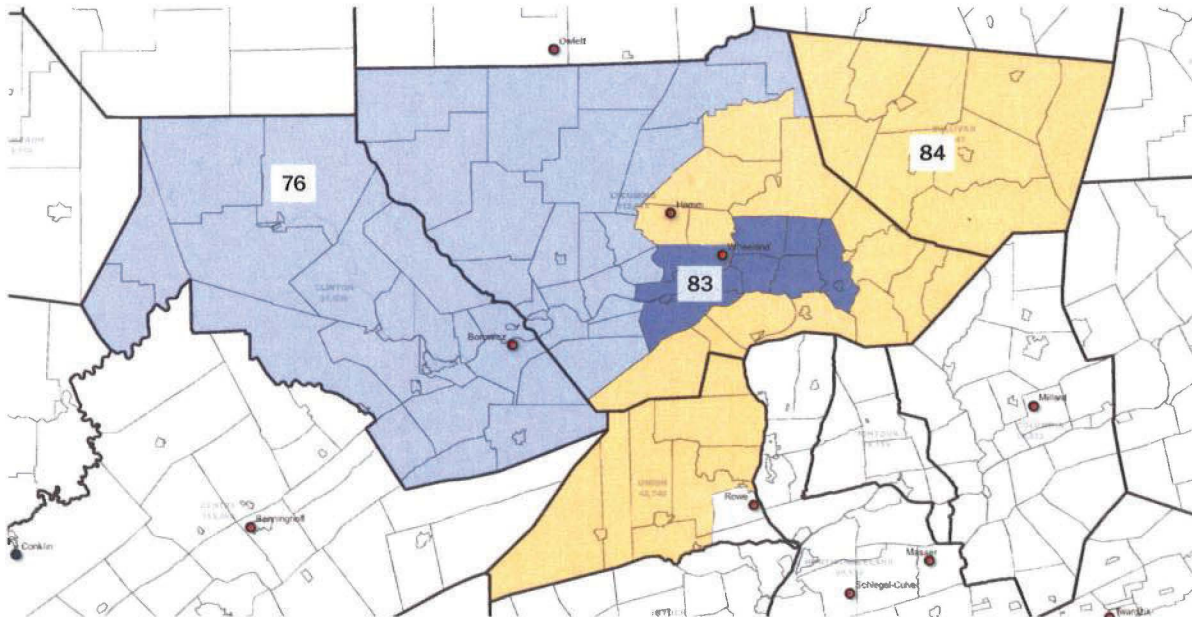
Looking first at the House map, both county and municipal splits are markedly lower, and our districts are more compact, though our overall and average deviations are somewhat higher, something that very often happens when splits are reduced. The Senate map, too, has a reduction in counties split, number of county splits and number of municipality splits, with a slight increase in municipalities split. It also has a reduction in average deviation and a slight increase in overall deviation.

The House of Representatives Map

Let me next comment on our House and Senate maps separately to highlight some of the changes that have been made since the preliminary maps were approved on December 16. In doing so, I will begin with the House, to some considerable extent, framing my comments around issues that have been raised by the House Majority Leader, who may have been the most vocal critic of it. In his remarks at the time the preliminary plan was approved, he stated that it had been his desire to support the Commission's plan; indicated that, because of the problems he saw in the House plan, he could not support it; but expressed the hope that "we can make changes before this thing is cemented permanently and finalized" and that we would take the time to listen to the people.

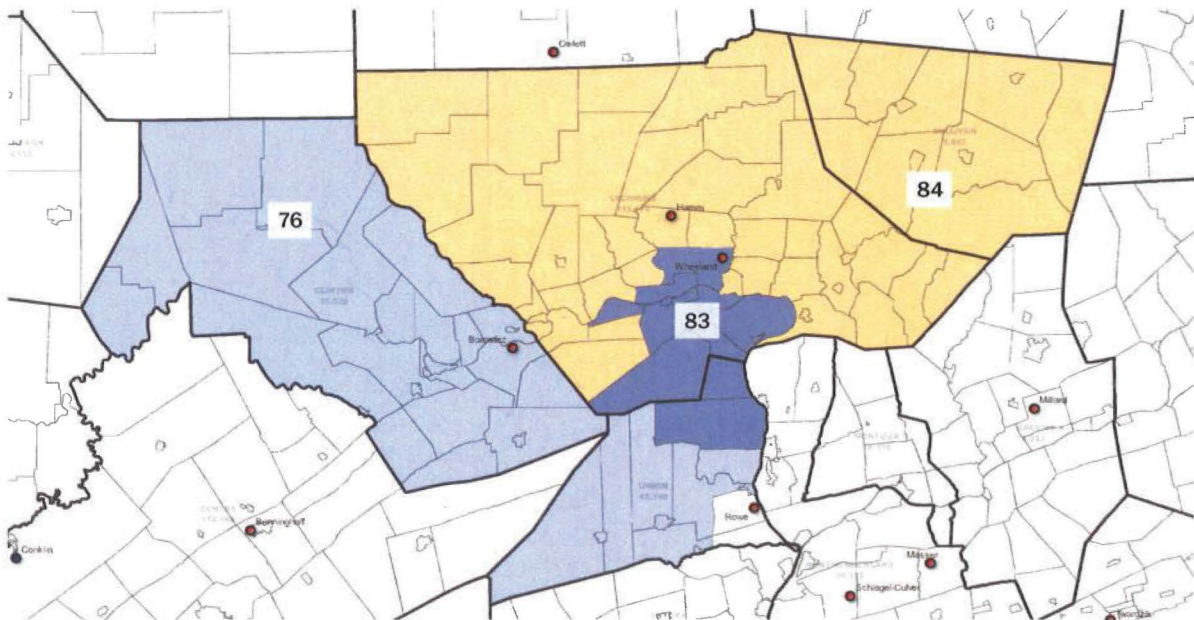
From my earlier comments, you already know that we did a great deal of listening, attracting an historic number of citizen suggestions, through our website portal and through our hearings. What may be less clear is the extent of the changes that have been made. However, we also have tried to be responsive, so let me update you on some of those changes.

The Well-Fed Salamander.



The most compelling visual from the meeting to approve the preliminary plan was the side-by-side presentation of the outline of Pennsylvania House District 84 and the salamander that has become a widely recognized symbol of gerrymandering. As I already have stated publicly, District 84 is a Republican district that is completely surrounded by other Republican districts. The way that it is drawn, then, cannot possibly benefit any Democrat, meaning that, by definition, this is NOT a partisan gerrymander.

However, I also did agree that there almost certainly would be more aesthetically pleasing ways to draw District 84 and the districts adjacent to it.



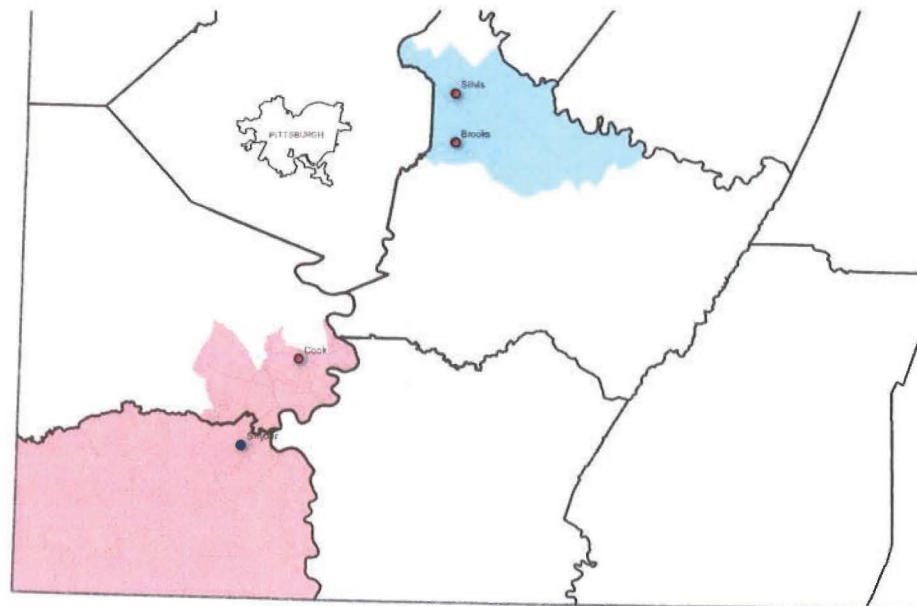
That now has been done, and in showing you the proposed final map of Districts 76, 83 and 84, let me acknowledge the assistance of Rep. Hamm, the Republican House member who represents the 84th District and who shared his thoughts, particularly regarding the communities of interest in Union, Lycoming and Sullivan Counties.

The Pairing of Republican Incumbents.

Probably the most vocal criticism of the preliminary map was directed at what was labeled the disproportionate pairing of Republican incumbents – which, in that map, involved six such pairings or twelve Republican incumbents. In earlier meetings, I explained that a majority party naturally would experience a higher level of pairings; I showed, because so many Republican

incumbents live very near district lines, how easy it would have been to target more of them if that had been our goal; and I offered two different points of comparison. The first was the redistricting plan that had been recently approved by the Virginia Supreme Court and pitted nearly half of the sitting legislative members against each other; and the second was the preliminary maps that had been submitted by Fair Districts PA and Amanda Holt, each of which pitted 36 Republican incumbents against each other, compared to the twelve in our preliminary plan.

Today, though, I want to talk about what has happened since then, and to do so, I want to return to the preliminary House map and look, in particular, to the western part of the state.



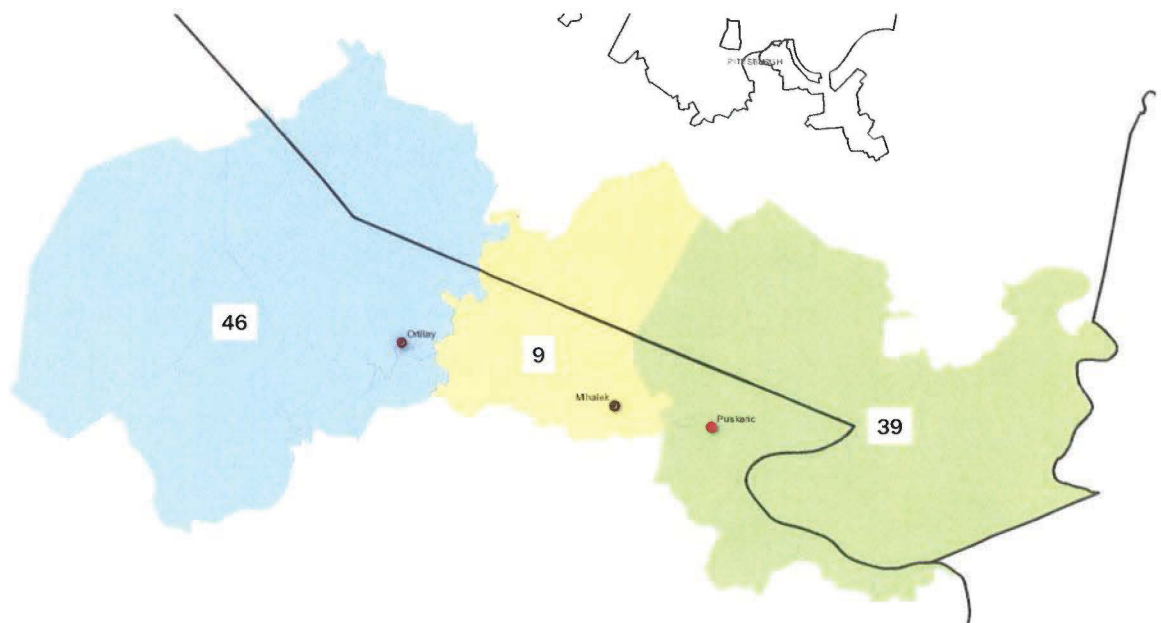
- Let me first call your attention to the Southwest corner of the state, where you will see the pairing of a Democrat

and a Republican in Greene and Washington Counties and a pairing of two Republican incumbents in Westmoreland County. Creating such pairings was necessary to deal with populations losses in that region – which, after all, is the principal purpose of reapportionment. However, let me be clear in saying that the particular pairings were not made by the Commission but came from the caucuses.

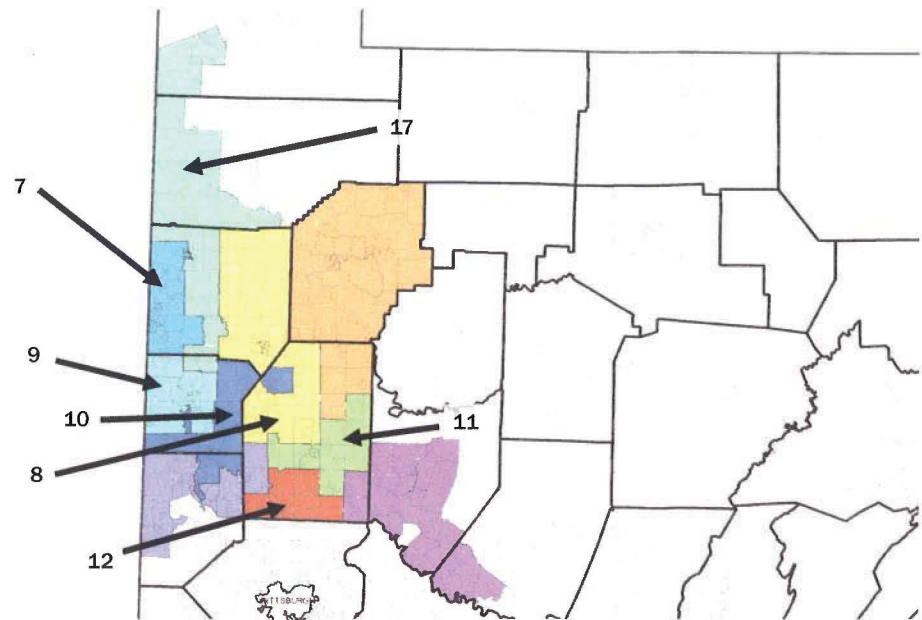


- The preliminary map also paired two Republican incumbents in northern Washington County, and that was done by my team and me, as part of an effort not to split the border between Allegheny and Washington Counties. However, a bipartisan group of four members of the House – Representatives Gaydos, Ortitay, Kinkead and Kulik -- made a persuasive, professional presentation, supported by submissions from local officials, about the damage that might be done unless we retreated from that

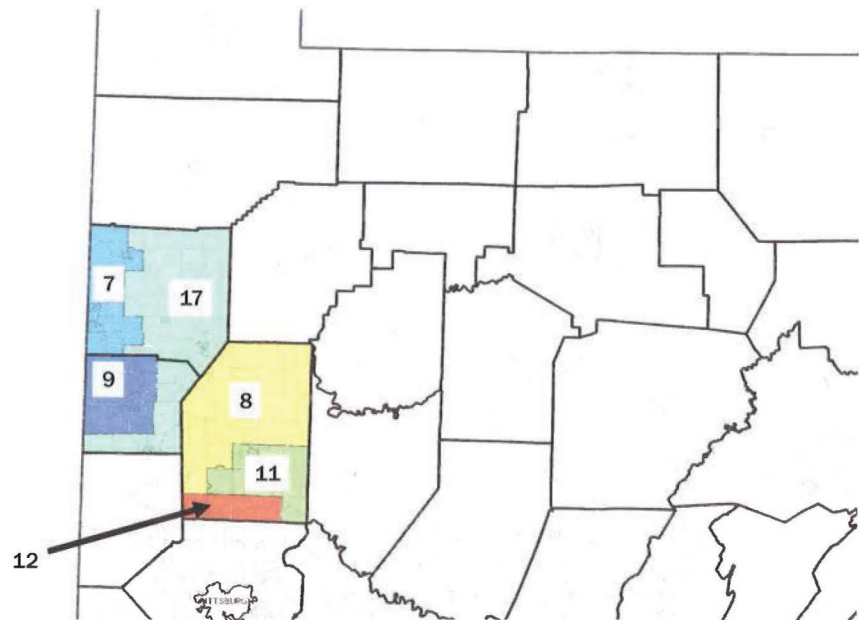
decision. To be clear, this was not a generic plea but one that focused on distinctive regional needs, including coordinated responses to flooding, key economic development initiatives that cross county lines, and the needs of the Greater Pittsburgh International Airport. I will say that, for me, their approach was one of the high points of this entire process.



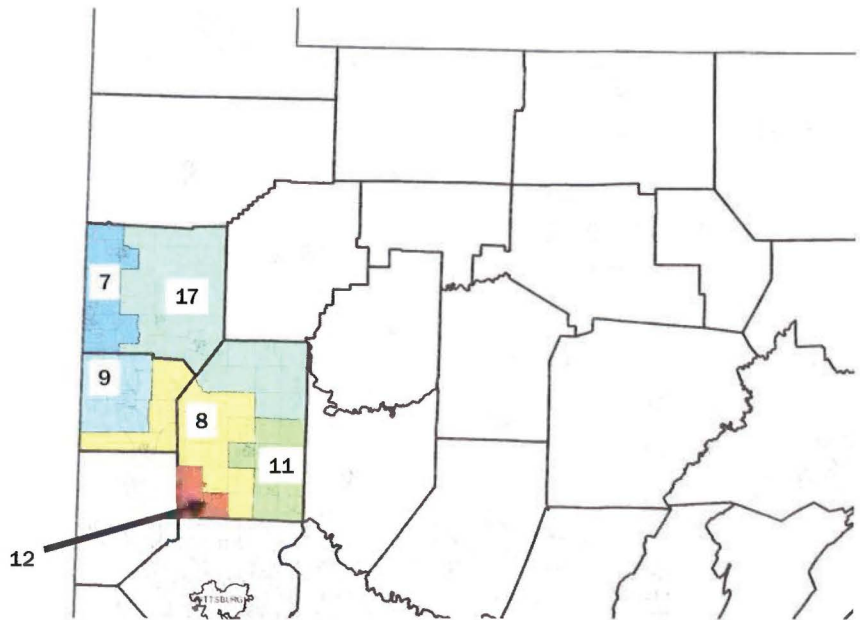
We found it to be persuasive, so we re-designed our plan for that region, permitted the cut of the border between the two counties – and, in the process, unpaired the Republican incumbents and also were able to eliminate some municipal splits.



- Moving north to the area of Butler, Lawrence and Mercer Counties, I first need to show you what a “mapping mess” this region is in the map that was enacted ten years ago. Butler County is an area that has experienced strong growth and is perfectly sized for three full House districts. However, under the 2012 plan, Butler County was divided into seven House districts, with only two of those representatives living within the County. Similarly, Mercer and Lawrence Counties together are perfectly sized for three full House districts. However, under the 2012 plan, those two counties were divided into five districts and partial districts, including a district that stretches from Lawrence County through Mercer, Crawford and Erie Counties to Lake Erie.



In our preliminary plan, we treated Butler County alone and treated Lawrence and Mercer together as a two-county unit and made maps accordingly. However, after the preliminary map was released, we did begin to receive comments explaining that there were communities of interest that crossed county lines in that region and, with the encouragement and help of the Republican caucus leadership, we ultimately treated the area as a three-county unit, producing this map and eliminating another pairing of Republican incumbents.



I hope this conveys some sense that this was a thoughtful process, not an exercise in targeting incumbents of either party. To summarize where we stand on the pairings of Republican incumbents, there are some pairings that were suggested to us because one incumbent of the pair has announced plans to retire. Putting those to the side, there are at most three sets of Republican incumbents paired against each other in the House map that is being advanced as our final plan – which, given the size of the House, by most standards, certainly is not out-of-line.

Community Impact

Beyond being responsive to incumbent pairings, we also were attentive to expressed community needs. Perhaps the most easily understood example of that part of the process can be traced to hearings held by the House Republican caucus in

McCandless and Mechanicsburg, as a way of highlighting their opposition to the splits in those communities and others in the preliminary plan. Those hearings, quite predictably, generated citizen comments directed to those issues.

Among them was a request for information from a North Allegheny High School student who was writing an article for her school newspaper about the splits of the Town of McCandless and the North Allegheny School District. She did not realize that, when I was her age, I lived in McCandless Township and attended North Allegheny. And I am sad to say that while we were able to cure the municipality split, the final plan could not make the school district whole.

So, we eliminated the McCandless and Mechanicsburg splits, as well as some of the other municipal splits in our preliminary plan. Other examples include Moon, Murrysville and Horsham, all of which had been the subject of comment. But what everyone needs to understand about this process is that when a cut is eliminated in one municipality, it most often is just moved to another municipality. As I noted earlier, there are 2,560 municipalities in Pennsylvania and inevitably some will need to be split.

Statistical Unfairness

The effort of the House Republican caucus to discredit the Commission's preliminary plan rested heavily on the report and

testimony of the only witness they presented during the hearing devoted to expert witnesses. The two main themes of his testimony were the use of statistical simulations in an attempt to establish that our plan was an unfair partisan gerrymander and the offering of general and unsupported conclusions about the dilution of the voting influence of minority groups.

A half-century ago, I was a math major, but I claim no expertise in statistical simulations. A quarter-century ago, I taught courses in civil procedure, evidence and trial advocacy, each of which dealt with the qualifications and testimony of expert witnesses, but that work, too, is dated and I would not claim any current expertise.

However, I have decades of distinctive experience that is directly relevant to this particular dimension of the Commission's work – for much of my career, one of my most important responsibilities was to review the academic work of faculty members -- at all levels and across all disciplines, in one of this country's leading research universities -- in connection with such important professional decisions as recruitment, promotion, the award of tenure, and elevation to the ranks of distinguished faculty.

When I reviewed the resume of the young faculty member called as an expert by the House Republican caucus, there were positive features of his record that stood out, including the fact that he has written articles in areas of interest to me. However,

what really caught my attention is that this academic expert has not published a single academic article in the areas for which his expert testimony was being presented.

Contrast that with the truly amazing record of Prof. Kosuke Imai, who was the House Democrats' first witness and is regarded by many to be the world's leading quantitative political scientist. He was on the Princeton faculty for fifteen years, where he was the founder of its Program in Statistics and Machine Learning. He now is at Harvard, where he is the first faculty member in that university's history to hold appointments in both the Department of Government and the Department of Statistics. Not only does he have an outstanding publication record in the field that was the subject of his testimony, but he actually developed the algorithm used by the House Republicans' witness to analyze our preliminary plan.

Prof. Imai found three things when he analyzed the study that was conducted by the House Republicans' witness: (1) he could not replicate the results, which raises questions; (2) when he used the algorithm that he had developed to assess the preliminary plan himself, he found that plan to be less of a statistical outlier than the House Republicans had claimed; and (3) that became even more true when he factored in racial data. In fact, he concluded that when "majority-minority districts are considered, there is no empirical evidence that the preliminary plan is a partisan gerrymander."

Also called by the House Democrats was Prof. Christopher Warshaw, a faculty member from the George Washington University Department of Political Science, who also held an appointment at MIT. Prof. Warshaw is a Pennsylvania native whose expert opinion was cited by the Pennsylvania Supreme Court in the 2018 League of Women Voters case. He has published papers directly related to his testimony and also is a member of the Advisory Board of Plan Score. His three conclusions about the Preliminary Plan all were very positive. This is what he said:

- The plan is likely to be responsive to shifts in voter preferences;
- On this plan, the party that wins the majority of the votes is likely to usually win the majority of the seats; and
- Based on three methods of projecting future elections and four different, generally accepted partisan bias metrics, I find that the plan is fair, with just a small pro-Republican bias.

John Nagle, a professor emeritus from Carnegie Mellon University, had appeared as a citizen-witness at one of our earlier hearings and returned in that role in January. Dr. Nagle was a professor of physics and the biological sciences at Carnegie Mellon and used statistical simulations extensively in his work. Interestingly, though this was not his original field, he now has published four directly relevant papers in *Election Law*, a top-ranked, peer-reviewed political science journal. He also

has invented two of the partisan bias metrics used by Dave’s Redistricting App.

In addition to his more scientific observations, Dr. Nagle offered a down-to-earth, but thought-provoking, perspective on the methods employed by the House Republicans’ witness. To quote: “The fallacy of averaging the ensemble of simulations can be revealed by an analogy. A professional basketball coach could consider 1,000 people who know how to play the game and then randomly choose an average one to play center. That is like choosing a plan from many simulated plans in the middle of the ensemble of simulated plans. Or the coach could hire LeBron James. That is like picking the LRC proposed plan.”

The Use of Racial Data

At the very beginning of his report, the House Republicans’ witness declared that his “simulation process ignores all . . . racial considerations when drawing districts.” That is a puzzling choice, since, under certain circumstances, the Commission is required to take account of racial considerations and in a broader set of circumstances is permitted to do so. Presumably, that is why Prof. Imai included such data in his simulations.

Neither the fact that his simulations included no racial data nor the fact that this is another area in which he has no academic publications to his credit kept the House Republicans’ witness from basing much of his analysis on the sweeping theme that, if minority-group voters are spread across multiple legislative

districts, their influence is inevitably diluted. Of course, all of us know that voter-influence can be diluted either by cracking or by packing and, under the law, knowing where the correct balance can be struck requires an intensive local appraisal, which the Republicans' witness did not perform.

To conduct such an analysis, the House Democrats retained Dr. Matt Barreto, one of the country's leading scholars of Latino politics and of the Voting Rights Act. Prof. Barreto is a faculty member with appointments in both Political Science & Chicana / Chicano Studies at UCLA, where he also is the Faculty Director of the UCLA Voting Rights Project. In analyzing the 2012 House map that currently is in place, Dr. Barreto said this:

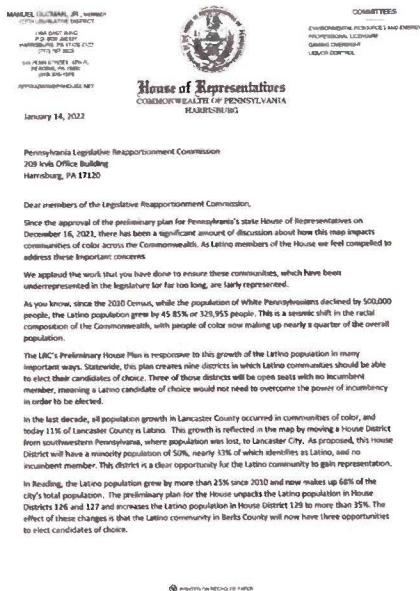
- Multiple Black-performing and Latino-performing districts are packed and exhibit wasted Minority votes, which results in vote-dilution; and
- Given growth of the Minority population in certain regions of the state, it is clear that existing Minority districts should be unpacked and that new Minority-performing districts [should be] created to comply with the [Voting Rights Act] VRA.

In analyzing this Commission's preliminary plan, Dr. Baretto concluded, "Minority-performing districts in the preliminary plan will perform for minority voters." That, of course, was very important to us because, as I said when the Commission approved the preliminary plan, "This plan includes seven minority opportunity districts – true VRA districts, minority

influence districts, and coalition districts – in which there is not an incumbent, creating special opportunities” for the election of minority-preferred candidates.

I probably should add, for the record, that the House Republican caucus did belatedly offer the written report of a second expert who took issue with some of Prof. Baretto’s work. However, even though they had earlier identified this expert as a witness they did not deliver his report as scheduled or make that witness available for questioning by the Commission, but Prof. Baretto did offer his own powerful and persuasive reply.

The Commission’s efforts to create these districts also were hailed by those who probably have the best-informed insights – the three Latino members of the current House of Representatives and the leadership of the Pennsylvania Legislative Black Caucus, which has served, since 1973, as “an information and advocacy vehicle to advance the interests of African American, Latino, and other people of color of the Commonwealth of Pennsylvania.”



This is some of what Representatives Danillo Burgos, Angel Cruz and Manuel Guzman said in their letter to the Commission:

“Since the approval of the preliminary plan for Pennsylvania’s state House of Representatives on December 16, 2021, there has been a significant amount of discussion about how this map impacts communities of color across the Commonwealth. As Latino members of the House we feel compelled to address these important concerns.

“We applaud the work that you have done to ensure these communities, which have been underrepresented in the legislature for far too long, are fairly represented. . . .

“The LRC’s Preliminary Plan is responsive to [the] growth of the Latino population in many important ways. Statewide, this plan creates nine districts in which Latino communities should be

able to elect their candidates of choice. Three of those districts will be open seats with no incumbent member, meaning a Latino candidate of choice would not need to overcome the power of incumbency in order to be elected. . . .

“ . . .Latino representation is lacking in Pennsylvania, particularly when you consider the growth that has occurred across Pennsylvania over the last decade. The Preliminary Plan for House Districts makes major strides in correcting this injustice and restoring fairness in representation in Pennsylvania. As Latino members of the House, we embrace the goal of the LRC and applaud their work. We look forward to serving in a more diverse legislature.”



Pennsylvania Legislative Black Caucus

January 18, 2022

Mark Norberg
Chairman, Pennsylvania Legislative Reapportionment Commission
209 Levin Office Building
Harrisburg, PA 17120

Chairman Norberg,

As the Chair of the Pennsylvania Legislative Black Caucus (PLBC), I write today regarding the Preliminary Plan for House Districts passed by the Pennsylvania Legislative Reapportionment Commission (LRC) on December 16, 2021. The PLBC is a historical institution established in 1973 to serve as an education and advocacy vehicle to advance the interests of African American, Latino, and other people of color of the Commonwealth of Pennsylvania.

I have watched the reapportionment process closely. I am truly impressed by the process you have led and the commitment to fairness and transparency that you have demonstrated in the creation of a preliminary map. I am pleased to fully endorse this preliminary plan as responsive to the growth of communities of color across the Commonwealth.

As many have noted, statewide the number of Pennsylvanians who identify as Black, Hispanic, Asian or multi-racial increased by more than 800,000 since the last census, while the White population decreased by more than 140,000.

In the last decade, the City of Philadelphia, after many census reports showing population losses, increased its population by more than 80,000 residents requiring a house district be moved within the City boundaries. As you know, this growth is recognized in the preliminary plan by adding House District 9 to Philadelphia. The newly drawn House District 9 is a majority Black district which, through the unpacking of neighboring districts including my own, furthers the goals of the Voting Rights Act (VRA).

The population growth in Philadelphia is part of a trend across the southeast of the Commonwealth. In addition to the placement of House District 9, the preliminary plan reflects this trend by placing new legislative districts in Montgomery and Lancaster counties which provide increased opportunities for the growing minority populations in those areas to secure representation.

In addition to preserving and expanding districts in which a racial minority group makes up the majority of the population, the preliminary plan takes the important step of including sensitive districts.

Representative Donna Bullock, the Chair of the Pennsylvania Legislative Black Caucus, sent a letter that, though addressed to

me, really was intended for the entire Commission. Let me quote briefly from it.

“I have watched the reapportionment process closely. I am truly impressed by the process . . . and the commitment to fairness and transparency that you have demonstrated in the creation of a preliminary map. I am pleased to fully endorse this preliminary plan [as] responsive to the growth of communities of color across the Commonwealth.

“As many have noted, statewide the number of Pennsylvanians who identify as Black, Hispanic, Asian or multi-racial increased by more than 800,000 since the last census, while the White population decreased by more than 540,000. . . .

“In addition to preserving and expanding districts in which a racial minority group makes up the majority of the population, the preliminary plan takes the important step of including coalition districts.

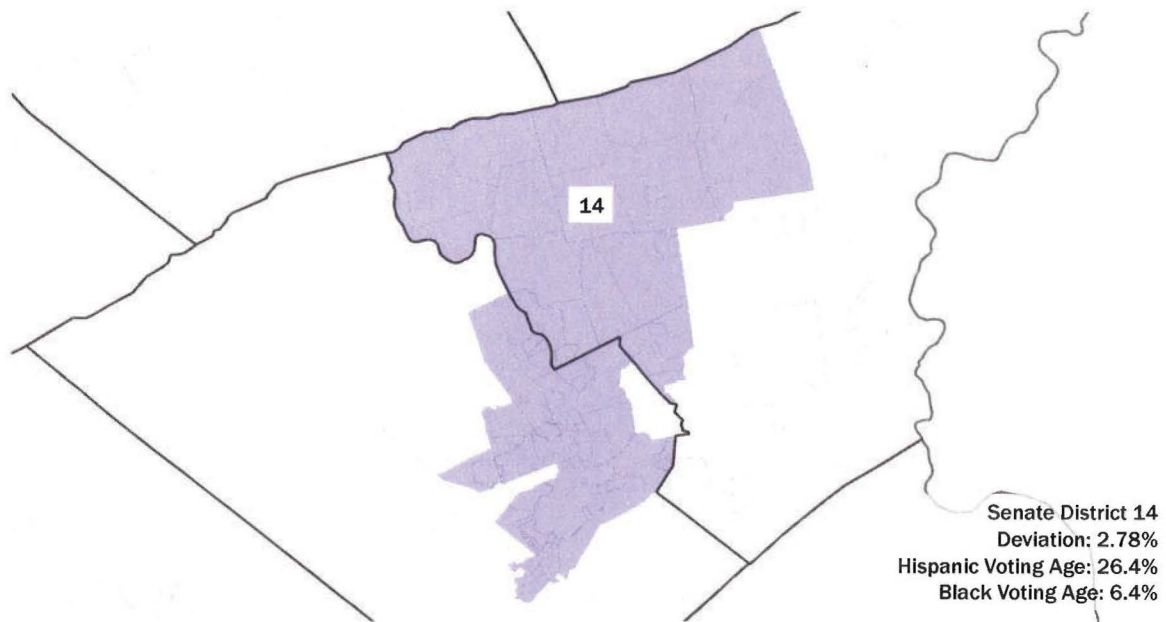
“These districts, in which diverse communities of color make up a majority or plurality of the population, recognize the commonalties of Black, Latino, Asian and Indigenous Pennsylvanians and will allow these communities to fully realize their political power. . . .

“I want to thank you . . . for your tireless efforts in the redistricting-cycle and for recognizing that the diversity of this Commonwealth is a strength. Your efforts have led to a plan that will uplift – rather than dilute – our voices.”

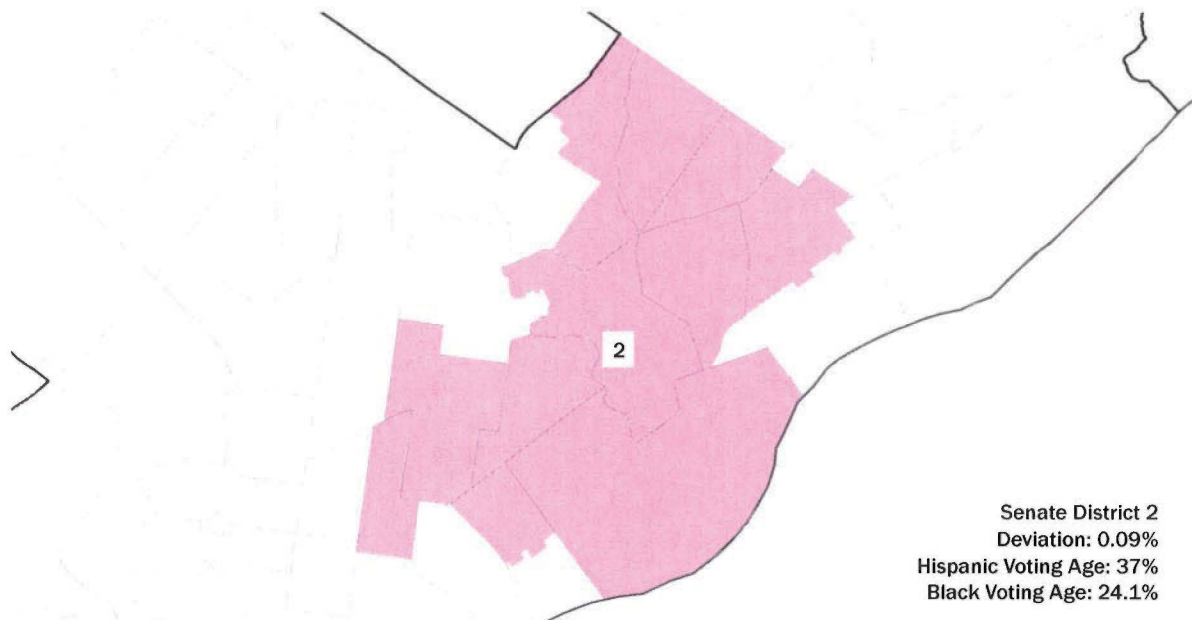
The Senate Map

Similar efforts were undertaken in our work on the Senate map. Because Senate districts are so much larger, though, that process is far more challenging.

Our preliminary Senate map included the foundation for what was an inspiring idea advanced by Majority Leader Ward – moving a district into the Lehigh Valley to create a Hispanic-influence district there. To maximize the Hispanic population in that district would have required stretching the district from Allentown in Lehigh County to include Bethlehem and other communities in Northampton County. Taking that step drew questions and criticisms from the involved communities, from elected officials and from some good-governance groups, so we decided not to take that step now.



However, our new Senate District 14 does already present opportunities for influence. Its Hispanic voting age population is 26.37%, and its Black voting age population is 6.37%. From population growth trends, state-wide and in that region, those numbers will only continue to grow. Consistent with our efforts in the House, it also is a district with no incumbent.



The most dramatic change in the Senate map, since our approval of the preliminary plan, is the creation of a new Hispanic-influence District in Philadelphia. District 2 has a Hispanic voting age population of 36.75% and a Black voting age population of 24.1%.

Conclusion

Because the Super Bowl is coming soon, I thought it might be appropriate to close with a quote from Vince Lombardi – the late, legendary Hall of Fame coach and the person after whom the Super Bowl trophy is named. Coach Lombardi said, “Perfection is not attainable, but if we chase perfection, we can catch excellence.”

As has been said before, there is no such thing as a perfect map. There also is no such thing as a perfect process. What I can say, though, is that no one involved in this effort just wanted to get the job done. Instead, we wanted to do the job well, and I believe we have succeeded. By virtually any measure these are very good maps that are fair, that responsive to the requirements of the law, and that will serve the people of Pennsylvania well for the next ten years.

Received 02/15/2022 Supreme Court Middle District

Filed 02/14/2022 Supreme Court Middle District

7 MM 2022

IN THE SUPREME COURT OF PENNSYLVANIA

CAROL ANN CARTER; MONICA
PARRILLA; REBECCA
POYOUROWN; WILLIAM TUNG;
ROSEANNE MILAZZO; BURT
SIEGEL; SUSAN CASSANELLI;
LEE CASSANELLI; LYNN
WACHMAN; MICHAEL
GUTTMAN; MAYA FONKEU;
BRADY HILL; MARY ELLEN
BALCHUNIS; TOM DEWALL;
STEPHANIE MCNULTY; and JANET
TEMIN,

Petitioners,

v.

No. 7 MM 2022

LEIGH M. CHAPMAN, in
her official capacity as the Acting
Secretary of the Commonwealth of
Pennsylvania; JESSICA MATHIS, in
her official capacity for the
Pennsylvania Bureau of Election
Services and Notaries,

Respondents.

PHILIP T. GRESSMAN; RON Y.
DONAGI; KRISTOPHER R. TAPP;
PAMELA GORKIN; DAVID P.
MARSH; JAMES L.
ROSENBERGER; AMY MYERS;
EUGENE BOMAN; GARY
GORDON; LIZ MCMAHON,
TIMOTHY G. FEEMAN; and GARTH
ISAAK,

Petitioners,

A2082

v.

LEIGH M. CHAPMAN, in
her official capacity as the Acting
Secretary of the Commonwealth of
Pennsylvania; JESSICA MATHIS, in
her official capacity as Director for the
Pennsylvania Bureau of Election
Services and Notaries,

Respondents.

**BRIEF OF INTERVENOR, REPRESENTATIVE JOANNA E.
McCLINTON, LEADER OF THE DEMOCRATIC CAUCUS OF THE
PENNSYLVANIA HOUSE OF REPRESENTATIVES IN SUPPORT OF
HER EXCEPTIONS TO THE FEBRUARY 7, 2022 REPORT OF THE
SPECIAL MASTER**

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Pennsylvania House of Representatives*

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I. INTRODUCTION

Pursuant to this Court’s February 2, 2022 *per curiam* Order, Intervenor, Representative Joanna E. McClinton, Leader of the Democratic Caucus of the Pennsylvania House of Representatives (“House Democratic Caucus Intervenor” or “Representative McClinton”), hereby files this Brief on Exceptions to the February 7, 2022 Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendation of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule of the Commonwealth Court of Pennsylvania (“Report and Recommendation” or “R&R”), “firmly” recommending that this Court:

adopt and implement HB 2146 as a matter of state constitutional law as it meets all of the traditional criteria of the Free and Equal Elections Clause, and does so in respects even noted by the Governor’s expert, as well as the other considerations noted by the courts, it compares favorably to all of the other maps submitted herein, including the 2018 redistricting map, it was drawn by a non-partisan good government citizen, subjected to the scrutiny of the people and duly amended, it creates a Democratic leaning map which underscores its partisan fairness and, otherwise, is a reflection of the “policies and preferences of the State, as expressed in statutory and constitutional provisions or in the reapportionment plans proposed by the state legislature.”

Id. at 216 ¶97 (all emphasis in original) (citations omitted). Additionally, the House Democratic Intervenor takes exception to the “Revised 2022 Primary Election Calendar Recommendations” submitted by the Commonwealth Court as set forth on pages 221-22 of the R&R. Significantly, unlike the Report and Recommendation of then President

Judge Craig in *Mellow v. Mitchell*, 607 A.2d 204 (Pa. 1992), the Commonwealth Court herein refused to credit any concerns regarding the potential that its proposed schedule might lead to disparate primary election days for the congressional primary election and any other primary elections currently scheduled for the 2022 General Primary Election. Evidence of this disregard is plain on the face of the R&R herein as the proposed revised General Primary Election Schedule provides that the first day to circulate/file nomination petitions is March 1, 2022. *Id.* at 221.

With regard to the upcoming primary election, the House Democratic Caucus maintains that the primary election should proceed as scheduled on May 17, 2022. Notwithstanding the diverse proceedings pending or shortly to be presented to this Court, there is sufficient time to complete all necessary pre-election requirements on a reasonably compressed schedule in advance of May 17. The House Democratic Caucus urges the Court to establish a unitary, compressed election schedule for all election contests that allows for completion of the state legislative reapportionment process mandated by Article 2, Section 17 of the Pennsylvania Constitution,¹ as well as formulation of a final congressional redistricting plan. Importantly, the Pennsylvania Constitution specifically requires that, once appeals from the state reapportionment plan are decided, the new state reapportionment map “shall be used thereafter in

¹ By order dated February 11, 2022, in *David v. Chapman*, 8 MM 2022, which involved a request to enjoin the election calendar for state legislative offices, this Court entered an Order denying Respondents’ Emergency Application for Extraordinary Relief as moot given the *per curiam* Order entered in this action.

elections to the General Assembly.” Pa. Const. art. 2, § 17(e) (“When the Supreme Court has finally decided an appeal or when the last day for filing an appeal has passed with no appeal taken, the reapportionment plan shall have the force of law and the districts therein provided shall be used thereafter in elections in the General Assembly until the next reapportionment”) (emphasis added). Accordingly, to ensure compliance with Article 1, Section 5 and Article 2, Section 17 of the Pennsylvania Constitution and to fulfill the guarantee of equal representation in the Fourteenth Amendment to the U.S. Constitution, adjustments to the election schedule as a result of this proceeding should allow for final decision in this action and full consideration and decision of any appeals from the state legislative reapportionment plan. The House Democratic Caucus defers to the Department of State for particular refinements of the election schedule that satisfy the competing constitutional demands.

II. STATEMENT OF THE CASE

In the interest of brevity and as this Court is already familiar with the facts of this matter together with its procedural background and the current procedural posture of the case following its January 10, 2022 and February 2, 2022, Orders as described above, House Democratic Caucus Intervenor, will not repeat same here.

III. SUMMARY OF BASIC POSITION OF HOUSE DEMOCRATIC CAUCUS INTERVENOR

The basic position of the House Democratic Caucus Intervenor remains as it did in its opening brief, trial brief, post-trial submission/brief filed in the Commonwealth

Court together with its Answer to the Petition for Extraordinary Relief filed by the *Carter* Petitioners²: first and foremost, preserve the rights of all citizens in the Commonwealth to participate in “free and equal” elections and that all elections in the Commonwealth be free and equal. *See League of Women Voters v. Commonwealth*, 178 A.3d 737, 804 (Pa. 2018) (“LWV”). Second, that this Court rule definitively that by virtue of it being imbued with the supreme judicial power in this Commonwealth that this Court and this Court alone, and not any inferior court has the sole power to adjudicate the constitutionality of any proposed congressional redistricting map whether that map has been previously adopted, or where the legislature and the Governor fail to agree on a proposed redistricting map. Finally, that this Court select its proposed map, not because of any purported statistical superiority, but because it appropriately ensures that no voter in the Commonwealth of Pennsylvania will be disenfranchised nor have its vote diluted.

IV. JURISDICTION

As discussed in great length in Intervenor McClinton’s trial brief and Answer to the *Carter* Petitioners’ Application for Extraordinary Relief, Intervenor McClinton position regarding jurisdiction is that only this Court through both its Extraordinary Jurisdiction (42 Pa. C. S. § 726) and King’s Bench powers (Pa. Const. art. V. § 2; 42 Pa.

² All of those briefs and pleadings are incorporated herein by reference as fully as though herein set forth at length.

C.S. §502) can declare an in-force congressional map to be violative of Pennsylvania’s Constitution *see LWV*, or craft remedy after declaring an in-force map unconstitutional or where, as here, the legislature and the Governor are unable or unwilling to agree on a redistricting plan. *See Carter v. Chapman*, No. 7 MM 2022, 2022 Pa. LEXIS 102, *8 (Pa. Feb. 2, 2022) (Dougherty, J., concurring). *Accord LWV, Mellon*.

As stated above, in *Mellon*, the last time this Court was faced with the issue of congressional redistricting, it exercised extraordinary jurisdiction to take plenary jurisdiction over the matter and thereafter appointed the President Judge of Commonwealth Court to function as a master in developing the factual record and to thereafter issue a report and recommendation. In both *LWV* and *Mellon* (relating to congressional redistricting plans), the Supreme Court fashioned the remedy while at the same time deputizing the Commonwealth Court to conduct “all necessary and appropriate discovery, pre-trial and trial proceedings so as to create an evidentiary record on which Petitioners’ claims may be decided.” *LWV* at 766-67. *See also Mellon*, at 206 (designating “President Judge David W. Craig of the Commonwealth Court as Master to conduct hearings and report to us not later than February 26, 1992.”). Regardless of the designation bestowed by this Court upon the Commonwealth Court, in both instances, the Commonwealth Court’s final determination was transmitted to this not as a “final order and judgment” of that Court, to the contrary, on both occasions the Commonwealth Court transmitted findings of fact, conclusions of law and recommendations as to the remedy. *See LWV* at 838 n.1 (referring to the

Commonwealth Court’s “December 29, 2017 Recommended Findings of Fact and Conclusions of Law”); and *Mellon*, at 206 (referring to Commonwealth Court President Judge Craig’s submission of “Findings, Recommended Decision and Form Order,’ along with a proposed election schedule revision”).

This is a “remedies case,” in that all parties and the Commonwealth Court agree that the currently in-force congressional district map has 18 congressional districts and as a result of the 2020 decennial census the Commonwealth has only been apportioned 17 representatives to the United States House of Representatives, thus the currently in-force map adopted by this Court in 2018 is now obsolete.³ Given that this Court must now fashion a remedy in the form of a newly redistricted congressional map of the Commonwealth, there can be no doubt that this Court and only this Court has the jurisdiction, judicial authority and power to grant such relief.

It cannot be gainsaid that the Commonwealth Court is a court of limited jurisdiction. That Court’s jurisdiction is circumscribed by statute (42 Pa. C.S. §§ 761 –

³ Throughout the R&R the Commonwealth Court refers to the currently in-force map adopted by this Court in 2018 as being “malapportioned.” *See, e.g.*, R&R at 4. Notwithstanding the census results, such is not the case. “Malapportioned” as defined by the Oxford English Dictionary means: “Of a legislative or electoral body: badly or inequitably apportioned; structured or constituted in such a way as to deprive sectors of the population of fair representation.” *See* “malapportioned, adj.” OED Online, Oxford University Press (Dec. 2021 Ed.) available online at www.oed.com/view/Entry/243991 (last accessed Feb. 14, 2022). The 2018 map is not “malapportioned,” in the sense that it was structured in such a way as to deprive sectors of the population fair representation. To the contrary, at the time it was adopted, it was properly proportioned, however, the population changed, resulting in Pennsylvania losing a representative in Congress. Thus, while the 2018 map may be unconstitutionally obsolete due to the 2020 census results, there is no evidence on this record that the 2018 map was “malapportioned” as that term is defined. *Id.*

764). Relevant to this matter, the Commonwealth Court's jurisdiction can only be predicated upon 42 Pa. C.S. § 761(a)(1), as the Commonwealth Court has original (but not exclusive) subject matter jurisdiction over all civil actions and proceedings against the Commonwealth government, including any officer thereof, acting in their official capacity. *Id.*⁴ Furthermore, 42 Pa. C.S. § 562 specifically cabins the Commonwealth Court's powers by limiting those powers to issuing:

every lawful writ and process necessary or suitable for the exercise of its jurisdiction and for the enforcement of any order which it may make, including such writs and process to or to be served or enforced by system and related personnel as the courts of common pleas are authorized by law or usage to issue. The court shall also have all powers of a court of record possessed by the courts of common pleas and all powers necessary or appropriate in aid of its appellate jurisdiction which are agreeable to the usages and principles of law.

Id. Simply put the Commonwealth Court's power is limited to performing all necessary acts and the issuance of all process necessary in order to exercise its jurisdiction as an appellate court or as a court of original jurisdiction, like that of a court of common pleas within one of Pennsylvania's 60 judicial districts. *Id.*

By contrast, this Court, the Supreme Court of Pennsylvania, possesses original, appellate, extraordinary, special, and plenary jurisdiction over all matters within Pennsylvania's Unified Judicial System. *See* Pa. Const. art. V, §§ 1, 2, 10. *See also* 42 Pa.

⁴ While 42 Pa. C.S. § 764 delegates to the Commonwealth Court exclusive original jurisdiction over certain contests related to nominations and elections pursuant to the Pennsylvania Election Code, this matter does not involve any contested election or nomination for any office in particular over which the Commonwealth Court has original exclusive jurisdiction.

C.S. §§ 721 – 727. No statute nor the Pennsylvania Constitution limits the judicial power of this Court within the Commonwealth of Pennsylvania. To the contrary, “The Supreme Court (a) shall be the highest court of the Commonwealth and in this court shall be reposed the supreme judicial power of the Commonwealth;” Pa. Const. Art. V, § 2(a). *See also* 42 Pa. C.S. § 501 (“The [Supreme] court shall be the highest court of this Commonwealth and in it shall be reposed the supreme judicial power of the Commonwealth.”). Finally, the “general powers” of our Supreme Court are statutorily set forth as follows:

The Supreme Court shall have and exercise the powers vested in it by the Constitution of Pennsylvania, including the power generally to minister justice to all persons and to exercise the powers of the court, as fully and amply, to all intents and purposes, as the justices of the Court of King’s Bench, Common Pleas and Exchequer, at Westminster, or any of them, could or might do on May 22, 1722.

The Supreme Court shall also have and exercise the following powers:

- (1) All powers necessary or appropriate in aid of its original and appellate jurisdiction which are agreeable to the usages and principles of law.
- (2) The powers vested in it by statute, including the provisions of this title.

42 Pa. C. S. § 502. Accordingly, our Constitution and judiciary code make plain that, unlike every other court in this Commonwealth, this Court has all the necessary powers in aid of its original and appellate jurisdiction, and also all “powers vested in it by the Constitution of Pennsylvania, including the power generally to minister justice to all

persons and to exercise the powers of the court, as fully and amply, to all intents and purposes, as the justices of the Court of King’s Bench, Common Pleas and Exchequer, at Westminster, or any of them, could or might do on May 22, 1722.”

Id. (Emphasis added). As such, this Court, by definition has the power, authority, and jurisdiction to fashion any judicial remedy: legal, equitable, criminal, or otherwise. As is self-evident, this Court is the only court within this Commonwealth to be so invested.

Id.

With regard to the sole issue before the Commonwealth Court in this proceeding, selecting which of more than a dozen of proposed congressional redistricting plans should be adopted by the Commonwealth following the constitutionally required census, as noted above, this Court has been called upon previously to fashion such a remedy *i.e.*, select between competing redistricting plans or simply fashioning one itself that meets both the federally mandated requirements and those of the Free and Equal Elections Clause of the Pennsylvania Constitution. Pa. Const. Art. I, § 5. *See LWV and Mellor*. *See also Butcher v. Bloom*, 203 A.2d 556, 559 (Pa. 1964) (relating to “Pennsylvania Reapportionment Acts and the election of state senators and representatives thereunder.”). The *LWV* Court in summarizing those prior decisions stated:

Thus, it is beyond peradventure that it is the legislature, in the first instance, that is primarily charged with the task of reapportionment. However, the Pennsylvania Constitution, statutory law, our Court’s decisions, federal precedent, and case law from our sister states, all serve as a bedrock foundation on which stands the authority of the

state judiciary to formulate a valid redistricting plan when necessary. Our prior Order, and this Opinion, are entirely consistent with such authority.^[1]

Id. at 824. Furthermore, the *LWV* Court held:

When, however, the legislature is unable or chooses not to act, it becomes the judiciary’s role to determine the appropriate redistricting plan. Specifically, while statutes are cloaked with the presumption of constitutionality, **it is the duty of this Court**, as a co-equal branch of government, to declare, when appropriate, certain acts unconstitutional. **Indeed, matters concerning the proper interpretation and application of our Commonwealth's organic charter are at the end of the day for this Court — and only this Court.**

Id. at 822 (emphasis added). Specifically with regard to the crafting of a remedy, the *LWV* Court found:

Further, our Court possesses broad authority to craft meaningful remedies when required. Pa. Const. art. V, §§ 1, 2, 10; 42 Pa.C.S. § 726 (granting power to “enter a final order or otherwise cause right and justice to be done”).

Id. (emphasis added).

Accordingly, what any fair reading of *LWV*, *Mellow*, and *Butcher* bring into sharp focus is that it is this Court that uniquely possess both the jurisdiction **and power** to “craft” the necessary remedy in this case. The Commonwealth Court simply does not have jurisdiction to craft a constitutional remedy in the form of either creating or selecting a redistricting plan.

As discussed above, the fact that the Commonwealth Court lacks the jurisdiction, power, and authority to implement one constitutionally satisfactory plan over another

is further buttressed by *LWV*, *Mellow*, and *Butcher*. In each of those cases, once the legislature and governor failed to enact reapportionment or redistricting plans it was the Supreme Court that fashioned the remedy. *LWV* at 766-67. *See also Mellow* at 206 (designating “President Judge David W. Craig of the Commonwealth Court as Master to conduct hearings and report to us not later than February 26, 1992.”).

Unlike the present case, in *LWV*, the issue was whether the then existing and enacted “Pennsylvania Congressional Redistricting Act of 2011” violated our Commonwealth’s Constitution. *Id.* at 741. Here, there is currently no redistricting plan in place. Accordingly, no decision need be rendered on the constitutionality of any existing redistricting map. Furthermore, the parties stipulated that based upon the United States 2020 Census results, Pennsylvania shall be apportioned 17 seats in the United States House of Representatives as opposed to the 18 seats apportioned by to the Commonwealth as a result of the 2010 United States Census. As a result, the current Pennsylvania congressional map enacted by the Pennsylvania Supreme Court in 2018 as a result of the *LWV* decision, is by definition unconstitutionally obsolete as it contains one more district than the Commonwealth has been apportioned. *See* USCS Const. Art. I, § 2, Cl 3.

Because Pennsylvania’s current congressional district map provides for 18 congressional districts rather than 17 it cannot legally be used for the upcoming election.

As a result, the Commonwealth Court need not pass judgment upon the constitutionality of that map and, given the Governor's veto of House Bill 2146 on January 26 2022, there is no currently enacted redistricting plan for the Commonwealth Court to evaluate as to constitutionality. Rather, the Commonwealth Court was being asked to fashion a remedy in the absence of a legislatively passed and approved redistricting plan. As discussed above, the jurisdiction, power, and authority to issue such a remedy is outside the statutorily prescribed jurisdiction and power of the Commonwealth Court and instead resides solely with the Supreme Court of Pennsylvania.

Simply stated, the Commonwealth Court lacks jurisdiction to issue a final judgment and order declaring which congressional redistricting plans should be utilized in the upcoming 2022 congressional election cycle. The House Democratic Caucus Intervenor sets forth this detailed jurisdictional argument herein in hopes that consistent with *Mellow* and *LWV* this Court will issue an opinion herein which finally adopts a rule consistent with the historically understood procedure that regardless of whether a case of this nature is originated in this Court or the Commonwealth Court, that the Commonwealth Court be appointed to head evidence, conduct pre-trial and trial proceedings, submit findings of fact and conclusions of law and then issue its overall conclusions not as an order and final judgment, but instead as here as a Report and Recommendation. *See Mellow* at 206, 224; *LWV* at 838, n.36 (referring to this Court's December 29, 2017, decision as "Recommended Findings of Fact and

Conclusions of Law”). Such a ruling will take the “guesswork” out of this procedure, should the Court be called upon to grant such remedy in the future.

V. ARGUMENT

A. The Commonwealth Court’s “Noise” and “Confirmation Bias”

The House Democratic Caucus respectfully takes exception with the R&R to the as it appears that wherever and whenever the Commonwealth Court was required to select between a Republican aligned map or suggestion, or between the credibility of experts, the Commonwealth Court almost always selected the Republican choice. This includes recommending that this Court adopt HB2146, despite it being vetoed by the Governor of the Commonwealth and his veto not being overridden by a two-thirds vote of each house of the General Assembly, accepting as credible the testimony Dr. Naughton, while not crediting or only crediting in part the testimony of other experts, despite the fact that the record in this case hardly reveals that it was a “battle of the experts.” Yet despite all cross examination, agreement of experts on most issues (with only slight deviations), the Commonwealth Court when presented with a binary choice between Republican and Democrat, always chose the Republican point of view.

“Confirmation Bias” and “Noise” in system judgements have been the subject of much scholarly work over the last decade or more. *See, e.g.,* Daniel Kahneman, Olivier Sibony, & Cass R. Sunstein, *Noise: A Flaw in Human Judgment* (2021); Daniel Kahneman, *et al.*, *Noise: How to Overcome the High, Hidden Cost of Inconsistent Decision Making*, Harvard Bus. Rev., Oct. 2016, at 2; Daniel Kahneman, *Thinking, Fast and Slow*,

(2011). Confirmation Bias is defined by the Oxford English Dictionary as “the tendency to seek or favour new information which supports one’s existing theories or beliefs, while avoiding or rejecting that which disrupts them.” *See* “confirmation bias, n” OED Online, Oxford University Press (Jun. 2019 Draft Addition) available online at www.oed.com/view/Entry/38852 (last accessed Feb. 14, 2022). Unlike “confirmation bias,” “noise” in judgment is described as the variability of judgments by different people or experts, who are given the same data to analyze. *See* Kahneman, *et al.*, at 4 (“The unavoidable conclusion is that professionals often make decisions that deviate significantly from those of their peers, from their own prior decisions, and from rules that they themselves claim to follow.”). As Kahneman, *et al.*, explained in their 2016 article, a “noisy judgment” can be thought of as an arrow that misses the bullseye, but does not always hit the target in the same place, they are widely scattered. A “biased” decision also does not hit the bullseye, but all of the shots are clustered in the same location. Finally, a “noisy and biased” decision is one where all the arrows miss the bullseye, and although they appear widely scattered, they are all still clustered in the same general area of the target. *Id.* at 5. Put in a legal context by Kahneman and Sunstein, while studying criminal sentencing found variability between judges in the severity of their sentencing for equivalent crimes. *See* Noise and the Flaws in Human Judgement – A Conversation with Daniel Kahneman & Cass R Sunstein, available on the internet at <https://thoughtconomics.com/noise/> (last accessed Feb. 14, 2020). Significantly, they found that: “Judges may issue the right sentence by the agreed upon

guidelines, but the increased severity or leniency created variability that adds up.” *Id.* The difference between bias and noise in decision making was explained by Prof. Sunstein as follows:

In many domains, there are biases. Over the last 30 years, bias has received a great deal of attention. They may be cognitive biases such as unrealistic optimism, or biases like discrimination on the basis of gender or skin colour. Then there’s noise, unwanted variability. You could have a firm where half the time people discriminate against women, and half the time people discriminate against men. On average you may get the right distribution, but you get a lot of mistakes and unfairness on both sides – that’s noise.

Id.

In this case, without differentiating between any potential “confirmation bias” or “noise” exhibited by the Commonwealth Court in the R&R a pattern of favoring Republican leaning parties’ facts and expert testimony, as well as only partially crediting or not crediting at all the facts and expert testimony presented by other parties, culminating in the R&R’s selection of the now vetoed HB2146 as the “winning map,” reveals either that such a selection was the result of a subconscious confirmation bias or a decision variability (noise) which steered the Commonwealth Court’s R&R away from “neutral criteria” to the subordination of that criteria to elevate subjective criteria above that of the neutral criteria that this Court set forth in *LWV*. Purely by way of example, and not intended as a full and complete list, the Commonwealth Court R&R:

- At first stated that it would review HB2146 along with all of the other proposed redistricting criteria without giving it any special deference due solely to the fact that it had been passed by the legislature. R&R at 42-42. Subsequently however, the

Commonwealth Court went on to do just that, stating: “Therefore, with all things being relatively equal with regard to the maps that the Court has not previously discounted or recommended not be adopted, **the Court respectfully recommends that our highest and most honorable institution in the judicial branch of government, our Supreme Court, recognize and revere the expressed will of the People, and the ‘policies and preferences of our State,’ ... as previously stated, and adopt HB 2146 to represent the boundary lines for the Commonwealth of Pennsylvania in its creation of geographically-unique congressional districts so that the citizens of our great Commonwealth are ensured fair and equal representation in the United States House of Representatives.** *Id.*, at 214-15. (emphasis added; citations omitted). Accordingly, after initially stating that it would not accord the now vetoed plan embodied in HB2146 any special deference, the Court then did just that and found that all other things being equal, in its judgment HB2146 should be selected because it represents the “will of the people,” despite this Court and the Supreme Court of the United States previously holding that redistricting legislation that fails the legislative process in whole or in part (including being vetoed by the executive branch) is entitled to absolutely zero deference in a judicial proceeding. *See LWV* at 742; *Ariz. State Legis. v. Ariz. Indep. Redistricting Comm’n*, 576 U.S. 787, 862 (2015).

- In referring to the drafter of the plan which is embodied in HB2146, the Commonwealth Court repeatedly referred to it as being drafted by a “well-known nonpartisan citizen, Amanda Holt ...” (R&R at 42) and “being drawn by a non-partisan good government citizen, subjected to the scrutiny of the people...”. *Id.* at 216. Despite the effusive praise for the non-partisanship of the “citizen drafter” of this plan, Ms. Holt is neither non-partisan nor merely a “good government citizen.” To the contrary, Ms. Holt is a former Republican member of the Lehigh County Board of Commissioners, initially appointed in 2014 to fill a vacancy on that Board. *See* Randy Kraft, *Amanda Holt of Upper Macungie appointed Lehigh County commissioner*, available on the internet at https://www.wfmz.com/news/insideyourtown/amanda-holt-of-upper-macungie-appointed-lehigh-county-commissioner/article_c3b45438-9447-5022-9cf2-46b22cf85a31.html (last accessed on Feb. 14, 2022). On the

occasion of her appointment, while being interviewed by the press: “Holt later agreed that she is a conservative Republican.” Accordingly, Ms. Holt can hardly be considered a neutral, agenda-less good government citizen who is equally non-partisan.

The fact that Ms. Holt self-identifies as a conservative Republican in and of itself is of no moment to this Court’s analysis. It is the Commonwealth Court’s description of Ms. Holt as a “non-partisan good government citizen” and its attempt to thereafter pass off HB2146 as truly non-partisan map due to its initial authorship that reveals why this Court must look skeptically at the Commonwealth Court’s R&R.

- The Commonwealth Court accepted as credible the testimony of Dr. Naughton, a political scientist who testified in support of the Republican Congressional Intervenors. Specifically, the Commonwealth Court found credible Dr. Naughton’s testimony that Bucks County not be split into two separate congressional districts and further that Bucks County should add population to its district by drawing from Montgomery County as opposed to Philadelphia County, who’s surplus population he suggested be added to Delaware County. R&R at 210-11. Again citing Dr. Naughton, the Commonwealth Court further stated that Bucks County should not be split, because it has not been split since the 1860s. *Id.* at 195.

Under cross examination regarding whether the far northeast of Philadelphia County could be appropriately attached to any Bucks County congressional district, Dr. Naughton admitted “I’m not good on the city neighborhoods. I apologize.” (N.T., Jan. 28, 2022, at 845). Further, when pressed on that same issue, admitted that part of the city of Philadelphia could added to a Bucks County district depending on “how much of the northeast you attach to Bucks County.” *Id.* He later said: “I wouldn’t recommend attaching too much of the northeast to Bucks. I don’t think it would be in their best interests.” *Id.* at 846. Despite Dr. Naughton’s testimony, this Court can take judicial notice of the fact the far northeast of the City and County of Philadelphia is in that city’s 10th Councilmanic District and has been represented in that district by a Republican Council Member, Brian J. O’Neill, since his election to that office in 1979, some 42 years now. *See*

<https://phlcouncil.com/brianoneill/#:~:text=District%2010,term%20on%20Philadelphia%20City%20Council>. Additionally, most of that same neighborhood in the far northeast of Philadelphia is part of District 170 of the Pennsylvania State House of Representatives. Since 2015, that District has been represented by Representative Martina A. White, a Republican and House Majority Caucus Secretary. *See* https://www.legis.state.pa.us/cfdocs/legis/home/member_information/house_bio.cfm?id=1732. (Ms. White also serves as the current Chair of the Philadelphia Republican City Committee). From 2009 – 2015 the 170th district was represented by a Democrat, Brendan Boyle, prior Mr. Boyle representing that district for 6 years it was represented by a Republican member dating back some 41 years to the time the district was first created in 1968 and was first represented by Republican Tom Gola. *See* https://en.wikipedia.org/wiki/Tom_Gola⁵

Pennsylvania House District 18, which directly borders the 170th district, and is in Bucks County, is also a Republican, Kathleen C. Tomlinson, who has held that post since 2020. Prior to that the district was represented by Gene DiGirolamo, also a Republican, who held that seat for 25 years prior to Ms. Tomlinson. Accordingly, the representation of the far northeast of Philadelphia in the Pennsylvania state House of Representatives and Philadelphia City Council has been Republican, just as the representatives in the Pennsylvania state House of Representatives for the abutting Bucks County District has also been Republican. Despite this obvious similarity between the communities of the far northeast of Philadelphia and Lower Buck County, Dr. Naughton testified, and the Commonwealth Court found that “Philadelphia’s surplus population would best be combined with a district with maximum commonality;” R&R at 210. The Commonwealth Court found that the “most sensible” plan “would attach surplus Philadelphia residences to Delaware County; and, hence, Philadelphia County should extend into Delaware County to obtain additional population.” *Id.* at 210-11.

⁵ Tom Gola is widely considered one of the greatest NCAA basketball players of all-time, having played for Philadelphia’s LaSalle University Explorers and being inducted into Naismith Memorial Basketball Hall of Fame in 1976. *Id.*

Despite this long history of similar party representation in both areas, the two bordering congressional districts the (now) 2nd district (encompassing the far northeast of Philadelphia and part of Montgomery County) has been regularly represented by a Democrat and the (now) 1st district (encompassing Bucks County and a portion of Montgomery County) has been (with the exception of four years from 2007-2011) represented by a Republican. However, in 2018 Representative Fitzpatrick (a Republican) won the seat with a majority of just over 8,000 votes and in 2020 he was reelected with a 57,929 vote margin.⁶ Accordingly, by keeping northeast Philadelphia out of the Bucks County district, the Republicans stand a better chance of maintaining control over the 1st district seat, while also maintaining control over the two abutting state house districts – the 170th and the 18th.

The above examples are but a few of the examples of either the “confirmation bias” or “noise” found in the Commonwealth Court’s decision to recommend the HB2146 plan for approval. As stated from the outset, the Commonwealth Court’s R&R appears to either be biased (intentionally or not) towards the Republican party or is the product of the Commonwealth Court’s variability (“noise”) combined with its confirmation bias in favor of Republicans, either way, the choice is not the product of the dispassionate, non-partisan judicial review to which the citizens of the Commonwealth of Pennsylvania are entitled in order to preserve what this Court has repeatedly referred to as “...the overarching objective of this provision of our

⁶ See Pennsylvania Department of State website showing election results for 2018 congressional district elections at <https://www.electionreturns.pa.gov/General/OfficeResults?OfficeID=11&ElectionID=63&ElectionType=G&IsActive=0> and for the 2020 election at <https://www.electionreturns.pa.gov/General/OfficeResults?OfficeID=11&ElectionID=83&ElectionType=G&IsActive=0>. (Both last accessed Feb. 14, 2022).

constitution is to prevent dilution of an individual's vote by mandating that the power of his or her vote in the selection of representatives be equalized to the greatest degree possible with all other Pennsylvania citizens." *LWV*, at 817.

B. Historical Perspective And The Fallacy Of "The Natural State of Political Voting" In The Commonwealth of Pennsylvania

1. The Cognitive Dissonance of the Commonwealth Court's Recommendation

Part and parcel of the House Democratic Caucus Intervenor's Exceptions to the R&R is the Commonwealth Court's constant reference to the "natural state of political voting in Pennsylvania" and that Court's conclusion that the "natural state of political voting" behavior in Pennsylvania is biased in favor of Republicans, and, thus, the Commonwealth Court with that same phrase eliminated all maps that were suggested by a Democratic elected official or had a democratic leaning advantage.⁷ Yet a closer review of the actual R&R language once again reveals the Commonwealth Court's bias towards a Republican leaning map.

In dismissing Governor Wolf's proposed plan, the R&R states:

5) based on its **credited efficiency gap score**, it provides a **partisan advantage to the Democratic party in contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania.**

⁷ Bearing in mind that Pennsylvania will go from an even number of representatives in the United States House of Representatives (18) to an uneven number (17), it is beyond peradventure that one party must have one more seat than the other and that the result of any election conducted under any plan will result in, at a minimum, one additional seat for one party (*i.e.*, 9-8).

Id. at 201 (emphasis added). In eliminating the so-called “Draw the Lines Map” the Commonwealth Court found:

4) based on its **credited efficiency gap score**, it provides a partisan advantage to the Democratic party in contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania.

Id. Similarly, in dismissing both of the Pennsylvania Senate Democratic Caucus maps, the R&R found:

5) based on its **credited efficiency gap score**, it provides a partisan advantage to the Democratic party in contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania.

Id. at 202. When it dismissed Intervenor McClinton’s proposed plan, the R&R found:

4) based on **both its credited efficiency gap score and credited mean-median score**, it provides a partisan advantage to the Democratic party in contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania.

Id. at 203. Neither the Carter Petitioners nor the Gressman Petitioners fared any better under the Commonwealth Court’s “natural state of political behavior and bias towards Republicans in Pennsylvania.” As to the Carter Petitioners’ plan, the Court stated:

4) based on its **credited efficiency gap score**, it provides a partisan advantage to the Democratic party in contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania.

Id. at 205. The Gressman Petitioners got the same treatment from the Commonwealth Court as did the House Democratic Caucus Intervenor’s plan:

3) based on **both its credited efficiency gap score and credited mean-median score**, it provides a partisan advantage to the Democratic party in contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania.

Id. Accordingly, every plan which the Commonwealth Court reviewed in detail with which it found either a credited efficiency gap score or credited mean-median score which provided a partisan advantage to the Democratic party, or both, the Commonwealth Court dismissed as in “contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania.” *Id.* All, that is, except one, HB2146. According to the Commonwealth Court, HB2146 also violates the natural state of political voting behavior and bias towards Republicans in Pennsylvania, and, yet, not only did the Commonwealth Court not eliminate HB2146, but it also recommended it for adoption by this Court.

In reviewing HB2146, the Commonwealth Court made certain findings of fact regarding the testimony of Dr. Barber, the expert presented by Intervenors Benninghoff and the House and Senate Republican Caucuses, including the following:

FF211. **On cross-examination, Dr Barber conceded that every other plan except for the two Reschenthaler plans have mean-median scores closer to zero, meaning they are less biased than HB 2146.** (N.T. at 575-78.).

Id. at 92. What this concession means is that of the more than one dozen maps proposed, the third most biased map submitted. *Id.* And yet, given the statements about the other plans and their disqualification for being bias towards Democrats

(although all apparently less so than HB2146), the Commonwealth Court did not exclude HB2146 for that reason. To the contrary, in recommending HB2146, the Commonwealth Court found that:

79. Unlike other maps that leaned Democrat, here, it is the Republican majority in the General Assembly that developed and proposed a plan, HB 2146, that favors Democrats, which ultimately underscores the partisan fairness of the plan.

Id. at 211. Further, the Commonwealth Court found:

80. The Court finds, as a result of the credible experts' opinions, reports, and concessions made during cross-examinations, that HB 2146 falls well within the acceptable constitutional ranges and indicia used to measure partisan fairness, in the following particulars.

81. H.B. 2146, when analyzed with districts that have a Democratic vote share of .48 to .52, which is a common range for assessing competitive elections, creates 5 competitive seats, 4 of which lean Democratic, and, ultimately, has more competitive districts than any other plan.

82. H.B. 2146 possesses a mean-median of -0.015, which is very close to zero and virtually unbiased, and demonstrates that HB 2146 is more favorable to Democrats than 85% of the simulation results.

83. H.B. 2146 has an efficiency gap of -0.02, which, again, is very close to zero and virtually unbiased, and, furthermore, demonstrates that Democratic votes are not much more likely than Republican votes to be "wasted" across districts.

Id. at 212-13. Accordingly, for the same reasons the Commonwealth Court eliminated other maps (they had a partisan advantage for Democrats), the Commonwealth Court recommended HB2146. The only basis for this dissonance is the Commonwealth

Court's deference to the plan, as it was passed in the General Assembly, although vetoed by the Governor, and that Court's belief in "the natural state of political voting behavior and bias towards Republicans in Pennsylvania." *Id.* As discussed above, the first reason, deference to the legislature is not a constitutional basis either under our Constitution nor the United States Constitution. *See LWV* at 742, *Ariz. State Legislature*, at 808.

As to the second reason given by the Commonwealth Court to support its selection of the now vetoed HB2146, the natural state of political voting behavior and bias towards Republicans in Pennsylvania, as this Court specifically detailed in *LWV*, there was never such a historic bias in favor of Republicans in the Congressional districting of Pennsylvania dating back to 1966.

2. Congressional Election in Pennsylvania from 1966 - 2010

In the years leading up to this Court's 2018 *LWV* decision, from 1966 – 2010, Pennsylvania's Congressional delegation ranged in amount between 19 – 27 members of congress being elected from Pennsylvania. *Id.* at 762-763 (Table 1). Accordingly, Pennsylvania's congressional delegation during that time averaged approximately 23 (22.65%) members. During that same time the number of Democrats elected to congress averaged 12.35 members per election cycle and the number of Republicans averaged 12.30 members per election cycle. Translated into percentages, what that means is that from 1966 – 2010 of the total 521 representatives elected to the United States House of Representatives from Pennsylvania, 54.5% were Democrats and

54.39% were Republicans. Simply put, given the varying number of representatives apportioned to the Commonwealth during that 44 year period, the election results were almost evenly split.⁸

In 2011, after the 2010 census, Pennsylvania's number of apportioned members to the House of Representatives was diminished by 1, from 19 to 18. As a result, the Pennsylvania General Assembly adopted Pennsylvania Congressional Redistricting Act of 2011, which was signed into law by then Governor Corbett. The result of that plan was that from its first use in the 2012 election through its last use in 2016, the 18 members of the United States Congress sent from Pennsylvania amounted 5 Democrats and 13 Republicans, in every one of those elections. Accordingly, during that four year period of time the average number of Democrats elected to the House of Representatives was diminished to 27.77% and the number of Republicans elected to the House of Representatives was increased to 72.23%. *Id.* at 765 (Table 2).⁹

Having lost only one seat due to the 2012 decennial census, the total average number of representatives for the first four years of the use of the 2011 plan resulted in a net loss of 26.73% of the seats historically (since 1966) won by Democrats and an increase of 17.84% of the seats historically (since 1966) won by Republicans. *Id.* Accordingly, in 2018, this Court implemented a remedial redistricting plan which

⁸ These percentages were calculated simply by averaging the numbers extant on table 1 in the *LWV* opinion.

⁹ These percentages were calculated simply by averaging the numbers extant on table 1 in the *LWV* opinion.

resulted in a 9-9 split of Pennsylvania's seats in the House of Representatives for that year and again in 2020. As a result, the 2018 remedial plan restored the previous 44 year balanced historical partisan distribution Pennsylvania's congressional districts. *Id.*

What these statistics (actual congressional election results) make clear is that there is no historical or "the natural state of political voting behavior and bias towards Republicans in Pennsylvania" relative to the election of representatives to Congress nor in drawing congressional districts in Pennsylvania. To the contrary, while there were years where one party or another enjoyed more seats than the other in the House of Representatives between 1966 – 2010, the plan itself was never solely responsible for the results of any particular election during that 44 year period. *Id.* at Table 1. It was only the 2011 plan that firmly established a lopsided Republican advantage in Pennsylvania's partisan distribution of members of the House of Representatives.

3. 2022 and Beyond

The two days of testimony in this matter focused on the technical details of redistricting and minute differences between the maps that have been submitted has been used to obscure the larger points at issue in this case. Fortunately, none of the proposed plans are as egregiously gerrymandered as the 2011 Plan. All of the parties' maps fall within an acceptable statistical range with regard to the neutral criteria set forth in *LWV*. Yet none of the maps (except that of the House Democratic Intervenor) considers the 44 year history of Pennsylvania's congressional delegation (from 1966 – 2010), as well as the 4 year history of that same delegation since 2018, nor do the other

plans consider the fact that between 2011 and the present registered Democratic voters outnumber Republicans by a range of 500,000 – 1,100,000 depending upon the year. Regardless of the amount of the Democratic voter registration advantage, there can be no doubt that such advantage has existed since at least 2011.

In *LWV*, this Court, did not suggest that the judicial process for determining what plan to implement was the one that came the closest to statistical perfection regarding the “neutral criteria.” To the contrary, in *LWV*, the Supreme Court recognized that:

Specifically, partisan gerrymandering dilutes the votes of those who in prior elections voted for the party not in power to give the party in power a lasting electoral advantage. By placing voters preferring one party’s candidates in districts where their votes are wasted on candidates likely to lose (cracking), or by placing such voters in districts where their votes are cast for candidates destined to win (packing), the non-favored party's votes are diluted. It is axiomatic that a diluted vote is not an equal vote, as all voters do not have an equal opportunity to translate their votes into representation. This is the antithesis of a healthy representative democracy. Indeed, for our form of government to operate as intended, each and every Pennsylvania voter must have the same free and equal opportunity to select his or her representatives.

Id. at 814. Furthermore, *LWV* itself specifically predicted and provided for a situation, where, as here, a plan or plans, might statistically meet the “neutral criteria” but a future Court, might still find that even a statistically perfect plan does not comply with the Free and Equal Elections Clause of the Pennsylvania Constitution. Pa. Const. art. I, § 5. In clairvoyantly predicting the not too distant future from 2018, Justice Todd writing for this Court in *LWV* found:

However, this is not the exclusive means by which a violation of Article I, Section 5 may be established. As we have repeatedly emphasized throughout our discussion, the overarching objective of this provision of our constitution is to prevent dilution of an individual's vote by mandating that the power of his or her vote in the selection of representatives be equalized to the greatest degree possible with all other Pennsylvania citizens. We recognize, then, that there exists the possibility that advances in map drawing technology and analytical software can potentially allow mapmakers, in the future, to engineer congressional districting maps, which, although minimally comporting with these neutral “floor” criteria, nevertheless operate to unfairly dilute the power of a particular group’s vote for a congressional representative. *See* N.T. Trial, 12/13/17, at 839-42 (Dr. Warshaw discussing the concept of an efficiency gap based on the number of “wasted” votes for the minority political party under a particular redistricting plan).

Id. at 817. Unfortunately, the *LWV* Court was not required to consider the issue presented in this case because as that Court concluded: “However, as the case at bar may be resolved solely on the basis of consideration of the degree to which neutral criteria were subordinated to the pursuit of partisan political advantage, as discussed below, we need not address at this juncture the possibility of such future claims.” *Id.* (Footnote omitted).

4. Analysis and Application to Current Proposed Plans

As a preliminary matter, the House Democratic Intervenor reasserts its objection the claim of the Republican House and Senate Intervenors, and apparent finding of the Commonwealth Court, that the now vetoed plan found in HB2146 deserves any deference or special treatment from this Court because it represents the “will of the people of the Commonwealth of Pennsylvania.” As stated in the Trial Brief of the

House Democratic Intervenor filed in Commonwealth Court, at section III.B, which is incorporated by reference herein, as fully as though set forth herein at length.

By comparison to the present case, the *LWV* case was not nearly as challenging. Since the 2011 Plan was so obviously violative of the “neutral criteria” as to be unconstitutional under Pennsylvania’s Free and Equal Elections Clause, not to mention that in practice over three separate election cycles it produced such lopsided results compared to the 23 election cycles that preceded it, the task of declaring that plan unconstitutional and thereafter implementing a remedial plan which restored parity to the partisan distribution of members Pennsylvania’s Congressional delegation now seems relatively “easy.” By contrast, the present case does not require this Court to declare any currently in force plan unconstitutional, everyone agrees the 2018 remedial plan is now unconstitutionally obsolete by virtue of the 2020 census. The only issue then is which new plan to pick.

That task is not simple. As the experts all agreed in one way or another, each of these plans meet all of the neutral criteria within such a narrow band of deviation, they could all be deemed reasonable. So, the question still remains, what should be the tiebreaking factor.

The House Democratic Caucus Intervenor suggests that there is no one factor that can be used to “break the tie.” Instead, a plan which comports with the historical partisan distribution of members of Pennsylvania’s congressional delegation (excluding those years that the unconstitutional 2011 Plan was in place), together with some

consideration of the overall partisan identification of the voters in the Commonwealth, is the fairest way to “break” the tie between these otherwise equal maps. When the results from 1966-2010 are added in with the results from 2018-2021, the total number of representatives elected to congress from Pennsylvania amounts to 557. Expressed as a percentage of those elected, approximately 54% (54.21%) were Democrats and approximately 46% (45.78%) were Republicans. Accordingly, carrying that 48 year, 25 election cycle history forward and applying it to the current 17 seats apportioned to Pennsylvania for 2022 that would result in 9 (9.17) Democratic representatives and 8 (7.82) Republicans elected.

An analysis of the House Democratic Caucus Intervenor’s Plan by the “Dave’s Redistricting” Website, reveals that of the 17 congressional districts in the Plan, 8 would be safely or lean Democratic, 6 would be safely or lean Republican and the remaining 3 districts would result in competitive or otherwise unpredictable district outcomes as between the two parties. *See* <https://davesredistricting.org/maps#stats::95238e8e-6273-480a-bb5e-ee0dd7b122d5> (last visited Jan. 29, 2022). With 3 competitive or otherwise unpredictable districts, the outcomes could range anywhere from 11 Democratic seats to 6 Republican seats; to 9 Republican seats and 8 Democratic seats. Both of those outcomes are at the extreme of the results, but either one would comport with the results of the 25 previous election cycles (again excluding only those cycles where elections were held under the unconstitutional 2011 Plan).

Accordingly, having paid its “entry fee,”¹⁰ the House Democratic Caucus Intervenor respectfully suggests to this Court that it is its Plan which is the only plan that meets the “neutral criteria” and is respectful of the historical partisan distribution of congressional representatives dating back to 1966 as well as the only plan that respects and reflects the Democratic voter registration of between 500,000 – 1,100,000 Pennsylvanians registered to vote in this Commonwealth from 2011 to the present.

Thus, it is the House Democrat Caucus Intervenor’s Plan which best protects against vote dilution and voter disenfranchisement, while best protecting the right of all Pennsylvanians to participate in all elections in this Commonwealth which are both free and equal, as guaranteed by Article. I, § 5 of our constitution.

VI. CONCLUSION

For all the foregoing reasons, Intervenor Representative Joanna E. McClinton, Leader of the Democratic Caucus of the Pennsylvania House of Representatives, respectfully requests that this Court order that House Democratic Caucus Intervenor’s congressional redistricting plan be adopted by this Court and be implemented throughout the Commonwealth of Pennsylvania for the 2022 General Primary Election.

¹⁰ House Democratic Intervenor incorporates by reference herein its January 24, 2022, Brief in support of its Proposed Redistricting Plan, filed in the Commonwealth Court as fully as though herein set forth at length with regard to the data and support that its plan does, in fact, meet the *LWV* neutral criteria.

Respectfully submitted,



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Dated: February 15, 2022

CERTIFICATE OF COMPLIANCE

I hereby certify that this Brief contains 8,726 words. In making this certification, I have relied upon the word count function of the word-processing system used to prepare this Brief.

I further certify that this Brief complies with the provisions of the *Public Access Policy of the Unified Judicial System of Pennsylvania: Case Records of the Appellate and Trial Courts* that require filing confidential information and documents differently than non-confidential information and documents.

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IN THE SUPREME COURT OF PENNSYLVANIA

No. 7 MM 2022

Carol Ann Carter; Monica Parrilla; Rebecca Poyourow; William Tung; Roseanne Milazzo; Burt Siegel; Susan Cassanelli; Lee Cassanelli; Lynn Wachman; Michael Guttman; Maya Fonkeu; Brady Hill; Mary Ellen Bachunis; Tom DeWall; Stephanie McNulty; and Janet Temin,

Petitioners,

vs.

Leigh M. Chapman, in Her Capacity as Acting Secretary of the Commonwealth of Pennsylvania; and Jessica Mathis, in Her Capacity as Director of the Bureau of Election Services and Notaries,

Respondents.

**SENATE REPUBLICAN INTERVENORS' BRIEF IN SUPPORT OF
REPORT AND RECOMMENDATION OF SPECIAL MASTER**

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During the two-day trial that the Honorable Patricia A. McCullough conducted in this matter, one fact became crystal clear: most of the congressional redistricting plans that were submitted to the Commonwealth Court satisfy all of the traditional, constitutionally-derived criteria for redistricting. But only one of the plans that meets those criteria, House Bill 2146 (“H.B. 2146” or the “Bill”), was the product of a public, transparent, and legislative process. The importance of this factor cannot be overstated or ignored. The United States and Pennsylvania Constitutions have assigned the task of redistricting the Commonwealth’s congressional districts to the Pennsylvania General Assembly. *Arizona State Legislature v. Arizona Indep. Redistricting Comm’n*, 576 U.S. 787, 808 (2015); Pa. Const. art. II, § 1. The task, in other words, is expressly and constitutionally committed to the people’s elected representatives. It is a fundamentally legislative task.

H.B. 2146 embodies a 17-district congressional redistricting plan that both the Pennsylvania Senate and House of Representatives thoughtfully considered and passed. H.B. 2146 reflects a transparent, deliberative, and open legislative process, which involved negotiations, compromise, and policy judgments, and which the people’s elected representatives undertook in order to memorialize and implement state policy that reflects the will of their constituents.

During the trial, not a single expert witness testified that H.B. 2146 fails to satisfy the traditional redistricting criteria. Not a single expert witness offered

testimony to suggest that H.B. 2146 is otherwise unlawful, fractures communities of interest, or is insufficiently fair in light of partisan, racial, or other considerations. A witness, in fact, could not credibly offer testimony along those lines. H.B. 2146 meets all of the applicable redistricting requirements (compact and contiguous territory, population equality, and respect for the boundaries of political subdivisions), creates more highly competitive districts than any other map, preserves communities of interest, and, despite having been passed by the Republican-controlled General Assembly, favors Democratic candidates.

Against this backdrop, Judge McCullough was correct to conclude that “with all things being relatively equal with regard to the maps that the Court has not previously discounted or recommended not to be adopted, the Court respectfully recommends that our highest and most honorable institution in the judicial branch of government, our Supreme Court, recognize and revere the expressed will of the People, and the ‘policies and preferences of our State,’ as previously stated, and adopt HB 2146 to represent the boundary lines for the Commonwealth of Pennsylvania in its creation of geographically-unique congressional districts so that the citizens of our great Commonwealth are ensured fair and equal representation in the United States House of Representatives.” Report & Recommendation (“RR”) at 214-15 at ¶ 95 (quoting *Upham v. Seamon*, 456 U.S. 37, 41 (1982) and citing *Perry v. Perez*, 132 S. Ct. 934, 941 (2012)).

Senate Republican Intervenors Jake Corman, President *pro tempore* of the Pennsylvania Senate, and Kim Ward, Majority Leader of the Pennsylvania Senate, support Judge McCullough’s report and recommendation and respectfully request that this Court adopt H.B. 2146. In addition to the points that are discussed below, the Senate Republican Intervenors expressly reserve the right to present arguments at the oral argument in response to any exceptions that the parties and *amici* file to Judge McCullough’s report and recommendation.

SCOPE AND STANDARD OF REVIEW

Under 42 Pa.C.S. § 726, this Court has exercised extraordinary jurisdiction over this matter and, in doing so, designated Judge McCullough as the Special Master. Under these circumstances, the Court’s scope of review is plenary and its standard of review is *de novo*. But where, as here, the Court designates a special master, the special master’s findings of fact, while not binding, are afforded “due consideration, as the jurist who presided over the hearings was in the best position to determine the facts.” *Annenberg v. Com.*, 757 A.2d 338, 343 (Pa. 2000). In this case, Judge McCullough presided over a two-day trial, heard extensive testimony from six expert witnesses, reviewed expert reports that those witnesses prepared, and likewise reviewed expert reports that several non-testifying experts prepared. Judge McCullough authored a comprehensive report and recommendation, setting forth more than 600 findings of fact and conclusions of law. Judge McCullough was in

the best position to make factual findings and credibility determinations and, accordingly, her report and recommendation is entitled to this Court’s careful consideration.

ARGUMENT

A. H.B. 2146 Is a Product of the Legislative Process

As the U.S. Supreme Court has stressed, under Article I, Section 4 of the United States Constitution, congressional “redistricting is a legislative function, to be performed in accordance with the State’s prescriptions for lawmaking.” *Arizona State Legislature v. Arizona Indep. Redistricting Comm’n*, 576 U.S. 787, 808 (2015). Pennsylvania’s legislative power (and therefore its power to engage in congressional redistricting) is vested exclusively in the General Assembly. *See* Pa. Const. art. II, § 1. In Pennsylvania, in other words, the “primary responsibility and authority for drawing federal congressional legislative districts rests squarely with the state legislature.” *League of Women Voters of PA v. Commonwealth*, 178 A.3d 737, 821-22 (Pa. 2018).

Of the multitude of plans that were submitted to the Commonwealth Court, only H.B. 2146 reflects this constitutional directive and represents the deliberation, compromise, and public input that is a part of a transparent legislative process. No other party or *amici* submitted a redistricting plan that has made its way through *any* part of the legislative process, let alone a plan that both the Senate and House have

passed – or even a plan that has been subject to any sort of meaningful public input process at all.

On December 8, 2021, H.B. 2146 was introduced and referred to the House State Government Committee. RR at 47 (FF5). The Bill “embodied a 17-district congressional redistricting plan that a citizen and good-government advocate, Amanda Holt, had created on her own.” RR at 47 (FF6). The House State Government Committee made the bill available for public comment, leading to 399 comments, which resulted in amendments to the bill that were designed to increase the compactness of certain districts and ensure that certain communities of interest were preserved. RR at 48 (FF8 & FF9). On January 11, 2022, the Bill was brought up for second consideration and, on January 12, 2022, the House of Representatives passed it. RR at 48 (FF10).

In the Senate, H.B. 2146 was referred to the State Government Committee. On January 18, 2022, the Bill was reported out of that committee and brought up for first consideration. RR at 48 (FF11). On January 19, 2022, the Bill was brought up for second consideration. RR at 48 (FF12). On January 24, 2022, it was referred to the Senate Appropriations Committee, reported out of that committee, and brought up for third consideration. RR at 48 (FF13). On the same day, the Senate passed H.B. 2146 and the Bill was presented to the Governor, who then vetoed it on January 26, 2022. RR at 48 (FF13 & FF14).

No other party's or *amici*'s plan has been through a similar process. Indeed, both the House Democrats and the Senate Democrats, as members of the General Assembly, could have circulated co-sponsorship memos for proposed plans, introduced their own bills that embodied proposed plans, or offered amendments to H.B. 2146 during the legislative process. They did not do so, instead choosing to forego the legislative process altogether. Similarly, between August 2021 and January 2022, the Governor refused to engage with legislative leaders on the drawing of congressional maps, suggesting that, in this context, he has "no role" in the bill passage process. His claimed lack of any role in the process is belied by his own position in this case, as well as his mid-January release of the very map that he now submits to this Court for consideration, which was essentially presented as a take-it-or-leave it option for the General Assembly at the last legislative moment.

The importance of these dynamics should not be overlooked or diminished. Undertaking redistricting through legislative means and a transparent public process is a fundamental constitutional principle that, as Judge McCullough correctly concluded, elevates H.B. 2146 above the plans that the other parties and *amici* have presented. RR at 214 at ¶ 95. The Constitution envisions that the legislature, not a supercomputer or individual expert witness, will create the redistricting map that governs Pennsylvania's congressional elections for the next decade.

B. H.B. 2146 Satisfies All of the Traditional Redistricting Criteria

H.B. 2146 unquestionably satisfies all of the traditional, constitutionally-derived criteria for a redistricting plan: compact and contiguous territory, population equality, and respect for the boundaries of political subdivisions. *See League of Women Voters*, 178 A.3d at 816 (determining that, under Article I, Section 5 of the Pennsylvania Constitution, *i.e.*, the “Free and Equal Elections Clause,” the criteria in Article II, Section 16, which apply to the creation of state legislative districts, likewise apply to congressional redistricting).

The experts agreed, and Judge McCullough found, that all of the proposed plans satisfy the contiguity requirement. RR at 137 (CL1), 192 (¶ 16). All of the plans, moreover, perform well on the compactness metrics that the experts used. RR at 147 (FF1 & FF3), 193 (¶ 22). And, with the exception of the Carter Petitioners’ Plan and the House Democratic Plan, all of the plans also achieve population equality within a one-person deviation. RR at 138 (CL2), 192 (¶ 18).

With respect to maintaining the boundaries of political subdivisions, the Pennsylvania Constitution identifies six types of subdivisions to consider: counties, cities, incorporated towns, boroughs, townships, and wards. Pa. Const. art. II, § 16. H.B. 2146, in this regard, is among the plans that split the lowest total number of these subdivisions. RR at 147 (FF3), 193 (¶ 23).

It follows that, when it comes to the four fundamental constitutional requirements for a redistricting map, H.B. 2146 performs well, as do other plans. But what sets H.B. 2146 apart, as explained above, is its status as the only plan that has passed through the legislative process or, for that matter, *any* meaningful public input process at all.

As explained below, moreover, there is nothing to suggest that, in meeting the traditional redistricting criteria, H.B. 2146 is otherwise unlawful or fails to preserve communities of interest or, from a partisan perspective, is not sufficiently fair. To the contrary, H.B. 2146 performs *better* on these metrics than the other plans.

C. H.B. 2146 Preserves Communities of Interest and there is Nothing to Suggest that, from a Partisan Perspective, it is Unfair

1. H.B. 2146 Preserves Communities of Interest

As Judge McCullough noted, this Court in *League of Women Voters* emphasized the importance of “creating representational districts that both maintain the geographical and social cohesion of the communities in which people live and conduct the majority of their day-to-day affairs[.]” RR at 152-53 (quoting *League of Women Voters*, 178 A.3d at 814). *See also Holt v. 2011 Legislative Reapportionment Comm’n*, 67 A.3d 1211, 1241 (Pa. 2013) (“*Holt II*”) (“redistricting efforts may properly seek to preserve communities of interest which may not dovetail precisely with the static lines of political subdivisions”).

On this point, the proposed plans can be distinguished from one another based on whether they split the City of Pittsburgh. RR at 151 at CL3 (concluding that “the maintenance of the City of Pittsburgh within one district is an important factor, which is entitled to weight in the ultimate analysis”); RR at 155 (FF5). This variable is important because, as Judge McCullough observed, “it is undisputed that Pittsburgh’s population is not so great that it is *necessary* to divide the city into multiple congressional districts, as is the case with Philadelphia.” RR at 149 (FF4) (emphasis in original). As Judge McCullough likewise observed, “[t]he Court further heard credible evidence which supports the conclusion that the City of Pittsburgh in many ways constitutes a community of interest, such that its division would not be in the best interests of its residents.” RR at 149 (FF9). Judge McCullough heard evidence, for example, that Pittsburgh voters tend to favor local candidates in statewide elections and share common interests in acquiring federal funds and obtaining constituent services. RR at 150 (FF10 & FF11).

Despite the fact that Pittsburgh “in many ways constitutes a community of interest,” the plans from the Governor, the Senate Democratic Caucus, Draw the Lines PA, and Khalif Ali all split Pittsburgh. RR at 151. The House Democratic Caucus’s Plan, for its part, preserves Pittsburgh but “draws a Freddy Krueger-like claw district in Allegheny County to ‘grab’ Pittsburgh to combine it with small Republican-leaning areas to the north.” RR at 152 (FF20). Judge McCullough

determined that these tactics suggest a partisan aim to turn one Democratic-leaning district into two such districts. RR at 151 (FF18), 194 (¶ 28). H.B. 2146, on the other hand, preserves Pittsburgh.

Judge McCullough reached similar conclusions in connection with the parties' and *amici*'s approach to Philadelphia, which, as noted above, must be split based on the size of its population. Judge McCullough found that Philadelphia's surplus population should not be joined with Bucks County in order to form a district. RR at 157-58 (FF16). She correctly determined, in this regard, that lower and upper Bucks County communities are similar to one another, but different from Philadelphia, when it comes to demography, economics, land use, and commercial and commuting interests, and that "[a]ttaching the lower Bucks communities to Philadelphia would render those communities 'orphans' from an interest and advocacy standpoint." RR at 158 (FF17) (quoting Dr. Naughton expert report). Crediting Dr. Naughton's unrebutted expert testimony, Judge McCullough, as a corollary, explained that "Philadelphia's surplus population would be best combined with a district with maximum commonality – that is, with common interests with Philadelphia, such as use of public transit, recipient of federal transfer payments and common commercial and industrial interests" and that communities in Delaware County fit this description. RR at 159 (FF18-FF21). H.B. 2146 accomplishes these preferred groupings unlike, for example, the Governor's proposed plan, which splits

Bucks County and connects Philadelphia's surplus population to the southern part of Bucks County instead of Delaware County. RR at 160 (FF22-FF26).

2. There is Nothing to Suggest that, from a Partisan Perspective, H.B. 2146 Is Not Fair

In *League of Women Voters*, this Court acknowledged that, under the Commonwealth's Constitution, factors like "protection of incumbents" and "the maintenance of the political balance which existed after the prior reapportionment" can play a role in the creation of a redistricting plan. 178 A.3d at 817. But the Court also concluded that, under the Free and Equal Elections Clause, those factors must be "wholly subordinate" to the "neutral [redistricting] criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among...districts." *Id.* The Court then stated that, along similar lines, when a redistricting body crafts a redistricting plan, it may not "unfairly dilute the power of a particular group's vote for a...representative." *Id.* It did not attempt to define the contours of "unfair" vote-dilution.

Although, during the trial in this matter, the experts testified at length about various ways to measure the partisan fairness of a map, no single metric can determine whether a map is fair. *See* RR at 164-176 (discussing the various metrics). Further, no expert opined that H.B. 2146 is unfair.

In this context, as Judge McCullough explained, any discussion of partisan fairness must take into account Pennsylvania's political geography. RR at 162 at FF2

(“Based upon the evidence credited, the Court finds that Pennsylvania’s unique ‘political geography’ affects the analysis of partisan advantage in any proposed map.”). In particular, a redistricting map for the Commonwealth that is drawn randomly and that complies with the traditional redistricting criteria, but that is not drawn with reference to any partisan data, will tend to yield more seats for Republicans than Democrats in comparison to vote share. RR at 162. As Judge McCullough noted, even Governor Wolf’s own expert, Dr. Moon Duchin, acknowledged this point. RR at 84-85 (FF166). The pro-Republican “tilt” is a function of the fact that Democratic voters tend to be concentrated in urban regions of Pennsylvania, while Republican voters tend to be distributed throughout the other parts of the Commonwealth. RR at 162 (FF1-FF3). And if a mapmaker, in drawing a congressional redistricting map, attempts to “adjust” or “control” for this phenomenon, that person is necessarily drawing the map with an intent to achieve a particular partisan outcome. RR 162-63 (FF4-FF6).

One way to evaluate partisan fairness, while properly taking account of political geography, involves comparing a proposed map to a set of randomly-generated simulated maps that follows only the traditional redistricting criteria. RR at 164 (FF1). As Judge McCullough correctly observed, in light of the Commonwealth’s political geography, “if a plan is not evaluated against a non-partisan set of maps, the potential issues or red flags in the maps may not at all be

due to partisan gerrymandering, but rather the geographic distribution of voters in the state.” RR at 164 (FF3) (citing Dr. Barber expert report at 11). The House Republican Intervenors’ expert, Dr. Michael Barber, therefore compared H.B. 2146 to a set of 50,000 simulated 17-district maps, all of which adhere to the traditional redistricting criteria and none of which were created with reference to any partisan data. RR 164-165 (FF4-FF6). And, as Judge McCullough confirmed, “[t]he simulation analysis performed by Dr. Barber demonstrates that HB 2146 is predicted to result in nine Democratic-leaning seats and eight Republican-leaning seats using an index of statewide elections from 2012-2020, whereas the most likely outcome in his 50,000 simulated maps, created without using partisan data, is eight Democratic-leaning seats and nine Republican-leaning seats.” RR at 165 (FF7).

What is more, H.B. 2146 creates five competitive seats, which is more competitive districts than any other plan, and four of those seats lean Democratic. RR at 212 (¶ 81). It also scores as a fair and unbiased plan under all of the other metrics that the experts used to assess partisan bias. RR at 212 (¶¶ 82-83).

All of these factors underscore that, as Judge McCullough correctly determined, H.B. 2146 is a fair map, and nothing in the record suggests otherwise.

CONCLUSION

The legislative process is one that, under both the United States and Pennsylvania Constitutions, is the principal and preferred method for drawing congressional districts. As a legislatively-approved plan that meets all of the applicable redistricting criteria, the H.B. 2146 map is not only a reasonable choice, but should be the preferred choice in order to honor the General Assembly's constitutional prerogative to engage in redistricting and express the will of the voters.

For these reasons, the Senate Republican Intervenors respectfully request that the Court adopt the H.B. 2146 map.

Dated: February 14, 2022

Respectfully submitted,

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CERTIFICATION OF COMPLIANCE

I hereby certify that this filing complies with the provisions of the *Case Records Public Access Policy of the Unified Judicial System of Pennsylvania* that require filing confidential information and documents differently than non-confidential information and documents.

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CERTIFICATE OF SERVICE

I hereby certify that I am this day serving the foregoing document upon the persons and in the manner indicated below, which service satisfies the requirements of Pa.R.A.P. 121:

Service by PACFile eService as follows:

All counsel of record

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IN THE SUPREME COURT OF PENNSYLVANIA

No. 7 MM 2022

Carol Ann Carter; Monica Parrilla; Rebecca Poyourow; William Tung; Roseanne Milazzo; Burt Siegel; Susan Cassanelli; Lee Cassanelli; Lynn Wachman; Michael Guttman; Maya Fonkeu; Brady Hill; Mary Ellen Balchunis; Tom DeWall; Stephanie McNulty; and Janet Temin,

Petitioners,

vs.

Leigh M. Chapman, in Her Capacity as Acting Secretary of the Commonwealth of Pennsylvania; and Jessica Mathis, in Her Capacity as Director of the Bureau of Election Services and Notaries,

Respondents.

Philip T. Gressman; Ron Y. Donagi; Kristopher R. Tapp; Pamela A. Gorkin; David P. Marsh; James L. Rosenberger; Amy Myers; Eugene Boman; Gary Gordon; Liz McMahon; Timothy G. Feeman; and Garth Isaak

Petitioners,

vs.

Leigh Chapman, in her Official Capacity as the Acting Secretary of the Commonwealth of Pennsylvania; and Jessica Mathis, in Her Official Capacity as Director of the Bureau of Election Services and Notaries,

Respondents.

**BRIEF OF INTERVENORS BRYAN CUTLER, SPEAKER OF
THE PENNSYLVANIA HOUSE OF REPRESENTATIVES, AND
KERRY BENNINGHOFF, MAJORITY LEADER OF THE
PENNSYLVANIA HOUSE OF REPRESENTATIVES, IN
SUPPORT OF JUDGE MCCULLOUGH'S REPORT AND
RECOMMENDATION**

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INTRODUCTION

This Court’s decision in *League of Women Voters v. Com.*, 178 A.3d 737 (Pa. 2018) (“*LWV*”), striking down the 2011 congressional plan, re-affirmed the primacy of adherence to traditional districting criteria and held that subordination of those traditional principles for partisan advantage violated the Free and Equal Elections Clause. The General Assembly took the guidance from this Court in *LWV* to heart, and passed House Bill 2146 (“H.B. 2146”) to redistrict the Commonwealth into seventeen congressional districts through the fairest and most transparent redistricting process in modern history. H.B. 2146 is not the 2011 congressional plan. It adheres to all traditional redistricting criteria and is a fair map—creating nine Democratic-leaning districts, eight Republican-leaning districts, and several highly competitive districts in this closely-divided state. An honest process yielded an honest map that does not discriminate against voters on the basis of their political views—consistent with the holding of *LWV*.

The Commonwealth Court issued an exhaustive 222-page report and recommendation after conducting a thorough analysis of the politics of this State, hearing the testimony of several expert witnesses, and reviewing hundreds of pages of briefing concerning the 13 proposed plans. That exhaustive record confirms that H.B. 2146 fulfills all the constitutional criteria and provides a plan that does not unfairly dilute the vote of any citizen of the Commonwealth on account of

partisanship. Due to the practically infinite number of ways a congressional map can be drawn, and the competing criteria, there is no “best” or “optimal” map other than one that achieves the goals of the map-drawer. But those are decisions best left to the Representatives and Senators elected by the people of Pennsylvania who are best suited to make those policy choices, and to whom the Framers of the U.S. Constitution assigned that responsibility. *See* U.S. Const. art. I, § 4.

The same cannot be said for many of the other map submissions. As set forth more fully herein and in the Special Master’s Report, several of the plans submitted—including those by the *Carter* Petitioners, the *Gressman* Petitioners, Governor Wolf, the Senate Democratic Caucus (Maps 1 and 2), and the House Democratic Caucus—either subordinate traditional districting principles for partisan gain, or otherwise intentionally draw districts for unfair partisan advantage. In particular, the Governor’s Plan and both Senate Democratic Caucus Plans split the City of Pittsburgh in half for partisan purposes, and the House Democratic Caucus kept Pittsburgh whole but instead drew a Freddy Krueger Claw district to “grab” Pittsburgh and combine it with Republican-leaning areas to the north.

Additionally, the *Carter* Petitioners, *Gressman* Petitioners, Governor Wolf, the Senate Democratic Caucus, and the House Democratic Caucus all gerrymander their proposed plans by drawing the four most competitive districts in their simulated plans to be as strongly Democratic-leaning as possible. Through this and other

means, those parties manage to draw plans that contain *ten* Democratic-leaning districts—a highly uncommon outcome when compared to a set of 50,000 simulated plans created without political data and that follow this state’s traditional criteria.

Several of these parties have attempted to defend their rigged proposed plans by saying those plans counteract or “override” a slight, naturally occurring Republican tilt in the state’s political geography. Such a methodology is an express invitation for the Court to override the actual voting patterns and preferences of the voters as expressed at the ballot boxes in their community, which is the literal subordination of political subdivision integrity in favor of partisan advantage. Judge McCullough rightly rejected this argument as a “subspecies” of unfair partisan gerrymandering of the sort prohibited in *LWV*, and so should this Court.

The *Carter* Petitioners also urge the adoption of their plan on the grounds that it is a “least change” plan from the Court’s 2018 remedial plan in *LWV*. However, they ground this argument on a fundamental misunderstanding of the “least change” case law (which does not apply here), and as a factual matter, their plan takes the remedial plan’s politically even, 9-9 plan and converts it to a heavily Democratic-advantaged 10-7 plan. Surely that is not a “least change” plan.

In the end, Judge McCullough recommended that:

our Supreme Court adopt and implement HB 2146 as a matter of state constitutional law as it meets all of the traditional criteria of the Free and Equal Elections Clause, and does so in respects even noted by the Governor’s expert, as well as the other considerations noted by the

courts, it compares favorably to all of the other maps submitted herein, including the 2018 redistricting map, it was drawn by a non-partisan good government citizen, subjected to the scrutiny of the people and duly amended, it creates a Democratic leaning map which underscores its partisan fairness, and, otherwise, is a reflection of the “policies and preferences of the State, as expressed in statutory and constitutional provisions or in the reapportionment plans proposed by the state legislature.”

Report of Special Master, 464 M.D. 2021, at 216 (Feb. 7, 2022) (bold removed, underline in original) (citing *Perry v. Perez*, 132 S. Ct. 934, 941 (2012)).

For all the reasons set forth in this brief as well as in the House Republican Legislative Intervenors’ briefing to the Commonwealth Court, and any further arguments advanced in response to any Exceptions filed by other parties, the House Republican Legislative Intervenors urge the Court to adopt the Special Master’s Report in its entirety and to select H.B. 2146 as the congressional district plan to govern the Commonwealth’s congressional elections.

FACTUAL AND PROCEDURAL BACKGROUND

I. Framework of Redistricting

At issue in this case is the congressional redistricting process mandated by the U.S. Constitution. Every ten years, a national census is conducted, and the 435 voting members of the U.S. House of Representatives are reapportioned among the states on the basis of population. U.S. Const. art. I, § 2. The federally conducted census determines the number of House seats apportioned to each state, and Congress can and does make regulations which govern the states’ redistricting

process. *See* U.S. Const. art. I, § 4. For example, if a state loses a seat in the apportionment process and fails to enact a new, valid redistricting plan, that state’s House delegation “shall be elected from the State at large.” 2 U.S.C. § 2a(c)(5).

In the first instance, the Constitution entrusts the “Times, Places and Manner” of House elections, including the task of drawing congressional districts, to state legislatures. *See id.* Thus, each decade, pursuant to this delegated constitutional authority, the Pennsylvania General Assembly, on behalf of the People of the Commonwealth, is tasked with creating a new congressional map for the Commonwealth that reflects the results of the latest census. As a general rule, each of these districts will have one member and will be of equal population, consistent with the one person, one vote principle, though minor deviations to achieve traditional redistricting objectives may be permissible. *See, e.g., Karcher v. Daggett*, 462 U.S. 725, 740 (1983) (“Any number of consistently applied legislative policies might justify some variance, including, for instance, making districts compact, respecting municipal boundaries, preserving the cores of prior districts, and avoiding contests between incumbent Representatives.”); *see also Rucho v. Common Cause*, 139 S. Ct. 2484, 2501 (2019) (“[E]ach representative must be accountable to (approximately) the same number of constituents. That requirement does not extend to political parties. It does not mean that each party must be influential in proportion to its number of supporters.”).

This familiar framework has received further elaboration in Pennsylvania law. In Pennsylvania, congressional redistricting plans are handled as regular legislation—that is, a congressional redistricting plan must pass both chambers of the General Assembly and be signed into law by the Governor in order to take effect. *See* Pa. Const. art. IV, § 15. A plan that emerges from the constitutionally created state legislative process is subject to review by the judicial branch, as occurred in 2018. *LWW*, 178 A.3d at 742-43.

Impasse cases, like this one, arise when the political branches deadlock and fail to redistrict the Commonwealth following the decennial census and apportionment. *See Mellow v. Mitchell*, 607 A.2d 204, 214 (Pa. 1992). Prior to Intervenors’ intervention, the Commonwealth Court entered an order on December 20, 2021 essentially finding that an impasse had occurred. Unfortunately, after failing to engage with the legislature during the process, Governor Wolf vetoed H.B. 2146 only a day before trial—in the apparent hope that this Court would adopt a map he publicly proposed only on January 15, 2022.

The Court has described the task of selecting a congressional map as an “unwelcome obligation.” *LWW*, 178 A.3d at 823 (citation and internal quotation marks omitted). But in assuming this unhappy task in the past, the Court has also clearly articulated the controlling constitutional and legal principles that govern

congressional redistricting plans in this Commonwealth. Those principles are worth recounting here.

The Court was last presented with an impasse situation similar to the one it faces now in 1992. *See Mellow*, 607 A.2d at 204-05. The 1990 census found that Pennsylvania was entitled to only 21 House members, where it previously had 23. *Id.* at 205. The General Assembly then failed to pass a 21-member map. *Id.* Thus, in the absence of a map approved by the General Assembly, the Court decided to select an appropriate redistricting plan. *Id.* at 205-07, 211.

After the political branches deadlocked, eight Members of the Pennsylvania Senate brought an action requesting judicial intervention. The Court ultimately approved a plan proposed by those eight Senators, and in its opinion, described the factors it considered. First, it evaluated the plans to ensure they complied with the one-person, one-vote standard required by federal law. *Id.* at 207-08. Second, it reviewed for compliance with Section 2 of the Voting Rights Act, 52 U.S.C. § 10301. *Id.* at 208-10. And finally, it reviewed for minimization of political subdivision splits, and to evaluate whether the plan was “politically fair” in terms of the allocation of Democratic and Republican-leaning districts, and, in particular, how the maps dealt with the state’s loss of two congressional seats. *Id.* at 210-211.

The Court’s recent decision in *LWV* further elucidates this legal framework, although *LWV* arose from a challenge to an enacted map, and not, as here and in

Mellow, from a legislative impasse between the General Assembly and the Governor after a reduction in the number of House seats following the census. In *LWV*, the Court considered the Pennsylvania Constitution’s Free and Equal Elections Clause, which provides, “Elections shall be free and equal; and no power, civil or military, shall at any time interfere to prevent the free exercise of the right of suffrage.” Pa. Const. art. I, § 5. The Court concluded that this provision invalidated the then-existing congressional map from 2011 as an unconstitutional partisan gerrymander. *See LWV*, 178 A.3d at 824-25. The Court subsequently ordered the use of a remedial plan that has been in place since the 2018 elections. *League of Women Voters v. Commonwealth*, 181 A.3d 1083 (Pa. 2018) (“*LWV II*”).

The reasoning behind the Court’s decision in *LWV* was that the Free and Fair Elections Clause requires that “an individual’s electoral power not be diminished through any law which discriminatorily dilutes the power of his or her vote” *LWV*, 178 A.3d at 816. In framing this interpretation, the Court looked to Article II, Section 16, of the Pennsylvania Constitution, in which the Court identified the “neutral benchmarks” that serve to prevent the dilution of individual votes. *Id.* Thus, the Court held that to comply with the Free and Equal Elections Clause, congressional districts must (1) be compact, (2) be contiguous, (3) be “as nearly equal in population as practicable,” and (4) not divide any “county, city, incorporated town, borough, township, or ward, except where necessary to ensure

equality of population.” *See id.* at 816-17 (citations and internal quotation marks omitted). But while other factors “have historically played a role in the drawing of legislative districts, such as the preservation of prior district lines, protection of incumbents, or the maintenance of the political balance which existed after the prior reapportionment,” such extraneous, political factors are “wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts.” *Id.* at 817.

Thus, in evaluating the constitutionality of a congressional redistricting plan, whose creation is constitutionally committed to the General Assembly in the first instance, the Court must begin with the neutral redistricting criteria identified in *Mellow* and *LWV*. Other relevant factors, such as the preservation of communities of interest, preventing an undue departure from the existing map, and various metrics of partisan fairness may be considered, but not in ways that supplant or detract from the traditional, non-political factors that this Court has articulated over the course of several decades now.

II. Development of H.B. 2146

Exercising their prerogative and fulfilling their duty under both the United States and Pennsylvania Constitutions, the House and Senate passed H.B. 2146, which redistricts the Commonwealth into 17 congressional districts.

H.B. 2146 was first introduced and referred to State Government Committee on December 8, 2021. *See* Bill History, House Republican Legislative Intervenors’ Opening Br., Ex. E (“Bill History”). The bill introduced, for what might be a first in the history of the Pennsylvania House, a plan proposed by “well-known nonpartisan citizen,” and good-government advocate, Ms. Amanda Holt. *See* Report of The Honorable Patricia McCullough, Special Master, Feb. 7, 2022, 42 (“the Report” or “Rep.”). The State Government Committee selected Ms. Holt’s proposal from among 19 submitted by the public because, as Rep. Seth Grove indicated, Ms. Holt drew it without political influence, it met constitutional standards, and it limited the splits of townships and other municipalities, offering compact and contiguous districts. House Republican Legislative Intervenors’ Opening Br., Ex. A, Grove Letter (Jan. 6, 2022) (“Grove Letter”); Ex. 1 to Ex. I, Affidavit of Bill Schaller.

The State Government Committee received 399 comments concerning the map in H.B. 2146 as introduced. *See* Grove Letter; Rep. at 48, FF8. The legislature considered and implemented changes based on these comments, increasing the compactness of certain districts and ensuring that the map preserved certain communities of interest. Rep. at 48; *see also* Grove Letter. From the time the bill was amended in, and reported from, the House State Government Committee on December 15, 2021, until the bill was passed by the House, the public had 28 days

to view the contents of the bill and review the proposed congressional plan. *See* Grove Letter; Bill History.

Under the Rules of the Pennsylvania House of Representatives, second consideration of a bill is the opportunity for any House Member to introduce and offer amendments to a bill. House Rules 21 and 23. While Members had ample to time to draft and file amendments to the bill, no amendment was timely filed to H.B. 2146. It received third consideration and final passage in the House on January 12, 2021. Rep. at 48.

The Senate then referred H.B. 2146 to the Senate State Government Committee. After being reported from committee without amendment, the Senate gave H.B. 2146 first consideration on January 18, 2022 and second consideration on January 19, 2022. The Senate passed H.B. 2146 on January 24, 2022, by a vote of 29 to 20. *See* Bill History; Rep. at 48.

The legislature then presented H.B. 2146 to Governor Tom Wolf on January 24, 2022. As described above, this bill included a map subject to public comment, review, and multiple revisions in response to those comments. At that point, 40 days had passed since H.B. 2146 had last been amended in the House State Government Committee. But only one day before this trial began, on January 26, 2022, Governor Wolf vetoed H.B. 2146. Throughout this process, the Governor had refused to meet with the legislature. *See* Grove Letter. He did not negotiate a redistricting plan with

either the House or the Senate, but instead proposed his own map, absent any legislative input.

III. Proceedings Below

Before the commencement of the present action, the Carter Petitioners filed a case in the Commonwealth Court (“*Carter I*”) challenging the 2018 remedial plan as constitutionally deficient based on the 2020 census results. *See Rep* at 4 n.10. Subsequently, a three-judge panel of the Commonwealth Court dismissed that action without prejudice for lack of standing and ripeness. *Id.*

On December 17, 2021, the *Carter* Petitioners filed the instant Petition for Review (“*Carter II*”) directed to the Commonwealth Court’s original jurisdiction, again claiming that the 2018 remedial congressional map was malapportioned and that the judiciary needed to step in and adopt the *Carter* Petitioners’ plan for the upcoming 2022 elections. *Rep.* at 4. On the same day, the *Gressman* Petitioners filed their own petition for review, making substantially similar claims and offering up their own map for the Commonwealth Court’s adoption. *Id.* at 7-8.

By order dated December 20, 2021, the Commonwealth Court consolidated both petitions for review, set December 31, 2021 as the deadline for applications to intervene, and ruled that any party to the consolidated cases could submit a proposed 17-district congressional redistricting plan. *Id.* at 10. The Commonwealth Court’s December 10 order further provided that the Commonwealth Court would select

from among the timely filed plans if a legislatively enacted plan was not in place by January 30, 2022. *Id.* at 10-11.

Immediately after the Commonwealth Court’s December 20 order, both the *Carter* and *Gressman* Petitioners filed applications for extraordinary relief, requesting that this Court exercise extraordinary jurisdiction over these matters. *Id.* at 11. This Court denied those applications on January 10, 2022. *Id.* at 12.

By order dated January 14, 2022, the Commonwealth Court granted applications to intervene by (i) the Speaker and Majority Leader of the Pennsylvania House of Representatives (“House Republican Legislative Intervenors”) and the President Pro Tempore and Majority Leader of the Pennsylvania State Senate (“Senate Republican Legislative Intervenors”) (collectively, “Republican Legislative Intervenors”), (ii) Pennsylvania State Senators Maria Collett, Katie J. Muth, Sharif Street, and Anthony H. Williams (“Democratic Senator Intervenors”)¹; (iii) Tom Wolf, Governor of the Commonwealth of Pennsylvania (“Governor”); (iv) Senator Jay Costa and members of the Democratic Caucus of the Senate of Pennsylvania (“Senate Democratic Caucus Intervenors”); (v) Representative Joanna E. McClinton, Leader of the Democratic Caucus of the Pennsylvania House of Representatives (“House Democratic Caucus Intervenors”); and (vi) Congressman

¹ The Democratic Senator Intervenors and Senate Democratic Caucus Intervenors were joined as a single party. Rep. at 12-13, n.21.

Guy Reschenthaler, Swatara Township Commissioner Jeffrey Varner, and former Congressmen Tom Marino, Ryan Costello, and Bud Shuster (“Congressional Intervenors”). *Id.* at 12-13. The remaining applications to intervene were denied, but the entities that filed them were permitted to submit plans, briefs, and supporting materials as *amici*. *Id.* at 14.

The Commonwealth Court’s January 14 order also superseded the prior procedural schedule and required submission, by each party, of one or two proposed congressional plans and a supporting brief and/or expert report by January 24, 2022, with responsive briefs and/or expert reports by January 26, 2022. *Id.* at 13. The Commonwealth Court also directed the filing of a joint stipulation of facts and accelerated the trial to January 27 and 28, 2022. *Id.* at 14. The Commonwealth Court further indicated that it planned to issue an opinion based on the parties’ submissions and the record evidence if a legislative plan was not enacted by January 30, 2022. *Id.*

The parties submitted their briefs and expert reports in due course on January 24 and 26. Consistent with the Commonwealth Court’s amended procedural schedule, the Court conducted the trial on January 27 and 28, 2022. *Id.* at 58. Each party conducted a one-hour direct examination of one expert witness, with each party permitted to conduct a fifteen-minute cross-examination of every other party’s expert witness. *Id.* Each party was permitted to make an opening and closing

statement. *Id.* The expert reports and testimony submitted by the parties and *amici* are summarized in the Report. *See generally id.* at 58-114. The Report further provided that “exhibits introduced in trial and attached briefs were admitted into evidence. All exhibits are part of the record in this matter.” *Id.* at 117.

The day after trial, on Saturday, January 29, 2022, the parties made written post-hearing submissions.

Then, on January 29, 2022, the Carter Petitioners renewed their application for extraordinary relief, which this Court had previously denied on January 10. *Id.* at 15. On February 2, 2022, this Court granted the application for extraordinary relief, assumed jurisdiction over the proceedings, designated Commonwealth Court Judge McCullough as Special Master, and directed Judge McCullough to identify proposed findings of fact and conclusions of law, and a recommendation as to which plan should be selected and as to potential election calendar revisions, no later than February 7, 2022. Order, No. 7 MM 2022, 1-2 (Feb. 2, 2022.) The Court further ordered that parties and *amici* could file exceptions to the Special Master’s Report by February 14, and set oral argument for February 18. *Id.* at 2.

Judge McCullough’s Report was filed on February 7, 2022. The Report, coming in at 222 pages, exhaustively recounts the procedural history of these cases, the controlling constitutional and legal principles, proposed findings of fact and conclusions of law, a detailed analysis and comparison of each proposed map, and a

recommendation regarding which map should be selected and how the 2022 election schedule should be revised. *See generally* Report. Judge McCullough recommended adoption of H.B. 2146. *Id.* at 216.

Following the release of the Report, the Court issued a *per curiam* order dated Friday, February 11, 2022, in which it denied a joint application for leave to file briefs in response to exceptions and directed that parties and *amici* file any briefs in support of the Report by Monday, February 14, 2022. Order, No. 7 MM 2022, 2 (Feb. 11, 2022).²

The House Republican Legislative Intervenors now respectfully submit this brief in support of the Report.

LAW AND ANALYSIS

I. The Commonwealth Court Correctly Recognized that H.B. 2146 Adheres to the Traditional Redistricting Criteria Set Forth in Article II, Section 16, of the Pennsylvania Constitution, Which this Court Recognized as Neutral Benchmarks to Be Used in Detecting Gerrymanders.

There is no dispute that H.B. 2146 adheres to the traditional redistricting criteria set forth in Article II, Section 16, of the Pennsylvania Constitution, which this Court indicated were “neutral benchmarks” in determining whether a plan violates the Free and Equal Elections Clause of the Pennsylvania Constitution. *LWV*,

² Unfortunately, due to the denial of this application, the House Republican Legislative Intervenors will not be able to file a comprehensive brief responding to the various Exceptions anticipated to be filed challenging the Report and its recommendation that this Court adopt H.B. 2146.

178 A.3d at 815-16. H.B. 2146 is comprised of contiguous districts and has at most a plus/minus one-person population deviation between districts. Rep. at 137-39. Moreover, with a Polsby-Popper score of .324, it is reasonably compact and similar to the compactness score of the map adopted by this Court in *LWV II*, 181 A.3d 1083, 1087. See Rep. at 141, 211. It also does considerably well on political subdivision splits, splitting only 15 counties, 16 municipalities, and 18 wards. *Id.* at 144. H.B. 2146 splits the fewest municipalities of any plan. *Id.* at 146. As the Governor's expert, Dr. Duchin, opined, "[t]he Congressional districting plan passed by the Pennsylvania House of Representatives (HB - 2146) is population-balanced and contiguous, shows strong respect for political boundaries, and is reasonably compact." Duchin Opening Rep. at 2.

Not all plans even meet these neutral benchmarks. Unlike H.B. 2146, two plans have a population deviation of greater than one person. Both the Carter Plan and the House Democratic Caucus Plan have deviations of two-persons. Rep. at 138. While that might not seem like a big difference, the U.S. Supreme Court has recognized that congressional districts must be mathematically equal in population unless necessary to achieve a legitimate state objective. *Karcher*, 462 U.S. at 730, 740. Neither the *Carter* Petitioners nor the House Democratic Caucus identify a reason for their departure from mathematical equality. That other plans, like H.B. 2146, were able to achieve such equality without sacrificing other redistricting

criteria demonstrates that these plans are unconstitutional. Thus, Judge McCullough appropriately gave them less weight. Rep. at 139.

In addition, many of the plans unnecessarily split the City of Pittsburgh, including the Governor, Senate Democratic Caucus, Draw the Lines, and *Ali amici* plans. None of these parties or *amici* provide an explanation for splitting the state's second largest city. *Id.* at 151-52. The lack of any explanation is telling. As Dr. Barber found, splitting the city may allow a plan to use Pittsburgh's Democratic-leaning population to create two districts in the immediately surrounding area that are likely Democratic-leaning, instead of only one. *Id.* at 149. But achieving this partisan advantage at the behest of traditional redistricting criteria of avoiding city splits violates the principles enunciated by this Court in *LWV*. In addition, the City of Pittsburgh is a community of interest that should be preserved to best respect the interest of its residents. *Id.* at 149-50. Absent explanation, any plan that unnecessarily splits the City of Pittsburgh for partisan gain violates the Free and Equal Elections Clause as stated by this Court in *LWV*. Thus, Judge McCullough appropriately gave plans that split Pittsburgh with no explanation less weight. *Id.* at 195.

In addition, many plans unnecessarily split Bucks County and pair portions of it with Philadelphia to more evenly distribute Democratic voters. But the only evidence before the Court demonstrates that splitting Bucks County unnecessarily

divides a community of interest for partisan gain. *Id.* at 157-60. H.B. 2146 protects this community of interest and does not split Bucks County. Based upon this undisputed evidence, Judge McCullough appropriately gave less weight to maps that split Bucks County. Rep. at 195.

As such, Judge McCullough properly recognized based upon all the evidence submitted, including testimony from experts of proponents of other submitted plans, that “HB 2146 does not contravene, and in fact sufficiently satisfies, the standards of the Free and Equal Elections Clause of the Pennsylvania Constitution, the other criteria discussed by our Supreme Court in *LWV*, and further, reflects a non-partisan tilt in favor of Democrats.” Rep. at 191.

II. The Commonwealth Court Correctly Recognized that H.B. 2146 Is Fair to the Political Parties.

A. Dr. Barber’s Simulation Analysis

Dr. Barber conducted a simulation analysis generating 50,000 simulated congressional redistricting plans for Pennsylvania following only the constitutional criteria outlined in this Court’s decision in *LWV*. Barber Opening Rep. at 13-14. Notably, this simulation analysis is very similar to the simulation analyses utilized by Dr. Chen and Dr. Pegden and relied upon by this Court in *LWV*. 178 A.3d at 770-75, 776-77.³ Dr. Barber’s simulation, like those of Dr. Chen and Dr. Pegden, use a

³ During the hearing, Dr. Barber’s simulation analysis was weakly attacked as unreliable because the algorithm he utilized was not peer reviewed. However, the

set of unbiased alternative maps to compare to a proposed map, like H.B. 2146, and to determine if the proposed map is an outlier from the simulated maps. Barber Opening Rep. at 11; Tr. 515-17. Dr. Barber’s simulated plans do not consider partisanship, race,⁴ the location of incumbent legislators, or other political factors. They only consider the traditional redistricting criteria of contiguity, compactness, equalizing population, and minimizing political subdivision splits. Barber Opening Rep. at 13-14; Rep. at 87. Thus, if a map, like H.B. 2146, “significantly diverges from the set of simulated maps, it suggests that some other criteria that were not used in drawing the comparison set of maps may have guided the decisions made in drawing the proposed map.” *Id.*

Based upon an index of statewide elections from 2012-2020,⁵ Dr. Barber predicts that H.B. 2146 will result in nine Democratic-leaning seats and eight

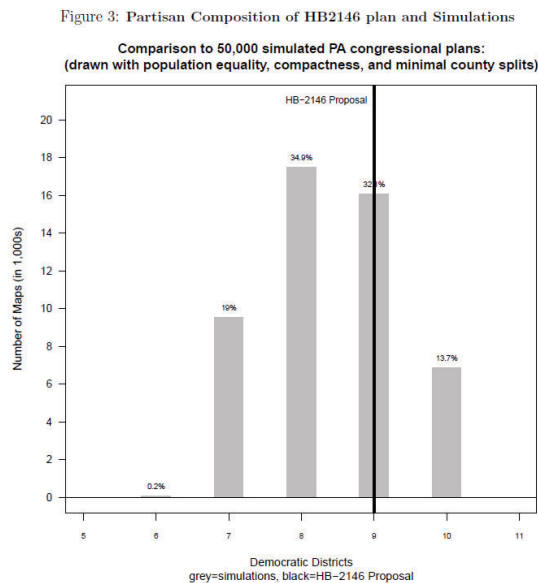
algorithm has been validated. Tr. 662:7-25. And, the same algorithm has been used by other experts and relied upon in the recent Ohio redistricting litigation by Dr. Kosuke Imai. Tr. 663:24-664:4. Indeed, Dr. Imai used the same algorithm to provide a report and testimony before the Pennsylvania Legislative Reapportionment Commission who likewise relied upon his analysis. In addition, Judge McCullough, who had the benefit of viewing Dr. Barber’s testimony during the hearing, credited his opinions and methodology. Rep. at 165.

⁴ Dr. Barber did, however, check the impact of race on his results. He reviewed a subset of his 50,000 simulations that contained two majority-minority districts, and ran a second set of simulations that drew three minority-influence districts, to check the robustness of his results. Barber Opening Rep. 35-37. His results were robust. *Id.*

⁵ In *LWV*, Dr. Chen likewise used an index of statewide elections from 2008 and 2010, and this Court found his methodology reliable and utilized it in holding the 2011 congressional plan unconstitutional. *LWV*, 178 A.3d at 772-73, 818-21.

Republican-leaning seats.⁶ Barber Opening Rep. at 23; Rep. at 88. Given that the current map adopted by this Court in 2018 has resulted in nine Democratic seats and nine Republican seats for the past two congressional elections, a map predicted to result in nine Democratic seats and eight Republican seats is demonstrably fair.

But Dr. Barber also then compared his prediction for the partisan lean of H.B. 2146 against the 50,000 unbiased simulated plans drawn only using traditional redistricting criteria and with no partisan data. The distribution of predicted seats for his simulated plans is below:



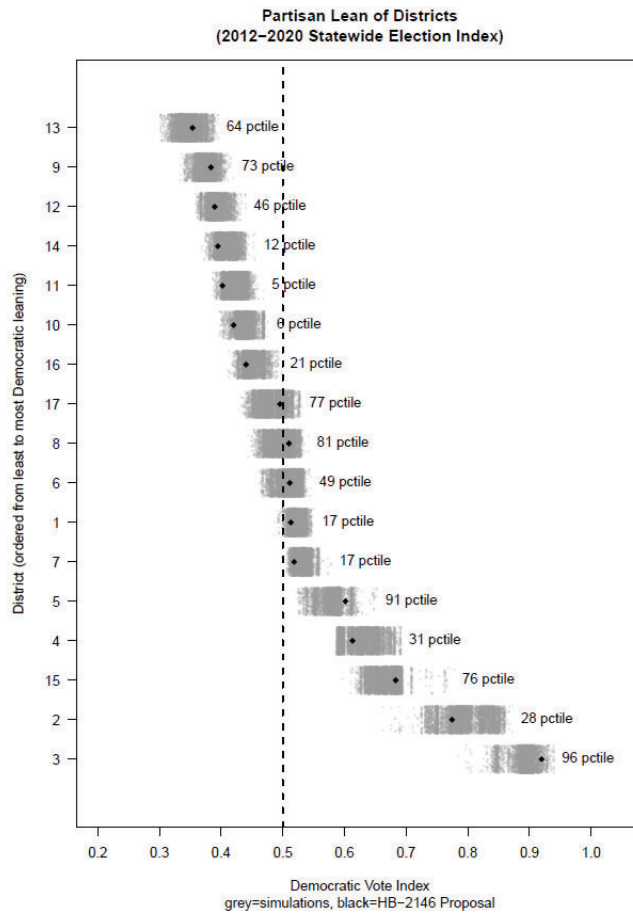
⁶ When using an index of statewide elections from 2014-2020, Dr. Barber predicts that H.B. 2146 will result in eight Democratic-leaning seats and nine Republican-leaning seats. Barber Opening Rep. at 44 (App’x A). But this simply shows that different elections can lead to different outcomes. A map that sometimes results in eight Republican seats and sometimes nine Republican seats is fair.

Barber Opening Rep. at 23, Fig. 3. The most common outcome (34.9%) is eight Democratic-leaning seats—one less than Dr. Barber predicts for H.B. 2146. *Id.*; Rep. at 165. Nine Democratic-leaning seats results 32.1% of the time—very consistent with H.B. 2146. Barber Opening Rep. at 22. In other words, unlike the conclusions reached by Dr. Chen and Dr. Pegden in *LWV* that the 2011 plan was a partisan outlier when compared to a set of simulated maps, H.B. 2146 falls well within the range of likely outcomes and on the Democratic-favorable side of outcomes in the distribution of simulated plans. Dr. Barber’s analysis demonstrates that H.B. 2146 is not a partisan outlier and is fair to both political parties.

Dr. Barber next analyzed how the other plans submitted to the Commonwealth Court compared to the 50,000 simulated plans. Many of the plans (*Carter, Gressman, Governor, Senate D2, CCFD, Citizen Voters, Draw the Lines, Ali*) are predicted to result in 10 Democratic-leaning seats. Barber Reb. Rep. at 15, Table 3. However, only 13.7% of the simulations are predicted to result in 10 Democratic-leaning seats—significantly less than the other likely outcomes. Barber Opening Rep. at 23, Fig. 3. The much more common outcomes are either eight or nine Democratic-leaning seats. The House Democratic Caucus Plan is an extreme outlier, predicted to result in 11 Democratic-leaning seats, which occurs in *none* of the 50,000 simulated plans. Barber Reb. Report at 15, Table 3.

H.B. 2146 also creates the most competitive districts of any of the plans. H.B. 2146 creates five districts with a predicted Democratic vote share between .48 and .52. Barber Opening Rep. at 18-21, Fig. 2; Rep. at 89. No other plan creates as many competitive districts, and most create from zero to three such districts. Rep. at 89; Barber Reb. Rep. at 13. What is more, Dr. Barber’s analysis further shows that numerous plans draw these most competitive “up for grab” districts to generate more Democratic-leaning seats, making them much less competitive and safer for Democrats. In analyzing the most competitive seats, Dr. Barber found that, for example, both the *Gressman* and Governor plans “systematically generate districts that are at the most Democratic edge of the simulations in these competitive districts.” Barber Reb. Rep. at 17. He found similar results with many of the other plans. *Id.* at 19, Table 4. Thus, in the districts that are most up for grabs, these plans create districts that are more Democratic-leaning than nearly every one of the simulated plans. *Id.* This does not occur by accident. These plans are optimized to create more favorable Democratic-leaning seats in the districts that are the most competitive. To the contrary, these same middle districts in H.B. 2146 are generally within the middle range of the simulations:

Figure 4: Partisan Composition of HB2146 plan and Simulations



Note: The grey 'clusters' show the range of vote margins for each district, ordered from least Democratic to most Democratic in the 50,000 simulations. The black dot inside of each cluster shows the partisan index for the HB2146 plan. Next to each cluster is the percentile, or relative position of the HB2146 plan within each cluster of simulation results for each district.

Barber Opening Rep. at 26, Fig. 4; Rep. at 89. Thus, H.B. 2146 stands out as the least biased of all the proposals across these most competitive districts. Barber Reb. Rep. at 19.

Finally, during the hearing, several parties made unfounded accusations that Dr. Barber’s failure to consider race in his simulations was skewing the partisan results. Not so. Dr. Barber analyzed 1,852 of his 50,000 simulated plans that likewise created two majority-minority districts including one majority-Black district just by

following traditional redistricting criteria. Barber Opening Rep. at 35-36; Rep. at 90-91. He also generated another set of 5,000 simulated plans that had at least three districts that contained 35% or greater non-white voting age population for purposes of comparison. Barber Opening Rep. at 36; Rep. at 9. Even these race-conscious simulations demonstrated that the most common outcome in the simulated plans was eight or nine Democratic-leaning seats, the same as H.B. 2146 or less, and one or two less than the majority of the plans submitted to the Court. Barber Opening Rep. at 35-36; Rep. at 91. In other words, the alleged failure to intentionally draw certain majority-minority districts, for which there is no support in the record, is not the cause of any partisan skew shown by Dr. Barber's analysis.

In sum, Judge McCullough appropriately credited Dr. Barber's methodology and reasoning and found it to be persuasive. Rep. at 209. There is no reason to depart from that finding. Dr. Barber's analysis clearly and unequivocally demonstrates that H.B. 2146 is fair when compared to a set of unbiased maps. Based upon Dr. Barber's analysis, H.B. 2146 is actually the most "fair" map when comparing to a set of unbiased maps. This Court previously relied upon a similar methodology in evaluating the 2011 map's compliance with the Free and Equal Elections Clause and it should do so again here.

B. Partisan Fairness Metrics

1. H.B. 2146's partisan fairness metric scores are good and do not indicate the plan confers an unfair advantage to any political party.

Under numerous partisan fairness metrics, H.B. 2146 is also very fair. Dr. Barber calculated a mean-median of $-.015$ and an efficiency gap of $-.02$ for H.B. 2146, which are close to zero but tilt slightly in favor of Republicans. Barber Opening Rep. at 28, 31. This is consistent with the political geography of Pennsylvania that all experts agree results in a natural tilt in favor of Republicans.

But these raw scores do not tell you much unless you have something to compare them to. They simply indicate a bias in favor of one party or another; they do not tell you the cause of that bias. Thus, Dr. Barber also calculated the mean-median and efficiency gap scores for each of his 50,000 simulated plans and found that H.B. 2146 has a mean-median that is smaller (more favorable to Democrats) than 85% of the simulated plans, and an efficiency gap that is smaller (more favorable to Democrats) than all of the 50,000 simulated plans. Barber Opening Rep. at 28-29, 32, Figs. 5 & 6. In other words, the bias seen in H.B. 2146 is consistent with the bias seen in plans drawn by a computer with no partisan data, and that simply follow traditional redistricting principles. This proves that the small Republican bias seen in H.B. 2146 is the result of political geography, not any intentional gerrymander. That is in stark contrast with the opinions of Dr. Chen and

Dr. Pegden in *LWV* regarding the 2011 congressional plan—namely, that it was a statistical outlier that could *not* be explained by political geography. *LWV, LWV*, 178 A.3d at 772-75, 776-77.

Many of the experts in this case opine that H.B. 2146 is less “fair” than other maps because other maps have partisan fairness metric scores that are closer to zero. Their idea of a “fair” map is one that has partisan fairness metric scores as close to zero as possible. But that is not the correct way of analyzing it. Only Dr. Duchin compares these measures of partisan fairness to any simulation result. *See Barber Reb. Rep.* at 20. As discussed more fully below, her analysis confirms Dr. Barber’s conclusions. Without comparing these metrics to a set of unbiased maps one “cannot disentangle any measures of partisan bias from impacts due to the political geography of the state.” *Id.*

Dr. Barber calculated the mean-median and efficiency gaps scores for each of the other submitted plans and compared them to the simulated maps. He was the only expert to do such an analysis. He concluded that all of the other plans are *more* Democratic-leaning than the non-partisan simulations. *Id.* at 21. In many cases, the other plans are in the 97-100th percentile of the simulations. *Id.* In other words, they are partisan outliers in favor of Democrats. To the contrary, H.B. 2146 is in the middle, *Barber Reb. Rep.* at 21, demonstrating its fairness when compared to a set of unbiased maps—the same methodology previously adopted by this Court to

evaluate the partisan fairness of the 2011 congressional plan in *LWV*. 178 A.3d at 828 (Baer, J., concurring in part) (“a petitioner may establish that partisan considerations predominated in the drawing of the map by, *inter alia*, introducing expert analysis and testimony that the adopted map is a statistical outlier in contrast with other maps drawn using traditional redistricting criteria . . .”).

Dr. Duchin is the only other expert that performed a simulation analysis, though she provided no details on her methodology or the parameters used to generate her “ensemble” of 100,000 maps. Tr. 445:1-23. Still, Dr. Duchin overtly admits, “[r]andom plans tend to exhibit pronounced advantage to Republicans across this full suite of recent elections.” Duchin Opening Rep. at 18, Fig. 7. The Governor’s plan, and many of the other plans, are drawn to overcome this tendency. *See id.* But in doing so, these plans are partisan outliers in favor of Democrats. Dr. Duchin admitted during cross-examination that the Governor’s map was an outlier when compared to her ensemble of maps. Tr. 452:20-25. It had a partisan bias score that was outside all of her ensemble of 100,000 maps. *See* Duchin Opening Rep. at 19, Fig. 8. Dr. Duchin absurdly asserts, however, that an outlier here is good. Tr. 450:10-16. But this Court rejected that notion in *LWV*.

Dr. Duchin’s analysis confirms Dr. Barber’s work. It confirms that drawing a set of random plans results in plans that have a natural tilt in favor of Republicans. Nobody disputes that H.B. 2146 has a partisan bias consistent with the unbiased

simulated plans. The plans that have lower partisan fairness scores (*i.e.*, closer to zero) based on metrics like mean-median and efficiency gap are drawn to intentionally overcome this unintentional geographic bias, and result in statistical outliers. They demonstrate that partisan considerations dominated the drawing of these maps as opposed to following traditional redistricting criteria, which is why many of them split cities like Pittsburgh, or split Bucks County to pair with parts of Philadelphia. But that is drawing lines to intentionally benefit one political party over another—gerrymandering—and this Court rejected that practice in *LWW*.

2. There is no requirement that partisan fairness metrics get to “zero”; the focus is on whether a plan is within a given range.

In addition, Judge McCullough properly rejected an attempt to “get to zero” on these partisan-fairness metrics. These measures do not point to ideals and condemn small variations from them. “One thing all the measures have in common is that they” look to “the *magnitude* of the bias.” Barry Burden & Corwin Smidt, *Evaluating Legislative Districts Using Measures of Partisan Bias and Simulations*, SAGE Publishing, Vol. 10 No. 4, at 2 (2020), <https://doi.org/10.1177/2158244020981054>.

Indeed, no other approach would make sense. Partisan-fairness measures are imperfect estimates that attempt to forecast future election results based on past results, often from different electoral units. Reading significance into small differences is like seeing two news channels make slightly different weather

forecasts—one predicts 30 degrees and the other 32 degrees—and concluding they are dramatically different when they offer practically the same forecast. Partisan fairness measures are like that—imprecise. They do not command adherence to *zero*. They afford a range and signal cause for concern when plans stray outside the range.

a. The Efficiency Gap. The efficiency gap defines all votes for a losing candidate as “wasted” and creates a measurement of the difference in the parties’ “wasted” votes divided by the total number of votes. A party benefitting from a partisan gerrymander will have fewer wasted votes than the burdened party. The authors of the efficiency gap metric did not argue for a “zero” efficiency gap. Rather, they proposed a limit of “two seats for congressional plans and 8 percent for state house plans” above which an efficiency gap score would be identified as a “presumptive[]” gerrymander. Nicholas O. Stephanopoulos & Eric M. McGhee, *Partisan Gerrymandering & the Efficiency Gap*, 82 U. Chi. L. Rev. 831, 837 (2015). The authors included the important caveat that “plans not be expected, based on sensitivity testing, ever to have an efficiency gap of zero over their lifetimes.” Stephanopoulos & McGhee, 82 U. Chi. L. Rev. at 837. In fact, they did not recommend that a court adopt a “zero threshold” for several reasons, including that the efficiency gap’s calculation varies so much from election to election. *Id.* at 887. In practice, “beginning in 2000, there was a ‘very modest Republican advantage,’ but the efficiency gaps ‘were never very far from zero’” and some 75% of efficiency

gaps in Pennsylvania ranged from -10% to 10%. *LWV*, 178 A.3d at 778 (citations omitted).

b. The Mean-Median Measure. The mean-median measurement identifies the difference between the median or middle vote share across all districts and the mean or average vote share across all districts. When these numbers diverge significantly, the district vote distribution is skewed in favor of one party and, conversely, when it is close, that distribution is more symmetric. Among those limitations is the reality that it is “sensitive to the outcome in the median district.” *Ohio A. Philip Randolph Institute v. Householder*, 373 F. Supp. 3d 978, 1028 (S.D. Ohio 2019) (citation and internal quotation marks omitted), *rev’d on other grounds*, 140 S. Ct. 102. In *LWV*, Dr. Chen found his simulated plans ranged from “a little over 0 percent to the vast majority of them being under 3 percent,” a range he explained as “normal.” 178 A.3d at 774.

c. Partisan Symmetry. Another measure of partisan fairness is a partisan symmetry analysis that analyzes a “vote-seat curve.” The vote-seat curve is a computer-generated graph that plots the portion of seats a party will win for a certain vote share. The theory behind this metric is that a difference between seats won and vote share—*e.g.*, 70% of the seats won with only 50% of the overall votes—would suggest an asymmetrical partisan skew. This partisan symmetry metric was proposed during the 1990s and was the subject of debate in *League of United Latin American*

Citizens v. Perry, 548 U.S. 399 (2006) (“*LULAC*”). See generally Stephanopoulos & McGhee, 82 U. Chi. L. Rev. at 844-45. Both Justice Stevens, the metric’s main proponent, and Justice Kennedy, the “swing” justice, in their respective opinions acknowledged that any departure from zero was not suspect, and the debate—then, as now—is when a deviation exceeds a reasonable range and becomes suspect. See, e.g., *LULAC*, 548 U.S. at 420 (Kennedy, J.) (recognizing the need for a judicially-manageable standard based on partisan symmetry to evaluate “how much partisan dominance is too much”); *id.* at 468 n.9 (Stevens, J., concurring in part) (suggesting either that “deviations of over 10% from symmetry create a prima facie case of an unconstitutional gerrymander” or that “a significant departure from symmetry is one relevant factor in analyzing whether . . . a districting plan is an unconstitutional partisan gerrymander”). One of the principal concerns with the partisan symmetry standard, according to Justice Kennedy, is the measure’s resort to hypothetical, or “counterfactual,” elections; “the existence or degree of asymmetry may in large part depend on conjecture about where possible vote-switchers will reside.” *Id.* at 420 (Kennedy, J.).

d. The use of these partisan metrics as a range, rather than an absolute-zero standard, is consistent with the judicial scrutiny applied to other voting laws. For example, when evaluating a challenge to a voting law under the Voting Rights Act, “the size of the burden imposed by a challenged voting rule is highly relevant.”

Brnovich v. Democratic Nat'l Comm., 141 S. Ct. 2321, 2338 (2021). “The concepts of ‘openness’ and ‘opportunity’ connote the absence of obstacles and burdens that block or seriously hinder voting, and therefore the size of the burden imposed by a voting rule is important.” *Id.* (edit marks omitted). The same is true under the so-called *Anderson-Burdick* framework for assessing burdens on the fundamental right to vote under the Equal Protection Clause. *See Daunt v. Benson*, 956 F.3d 396, 406-07 (6th Cir. 2020). “The level of scrutiny under this test ‘depends upon the extent to which a challenged regulation burdens First and Fourteenth Amendment rights.’” *Id.* at 407 (quoting *Burdick v. Takushi*, 504 U.S. 428, 434 (1992)). “[W]hen a state election law provision imposes only ‘reasonable, nondiscriminatory restrictions’ upon the First and Fourteenth Amendment rights of voters,” no strict-scrutiny standard applies, and “‘the State’s important regulatory interests are generally sufficient to justify’ the restrictions.” *Id.* (quoting *Burdick*, 504 U.S. at 434). The same is true with the one-person, one-vote standard under the federal Equal Protection Clause for congressional districts. *See Tennant v. Jefferson Co. Comm’n*, 567 U.S. 758, 760 (2012) (recognizing the vote-dilution standard “is a ‘flexible’ one” that depends, among other things, on “the size of the deviations”).

e. And using partisan fairness measurements as a comparison to a range, rather than as an absolute zero target, is not only consistent with that body of federal case law, but is also consistent with the Court’s treatment of these metrics in *LWV*.

In its discussion of the 2011 Plan, the Court viewed Dr. Chen’s simulations analysis as “the most compelling evidence.” 178 A.3d at 818. In relevant part, the Court credited Dr. Chen’s analysis that showed his set of simulated non-partisan plans exhibited pro-Republican mean-median gap ranging between 0 and 4%, whereas the 2011 Plan’s score was 5.9%. *Id.* at 820. The difference between the simulation range and the 2011 Plan was treated as an “outlier”—one that could not be explained as “an attempt to account for Pennsylvania’s political geography” or other non-partisan reasons. *Id.*

Likewise, the Court credited Dr. Warshaw’s testimony that:

similarly detailed how the 2011 Plan *not only preserves the modest natural advantage, or vote efficiency gap, in favor of Republican congressional candidates relative to Republicans’ statewide vote share*—which owes to the fact that historically Democratic voters tend to self-sort into metropolitan areas and which he testified, until the 2011 Plan, was “never far from zero” percent—but also creates districts that *increase that advantage to between 15 to 24% relative to statewide vote share.*

Id. (emphasis added). Hence, just four years ago, this Court recognized that there is a range of typical or normal values for these metrics attributable to Pennsylvania’s political geography—and this Court struck down the 2011 Plan for exhibiting “unfair partisan advantage,” *id.* at 821, in part because the 2011 Plan fell outside that range. All of the Court’s analysis and its studious comparison of these scores to a non-partisan baseline (*i.e.*, Dr. Chen’s simulated plans) would have been a complete waste if the real test was a comparison between the 2011 Plan and zero.

As demonstrated above, the mean-median and efficiency gap scores for H.B. 2146 fall well within the range of reasonableness as opined by Dr. Chen and Dr. Warshaw four years ago. Although scoring can depend on the elections utilized by the expert, no expert found that H.B. 2146 had a mean-median gap greater than three percent, and no expert found that H.B. 2146 had an efficiency gap greater than seven percent. This demonstrates that the modest bias is the result of political geography, not the result of an intention to create a partisan advantage.

III. Intentionally Drawing District Lines To “Correct For” A Slight, Natural Republican Tilt In The State’s Political Geography Is Gerrymandering.

It is an undisputed fact that the present political geography of Pennsylvania has a slight tilt in favor of Republicans. This tilt is not caused by gerrymandering, but simply because voters who support Democratic candidates are densely clustered in urban areas and voters who support Republican candidates are more widely dispersed in the rural and suburban areas. Petitioners and other parties urged the Commonwealth Court to adopt plans with a strong Democratic skew, which they justify in the name of “correcting” that small tilt. But nothing in Pennsylvania’s Free and Equal Elections Clause or *LWV* either compels or permits that outcome—sorting voters based on their politics does *not* “equalize” the power of voters. And sorting voters by their partisan preferences is, by definition, gerrymandering.

A. All experts confirmed that Pennsylvania’s political geography has a Republican tilt because Democratic voters are clustered in cities and urban areas, but Republican voters are more evenly distributed in the rest of the state.

It is an undisputed fact in this case that the natural political geography in Pennsylvania today has a slight Republican tilt due to the geographic concentration of Democratic voters in cities. This Court noted that phenomenon in *LWV*. *See* 178 A.3d at 774 (recognizing a “small” advantage for Republicans). In that case, Dr. Chen attributed the small advantage to “the way that Democratic voters are clustered and Republican voters are a bit more spread out across different geographies of Pennsylvania.” Rep. at 162 (quoting *LWV*, 178 A.3d at 774).

As Judge McCullough concluded, the experts in this case confirmed that political geography exists today and results in a small (or slight) tilt. *See, e.g.*, Rep. at 162-64 (citing testimony of Drs. Rodden, DeFord, and Duchin). Most notably, Governor Wolf’s expert, Dr. Duchin, created an ensemble of 100,000 simulated redistricting plans for Pennsylvania that were drawn using non-partisan criteria and without partisan data, and she found that her ensemble “tend[ed] to exhibit pronounced advantage to Republicans across this full suite of recent elections.” *Id.* at 164 (quoting Duchin Opening Rep. at 18).

B. The Commonwealth Court correctly concluded that deliberate efforts to “correct” for a naturally occurring political tilt in a plan is a subspecies of partisan gerrymandering that this Court found violated the Free and Equal Elections Clause.

This Court recognized in *LWV* the possibility that technological advances “can potentially allow mapmakers, in the future, to engineer congressional districting maps, which, although minimally comporting with these neutral ‘floor’ criteria, nevertheless operate to unfairly dilute the power of a particular group’s vote for a congressional representative.” 178 A.3d at 817. Petitioners and certain other parties in this case have, using advanced computational tools, presented the Commonwealth Court—and now this Court—with plans that do just that. They asked the Commonwealth Court to adopt plans that are intended to “overcome” the slight tilt in favor of Republicans found in Pennsylvania’s political geography, and have invoked *LWV* to do so. But nothing in Article I, Section 5, gives Petitioners a right to a rigged plan that “overcomes” a neutral and small pro-Republican tilt based on the state’s political geography. Their view, in fact, vaults political party interests over those of voters’ and turns over 200 years of Pennsylvania history and precedent on its head. Judge McCullough rightly rejected this theory, calling it a “subspecies of unfair partisan gerrymandering,” Rep. at 197, and so should this Court.

Pennsylvania elects its Representatives to Congress in single-member districts, a geographic-based system of representation. Respecting the integrity of counties and political subdivisions has *always* been paramount to the

Commonwealth's redistricting policy. Since 1790, standards grounded in "neutral criteria" governed the crafting of General Assembly districts. *LWW*, 178 A.3d at 814. "These standards place the greatest emphasis on creating representational districts that both maintain the geographical and social cohesion of the communities in which people live and conduct the majority of their day-to-day affairs, and accord equal weight to the votes of residents in each of the various districts in determining the ultimate composition of the state legislature." *Id.* The prevention of the "dilution of an individual's vote was of paramount concern" to the framers of the Pennsylvania Constitution, and they "considered maintaining the geographical contiguity of political subdivisions . . . to afford important safeguards against that pernicious prospect." *Id.* at 815.

Balancing the expectation of political parties has not been part of the equation. As this Court found, "[t]he constitutional reapportionment scheme [of Article II, Section 16] does not impose a requirement of balancing the representation of the political parties; it does not protect the 'integrity' of any party's political expectations. Rather, the construct speaks of the 'integrity' of political subdivisions, which bespeaks history and geography, not party affiliation or expectations." *Holt v. 2011 Legislative Reapportionment Comm'n*, 67 A.3d 1211, 1235-36 (Pa. 2013) ("*Holt II*"). That makes sense: redistricting law focuses on the rights of *voters*, not *parties*.

In *LWV*, this Court again recognized the primacy of using *geography*—and not *political preferences*—as the basis for drawing fair representational districts. By focusing on the neutral criteria, a map-drawer “maintains the strength of an individual’s vote in electing a congressional representative.” 178 A.3d at 816. The Court went on: “[w]hen an individual is grouped with other members of his or her community in a congressional district for purposes of voting, the commonality of the interests shared with other voters in the community increases the ability of the individual to elect a congressional representative for the district who reflects his or her personal preferences.” *Id.* Importantly, “[t]his approach inures to no political party’s benefit or detriment,” but “simply achieves the constitutional goal of fair and equal elections for all of our Commonwealth’s voters.” *Id.*

But if this Court were to select a plan intended to “overcome” any slight, naturally occurring Republican-leaning tilt in the state’s political geography, the Court would thereby place its thumb on the scale for Democrats—an approach that will “inure[]” to the Democratic Party’s benefit.

Petitioners believe this thumb-on-the-scale is defensible under *LWV* based on dicta in that case describing the intent of Article I, Section 5, as ensuring that each voter’s “power . . . in the selection of representatives be equalized to the greatest degree possible with other Pennsylvania citizens.” 178 A.3d at 817. If today’s political geography happens to offer a slight advantage to Republicans, to

Petitioners, it is essential to jimmy the district lines until that political geography is “overcome” and Democrats get the number of districts they desire. But when the Court spoke of “equalizing” voting power, it was doing so in the framework of hundreds of years of precedent that spoke of “equality” of representation in terms grounded in the number of people in each district and respecting the integrity of the boundaries of the counties and municipalities that form a major part of Pennsylvanians’ daily lives.

“Political geography” means the will of the voters as expressed in their own communities. Petitioners and other parties treat the voting patterns of Pennsylvania’s communities as an obstacle to be “overcome” through clever redistricting using computer algorithms and mathematical metrics. But “overcoming” a “tilt” in the state’s “political geography” is not an innocuous act, akin to the old barkeeper’s trick of putting sugar packets under an unlevel table leg to prevent the table from tilting. It requires conscious state action to treat the voters of urban areas (that are heavily Democratic) differently than voters in suburban areas (that are politically mixed), and both of those groups differently than rural areas (that are Republican-leaning), to convey a partisan advantage on Democrats. As *Carter* Petitioners’ expert, Dr. Rodden, explained in a 2019 book, to overcome this natural tilt, “Democrats would need a redistricting process that intentionally carved up large cities like pizza slices or spokes of a wheel, so as to combine some very Democratic urban areas with some

Republican exurbs in an effort to spread Democrats more efficiently across districts.” Rep. at 162-63 (citations omitted); *see also id.* at 177 (quoting public comments of Dr. David Wasserman that the process requires “conscious pro-Dem[ocrat] mapping choices” to give Democrats an advantage). Rather than do the work of persuading voters to elect their preferred candidates to Congress, Petitioners ask this Court to rig the map to spare them the effort. That is the very definition of gerrymandering, and it violates the rights of voters as enshrined in the Free and Equal Elections Clause.

Perhaps this point is illustrated most clearly with Governor Wolf’s proposed plan and evidentiary presentation. His expert, Dr. Duchin, praised the plans submitted by the Governor, the *Carter* Petitioners, and the House Democratic Caucus as “dominating the field” on her partisan-fairness metrics. Duchin Reb. Rep. at 5. But the Governor’s plan saws the City of Pittsburgh practically in half, placing 176,425 people into one district and 126,546 people into another. Barber Reb. Rep. at 10, Tbl. 2.⁷ Governor Wolf’s plan also splits Bucks County unnecessarily. Rep. at

⁷ This analysis illustrates the danger in just looking at metrics like the number of split cities—doing so can mask important differences between plans. As Dr. Barber explained in his study of the various proposed plans’ municipal splits, “aside from necessary divisions of Philadelphia and unnecessary divisions of Pittsburgh [in some plans], . . . all of the remaining municipal splits are of very small municipalities and townships across the state that shift only a small population.” Barber Reb. Rep. at 9. Splitting a small municipality to move a few thousand people into another district (e.g., to achieve population equality) is one thing; moving 96,829, 126,546, or

160. Although the House Democratic Caucus plan draws Pittsburgh into a single district, it does so by combining it with northern areas in a shape the Commonwealth Court described as a “Freddy-Krueger like claw.” *Id.* at 203. Yet Dr. Duchin defended the Governor’s plan—despite her own analysis revealing it to be an “outlier” on partisan metrics—by saying it went the farthest to “overcome” the natural geographic “tilt.” Duchin Opening Rep. 2. Although Dr. Duchin may view these plans as “dominating the field” in certain mathematical metrics, Duchin Reb. Rep. at 5, the Pennsylvania Constitution and this Court’s precedents would say otherwise. In fact, they are all partisan outliers that draw *ten* Democratic-leaning districts (and eleven, in the case of the House Democratic Caucus plan).

But while several of these plans might “dominate the field” in terms of maximizing the number of Democrat-leaning seats, they do so at representational cost to the voters. As Dr. Naughton testified at trial with respect to Pittsburgh, keeping the City together “unites people’s interests for resources” and “gives them a [series] of common interests.” Rep. at 96 (quoting Tr. 713.) After all, a Member of Congress represents *all* the constituents of the Member’s district—not only those of the Member’s party. Splitting Pittsburgh up might serve national Democratic interests by eking out one more Democratic seat, but dividing Pittsburgh’s voters

140,884 Pittsburgh residents into another district is another. *See id.* at 10. Yet the metrics count each as “one” split even though the latter has a much larger impact.

into two districts “dilutes their advocacy” and reduces those voters’ power and influence in Washington, D.C. *Id.*

In addition to these other problems, trying to rig a redistricting plan to “correct” for the state’s political geography presumes political geography is static—that every blue and red dot on today’s map is no more likely to move than the Allegheny Mountains. That assumption is wrong: political geography is dynamic and unpredictable. As Dr. Rodden explained, a “pronounced trend in Pennsylvania” over the past decade was that “places that are gaining population are not only more Democratic to begin with, but are becoming *more* Democratic as they gain population” and that places losing population are becoming more Republican. Rodden Opening Rep. 10 (emphasis in original). Hence, places “like Lancaster and Cumberland, started out with strong Republican majorities, meaning that they are becoming more competitive over time as they gain population.” *Id.* After discussing Dr. Rodden’s analysis and other data about Pennsylvania voting patterns over the past decade, Dr. Barber concluded:

The upshot of these patterns is that if a map drawer is using contemporary partisan trends to guide their decision-making, we have no way of knowing if the geographic patterns they are trying to “correct” for will 1.) remain the same, 2.) perhaps become more pronounced, or 3.) reverse in direction. It very well could be the case that over the next 10 years Democratic voters start to win more in suburban and rural areas while Republicans begin to make inroads in the cities. In fact, recent research shows that the issues that divide the parties are shifting from economic to social and educational-based,

which could easily lead to a shift in the partisan coalitions that looks very different than it does today.

Barber Reb. Rep. 6-7.

At bottom, our nation elects Representatives to Congress using single-member districts—a fundamentally geographic-based system of representation. Our nation does so even though other electoral systems are available that are less tied to geography, like the party-list proportional representation system used in 94 countries. *See* Peter Buisseret et al., *Party Nomination Strategies in List Proportional Representation Systems*, *Am. J. Pol’y Sci.* (Jan. 14, 2022), <https://doi.org/10.1111/ajps.12691>, at 1 n.1. And that choice of system matters, and it must be respected—even if the current spatial distribution of voters produces a small advantage for Republicans.

IV. H.B. 2146 Is the Only Plan Submitted to the Commonwealth Court That Went Through Any Meaningful Public Process.

House Bill 2146 not only was legislation passed by both houses of the General Assembly, but it went through an open, public, and transparent process. It was drafted studiously over the course of months, with 11 public hearings, the work of non-partisan activists, and extensive public comments. This Court should not adopt the other proposals drafted under the cover of darkness with little or no public scrutiny.

A. **The General Assembly undertook a transparent, deliberative, and meaningful redistricting process that led to the passage of H.B. 2146.**

As described *supra*, H.B. 2146 went through a full transparent, deliberative, and meaningful process that ultimately led to its passage by both chambers of the General Assembly. The House began by soliciting proposals, and after evaluating the 19 proposals, chose one drafted by a well-known nonpartisan citizen, Amanda Holt. She drew this map without political influence, met constitutional requirements, and it limited unnecessary splits of communities, while creating compact, contiguous districts. Grove Letter; Ex. 1 to Schaller Aff. The legislature did not stop its request for input there, but again solicited the public's input, this time in the form of public comments. *See* Grove Letter; Rep. at 48. After considering each of the 399 comments they received, the legislature incorporated many of these suggestions to increase compactness and preserve certain communities of interest. *Id.* The public had four weeks to review and comment on every part of this plan. *See* Grove Letter. The legislature had the opportunity to review and amend the bill, and then passed it out of the House on January 12, 2021. The Senate then reviewed and considered the map for twelve days before ultimately passing it as well.

This means that H.B. 2146 was initiated with an open and transparent process. The legislature not only solicited additional input from citizens themselves and from the people's elected representatives in both the House and the Senate, but adjusted

the map in response to Pennsylvanian’s concerns and comments. This orderly legislative process allowed appropriate consideration of various parties’ concerns and ultimately, created a map that had gone through the entire legislative process with no short cuts or back-room deals. Even the Governor’s expert admitted that this process led to a map which fulfilled traditional criteria for evaluating redistricting maps, because H.B. 2146 “is population-balanced and contiguous, shows strong respect for political boundaries, and is reasonably compact.” Duchin Opening Rep. at 2.

The voice and will of the people of a state is expressed through their elected representatives, so the actions of the legislature are devices of “monumental import, and should be honored and respected by all means necessary.” Rep. at 214. The legislative branch, in this case, the General Assembly, is uniquely equipped to evaluate redistricting maps because of “the knowledge which its members from every part of the state bring to its deliberations, its techniques for gathering information, and other factors inherent in the legislative process.” *Butcher v. Bloom*, 203 A.2d 556, 569 (Pa. 1964). The legislature is able to “weigh[] and evaluate[]” key “criteria and standards” and “exercise its political judgment” in a way that no other branch of government can. *Perry v. Perez*, 132 S. Ct. 934, 941 (2012). The legislature’s unique position and tools to evaluate necessary criteria for redistricting while expressing the will of the people is why the General Assembly must be “the

organ of government with the primary responsibility for the task of apportionment.”

Butcher v. Bloom, 216 A.2d 457, 458 (Pa. 1966).

B. The Governor’s plan was only published Nine Days before his submission was due in Court, and much of it is shrouded in secrecy.

Rather than work with the General Assembly to agree on a congressional redistricting plan, or provide any meaningful and valid feedback on how H.B. 2146 was unconstitutional, the Governor simply created his own map. But in contrast to H.B. 2146, the Governor’s plan evaded any meaningful review or public input. To begin with, the origins of the Governor’s plan are a mystery. The Governor’s own expert, Dr. Duchin, does not know who drew the Governor’s plan. Tr. 436:24-437:8. There is no information regarding the process or considerations used by the architect of the Governor’s plan. Tr. 437:9-13. And the Governor has never shared that information with the public. Tr. 437:14-18. The governor then purposefully avoided any meaningful public review or consideration of his map, by introducing his map on January 15, 2022, less than two weeks before this trial began (and nearly forty days after the legislature introduced H.B. 2146). The governor released his own map only *after* the Commonwealth Court’s January 14, 2022 order requiring the intervenors to submit maps in this case, raising the question of whether he would have shared this map for public view *at all* if not required to do so by the court.

The Governor did not approach this redistricting process with the legislature in good faith. Although redistricting is inherently a legislative activity, as discussed

above, the Governor did not communicate at all with the legislature while drafting this plan. *See* Grove Letter. The House State Government Committee released detailed information regarding the choices it made to update H.B. 2146’s maps, but the Governor’s staff either did not reach out to Rep. Grove for this information or ignored it when it was provided on the “paredistricting.com” website. *Id.* at 3, 8-9. The Governor argued that his only ability to influence the maps was a veto, but that was only because he refused to participate in any earlier discussions. *Id.* A decision that permits the Governor to opt out of the legislative redistricting process, and then adopts his eleventh-hour plan (suited to his own interests) would create a perverse incentive for the executive branch to avoid the legislative process and responsibilities required of it by both state and federal law.⁸

C. The House and Senate Democratic Caucuses never proposed their plans during the legislative process.

Similarly, the House and Senate Democratic Caucuses have drafted plans from whole cloth without any input from the legislative process or from the People of Pennsylvania. These maps were never proposed during the lengthy legislative

⁸ During closing argument, the Senate Democratic Caucus argued that the General Assembly’s plan should not receive any special consideration because, counsel argued, it would create a perverse incentive for future legislators to refuse to compromise and then demand that the Court blindly defer to their plan. *See* Tr. 1027-28. But that is not what occurred here. It was Governor Wolf and the Democratic caucuses in the General Assembly that did not meaningfully engage in the legislative process—apparently in the hope that this Court would simply rubber-stamp one of their plans.

process, and none of the members of these caucuses proposed any of these maps as amendments to H.B. 2146. *See* Bill History, Republican Legislative Intervenors' Opening Br., Ex. E ("Bill History"). This Court should reject the attempt by a handful of officials to circumvent the legislative process and flood the court with maps that could not garner support in the duly-elected General Assembly.

D. The Gressman plan was drawn in secret by a computer “optimization” algorithm.

The *Gressman* plan is the most mysterious of all. Using a “computer algorithmic technique” to draw its districts, Tr. 276:21-22, the *Gressman* plan has no input from anyone besides the *Gressman* plaintiffs. The expert testifying in support of that plan did not know what technique was used—he only knew that it was an algorithm. Tr. 276:19-277:4. And he did not disagree that the “computational techniques” could have included optimizing for partisan fairness. Tr. 278:13-23. This is yet another plan that had no benefit of the legislative process or input from the public.

None of the above plans acknowledge the Legislature’s “primary role in redistricting.” *LWV*, 178 A.3d at 822. Moreover, they may be motivated by impermissible political criteria, and they involved minimal or no input from the public. Only H.B. 2146 can trace its origins, explain the traditional redistricting criteria and constitutional requirements it achieves, and show its implementation of broad public comment and support.

V. **The Commonwealth Court Properly Rejected the “Least Change” Approach Advocated by the Carter Petitioners.**

The *Carter* Petitioners argued below that their proposed plan is superior because it “takes a least-change approach” relative to the 2018 plan. Carter Post-Trial Br. at 22. Consistent with this Court’s existing case law, Judge McCullough correctly held that “using least-change metrics here is of limited utility because an 18-district plan is being replaced by a 17-district plan,” and that there is no legal requirement that the Court defer to its own prior redistricting choices in such circumstances. Rep. at 184, 186. Those conclusions should be affirmed.

First, when a version of the “least changes” argument was pressed in legislative reapportionment litigation a decade ago, the Supreme Court rejected it and reiterated that “the governing ‘law’ for redistricting” is “applicable constitutional and statutory provisions and on-point decisional law,” not “the specifics of prior reapportionment plans ‘approved’ by the Court.” *Holt v. 2011 Legislative Reapportionment Comm’n*, 38 A.3d 711, 735 (Pa. 2012) (“*Holt I*”).

Then, in *Holt II*, the Court again criticized arguments about “the supposed constitutionalization of prior redistricting plans” and emphasized the “limited constitutional relevance” of maintaining the outcomes of previous plans. *Holt II*, 67 A.3d at 1236. When a similar argument was again raised in 2018 in *LWV II*, the Court again rejected it and reiterated that “the preservation of prior district lines” is a consideration that is “wholly subordinate to the neutral criteria of compactness,

contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts.” *LWV*, 178 A.3d at 817.

Aside from the fact that their argument flies in the face of prior precedent, *Carter* Petitioners’ contention that making the “least changes” from the previous map is somehow a virtue is not sound. As the Supreme Court explained when rejecting the argument in *Holt I*, prioritizing similarity to a previous plan is not a traditional redistricting principle. That is because “prior ‘approvals’ of plans do not establish that those plans survived . . . all possible challenges. Instead, in the prior redistricting appeals, this Court merely passed upon the specific challenges that were made.” *Holt I*, 38 A.3d at 735-36.

The cases that the *Carter* Petitioners have identified on this point are inapplicable. In each case, unlike Pennsylvania in this cycle, the state “ha[d] not lost or gained any congressional seats,” *Johnson v. Wis. Elections Comm’n*, 2021 WI 87, ¶ 15, 399 Wis. 2d 623, 637 (Nov. 30, 2021); *see also LaComb v. Growe*, 541 F. Supp. 145, 154 (D. Minn. 1982), *aff’d sub nom. Orwoll v. LaComb*, 456 U.S. 966, 102 S. Ct. 2228, 72 L. Ed. 2d 841 (1982) (eight district plan was first enacted after the 1960 census, and revised eight district plan was challenged after the 1970 census) (Alsop, J. dissenting); *Hippert v. Ritchie*, 813 N.W.2d 374, 381 (Minn. 2012) (adjusting state house and senate districts). None of the courts in those cases grappled with a map where the number of districts itself had to change. Instead, they

recognized the fundamental principle that “[n]otwithstanding a history of political involvement in redistricting . . . it remains the legislatures’ duty,” *Johnson*, 2021 WL 87 at ¶ 19 (citations omitted). In other words, the goal of a “least change” approach is to respect the most recent choices of the *legislature*—not some imagined fidelity to calcified district lines. *See LWV*, 178 A.3d at 822 (the legislature has the “primary role in districting”).

Moreover, the *Carter* Petitioners are simply wrong when they argue that the 2018 remedial plan is the “benchmark” for any plan evaluated by this Court. Courts have recognized that “preserving the cores” of prior districts may be a “legitimate *state* objective[.]” in redistricting, *Mellow*, 607 A.2d at 207-08 (emphasis added), but no cases cited by the *Carter* Petitioners require *courts* to follow this objective as a constitutional directive. *See Karcher*, 462 U.S. at 740 (recognizing that “[a]ny number of consistently applied legislative policies might justify some variance . . . [including] preserving the cores of prior districts”); *see also Abrams v. Johnson*, 521 U.S. 74, 85-86 (1997) (requiring any judicial changes to a legislative plan to be consistent with the legislature’s “redistricting principles”); *Stone v. Hechler*, 782 F. Supp. 1116, 1126 (N.D. W.Va. 1992) (deferring to legislature’s definition of what “preserving the core” meant).

In addition to lacking a sound basis in the case law, a constitutional enshrinement of the “least change” approach would undermine the integrity of the

redistricting process. Evaluating redistricting plans against the traditional criteria—instead of similarity to previous plans—ensures that the new plan is scrutinized in each and every redistricting cycle against the applicable constitutional and statutory standards, and with reference to population and other changes. By contrast, the *Carter* Petitioners’ position would ensure that choices from prior plans would be “frozen” into future plans and tie the hands of future legislators, an outcome that Judge McCullough deemed “deeply troubl[ing].” Rep. at 188.

The record evidence and testimony further reinforce the weakness of the *Carter* Petitioners’ “least change” argument. As the Report noted, the *Carter* Petitioners’ expert, Dr. Rodden, “admitted in his report and testimony that, in the past 10 years, there has been dramatic population shifts in Pennsylvania and fluctuating levels of density in specific areas throughout the Commonwealth, which presumably would have resulted in differing communities of interest.” Rep. at 156-57. Even worse, by the admission of the *Carter* Petitioners’ own expert, their putatively “least-change approach” takes the current 9-9 partisan split and produces a 10-7 pro-Democrat map. Rodden Reb. Rep. at 9, Table 5.

For these reasons, comparing the prior map against any proposed map is not a viable or virtuous principle for redistricting, as this Court has recognized every time the argument surfaces. *Carter* Petitioners’ arguments touting the similarity of their plan to the previous map should fare no better than when this same contention

was rejected in previous redistricting cycles. This Court should reject them once more, in line with existing precedent.

CONCLUSION

For all these reasons, plus those set forth in the House Republican Legislative Intervenors' briefs before the Commonwealth Court (that are incorporated herein by this reference) and that will be set forth in oral argument, House Republican Legislative Intervenors respectfully request that the Court adopt Judge McCullough's Special Master's Report in its entirety.

Dated: February 14, 2022

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

I certify that this filing complies with the provisions of the Case Records Public Access Policy of the Unified Judicial System of Pennsylvania that require filing confidential information and documents differently than non-confidential information and documents.

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7 MM 2022

IN THE SUPREME COURT OF PENNSYLVANIA

CAROL ANN CARTER, et al.,	:	No. 7 MM 2022
	:	
Petitioners,	:	
v.	:	
	:	
LEIGH M. CHAPMAN, et al.,,	:	
	:	
Respondents.	:	
***	:	
PHILIP T. GRESSMAN, et al.,	:	
	:	
Petitioners,	:	
v.	:	
	:	
LEIGH M. CHAPMAN, et al.,	:	
	:	
Respondents.	:	

**EXCEPTIONS TO SPECIAL MASTER’S REPORT
BY GUY RESCHENTHALER, JEFFREY VARNER, RYAN
COSTELLO, TOM MARINO, AND BUD SHUSTER**

Per paragraph 5 of the Court’s Order of February 2, 2022,

Guy Reschenthaler, Jeffrey Varner, Ryan Costello, Tom Marino, and Bud Shuster (collectively, “the Congressional Intervenors”) respectfully submit the following exceptions to the Report Containing Proposed Findings of Fact and Conclusion of Law Supporting Recommendation of Congressional Redistricting Plan and Proposed Revision to the 2022

Election Calendar/Schedule (hereafter, “the Report”) issued on February 7, 2022:

1. The Congressional Intervenors take exception to, and this Court should decline to adopt, the Report’s recommendation to adopt HB 2146 as the congressional plan for Pennsylvania; instead, the Court should adopt Reschenthaler 1 or 2 as the congressional plan for Pennsylvania.

2. The Congressional Intervenors take exception to, and this Court should decline to adopt, the following components of the Report’s recommendations:

- a. The Report’s proposed finding that the Carter plan splits only 13 Counties;
- b. The Report’s proposed finding that only one plan violates the equal population requirement;
- c. The Report’s proposed finding that all of the proposed plans comply with the Voting Rights Act and the Fourteenth Amendment on the present record;
- d. The Report’s misinterpretation of the prohibition against splitting political subdivisions unless “absolutely necessary”; and
- e. The other flaws discussed in the accompanying brief, which addresses these exceptions (and related errors) more fully.

WHEREFORE, the Congressional Intervenors respectfully request that the Court select Reschenthaler 1 or Reschenthaler 2 as the congressional redistricting plan for Pennsylvania.

Respectfully submitted,

Dated: February 14, 2022

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IN THE SUPREME COURT OF PENNSYLVANIA

No. 7 MM 2022

CAROL ANN CARTER, ET AL.

v.

LEIGH M. CHAPMAN, ET AL.

PHILIP T. GRESSMAN, ET AL.

v.

LEIGH M. CHAPMAN, ET AL.

**BRIEF IN SUPPORT OF SPECIAL MASTER'S REPORT AND
EXCEPTIONS TO SPECIAL MASTER'S REPORT
BY GUY RESCHENTHALER, JEFFREY VARNER,
TOM MARINO, RYAN COSTELLO, AND BUD SHUSTER**

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I. INTRODUCTION AND SUMMARY OF THE ARGUMENT

As developed in the ensuing pages, the Congressional Intervenors are in full accord with many aspect of the Special Master’s recommendations. Indeed, in terms of the proposed findings of fact, the Special Master’s Report (“SMR”) ably and fairly relays the content and nature of the facts adduced in the proceedings and, with the exception of a few minor miscalculations that are undoubtedly the product of the expedited nature of these proceedings, its factual rendition is free of error. Similarly, a substantial portion of the Special Master’s proposed legal conclusions are well reasoned and should be adopted. In particular, the SMR’s recommendations are cogent and well-grounded with regard to compactness and contiguity, the importance of communities of interest, the role of partisan considerations in the present matter, the “least change” approach to redistricting advocated by the Carter Petitions, and the use of prisoner-adjusted census data.

Nevertheless, some errors warrant closer scrutiny from this Court. *First*, the Special Master’s proposed finding that the Carter Plan splits only 13 counties, rather than 14, is not supported by the record and is contrary to law. *Second*, the Special Master’s assessment of the equal

population requirement under the United States Constitution is legally flawed. *Third*, the Special Master misconstrued the United States Constitution's prohibition against racial gerrymandering, as applied to the present action. *Fourth*, the Special Master misinterpreted the prohibition against splitting political subdivisions unless "absolutely necessary" and did not afford this consideration sufficient weight. *Finally*, in light of the foregoing, the Special Master also erred in her ultimate recommendation that this Court should select HB 2146, rather than Reschenthaler 1 or 2.

II. BACKGROUND

A. Constitutional Factors for a Congressional Plan

1. Equal Population

Reschenthaler 1 and 2 achieve equal population because both maps have only a one person deviation between districts—which is the lowest possible deviation. *See* **Special Master Report (“SMR”) at 138, ¶¶ CL1-CL2**; *see also* N.T. 1/27/22 at 164:15-23 (Dr. Rodden); *id.* at 284:21-285:8 (Dr. DeFord); *id.* at 458:9-13 (Dr. Duchin); Brunell Report at 1-2.

Only the House Democratic Caucus map and the Carter map deviate by *more* than one person—both have a two person deviation. *See* **SMR at 138, ¶ CL2**; *see also* N.T. 204:4-20 (Dr. Rodden).

2. Compactness

Reschenthaler 1 and Reschenthaler 2 have compactness scores in a narrow range and do not feature highly non-compact districts based upon Dr. Rodden’s calculations. *See* **SMR at 65, ¶ FF48**; *see also* Rodden Reply Report at 3; N.T. 1/27/22 at 166:10-17. Dr. Rodden is “confident” in the numbers in his report. *See* N.T. 1/27/22 at 163:20-164:7.

Further, based upon Dr. DeFord's review, Resenthaler 1 and Resenthaler 2 have equal or better compactness scores on every measure as compared to the Gressman Map. *See SMR at 69, ¶¶ FF77-FF78; see also* N.T. 1/27/22 at 285:13-22; DeFord Reply Report at 9.

Dr. Duchin agrees that Resenthaler 1 and Resenthaler 2 have compact districts. *See SMR at 79, ¶¶ FF137-FF138; SMR at 147-148, ¶¶ FF1-3; see also* N.T. 1/27/22 at 458:15-22. Dr. Duchin is "very confident in her numbers." *See* N.T. 1/27/22 at 457:16-458:1. She rated Resenthaler 1 as a plan that meets "a high excellence standard for traditional criteria," and rated Resenthaler 2 as a plan that meets "an excellence standard for traditional criteria[.]" *See SMR at 79-80, ¶¶ FF138-139; see also* Duchin Reply Report at 3.

Resenthaler 1 has an average Reock score of .435. *See* Brunell Report at 3; N.T. 1/27/22 at 168:3-11 (Dr. Rodden testifying, stating Resenthaler 1 has a Reock score of .43). Resenthaler 1 has an average Polsby-Popper score of .363. *See* Brunell Report at 3.

Resenthaler 2 has an average Reock score of .424. *See* Brunell Report at 3; N.T. 1/27/22 at 168:3-11 (Dr. Rodden testifying). Resenthaler 2 has an average Polsby-Popper score of .352. Brunell Report at 3.

Reschenthaler 1 and Reschenthaler 2 are reasonably compact. *See SMR at 104, ¶ FF278; see also Brunell Report at 2-3.*

3. Contiguity

All 17 districts in Reschenthaler 1 are contiguous, as multiple experts concluded. *See SMR at 137-138, ¶¶ CL1-CL3; see also N.T. 1/27/22 at 165:3-9 (Dr. Rodden); N.T. 1/27/22 at 285:9-12 (Dr. DeFord); N.T. 1/27/22 at 458:4-8 (Dr. Duchin); Brunell Report at 2.*

4. Splits of Counties, Municipalities, and Wards

Reschenthaler 1 and 2 split just 13 counties. *See SMR at 144-145, ¶¶ FF21-FF22; SMR at 147, ¶ FF41-FF42; SMR at 193, ¶ 24; see also N.T. 1/27/22 at 166: 3-9 (Dr. Rodden); id. at 458:23-459:4 (Dr. Duchin); Brunell Report at 4. No other maps before the Court split fewer Counties.¹ *See SMR at 146, ¶ FF36; SMR at 147, ¶ FF41; SMR at 193, ¶ 24.**

¹ While the Special Master's Report finds that the Carter map also only splits 13 counties, *see SMR at 143, ¶ FF 7*, that finding is predicated on an error, as explained in the argument section below. And even if true, Reschenthaler 1 and 2 remain the *only* maps that split just 13 counties **and** just 16 municipalities; all others split more in one or both government units. *See SMR at 147, ¶ FF41* ("It is worth emphasizing, however, that of all the plans proposed, only the Reschenthaler Plans were able to divide only 13 counties and 16 municipalities—the lowest number in both categories."); *see SMR at 193, ¶ 24* ("The Reschenthaler Plans remarkably divide only 13 counties and 16 municipalities, which is the lowest numbers in both categories.").

Reschenthaler 1 and 2 also had only 29 county “pieces” or “segments,” which was also the fewest of all the maps before the Court. *See SMR at 206-07, ¶ 54.*

Reschenthaler 1 and 2 split just 16 municipalities. *See SMR at 144-145, ¶¶ FF21-FF22; at 147, ¶ FF41-FF42; SMR at 193, ¶ 24; see also Duchin Reply Report at 2 (Table 1); Barber Reply Report at 8; Brunell Report at 5 (Table 5).*

No other maps before the Court split *fewer* municipalities (though some split an equal amount). *See SMR at 146, ¶ FF37; SMR at 147, ¶ FF41; SMR at 193, ¶ 24* (“The Reschenthaler Plans remarkably divide only 13 counties and 16 municipalities, which is the lowest numbers in both categories.”).

Reschenthaler 1 and 2 split those municipalities into only 33 “segments,” or “pieces.” *See SMR at 206-07, ¶ 54.* Again, although some split an equal amount, no other proposal before the Court contained fewer municipal “segments” or “pieces.”

At least three experts—none of whom were experts for the Congressional Intervenors—testified that it is possible to create a 17-district plan that splits only 13 counties and 16 municipalities, and still

has equal population, is contiguous, and is reasonably compact—just as Reschenthaler 1 and 2 propose. *See SMR at 147, ¶¶ FF42-FF43; see also N.T. 1/27/22 at 43:19-25; 170:15-20 (Dr. Rodden); N.T. 1/27/22 at 287:11-20 (Dr. DeFord); N.T. 1/27/22 at 461:5-21 (Dr. Duchin).*

Finally, Reschenthaler 1 and 2 split 25 wards and 24 wards, respectively. *See SMR at 144-145, ¶¶ FF21-FF22; see also DeFord Reply Report at 7, ¶ 20 (Table 5); Brunell Report at 6 (Table 7).*

5. Communities of Interest

Dr. Keith Naughton explained that in order to achieve a good score under certain compactness models, certain communities may be included where they would not otherwise fit in terms of a community of interest. *See SMR at 154, ¶¶ FF2-FF4; SMR at 155, ¶¶ FF7, FF9; see also N.T. 1/28/22 at 709:12-710:12.* Dr. Naughton found that a compactness score may not be satisfied when communities are grouped together based upon their interests. *SMR at 154, ¶¶ FF2-FF4; SMR at 155, ¶¶ FF7, FF9; see also N.T. 1/28/22 at 712:1-16.* Dr. Naughton testified that keeping people with common interests together allows for better representation of those interests. *See SMR at 155, ¶¶ FF6-FF7; see also N.T. 1/28/22 at 697:5-698:3.*

To support his opinion regarding communities of interest, Dr. Naughton focused on a few key areas in the Commonwealth. For instance, he noted that Reschenthaler 1 and 2 keep Pittsburgh within one district. *See SMR at 95, ¶ FF228*. Dr. Naughton testified that Pittsburgh's communities of interests are best represented by keeping the city within the same district. *See SMR at 96, ¶ FF229; SMR at 155, ¶ FF5; see also N.T. 1/28/22 at 712:21-715:13*.

Dr. Naughton further noted that Reschenthaler 1 and 2 keep Bucks County within one District, and not with Philadelphia County. *See SMR at 157, ¶ FF15*. Dr. Naughton testified that the communities within Bucks County are best served by keeping the County within the same district and connecting it with nearby Montgomery County instead of with Philadelphia. *See SMR at 157-159, ¶¶ FF15-FF21; see also N.T. 1/28/22 at 715:14-716:13*. In a similar vein, he noted that Reschenthaler 1 and 2 connect Philadelphia with Delaware County in District 16. *See SMR at 96, ¶ FF230*. Dr. Naughton testified that Delaware County and Philadelphia county share similar communities of interest along their border, and that a map connecting them was ideal.

See **SMR at 159**, ¶¶ **FF19-FF21**; see also N.T. 1/28/22 at 786: 19-24; 840: 21-841:2.

Finally, Dr. Naughton observed that Reschenthaler 1 and 2 place Scranton and Wilkes-Barre in different districts. See **SMR at 96**, ¶ **FF231**. Dr. Naughton testified that Scranton and Wilkes-Barre, in the past, were in separate districts and that those communities prefer being in separate districts. See **SMR at 96**, ¶ **FF231**; see also N.T. 1/28/22 at 734:2-736:12.

6. Partisan Fairness and Pennsylvania Geography

(a) Mean-Median Scores

Reschenthaler 1 and 2 score well on the mean-median metric, regardless of the expert consulted; indeed, by expert, the scores were found to be as follows:

MEAN-MEDIAN			
Expert	Resch. 1	Resch. 2	Source
Barber	-2.1%	-2.2%	SMR at 170, ¶¶ FF18-FF19
Brunell	1.6%	1.89%	SMR at 170, ¶¶ FF18-FF19
DeFord	-2.7%	-2.6%	SMR at 170, ¶¶ FF18-FF19
Duchin	-2.1%	-2.1%	SMR at 170, ¶¶ FF18-FF19 ²
Rodden	1%	1%	SMR at 170, ¶¶ FF18-FF19

As is material to mean-median, in *League of Women Voters*, the Supreme Court noted that in Dr. Chen's simulation of 500 potential plans that relied only on Pennsylvania's traditional districting criteria, the average mean-median gap created by the simulated plans was generally between 0% and 3%, with some plans reaching a maximum of 4%. *See SMR at 166; see also League of Women Voters*, 178 A.3d at 770, 774. In this matter, Dr. Duchin, like Dr. Chen, also ran simulations, but this time for 100,000 plans using only traditional districting criteria. *See SMR at 76, ¶ FF119; see also Duchin Reply Report at 2* (discussing criteria used to create simulations), at 18 (discussing number of

² The Special Master's Report finds Dr. Duchin's numbers to be -25.24% and -25.34% respectively, and then suggests her analysis can be discredited because it was an outlier. *See SMR at 170, ¶¶ FF18-FF19; SMR at 172, ¶ FF26*. However, Dr. Duchin testified at trial that her numbers were a raw number, aggregated from across 12 elections; thus to convert it to a percent, the raw number should be first divided by 12 before converted to a percentage. *See N.T. 1/27/22 at 455:14-456:12* (Dr. Duchin explaining how to convert chart to a percentage). Thus, the numbers reported in this Brief attributed to Dr. Duchin reflect the division by 12 that she explained at trial.

simulations). According to her reply report, as elaborated at trial (specifically, with her explanation of how to convert her units of measure to a percentage), no *range* of mean/median results for the simulations were reported, but an average was, which was **-2.39%**. See Duchin Reply Report at 4 (Table 3: column three labeled “total mean-median”; row labeled “ensemble mean”; divided by 12 and multiplied times 100); N.T. 1/27/22 at 455:14-456:12 (Dr. Duchin explaining how to convert chart to a percentage). Her chart reveals that Reschenthaler 1 and 2 both scored a *lower* mean/median average than the 100,000 simulations, with averages of **-2.10%** and **-2.11%** respectively. See Duchin Reply Report at 4 (Table 3: column three labeled “total mean-median”; rows labeled “Reschenthaler 1” and “Reschenthaler 2”; divided by 12 and multiplied times 100).

**(b) Other Methods of Evaluating Partisan
Fairness—Seat Counts**

According to various experts in this case, the two Reschenthaler maps project to produce a variety of expected outcomes by seat counts (R v. D), though each of the experts reported the information in somewhat different ways (as noted) and based on different elections to simulate the results:

PARTISAN MEASURES BY VARIOUS SEAT COUNTS			
Expert	Resch. 1	Resch. 2	Source
Barber	9 D 8 R	9 D 8 R	Barber Reply at 15 (Table 3) ³
Brunell	5 D 8 R 4 Toss-Up	5 D 8 R 4 Toss-Up	Brunell Report at 8 (Table 9)
DeFord	3 R Safe 5 D Safe 9 Responsive	3 R Safe 5 D Safe 9 Responsive	DeFord Reply at 12 (Table 11) ⁴
Duchin	8 D 9 R	8 D 9 R	Duchin Reply Report at 4 (Table 2) ⁵
Rodden	6 D 8 R 3 Toss-Up	7 D 8 R 2 Toss-Up	Rodden Reply Report at 9 (Table 5); N.T. 1/27/22 at 171:1-25 (Dr. Rodden)

(c) Political Geography

Pennsylvania’s unique political geography affects the analysis of partisan advantage in any proposed map. **SMR at 162, ¶ FF2**. In a 2013 article authored by Dr. Rodden regarding unintentional gerrymandering, his results “illustrate[d] a strong relationship between

³ Dr. Barber’s chart reflects “Democratic-leaning” districts. Barber Reply at 15 (Table 3).

⁴ Dr. DeFord’s chart reports on “safe” districts versus “responsive” districts, which describes where only one party was preferred in that district over 18 elections (a safe district) or where a candidate from each party was projected to be selected (a responsive district). DeFord Reply at 12 (Table 11).

⁵ Adding all lines for Reschenthaler 1 or Reschenthaler 2 in Dr. Duchin’s Table 2 produces 91 elected Democrats under the projections. Dividing that by the number of elections simulated—12—yields an average of 7.58 Democrats elected. Rounding up, since .58 of a person cannot be elected, the Reschenthaler maps project to elect 8 Democrats in any given election out of 17 possible seats, thus projecting to elect 9 Republicans in any given election (a difference of *just one*).

the geographic concentration of Democratic voters and electoral bias favoring Republicans.” *See SMR at 162, ¶ FF3; see also* N.T. 1/27/22 at 178:22-179:3, 179:23-180:9. Dr. Rodden also concluded in this article that “proving such intent in court will be difficult in states where equally egregious electoral bias can emerge purely from human geography.” *See SMR at 163, at ¶ FF5; see also* N.T. 1/27/22 at 181:6-14. Dr. Rodden believes these statements to be true today about Pennsylvania. *See SMR at 163, at ¶ FF6; N.T. 1/27/22 at 181:18-20.*

Dr. DeFord also acknowledges that there is a “partisan advantage to Republicans based on the political geography of the state[,]” so it is “not necessarily a surprise to see a slight tilt favoring Republicans” on the metrics he used. *See SMR at 163, ¶ FF7; see also* DeFord Initial Report 40, ¶ 104; N.T. 1/27/22 at 291:13-23. Analyzing the 2020 presidential election, Dr. DeFord found that “there is not a part of the state where Republican voters are as heavily concentrated as Democratic voters are in the Philadelphia and Pittsburgh areas.” *See SMR at 163, at ¶ FF8; see also* DeFord Initial Report 40, ¶ 104; N.T. 1/27/22 at 291:24-292:16.

Dr. Duchin’s report most compellingly demonstrates the partisan political geography of the Commonwealth. *See SMR at 164, ¶ FF9*. In her expert report, Dr. Duchin found that 100,000 randomly drawn districting plans “tend[ed] to exhibit pronounced advantage to Republicans across this full suite of recent elections.” *See SMR at 164, ¶ FF10; SMR at 196, ¶ 38; see also Duchin Initial Report at 18*. Dr. Duchin further found in metrics from the partisan symmetry family, including the mean-median score, “random plans favor Republicans,” while the Governor’s Plan “temper[s] that tendency.” *See SMR at 164, ¶ FF10; see also Duchin Initial Report at 19*.

With regard to partisan fairness and the effect of political geography, Dr. Naughton agrees that nonpolitical issues cause voters and nonvoters to coalesce in certain parts of the state. *See SMR at 96, ¶ FF232; see also N.T. 1/28/22 at 696:13-17*. Scientific models predicting future elections cannot account for the various factors that contribute to winning an election, including the party of the current president, whether it is a mid-term election, the state of the economy, and campaign fundraising. *See SMR at 96-97, ¶ FF233; see also N.T. 1/28/252 at 700-15:24; 701:6-703:8, 704:10-16*. Dr. Naughton agrees that

scientific models used by Dr. Rodden, Dr. DeFord, and Dr. Duchin do not account for these extraneous factors that contribute to winning an election. *See SMR at 97, ¶ FF234; see also* N.T. 1/28/22 at 703:9-12. Moreover, running congressional races in Pennsylvania is “very geographical,” and certain mapping choices, such as splitting the City of Pittsburgh or splitting Bucks County and Philadelphia can result in losing representation. *See SMR at 97, ¶ FF235; see also* N.T. 1/28/22 at 713:20-715:24. In Dr. Naughton’s expert opinion, there is no perfect variable to put in the equation to create a perfect map because there is going to be subjectivity. *See SMR at 97, ¶ FF236; see also* N.T. 1/28/22 at 766:6-22.

B. Voting Rights Act

Analyzing the results of the 2012 Presidential election, the 2018 House of Representatives election for District 3, and the 2017 Pennsylvania Supreme Court election, Dr. Brunell conducted a racial bloc voting analysis to determine whether or not a minority-majority district was required under the Voting Rights Act. *See* Brunell Report at 10. Based on the homogeneous precincts, Dr. Brunell found that the majority of both black and white voters supported the minority

candidate, indicating an absence of racially polarized voting. *See* Brunell Report at 10. Looking to ecological regression, Dr. Brunell again found that racially polarized voting is not present. *See* Brunell Report at 11.

The Gressman map has three majority-minority districts. *See* **SMR at 182, ¶ FF4** DeFord Initial Report at 44, ¶ 117. All other maps have two majority-minority districts. *See* **SMR at 182, ¶ FF5**.

C. The “Best Map”

Many experts in this matter offered inconsistent, and thus not credible, testimony regarding which was the “best” map for the Court to choose. Indeed, when asked a near identical question—some version of “which map is best?”—the testimony produced the following answers:

Dr. Rodden (Carter’s expert): Carter map, *see* N.T. 1/27/22 at 162:13-20;

Dr. DeFord (Gressman’s expert): Gressman map, *see* N.T. 1/27/22 at 284:15-19; and

Dr. Duchin (Governor’s expert): Governor’s map, *see* N.T. 1/27/22 at 457:2-8.

The testimony was so inconsistent that Dr. Duchin actually stated when told she was the third expert to give a third different answer to the

question, “I am sure that there will be as many opinions as there are experts.” *See* N.T. 1/27/22 at 457:9-14.

Dr. Naughton opined, however, that there can be no such thing as a “best map” because that determination is too subjective. N.T. 1/28/22 at 164:25-765:13. Although there can be no best map, in Dr. Naughton’s expert opinion, Reschenthaler 1 and Reschenthaler 2 are good maps that would “represent the state well.” N.T. 1/28/22 at 772:8-14.

D. Snapshot of the Reschenthaler Maps

The characteristics of Reschenthaler 1 and Reschenthaler 2 can be summarized as follows:

Snapshot of Resch. Maps	Resch. 1	Resch. 2	Source
County Splits	13	13	SMR at 141, ¶ FF4; SMR at 144, ¶ FF21; SMR at 145, ¶ FF22; <i>see also</i> DeFord Reply Report at 5, ¶ 14; Duchin Reply Report at 2 (Table 1); Rodden Reply Report at 4 (Table 2); Barber Reply Report at 8 (Table 1); Brunell Report at 4 (Table 3)
County Segments	29	29	SMR at 141, ¶ FF4; <i>see also</i> Duchin Reply Report at 2 (Table 1); Brunell Report at 4 (Table 3)
Municipal Splits	16	16	SMR at 141, ¶ FF4; SMR at 144, ¶ FF21; SMR at 145, ¶ FF22; <i>see also</i> Duchin Reply Report at 2 (Table 1); Barber

Snapshot of Resch. Maps	Resch. 1	Resch. 2	Source
			Reply Report at 8; Brunell Report at 5 (Table 5)
Municipal Segments	33	33	SMR at 141, ¶ FF4; see also Duchin Reply Report at 2 (Table 1); Brunell Report at 5 (Table 5)
Ward Splits	25	24	SMR at 144, ¶ FF21; SMR at 144, ¶ FF21; SMR at 145, ¶ FF22; see also DeFord Reply Report at 7, ¶ 20 (Table 5); Brunell Report at 6 (Table 7)
Ward Segments	50	48	Brunell Report at 6 (Table 7)
Equal Population (Y/N)	Y	Y	SMR at 138, ¶¶ CL1-CL2; see also DeFord Reply Report at 4, ¶ 13; Duchin Reply Report at 2; Rodden Reply Report at 3; Brunell Report at 1
Contiguous (Y/N)	Y	Y	SMR at 137-138, ¶¶ CL1-CL3; see also DeFord Reply Report at 9, ¶ 27; Duchin Reply Report at 2; Rodden Reply Report at 3; Brunell Report at 2
Reock	a. 0.435 b. 0.4347 c. 0.43	a. 0.424 b. 0.4231 c. 0.41	a. Brunell Report at 3 (Table 2) b. SMR at 141, ¶ FF4; see also Duchin Reply Report at 2 (Table 1) c. DeFord Reply Report at 9, ¶ 25 (Table 8)
Polsby-Popper	a. 0.37 b. 0.363 c. 0.3629 d. 0.35	a. 0.36 b. 0.352 c. 0.3524 d. 0.34	a. Barber Reply Report at 8 (Table 1) b. Brunell Report at 3 (Table 2) c. SMR at 141, ¶ FF4; see also Duchin Reply Report at 2 (Table 1) d.

Snapshot of Resch. Maps	Resch. 1	Resch. 2	Source
			d. DeFord Reply Report at 9, ¶ 25 (Table 8)
Schwartz	1.6859	1.7127	SMR at 141, ¶ FF4; see also Duchin Reply Report at 2 (Table 1)
ConvHull	a. 0.8238 b. 0.81	a. 0.8161 b. 0.80	a. SMR at 141, ¶ FF4; see also Duchin Reply Report at 2 (Table 1) b. DeFord Reply Report at 9, ¶ 25 (Table 8)
PopPoly	0.7737	0.7658	SMR at 141, ¶ FF4; see also Duchin Reply Report at 2 (Table 1)
Cut Edges	a. 5090 b. 5061	a. 5237 b. 5208	a. SMR at 141, ¶ FF4; see also Duchin Reply Report at 2 (Table 1) b. DeFord Reply Report at 9, ¶ 25 (Table 8)
Retained Population of Prior Map	76.5%	76.5%	SMR at 185, ¶ FF3; see also Rodden Reply Report at 2
Number of Districts w/ Incumbents Paired	2	1	SMR at 180, ¶ FF15; SMR at 181, ¶¶ FF20-FF21; see also DeFord Reply Report at 21, ¶ 45 (Table 15)
Splits Pittsburgh (Y/N)	N	N	SMR at 52-53, ¶ FF17; SMR at 95, ¶ FF228; SMR at 151, ¶ FF18
Splits Bucks County (Y/N)	N	N	SMR at 52-53, ¶ FF17; SMR at 157, ¶ FF15

III. ARGUMENT IN SUPPORT OF SPECIAL MASTER'S REPORT

With the exception of two isolated errors—which are likely the byproduct of the expedited nature of the proceedings—the Special Master's factual findings and recommendations are supported by significant record evidence and, thus, should not be disturbed.

Similarly, the SMR also ably applies prevailing legal principles to the facts presented relative to: (1) contiguity and compactness; (2) communities of interest; (3) extra-constitutional considerations; (4) the “least change” approach advocated by the Carter Petitioners; and (5) the use of prisoner-adjusted data for redistricting. Accordingly, these facts of the SMR's analysis and recommendations should be adopted in full.

A. **Inasmuch as the Special Master's factual findings are supported by record, this Court should adopt them.**

As explained in *League of Women Voters*, “following . . . grant of extraordinary jurisdiction, [this Court's] standard of review is *de novo*.” *League of Women Voters v. Com.*, 178 A.3d 737, 801 n.62 (Pa. 2018) (“*LWV I*”). Nevertheless, this Court has cautioned that a special master's findings of fact must be afforded “due consideration,” since “the

jurist who presided over the hearings [is] in the best position to determine the facts.” *Id.* (quoting *Annenberg v. Com.*, 757 A.2d 338, 343 (Pa. 2000)).⁶ Moreover, although the Court has noted that it *may* conduct *de novo* review, as a practical matter, it has rarely (if ever) applied such a standard. *See, e.g., Com. v. Banks*, 29 A.3d 1129, 1135 (Pa. 2011); *In re J.V.R.*, No. 81 MM 2008 (Pa. Mar. 26, 2009) (*per curiam*) (adopting and approving the special master’s recommendations); *Com. v. McGarrell*, 87 A.3d 809, 810 (Pa. 2014) (*per curiam*) (accepting the special master’s report); *In re Off. of Philadelphia Dist. Att’y*, 244 A.3d 319 (Pa. 2020) (*per curiam*) (“[T]he King’s Bench petition is hereby dismissed in accordance with the special master’s recommendation.”); *see also id.* at 326 (Dougherty, J., concurring statement) (recognizing that a special master’s factual findings are afforded “due consideration”).

In this regard, this Court’s exercise of extraordinary jurisdiction in *Banks* aptly illustrates circumstances that would warrant rejection of a special master’s proposed factual findings, as compared against the

⁶ *See generally In re Thirty-Fifth Statewide Investigating Grand Jury*, 112 A.3d 624, 633-34 (Pa. 2015) (Baer, J., concurring) (“Special masters operate as an arm of the court, investigating facts on behalf of the court and communicating with it to keep it apprised of its findings[.]”).

general rule that such proposed findings are entitled to significant deference. Specifically, in *Banks* this Court exercised jurisdiction and appointed Judge Michael T. Conohan as special master, who was instructed to submit proposed findings of fact and law. Upon receiving Judge Conohan's report, this Court rejected the report, citing his failure to offer "an autonomous judicial expression" and, thus, appointed a different jurist as special master. *Com. v. Banks*, 989 A.2d 1 (Pa. 2009) (*per curiam*). Upon receipt of the second report, this Court expressly rejected the argument that its exercise of extraordinary jurisdiction and subsequent appointment of a trial judge to act as master warranted "a *de novo* standard of review . . . which would be less deferential to the hearing judge." *Banks*, 29 A.3d at 1135. A "circumstantial anomaly" that compels the Court to assume jurisdiction, the *Banks* panel explained, "does not operate to alter the nature of a competency determination, or the respective roles of trial judges and appellate courts." Accordingly, the Court held there was "no need to depart from the settled abuse of discretion standard in reviewing [the special master]'s findings of fact and conclusions of law." *Id.*; *accord Philadelphia Dist. Att'y*, 244 A.3d at 333 (Wecht, J., concurring

statement) (“In cases predicated upon the exercise of our King’s Bench jurisdiction, we must afford ‘due consideration’ to supported factual findings, *to which we then apply a de novo standard of review.*” (emphasis added)).

Viewed in this light, the Special Master’s factual conclusions should be adopted. To begin, save for several minor oversights, her findings are supported by ample record testimony and evidence. Furthermore, insofar as she was required to weigh competing evidence and make credibility determinations, the Special Master’s assessment in this respect should not be disturbed absent showing of manifest abuse of discretion. *Accord In re Breyer’s Est.*, 37 A.2d 589, 592 (Pa. 1944) (“[F]inding of the master and the court below on this point must be accepted because supported by evidence.”). After all, as this Court has recognized, when serving as the special master, “the jurist who presided over the hearings [is] in the best position to determine the facts.” *LWVI*, 178 A.3d at 801 n.62 (quoting *Annenberg*, 757 A.2d at 343).

B. This Court should adopt in full the Special Master’s analysis of compactness and contiguity, communities of interest, partisan “fairness,” and the “least change” approach.

Although the Congressional Intervenors differ with the Special Master on several discrete points of law, as well as her ultimate recommendation that HB 2146 should be chosen instead of Reschenthaler 1 or 2, they are in full accord with her recommendations in many respects. In particular, four overarching facets of the Special Master’s proposed conclusions of law warrant emphasis.

1. The Special Master properly concluded that all of the proposed redistricting plans are sufficiently compact and contiguous.

A central tenet of this Court’s decision in *League of Women Voters* was that a congressional redistricting plan must be both compact and contiguous to pass constitutional muster. As that panel explained, these factors—alongside population equality and minimization of split political subdivisions—are neutral benchmarks that “provide a ‘floor’ of protection for an individual against the dilution of his or her vote in the creation of such districts.” *LWVI*, 178 A.3d at 817. Under the present circumstances, the Special Master correctly concluded that all of the

plans are sufficiently compact and contiguous and that they are materially indistinguishable in this respect.

Turning initially to compactness, the Special Master found that “[b]ased on the credible testimony and charts provided by Governor Wolf’s expert, Dr. Duchin, regarding the metrics used to evaluate compactness, as corroborated by various other experts in their testimony and submissions,” all of the proposed “plans and maps fulfill the constitutional requirement that a map be composed of compact territory.” SMR at 193, ¶ 22. Because this conclusion was correct as a matter of law and is supported by the record, this Court should decline any invitation to differentiate between the plans based on compactness alone. In this regard, as relayed in the Special Master’s submission to this Court, a number of the experts testified that all of the plans “fell within a fairly ‘narrow range’ of acceptable compactness scores.” *Id.* at 60, ¶ FF18 (quoting Rodden Resp. Report at 3; N.T. at 93-94); *see also* SMR, at 79, ¶ FF137. Moreover, all of the experts acknowledged that, because each of the numeric scores are designed to evaluate different

aspects of compactness, reliance on any single measurement is ill-advised. *See* SMR, at 60, ¶ FF14; *see also id.* at 70, ¶ FF79.⁷

The Special Master’s assessment of compactness is also legally sound. To begin, despite directing the General Assembly to enact a remedial congressional redistricting plan to comport with the compactness requirement, in *League of Women Voters*, this Court declined to establish a formulaic standard for compactness and, instead, delineated a range constitutionally permissible outcomes. *See* 178 A.3d at 819 (explaining that in a computer simulation that applied only the traditional redistricting criteria, the appropriate range of scores for an 18-district plan based on the 2010 census data was between .31 and .46 under the Reock measurement, and between .29 and .35 under the Polsby-Popper test).

⁷ Notably, the expert testimony in this regard is consistent with the views of a host of scholars in this field. *See, e.g.*, Micah Altman, *The Computational Complexity of Automated Redistricting: Is Automation the Answer?*, 23 Rutgers Computer & Tech. L.J. 81, 131 (1997) (noting that there are “twenty-four quantifications for the goal of ‘compactness,’ most of which will differ in the values they assign to districts”); *see also* Daniel D. Polsby & Robert D. Popper, *The Third Criterion: Compactness As A Procedural Safeguard Against Partisan Gerrymandering*, 9 Yale L. & Pol’y Rev. 301, 346 (1991) (discussing the strengths and weaknesses of the various compactness calculations).

This approach is also constituent with the plain language of Article II, Section 16 of the Pennsylvania Constitution, which, under *League of Women Voters*, governs the present analysis. Specifically, while that provision requires redistricting plans to avoid splitting counties and political subdivision unless “absolutely necessary,” it does not require a plan to achieve *maximum* compactness. Indeed, as Charles Buckalew relays in his oft-cited treatise on the Pennsylvania Constitution, the compactness requirement, which first appeared in the State Constitution in 1857, “admits only of approximation to exactness, but good faith alone is required for a substantial execution of the rule of the Constitution.” Charles R. Buckalew, *An Examination of the Constitution of Pennsylvania. Exhibiting The Derivation and History of Its Several Provisions*, at 53 (1883).⁸ In short, given the multitude of acceptable methods of calculating compactness, as well as the language and structure of the State Constitution, this Court should refuse to draw any material distinctions between the proposals based on compactness.

⁸ Available at https://www.google.com/books/edition/_vOWeAQAACAAJ?hl=en&gbpv=1.

As it relates to the contiguity requirement, none of the plans were challenged on such grounds and no evidence was offered tending to show that any of the districts were non-contiguous. Accordingly, this Court should adopt The Special Master’s finding that, “[o]n their face, and as supported by the evidence of record, all the maps in the proposed plans contain districts that are comprised within a contiguous territory and comply with the contiguity’ requirement of the Pennsylvania Constitution.” SMR at 192, ¶ 16.

2. The Special Master’s factual and legal recommendations relative to communities of interest should be adopted.

This Court should adopt the Special Master’s recommendations relative to communities of interest, as they are legally and factually sound. In terms of the Special Master’s legal analysis, she correctly concluded that the communities of interest doctrine is rooted in the Free and Equal Elections Clause, as interpreted by *League of Women Voters*.

To begin, as the Special Master recognized, a common thread running through *League of Women Voters* is that, to the greatest degree practicable, a congressional redistricting plan should avoid dividing a

community with shared interests and concerns. Specifically, this Court’s decision in *League of Women Voters* repeatedly emphasized that safeguarding the interests of communities is central to a constitutional analysis of a redistricting plan;⁹ in fact, as relayed by the panel, compactness, contiguity, and respect for municipal boundaries were adopted as the as the neutral redistricting benchmarks precisely **because** “[t]hese standards place the greatest emphasis on creating representational districts that both maintain the geographical and social cohesion of the communities in which people live and conduct the majority of their day-to-day affairs[.]” *Id.* at 814; *see also Johnson v. Wisconsin Elections Com’n*, 967 N.W.2d 469, 484 (Wisc. 2021) (“[D]rawing contiguous and compact single-member districts of

⁹ *See LWVI*, 178 A.3d at 816 (“When an individual is grouped with other members of his or her community in a congressional district for purposes of voting, the commonality of the interests shared with the other voters in the community increases the ability of the individual to elect a congressional representative for the district who reflects his or her personal preferences.”). Moreover, in evaluating the historic underpinnings that lead to the development of the neutral criteria it prescribed, the Court emphasized that the Free and Equal Elections Clause, in its original form, provided that “all elections ought to be free; and that all free men having a sufficient evident common interest with, and **attachment to the community**, have a right to elect officers, or to be elected into office.” *Id.* (quoting Pa. Const. of 1776, art. I, § VII) (emphasis added); *see also id.* (“[I]t is evident that [our founders] considered maintaining the geographical contiguity of political subdivision, and barring the splitting thereof in the process of creating legislative districts”).

approximately equal population often leads to grouping large numbers of Democrats in a few districts and dispersing rural Republicans among several. These requirements tend to preserve communities of interest, but the resulting districts may not be politically competitive—at least if the competition is defined as an inter-rather than intra-party contest.”).

Accordingly, although compactness, contiguity, and respect for municipal boundaries, are undoubtedly the primary tool for evaluating the constitutionality of a redistricting plan, properly understood these principles serve to advance the Free and Equal Elections Clause’s overarching goal of protecting the interest of communities. While not susceptible to the precise mathematic measurement, this Court has recognized that the term “communities of interests” encompasses, among other things, “school districts, religious communities, ethnic communities, geographic communities which share common bonds due to locations of rivers, mountains and highways[.]” *Holt v. 2011 Legislative Reapportionment Com’n*, 38 A.3d 711, 746 (Pa. 2012) (“*Holt I*”). This concept may also refer to a community’s “circulation arteries, its common news media ... its organization and cultural ties[.]” its “common economic base[.]” and the relationship among “schools of

higher education as well as others.” *Mellow v. Mitchell*, 607 A.2d 204, 220-21 (Pa. 1992).

Applying the foregoing settled framework, the Special Master highlighted two recurring features that—based on Dr. Naughton’s detailed and un rebutted testimony—she found evince a plan’s disregard for communities of interest: (1) splitting the City of Pittsburgh, and (2) splitting Bucks County. Because the Special Master’s assessment of the communities of interest is grounded in this Court’s precedent and supported by ample record evidence, this Court should adopt her recommendations insofar as they relate to the various submissions’ attention to communities of interest; i.e., insofar as any given plan splits Pittsburgh or Bucks County, that plan should be discounted and set aside.

3. The Special Master’s assessment of partisanship in the redistricting plans should be adopted.

A central—if not overriding—theme in most of the briefing in support of the proposed maps submitted by the parties and *amici* is each plan’s partisan breakdown. Carefully examining the competing arguments, the Special Master concluded that, as a matter of law, partisan considerations in redistricting—regardless of the label

attached to them—must yield to the neutral criteria identified above (*i.e.*, equal population, compactness, contiguity, and respect for political boundaries). In this regard, given that numerous experts credibly testified that a redistricting plan principally guided by the constitutionally derived neutral factors would produce a pronounced Republican advantage in terms of likely electoral outcomes, the Special Master found that any plan which ***expressly*** sought to alter this natural state of affairs—namely the proposals submitted by the Gressman Petitioners, Governor Wolf, and Draw the Lines *amici*—improperly subordinated partisan considerations to the neutral benchmarks established by this Court in *League of Women Voters*. Because these conclusions are consistent with the Free and Equal Elections Clause, as interpreted by this Court in *League of Women Voters*, and supported by ample record evidence, the Special Master’s recommendations in this respect should be adopted.

In terms of the controlling legal principles, the Special Master accurately relayed this Court’s admonition that while other factors, including political considerations, may continue to play a role in the redistricting process, the Free and Equal Elections Clause requires

them to be “wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts.”

LWV I, 178 A.3d at 817. Accordingly, the Special Master rejected the argument that the Free and Equal Elections Clause requires a redistricting plan to be fashioned in such a way that it will allow the party whose candidates, on average, garner the majority of the statewide share of the vote, to also win a majority of the congressional districts.

The Special Master’s cogent analysis in this regard should be adopted, as it is consistent with this Court’s interpretation of the Free and Equal Elections Clause, as well as its precedent in the redistricting context. In terms of the constitutional requirements, as aptly summarized in *League of Women Voters*, the Free and Equal Elections Clause prohibits “subordinat[ing] the traditional redistricting criteria in the service of partisan advantage.” 178 A.3d at 818. A plan designed to overcome a partisan *disadvantage* that exists because of neutral factors, is necessarily is “in the service of partisan advantage.” *Id.* Moreover, this Court has previously considered—and expressly rejected—

proportionality as a valid principle. Specifically, emphasizing that compactness, contiguity, and respect for political subdivisions are the paramount goals in redistricting, the *Holt* panel admonished that “[t]he constitutional reapportionment scheme does not impose a requirement of balancing the representation of the political parties; it does not protect the ‘integrity’ of any party’s political expectations.” *Holt v. 2011 Legislative Reapportionment Com’n*, 67 A.3d 1211, 1235 (Pa. 2013) (“*Holt II*”). Instead, the panel explained, “the construct speaks of the ‘integrity’ of political subdivisions, which bespeaks history and geography, not party affiliation or expectations.” *Id.*; see also *Johnson*, 967 N.W.2d at 484.

In short, the Special Master’s recommendation relative to proportionality in the context of redistricting is firmly rooted in this Court’s precedent and predicated on a robust factual record. Thus, the analysis should be adopted by this Court.

4. **Because the “least change” approach does not afford sufficient attention to the neutral criteria under the Free and Equal Elections Clause, it should be rejected.**

Consistent with the Special Master’s recommendations, this Court should also reject the “least-change” principle urged by the Carter Petitioners.

First, in *League of Women Voters*, this Court made clear that “the preservation of prior district lines” is a factor that must be “wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts.” 178 A.3d at 817. Notwithstanding *League of Women Voters*’s clear directive, the Carter Petitioners’ expert witness and map-maker, Dr. Rodden, relayed that this consideration, which he described as the “least-change approach,” was his *central* focus in reconfiguring Pennsylvania’s congressional map. See SMR at 184, ¶¶ FF1. The fact that the Carter Petitioners’ primary motive was minimizing changes to the extant redistricting plan, rather than adherence to the neutral redistricting criteria is—without more—sufficient grounds for summarily rejecting the Carter Petitioners’ plan.

Moreover, this Court has been particularly skeptical of this approach, cautioning that “the notion that the Constitution independently, and tacitly, commands special respect for prior districting plans or incumbencies can be a mischievous one.” *Holt II*, 67 A.3d at 1234. Specifically, the Court recognized that this approach, in practice, is a thinly-veiled argument for entrenching incumbents and the existing political interests:

In the [Legislative Reapportionment Commission]’s view, upheaval or uncertainty in the electoral process must be avoided, and “historical” legislative districts should be preserved out of respect for the choices of the voting public and in the interest of efficiency. However, we are not so naïve as not to recognize that the redistricting process may also entail an attempt to arrange districts in such a way that some election outcomes are essentially predetermined for voters—“safe seats” and the like.

Id. at 1235. Notably, in reaching this conclusion, the Court also explained that *Karcher v. Daggett*, 462 U.S. 725, 740 (1983)—which the Carter Petitioners cite as authority in their brief—was wholly inapposite, noting that “the Court [in *Karcher*] was not speaking of ‘inherent’ constitutional considerations under Pennsylvania state law, or under any state constitution for that matter.” *Holt II*, 67 A.3d at 1234.

5. This Court should adopt the Special Master’s recommendation that a redistricting plan based on prisoner-adjusted data does not comport with the constitutional requirements for equal population.

The Special Master correctly concluded that a proposed redistricting plan which attempts to count incarcerated individuals at their home address rather than their prison address violates the one-person, one-vote requirement for congressional districting.

In redistricting, states must comply with the one person, one vote principle by “designing districts with total equal populations,” *Evenwel v. Abbott*, 578 U.S. 54, 71 (2016), which ensures equality of representation for equal numbers of people. *Reynolds v. Sims*, 377 U.S. 533, 560-61 (1964). Traditionally, states use census numbers as the basis for populations. *Evenwel*, 578 U.S. at 73 (noting that adopting voter-eligible population as the basis for apportionment would “upset a well-functioning approach to districting that all 50 states and countless local jurisdictions have followed for decades, even centuries”). Using census numbers for redrawing congressional districts is consistent with the fundamental understanding that elected officials represent all residents, regardless of their voter eligibility. *Id.* at 74. Relying upon

the principles articulated in *Evenwel*, the First Circuit has found that including prisoners as population in the ward where they are incarcerated does not raise a constitutional concern. *Davison v. City of Cranston*, 837 F.3d 135 (1st Cir. 2016). The First Circuit rejected the argument that inclusion of prisoners in the apportionment constituted vote dilution to those outside the district in question, emphasizing that the status quo is to base apportionment on census data. *Id.* at 144.

The *Ali amici*, who use this adjusted data set, place mistaken reliance upon Section 1302 of the Election Code for doing so. Section 1302 defines the residence of incarcerated electors for election purposes as the place where they were last registered to vote prior to incarceration. 25 Pa.C.S. § 1302. An individual's voter registration address does not necessarily correspond to the individual's residence for census purposes and thus does not warrant readjusting the data upon which the maps are drawn. College students, for example, are counted for census purposes in the places where they attend college, but may maintain a different voter registration address. Counting incarcerated individuals in their place of incarceration is consistent with the census and with the one-person, one-vote principle, and is not invalidated by

Section 1302 of the Election Code. Indeed, Pennsylvania’s consistent and traditional approach to counting incarcerated individuals where they are incarcerated for congressional redistricting is the majority view across the country.¹⁰

In light of the foregoing, Judge McCullough concluded that the Ali plan’s compliance with the one-person one-vote requirement must be assessed under the unadjusted census data used by all of the remaining parties, which resulted in a deviation of over 8,500 people. Because such a discrepancy violates the one-person, one-vote principle, Judge McCullough recommended that this Court reject the proposed redistricting plan submitted by the Ali *amici*.

As reflected in the foregoing discussion, Special Master’s analysis of this issue comports with controlling legal precepts and, thus, should be adopted.

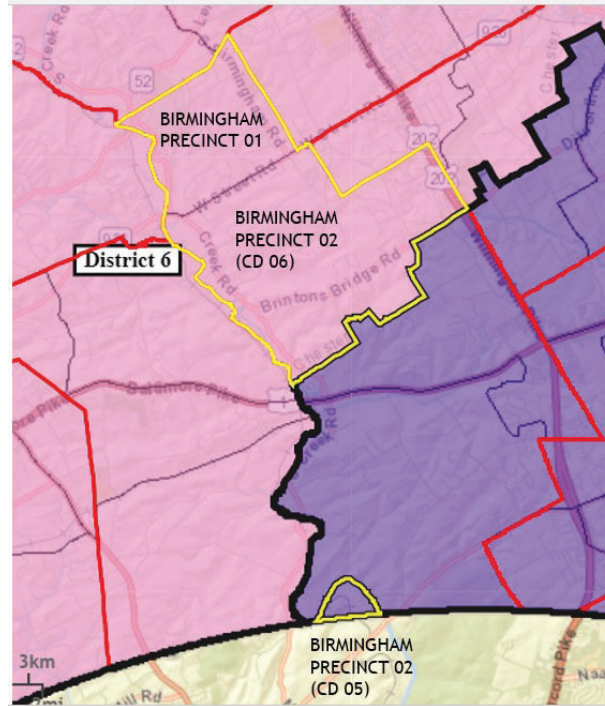
¹⁰ Washington, Nevada, California, Colorado, Virginia, Maryland, and New Jersey are the only states that adjust census data to account for prisoners in home districts in congressional districting and do so pursuant to state statute. *See* Cal. Elec. Code § 21003; Colo Rev. Stat. § 2-2-902; Md. Elec. Law § 8-701; Nev. Rev. Stat. § 360.288; N.J.S.A. 52:4-1.1 – 1.6; Va. Code Ann. § 24.2-304.04; Wash. Rev. Code § 44.05.140. *See also Davidson*, 837 F.3d at 144 (noting that the decision whether to include or exclude prisoners in apportionment “is one for the political process”).

IV. ARGUMENT IN SUPPORT OF EXCEPTIONS TO SPECIAL MASTER'S REPORT

A. The Special Masters' Report errs in concluding the Carter map has 13 county splits instead of 14 county splits.

Whether the Carter map splits 13 or 14 Counties comes down to an issue somewhat familiar to this Court, but which, under the facts now present, should generate a different finding. To explain, in adopting the 2018 Remedial Plan, this Court posted a footnote explaining that even though the Plan technically split Chester County due to a zero-population segment of Chester located within Delaware County, the Court would not consider that a split. *See League of Women Voters v. Com.*, 181 A.3d 1083,1088 n.10 (Pa. 2018) (“*LMV II*”). The proposed Carter map likewise has that same issue, specifically regarding Birmingham Township, precinct 02, which is a non-contiguous portion of that municipality bordering the state of Delaware, shown immediately below (from the Carter map, showing Birmingham in proposed districts five and six). The Carter Petitioners argued to the Special Master that this split should not be construed as a split at all, *see Carter Pet. Proposed Findings of Fact and Conclusions of Law at 30*

n.1 (Jan. 29, 2022), and the Special Master appeared to agree. *See* SMR at 143, ¶ FF7.



This proposed finding of the SMR should be rejected for at least two reasons. *First*, while this particular segment of Chester County in 2018 had no population, and thus was essentially a mere parcel of land, it now has six reported inhabitants. *See* Carter Pet. Proposed Findings of Fact and Conclusions of Law at 30 n.1. This rightly justifies now considering that small segment of population part of Chester County for “splits” purposes, since those six persons are residents of Chester County. *Second*, multiple experts construed the Carter map as having 14 county splits, including the Carter Petitioners’ *own expert* in his

reply report. *See* Rodden Reply Report at 4 (Table 2); N.T. 1/27/2022 at 166: 3-9 (Dr. Rodden discussing Table 2); *see also* DeFord Reply Report at 5 (Table 2); Duchin Reply Report at 2 (Table 1). Thus, the factual record supports finding this division to be a county “split” for purposes of this Court’s analysis.

Accordingly, the Court should find that Reschenthaler 1 and Reschenthaler 2 are the *only* maps before the Court that split just 13 counties.

B. The Special Master’s Report errs in concluding that all of the plans satisfy the equal population requirement of the United States Constitution.

The Special Master erred in concluding that all of the proposed plans satisfy the equal population requirement of the United States Constitution for at least two reasons. *First*, while the SMR correctly observes that a total population deviation of up to 10% is permissible in the context of state or local districts, the population equality requirements are far more stringent for *congressional* redistricting plans. *Second*, court-ordered congressional plan are held to an even more stringent standard. Examining the plans through the proper lens, this Court should reject the plans submitted by the House Democratic

Caucus and the Carter Petitioners without further inquiry, as they are constitutionally infirm.

To explain, in concluding that all of the redistricting proposals, with the exception of the prison-adjusted plan submitted by the Ali amici, satisfy the equal population requirement, the Special Master relied on the general principle that “[w]here the maximum population deviation between the largest and smallest district is less than 10%, the Court has held, a state or local legislative map presumptively complies with the one-person, one-vote rule.” *Evenwel v. Abbott*, 578 U.S. 54, 60 (2016). As *Evenwel* itself notes, however, congressional districts are judged by a different standard. *See id.* (observing that while “[s]tates must draw congressional districts with populations as close to perfect equality as possible[,] ... when drawing state and local legislative districts, jurisdictions are permitted to deviate somewhat”); *Mahan v. Howell*, 410 U.S. 315, 321 (1973) (explaining that “more flexibility [is] constitutionally permissible with respect to state legislative reapportionment than in congressional redistricting”), *modified*, 411 U.S. 922 (1973). Specifically, Article I, Section 2 of the United States Constitution “establishes a ‘high standard of justice and common sense’

for the apportionment of congressional districts: ‘equal representation for equal numbers of people.’” *Karcher v. Daggett*, 462 U.S. 725, 730 (1983) (quoting *Wesberry v. Sanders*, 376 U.S. 1, 18 (1964)). Indeed, “[t]he Supreme Court has been exceedingly clear in requiring lower courts to balance population among the districts with precision.” *Vieth v. Pennsylvania*, 195 F. Supp. 2d 672, 675 (M.D. Pa. 2002) (holding 19-person total deviation violated the Federal Constitution’s one person, one vote requirement).

While courts have recognized that mathematical precision is not always achievable, the “nearly as practicable” standard require “the State make a good-faith effort to achieve precise mathematical equality.” *Karcher*, 462 U.S. at 730.

A challenge to a plan’s equal population involves two inquiries. *First*, the party challenging the redistricting plan bears the initial burden of “proving the existence of population differences that ‘could practicably be avoided.’” *Tennant v. Jefferson Cty. Com’n*, 567 U.S. 758, 760 (2012) (quoting *Karcher*, 462 U.S. at 734). Second, if this burden is met, the burden shifts to the State “to show with some specificity that the population differences were necessary to achieve some legitimate

state objective.” *Id.* To meet its burden, “the State must justify each variance, *no matter how small.*” *Karcher*, 462 U.S. at 780 (emphasis added). Importantly, “there are no de minimis population variations, which could practicably be avoided, but nonetheless meet the standard of [Article I, Section 2] without justification.” *Id.* at 734.

Moreover, this standard—which, as the discussion above demonstrates, is quite exacting in its own right—is even more stringent when a redistricting plan is implemented by court order, rather than by legislative action. *See Abrams v. Johnson*, 521 U.S. 74, 98 (1997) (“Court-ordered districts are held to higher standards of population equality than legislative ones.”); *Navajo Nation v. Arizona Indep. Redistricting Com’n*, 230 F. Supp. 2d 998, 1009 (D. Ariz. 2002) (“A court-ordered plan is held to an even stricter *de minimis* standard of population equality than one drawn by a state legislature.”).

Against this backdrop, the Special Master erred in concluding that the plans submitted by the Carter Petitioners and the House Democratic Caucus pass constitutional muster, despite containing a two-person deviation. Although this action is not, strictly speaking, a challenge under Article I, Section 2 of the United States Constitution’s

equal population requirement, *Karcher*'s two-prong test is nevertheless instructive.

Thus, turning to the first part of the test, there is no doubt that the population difference in the Carter and House Democratic Caucus proposals “could practically be avoided[,]” 462 U.S. at 734, since ten of the thirteen maps submitted to the Special Master *did* avoid such a discrepancy. With regard to the second part of the inquiry, neither plan can credibly justify its deviation as necessary to achieve some “legitimate state objective.” As it pertains to the House Democratic Caucus’ plan, they did not even attempt to justify their failure to achieve population equality and, in fact, they were the only party that failed to offer any testimony—expert or otherwise. Similarly, the Carter Petitioners have not established that such a population deviation is necessary to advance a compelling state interest. Indeed—aside from being remarkable in that it is one of only two plans to violate the core precept of “one person one vote”—the Carter plan is remarkable in no other way. For example, it is not (and does not purport to be) the most compact, the most contiguous, or the most respectful of political subdivisions and municipalities.

Furthermore, to the extent the Carter Petitioners intend to argue that their non-compliance with Article I, Section 2 of the United States Constitution is warranted because of their “least change” approach to redistricting, that argument is unavailing. Specifically, as explained elsewhere in this Brief, maintenance of the core of a district is—at most—a secondary consideration that is wholly subordinate to the constitutionally prescribed neutral criteria. Accordingly, whatever role “the least” change rubric may have in the process, it is certainly not the type of “consistently applied legislative policies [that] might justify some variance,” *Tennant*, 567 U.S. at 761-62 (internal quotation marks omitted), since it is neither a “legislative polic[y],” nor has it been “consistently applied.” To the contrary, under *Holt*, reliance on this consideration is strictly circumscribed.

In short, a *one* person deviation is “as nearly as practicable” to equal population, and adhering to this deviation did not preclude the Carter Petitioners or the House Democrats from complying with the other constitutionally required redistricting criteria. It is manifest, therefore, that no compelling interest required the unconstitutional deviation.

C. The Special Master’s Report errs in its analysis of the interplay between Fourteenth Amendment’s prohibition against racial gerrymandering and the Voting Rights Act.

Although arguably not erroneous as such, the Special Master’s analysis of the Federal Voting Rights Act, *see* 52 U.S.C. §§ 10301, *et seq.* (the “VRA”), is incomplete in several material ways. At bottom, the question before the Special Master—and now this Court—is not whether any of the proposals comply with or violate the VRA, but rather, whether some of the plans have been constructed with an impermissible emphasis on race. As explained below, where the *Gingles* factors have not been satisfied, constructing a plan with an emphasis on race—regardless of subjective intent—risks running afoul of the United States Constitution’s prohibition against racial gerrymandering. Viewed in this light, the Special Master should have rejected the plans offered by the Governor, the Gressman Petitioners, and the Senate Democrats because the required record to complete a VRA and constitutional analysis of each is lacking (i.e., whether each plan does or does not violate the VRA and/or the Fourteenth Amendment is presently unknown, thus each should have been rejected).

1. The VRA and the Fourteenth Amendment.

As a prefatory matter, it is important to emphasize that there are two separate strands of federal law relating to racial gerrymandering. First, under Section 2 of the VRA, a state may be required to draw a majority-minority district if the three *Gingles* factors are satisfied. See *Thornburg v. Gingles*, 478 U.S. 30 (1986). Specifically, such a redistricting plan is mandatory if: “(1) [t]he minority group must be ‘sufficiently large and geographically compact to constitute a majority in a single-member district,’ (2) the minority group must be ‘politically cohesive,’ and (3) the majority must vote ‘sufficiently as a bloc to enable it ... usually to defeat the minority’s preferred candidate.’” *Bartlett v. Strickland*, 556 U.S. 1, 11 (2009) (quoting *Gingles*, *supra* at 50-51).

A distinct, but closely-related line of cases pertain to racial gerrymandering under the Fourteenth Amendment, which prohibits states from drawing district lines on the basis of race absent a ***compelling interest***. Of course, given that compliance with federal law is presumptively “a compelling interest,” where the VRA requires creation of a majority-minority district, a claim of racial gerrymandering is unlikely to succeed. See *Abbott v. Perez*, 138 S. Ct.

2305 (2018) (“[T]he Court has assumed that compliance with the VRA is a compelling State interest for Fourteenth Amendment purposes[.]”). But where the VRA does not require creation of a majority-minority district, a State must proffer a “significant reason” for drawing district lines based on race. Therefore, if one of the *Gingles* factors, such as white bloc-voting, cannot be established, then the requisite good reason for drawing a minority-majority district does not exist. *See Gingles*, 478 U.S. at 49 n.15 (noting that “in the absence of significant white bloc voting it cannot be said that the ability of minority voters to elect their chosen representatives is inferior to that of white voters”).

2. The proposed plans of Governor Wolf, the Gressman Petitioners, and the Senate Democrats.

In this matter, Dr. Brunell’s unrebutted expert report demonstrates that there is no racially polarized voting in Philadelphia County, which forms the core of all of the districts in question. Despite the absence of racially polarized voting in Pennsylvania, Governor Wolf, the Gressman Petitioners, and the Senate Democrats have created three districts that attempt to achieve a certain racial composition.¹¹

¹¹ Congressional Intervenors do not dispute that one of the districts is, by virtue of Philadelphia’s geography and demographics, likely to be a majority-

For instance, in their submissions to the Special Master, the Senate Democrats make a passing reference to *Gingles*, see Senate Democrats’ Br. at 10, but did not even mention, let alone develop, any of the three factors. Nor did their expert’s report suggest that this analysis had been undertaken, and the expert did not offer any testimony in this respect. The Senate Democrats cited *Bartlett* (again in passing, and without pinpoint citation) in support of drawing coalition districts; however, *Bartlett* did not consider a coalition district. See *Bartlett*, 556 U.S. at 13-14 (distinguishing between “crossover districts”—where minority and majority voters vote for a minority candidate—and “coalition districts” where “two minority groups form a coalition to elect a candidate” of that coalition’s choice, and expressly stating “[w]e do not address ... coalition district[s] here”). And, even if *Bartlett* supported drawing coalition districts, the Senate Democrats would still be required to prove all three *Gingles* factors, which in the context of a coalition district requires the State to show that the minority group votes as a sufficiently cohesive unit. But they did not.

minority district based on the application of the neutral criteria outlined in *League of Women Voters*.

And that flaw casts significant doubt on the constitutionality of their proposal.

Similarly while the Governor and the Gressman Petitioners suggest that *Gingles* applies, their experts did not—and, as Dr. Brunell’s report demonstrates, *could* not—establish that the third factor is satisfied. Notably, as well, while the Governor (and to some extent, the Senate Democrats) occasionally downplay their emphasis on race in drawing the districts, the Gressman Petitioners have advocated for their map precisely ***because*** it is able to pack more minority groups into the three districts than any other proposal. *See* SMR at 121.

Because the Governor, the Senate Democrats, and the Gressman Petitioners did not prove *Gingles* is met, and acknowledged that their plans were drawn (at least in part) to achieve certain racial compositions in the districts, the only way to withstand a challenge under the Fourteenth Amendment would be a showing of some other “significant reason” (beyond compliance with the VRA) for drawing district lines based on race. These particular plans fail on this score as well.

In *Shaw v. Reno*, 509 U.S. 630 (1993), the High Court concluded that a race-neutral redistricting plan, which separates voters into separate districts based predominantly on race, violates the Fourteenth Amendment when “that separation lacks sufficient justification.” *Id.* at 650. While the Court acknowledged that racial gerrymandering cases might be difficult to prove, but noted in “some exceptional cases, a reapportionment plan may be so highly irregular that, on its face, it rationally cannot be understood as anything other than an effort to segregate voters on the basis of race[,]” the *Shaw* court offered a scenario where “a State concentrated a dispersed minority population in a single district by disregarding traditional districting principles such as compactness, contiguity, and respect for political subdivisions.” *Id.* at 646; *see also id.* (these objective factors are important because “they may serve to defeat a claim that a district has been gerrymandered on racial lines”). As aptly relayed by the Court, grouping together individuals who share a common race, but no other commonality—geography, political boundaries, etc.—“reinforces the perception that members of the same racial group—regardless of their age, education, economic status, or the community in which they live—think alike,

share the same political interests, and will prefer the same candidates at the polls. We have rejected such perceptions elsewhere as impermissible racial stereotypes.” *Id.* These concerns are even more pounced where the plans at issue have prioritized the amalgamation of different races simply because they are not white.

To summarize, whether the plans discussed above actually violate Federal law is unclear and that question is not properly before the Court. Indeed, absent discovery and access to the mapmakers and the process utilized for creating the plans proposed by these parties, it would be nearly impossible to definitively make an assessment on this point at this juncture. What is clear, however, is that these plans, if adopted, will face questions that may result in their invalidation in Federal Court. Regardless, they should have been rejected by the Special Master due to the incomplete record.

D. The Special Master’s Report errs in the interpretation of the prohibition against splits of counties and municipalities unless “absolutely necessary.”

In evaluating the various plans, the Special Master did not accord sufficient legal weight to the prohibition against splitting municipalities and municipalities unless “absolutely necessary.” Specifically, although

the Special Master recognized that the prohibition against splitting counties and municipalities is one of the core neutral benchmarks under *League of Women Voters*, the SMR’s analysis in this regard was flawed in two important ways: *first*, it misinterpreted this directive as simply one of the factors that is weighted in the analysis; and *second*, it mistakenly placed wards on the same footing as counties and other political subdivisions. As explained below, the text, structure, and history of the State Constitution suggest that minimizing county and municipal splits is a paramount objective that is second only to the equal population requirement. Furthermore, consistent with the rules of textual interpretation, Article II, Section 16’s reference to “wards” should be given less weight.

1. Article II, Section 16.

As the Special Master recognized, in *League of Women Voters* this Court held that the neutral criteria articulated in Article II, Section 16 of the State Constitution properly governed its assessment of congressional redistricting plans. The full text of that provision is as follows:

The Commonwealth shall be divided into fifty senatorial and two hundred three representative districts, which shall be

composed of compact and contiguous territory as nearly equal in population as practicable. Each senatorial district shall elect one Senator, and each representative district one Representative. ***Unless absolutely*** necessary no county, city, incorporated town, borough, township or ward shall be divided in forming either a senatorial or representative district.

Pa. Const. art. II, § 16 (emphasis added). Explaining that this provision is deeply rooted in the Commonwealth’s constitutional history and is an outgrowth of the various efforts aimed at preventing voter dilution, the Court incorporated its three core requirements: (1) compactness; (2) contiguity; and (3) the prohibition against splitting political subdivisions “[u]nless absolutely necessary.” While the phrase “absolutely necessary” was not further developed in *League of Women Voters*, the debates of the 1968 Pennsylvania Constitutional Convention, as well as the interpretation of the United States Constitution, suggest that strict emphasis on keeping counties and political subdivisions whole is a central part of our organic law.

To illuminate, from the inception of the 1968 Convention, the delegates plainly regarded the maintenance of political boundaries as an overriding concern. Indeed, on the opening day, when the question of

implementing certain guidelines in the legislative reapportionment process was first raised, Mr. Stahl offered the following remarks:

The maintenance of political subdivision boundary lines is the principal non-population factor sanctioned by the courts. This can be accomplished by separate representation for local government units, or by preventing the splitting up of political subdivisions in the formation of legislative districts. The Supreme Court has recognized that the establishment of legislative districts along political subdivision lines may also serve to deter gerrymandering.

Debates of the Convention to Amend the Constitution of Pennsylvania, Vol. I at 32 (1967).

And the best evidence that the word “absolutely” was intended to elevate this requirement is found in the procedural history of the particular phrase. Specifically, after extensive debate—and before a final vote—an amendment regard it was referred to the Convention’s Committee on Style and Drafting. With the input of the Substantive Committee on Redistricting, the Chairman of the Committee on Style and Drafting specifically stated “[t]he Committee acquiesces in the substantive committee’s insistence upon the inclusion of the adverb ‘absolutely[,]’” *Debates of the Convention to Amend the Constitution of Pennsylvania*, Vol. II at 1161 (1968). Thus, in addition to the settled maxim that every word in the Constitution must be given effect, the

“substantive committee’s instance upon” the included adverb suggests an intent by the framers of the present version of our Constitution to create organic law that is more forceful than one where the word “necessary” stands alone.

Furthermore, a case that is familiar to every first-year law student also confirms the heightened emphasis that should be placed on “absolutely necessary.” Specifically, examining the meaning of the word “necessary” as used in the Necessary and Proper Clause, the U.S. Supreme Court explained that the word “standing by itself, has no inflexible meaning; it is used in a sense more or less strict, according to the subject.” *McCulloch v. State*, 17 U.S. 316, 388 (1819). The Court further observed, however, that this word “may be qualified by the addition of adverbs of diminution or enlargement, such as very, indispensably, more, less, or absolutely necessary[.]” *Id.* In this regard, the Court pointed to Article I, Section 10, which “prohibits a state from laying ‘imposts, or duties on imports or exports, except what may be absolutely necessary for executing its inspection laws[.]” U.S. Const. art I, § 10. While the Necessary and Proper Clause granted flexibility, Justice Marshall explained, Article I, Section 10’s prohibition was

decidedly more stringent, since “the convention understood itself to change materially the meaning of the word ‘necessary,’ by prefixing the word ‘absolutely.’” *McCulloch*, 17 U.S. at 414-15.

The foregoing leads to the inescapable conclusion that the prohibition against dividing counties and municipalities requires particularly close attention when redistricting under Pennsylvania law. The question, then, is what constitutes absolute necessity? The only logical conclusion is that such a division is appropriate where it is absolutely necessary to comply with another clear constitutional directive. Accordingly, in the present context, this directive can be read as mandating a strict regard for county and municipal boundaries, unless splitting them is necessary to comply with the equal population requirement.

2. Wards.

Because the nature of “wards” has changed drastically over the last century, the Special Master erred in placing equal legal weight on ward divisions. Specifically, at the time this constitutional provision was adopted, wards were an essential municipal unit within boroughs and cities of the Second and Third Class. Among other things, each

ward elected its own officers, such justice of the peace, aldermen,¹² assessors,¹³ and auditors. Moreover, given that municipal legislative bodies had not yet been made subject to equal population requirements, members of borough council were elected by ward. Wards, therefore, were integral to the municipal structure.

Over time, however, that began to change, beginning with the abolition of aldermen and justices of the peace.¹⁴ Furthermore, as the population distribution among wards continued to become more

¹² Pa. Const. of 1874, art. V, § 11 provided:

Except as otherwise provided in this Constitution, justices of the peace or aldermen shall be elected in the several wards, districts, boroughs and townships, at the time of the election of constables, by the qualified electors thereof, in such manner as shall be directed by law, and shall be commissioned by the Governor for a term of five years. No township, ward, district, or borough shall elect more than two justices of the peace or aldermen without the consent of a majority of the qualified electors within such township, ward, or borough; no person shall be elected to such office unless he shall have resided within the township, borough, ward or district for one year next preceding his election. In cities containing over fifty thousand inhabitants, not more than one alderman shall be elected in each ward or district.

¹³ See, e.g., 72 P.S. §§ 5020-102 (defining the role of assessors); 72 P.S. § 5020-301 (“The qualified voters of each ward in cities of the third class shall, at the municipal election in the year one thousand nine hundred and thirty five, and every four years thereafter, vote for and elect a properly qualified person, according to law, to act as county assessor in each of said wards under the provisions of this act, who shall serve for four years.”), *repealed by* 53 Pa.C.S. § 8801 *et seq.*

¹⁴ See Pa. Const. Sched. art. V, § 12 (abolishing office of alderman and justice of the peace).

lopsided and the application of one-person-one-vote principles to local reapportionment was firmly established, boroughs and cities also ceased elected council members by ward and, instead, either shifted to at-large representation, or decennial districting. At present, one of the only function wards serve is in the election administration process.¹⁵ Thus putting splits of wards on equal footing as splits of counties and municipalities in assessing redistricting plans is unjustified.

E. The Special Master erred in recommending HB 2146 over Reschenthaler 1 or 2.

In the end, this case comes down to “absolutely necessary.” Here, the *only* maps before the Court that have split counties and municipalities the least number of times (13 and 16 respectively)—i.e., only as absolutely necessary—are Reschenthaler 1 and Reschenthaler 2. Multiple experts (Dr. Rodden, Dr. DeFord, and Dr. Duchin), none of whom were experts for the Congressional Intervenors, testified that it was absolutely possible to draw a 17-district congressional map that contained only 13 county splits and 16 municipal splits, just as the

¹⁵ The only remnant of the old regime of ward officers appear to be constables. *See* 44 Pa.C.S. § 7113(b) (“The qualified voters of every borough divided into wards shall vote for and elect a properly qualified person for constable in each ward and a properly constable for high constable in the borough.”).

Congressional Intervenors have done. *See* SMR at 147, ¶¶ FF42-FF43; *see also* N.T. 1/27/22 at 43:19-25; 170:15-20 (Dr. Rodden); N.T. 1/27/22 at 287:11-20 (Dr. DeFord); N.T. 1/27/22 at 461:5-21 (Dr. Duchin). Here's what that means: a congressional plan for Pennsylvania **cannot** contain more than 13 county splits or 16 municipal splits because multiple experts admitted splitting more than that was not absolutely necessary to achieve constitutional compliance.

That should be the end of the inquiry for this Court. The Congressional Intervenors are the only participants in this proceeding who *to the letter* followed the Pennsylvania Constitution. While others submitted maps that have this or that feature purporting to be better in some one way or other, those maps all fail for the same reason: they split more counties and municipalities than is "absolutely necessary." Thus, comparing their various metrics to those of the Congressional Intervenors' maps is a comparison of apples to oranges: none of them presented testimony, and thus it is utterly unknown, how they would have fared in these metrics had they followed the Constitution.

N.T. 1/27/22 at 465:16-25 (Dr. Duchin testifying).¹⁶ Even if the Court could consider maps with higher numbers of splits, consideration of all neutral factors compels selecting one of the Reschenthaler maps: they are top of the class in compactness scores, share the least amount of municipal splits and segments, and of course stand alone with fewest county splits and segments. No other map checks as many of the neutral factor boxes as the Reschenthaler maps. Accordingly, the other parties' stats, and the maps themselves, should be summarily ignored.

Finally, various experts reported a variety of purported partisan measures about each of the *submitted* maps, but the most resounding detail was about ones *not* submitted. Indeed, Dr. Duchin—the Governor's expert—disclosed to the Court that in generating **100,000** random plans (i.e., maps) with a computer, which was programmed only to honor Pennsylvania's minimum constitutional requirements, the “[r]andom plans tend to exhibit **pronounced advantage** to

¹⁶ Q. So your representation to the Court is if these maps changed or produced fewer county splits, the scores don't change?

A. They might remain unchanged.

Q. They might remain unchanged, but they might change?

A. But they might change.

Q. Indeed.

A. I agree.

N.T. 1/27/22 at 465:16-25.

Republicans across this full suite of elections.” See Duchin Initial Report at 18 (emphasis added); SMR at 164, ¶ FF10. And that wasn’t a typo; indeed, on the next page of her report, still analyzing the 100,000 plans drawn by a non-partisan, non-biased computer, she once again concluded that “random plans favor Republicans[.]” Duchin Initial Report at 19. Further, far from backing away from this analysis, at trial she agreed that these 100,000 plans produced a “pronounced advantage to Republicans.” N.T. 1/27/22 at 449:1-12.¹⁷

In other words, the most “typical outcome” for any randomly drawn, constitutionally compliant plan, which takes no account for impermissible partisan considerations, is one that will produce a Republican “tilt” based on election projections. N.T. 1/27/22 at 450:10-10-16 (Dr. Duchin testifying).¹⁸ And the *reason* for that typical outcome is not anything nefarious but, in fact, something readily acknowledged

¹⁷ Q. Now, as I understand what you’re saying is that you agree that the random plans that are drawn in your ensemble without any partisan data, Exhibit A, pronounced advantage to Republicans. Correct?

A. That’s a qualitative assessment, but I would call this pronounced.

Q. You would call it pronounced?

A. I would.

N.T. 1/27/22 at 449:1-12 (testimony of Dr. Duchin).

¹⁸ Q. But the most typical outcome is plans with a Republican tilt. Fair?

A. Absolutely. And I’m not aware of any rule that requires that we pick the most typical. I think we’re trying to choose an excellent plan.

N.T. 1/27/22 at 450:10-10-16 (testimony of Dr. Duchin).

at trial: Pennsylvania’s human geography (sometimes referred to as political geography) results in its citizens living in population-dense urban areas, which are more Democrat, and also in population-dispersed rural areas, which are more Republican. *See* SMR at 162-164, ¶¶ FF1-FF10; *see also* N.T. 1/27/22 at 174:3-181:24 (Dr. Rodden testifying);); Duchin Initial Report at 17 (“In this section, I present a series of images that reinforce the theme elaborated above: the political geography of Pennsylvania creates a districting landscape that is tilted toward Republican advantage.”)¹⁹ Thus, in drawing population-equal districts, yet still compact and contiguous, those voters become grouped into divisions that, solely as a function of how people have self-sorted, tend to have a Republican lean. *See* SMR at 162-164, ¶¶ FF1-FF10; *see also* N.T. 1/27/22 at 181:9-20 (Dr. Rodden testifying).

¹⁹ The most poignant admission by Dr. Rodden of the phenomenon of Pennsylvania’s human geography yielding a Republican tilt in maps was as follows:

Q. I really just want to get to the terminal statement of this --- this report. Proving such intent in court will be difficult in states where equally egregious electoral bias can emerge purely from human geography? Did I read that correctly?

A. Yes.

Q. And is that --- was that true when you said it?

A. Yes.

Q. And is it still true today about Pennsylvania?

A. Yes.

N.T. 1/27/22 at 181:6-20.

And the foregoing most “typical outcome” is precisely reflected in Reschenthaler 1 and Reschenthaler 2. According to various experts in this case, these two maps produce a slight Republican tilt. *See supra*. This is utterly consistent with Pennsylvania’s political geography.

In the end, for these reasons, and for the reasons stated above, the Court’s choice in this matter is binary: pick either Reschenthaler 1 or Reschenthaler 2. All of the other proposed maps fail, in among other ways, the unequivocal constitutional requirement that they split counties and political subdivisions only when “absolutely necessary.” All of the parties submitting these maps could have done better—as multiple experts acknowledged—but they elected not to, for reasons unknown. Their failing winnows the wheat from the chaff, leaving only two maps that have met the constitutional requirements to be selected as Pennsylvania’s congressional plan. Accordingly, the Congressional Intervenors respectfully submit the Special Master erred in not recommending one of the Reschenthaler maps.

V. CONCLUSION

For the foregoing reasons, Reschenthaler 1 and Reschenthaler 2 are the only maps that meet *all of* the constitutional requirements for a

congressional district map. They should therefore be adopted by this Court.

Respectfully submitted,

Dated: February 14, 2022

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IN THE SUPREME COURT OF PENNSYLVANIA

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CASSANELLI; LEE CASSANELLI; LYNN WACHMAN;
MICHAEL GUTTMAN; MAYA FONKEU; BRADY
HILL; MARY ELLEN BALCHUNIS; TOM DEWALL;
STEPHANIE MCNULTY; & JANET TEMIN,

Petitioners

v.

LEIGH M. CHAPMAN, in her official capacity as the
Acting Secretary of the Commonwealth of Pennsylvania;
JESSICA MATHIS, in her official capacity as Director for
the Pennsylvania Bureau of Election Services and Notaries,

Respondents

7 MM 2022

CONSOLIDATED WITH

PHILIP T. GRESSMAN; RON Y. DONAGI;
KRISTOPHER R. TAPP; PAMELA GORKIN; DAVID P.
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EUGENE BOMAN; GARY GORDON; LIZ MCMAHON,
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**Exceptions to Report of Special Master of Amici Khalif Ali, Maryn Formley,
Richard Rafferty, Patrick Beaty, Susan Gobreski, Barbara Hill, Judy Hines,
Jodi Greene, John Thompson, Cynthia Alvarado, and Timothy L. Kauffman**

Amici Khalif Ali *et al.* respectfully submit the following exceptions to the Report of the Special Master, dated February 7, 2022:

1. Amici take exception to, and this Court should decline to adopt, the Special Master's recommendation that HB 2146 be selected as Pennsylvania's new congressional plan.
2. Amici take exception to, and this Court should decline to adopt, the Special Master's legal conclusion that in an impasse case, courts owe any degree of deference to a congressional plan passed by the General Assembly but vetoed by the Governor.
3. Amici take exception to, and this Court should decline to adopt, factual findings or mixed factual findings and legal conclusions that underlie the Special Master's selection of HB 2146 and rejection of the Ali Plan, including:
 - a. Elimination from consideration of any plans that split the City of Pittsburgh or the County of Bucks;
 - b. A failure to take into account whether plans split the Capital Region or the urban centers of Northeastern Pennsylvania; and
 - c. Elimination from consideration, and non-prioritization, of the Ali Plan on the grounds that it is based on residence data treating prisoners as residents of their homes instead of their cells.

4. Amici take exception to, and this Court should decline to adopt, the Special Master's recommendation that the Ali Plan not be selected as Pennsylvania's new congressional plan.

Amici's accompanying brief more fully addresses the above exceptions and related errors.

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

I certify that this filing complies with the provisions of the Case Records Public Access Policy of the Unified Judicial System of Pennsylvania that require filing confidential information and documents differently than non-confidential information and documents.

/s/ Benjamin D. Geffen
Benjamin D. Geffen

Dated: February 14, 2022

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INTRODUCTION

The Special Master recommended selecting the congressional plan proposed by the Republican Legislative Intervenors (HB 2146). This recommendation is premised on serious legal and factual errors and should be rejected. As a legal matter, a plan passed by the General Assembly but vetoed by the Governor deserves no deference whatsoever. And the Report's selection of HB 2146 is premised on arbitrary and flawed preferences about which local government units to split.

The Court should instead select one of several superior plans in the record, the best of which is the Ali Plan, which keeps key communities of interest intact and counts prisoners at their home addresses. In the alternative, the Court should appoint an expert to craft its own fair and neutral plan, drawing on the best features of the Ali Plan.

INTERESTS OF THE AMICI

Amici are Khalif Ali, Maryn Formley, Richard Rafferty, Patrick Beaty, Susan Gobreski, Barbara Hill, Judy Hines, Jodi Greene, John Thompson, Cynthia Alvarado, and Timothy L. Kauffman.¹ All of the Amici are Pennsylvania voters who have demonstrated a longstanding commitment to free and equal elections. They come from across the Commonwealth, belong to different political parties, and have all advocated at the local or state level for better redistricting for Pennsylvania. None is a politician. All are active in their communities and believe their communities should be fully and fairly represented in any congressional districting plan. Amici share a belief in the fundamental importance of neutral, nonpartisan standards for congressional redistricting.

The Ali Plan builds on Governor Wolf's Plan, proposing two modifications: (1) the use of prison-adjusted population data, a step already taken by the Legislative Reapportionment Commission (LRC) for redrawing legislative districts; and (2) adjustments to communities of interest, concentrating in three

¹ This brief was paid for and authored entirely by amici; counsel for amici; and staff, contractors, and volunteers from Common Cause, the League of Women Voters of Pennsylvania, and Fair Districts PA.

different parts of the Commonwealth, to ensure the integrity of those communities.²

Khalif Ali

Khalif Ali was born and raised in Pittsburgh and has spent the last five years living in the Hazelwood neighborhood. Since November of 2020, Mr. Ali has served as the Executive Director of Common Cause Pennsylvania, a nonpartisan nonprofit organization dedicated to upholding the core values of American democracy, including working to create open, honest, and accountable government that serves the public interest; promote equal rights, opportunity, and representation for all; and empower all people to make their voices heard in the political process. Common Cause Pennsylvania has approximately 35,000 members and supporters across the Commonwealth, including members in every congressional district. As Executive Director, Mr. Ali has been heavily involved in advocating for a fair, transparent, and representative redistricting process, including by submitting testimony to the relevant committees, lobbying individual members of the legislature and executive branch, as well as organizing and educating activists across Pennsylvania to make their voices heard in the process.

² Details about the crafting of the Ali Plan are available in the Brief of Amici Khalif Ali *et al.* (Jan. 24, 2022) at 1-2 & n.2, and the Expert Report of Sarah Andre (attached as Exhibit to *id.*).

Maryn Formley

Maryn Formley is a voter in Allegheny County and is the founder and Executive Chair for the Voter Empowerment Education and Enrichment Movement (VEEEM), a non-profit organization dedicated to increasing voter turnout in Allegheny County. She believes that representation is the core of our democracy and works to educate and empower voters, particularly Black voters, to make their voices heard.

Richard Rafferty

Richard Rafferty is a voter in Lafayette Hill, Montgomery County, and has been consistently voting in congressional elections there for some 30 years. After retiring as an IT Director five years ago, Mr. Rafferty joined Fair Districts PA as a volunteer. In 2019, he became the Montgomery County Local Lead for Fair Districts PA, leading organizing and advocacy across the county in support of transparent, impartial, and fair redistricting.

Patrick Beaty

Patrick Beaty is a voter in Huntingdon Valley, Montgomery County. He is a retired attorney who served for many years in state government. For the last five years, he has volunteered as the Legislative Director for Fair Districts PA, a nonpartisan, statewide coalition of organizations and individuals working to create a process for redistricting that is transparent, impartial, and fair. As a leader of Fair

Districts PA, he has been heavily involved in the coalition's efforts to educate and mobilize Pennsylvanians around ending gerrymandering, and he has given testimony in both houses of the General Assembly regarding congressional redistricting.

Susan Gobreski

Susan Gobreski is a voter in Philadelphia who serves on the Board of Directors for the League of Women Voters of Pennsylvania. As the League's Board Director for Government Policy, she works to protect voting rights. In that capacity she testified before the House State Government Committee on Congressional Redistricting on October 19, 2021. There she advocated for a fair process and outcome, including that the congressional plan follow the imperatives stated in the Pennsylvania Constitution; that the geography of the plan make sense, with minimal division of existing governance structures; and that there be no discriminatory effect on the basis of voters' political affiliations or preferences.

Barbara Hill

Barbara Hill is a voter in Stroudsburg, Monroe County. She has been a member of the League of Women Voters for decades, joining chapters wherever she lived. As a volunteer with the Monroe County League of Women Voters, Ms. Hill has worked on publishing their Voters Guide and their Government Directory. She believes a fair congressional plan is fundamental to democracy.

Judy Hines

Judy Hines is a voter in Mercer in Mercer County. She is an active member of the League of Women Voters of Mercer County, where she has regularly participated in advocating for a fairer, more representative congressional redistricting process. She also has served as the membership chair of the Mercer County NAACP and has been active in political campaigns.

Jodi Greene

Jodi Greene is a voter in Birdsboro in Berks County and a professor of history at Reading Area Community College. She is active in her community, including having served as President of the League of Women Voters of Berks County. She has regularly advocated for a fair, representative, and transparent redistricting process, including organizing in Berks County to ensure residents understand the impact of redistricting on their daily lives.

John Thompson

John Thompson is a lifelong Philadelphian. From 1980 to 2016, Mr. Thompson was incarcerated in a series of Pennsylvania State Correctional Institutions, most recently in SCI Smithfield. Immediately upon his release from prison in 2016, Mr. Thompson returned home to Philadelphia and registered to vote. Since 2020, Mr. Thompson has been employed as a social and political organizer with the Abolitionist Law Center, primarily working and advocating to

eliminate death by incarceration, solitary confinement, and the release of all aging and geriatric prisoners.

Cynthia Alvarado

Cynthia Alvarado grew up in and still lives in Philadelphia. From 2008 to 2020, Ms. Alvarado was incarcerated in the State Correctional Institution at Muncy, in Lycoming County, where she had no community ties outside the prison's walls. While growing up in the deeply impoverished Badlands section of Philadelphia, Ms. Alvarado felt politically disempowered and did not vote. But during her time in prison, she had a political awakening, and she is now an outspoken member of her community, promoting criminal-justice reform at the federal, state, and local levels. She recently registered to vote for the first time in her life and looks forward to voting in the 2022 congressional elections.

Timothy L. Kauffman

Timothy L. Kauffman was born in Lancaster City and graduated from JP McCaskey High School. He attended Gettysburg College and joined the Reserve Officer Training Corps in 1968. Dr. Kauffman served in the United States Army Reserves for 39 years, during which time he regularly encouraged his military associates to register and vote. He resides in Manheim Township in Lancaster County. Dr. Kauffman is concerned for the new congressional plan to fairly and adequately represent his community.

STATEMENT OF THE SCOPE AND STANDARD OF REVIEW

The scope of review is plenary. 42 Pa.C.S. § 726. The standard of review is *de novo*. *E.g.*, *League of Women Voters of Pa. v. Commonwealth (LWV-PA)*, 178 A.3d 737, 802 n.62 (Pa. 2018).

QUESTIONS INVOLVED

1. In an impasse case, how much deference should a court extend to a congressional plan passed by the General Assembly but vetoed by the Governor?

Proposed answer: None.

2. Do considerations of minimizing splits of local government units and protecting communities of interest support the selection of HB 2146 over the Ali Plan?

Suggested answer: No.

3. Should the Court prioritize a plan that treats prisoners as residents of their homes instead of their cells?

Suggested answer: Yes.

SUMMARY OF ARGUMENT

The Special Master pressed a heavy hand on the scale in favor of the congressional plan described in HB 2146 on the grounds that the General Assembly had approved that plan in the name of the people. But HB 2146 did not secure a single bipartisan vote, and the Governor vetoed it. The Special Master committed a serious legal error in giving preeminence to the politically charged HB 2146 plan. This Court should not compound the error by issuing a judicial stamp of approval to a failed bill passed by one party in the middle of impasse litigation. That would send the wrong message to future lawmakers and is hardly the way to instill confidence in the fairness of the judicial mapmaking process now forced on the Court.

Because of the failure of the legislative process, this Court must now select or draw a plan based on neutral principles. The Special Master rejected the Ali Plan and others for splitting Pittsburgh and Bucks County, but the decision to prioritize these splits over others was arbitrary. Indeed, the Ali Plan does a better job overall of keeping key local government units and communities of interest intact. Moreover, only the Ali Plan properly accounts for the treatment of prisoners. Nothing prohibits the selection of a plan that counts prisoners at their homes, and indeed this is a plus factor in favor of the Ali Plan.

ARGUMENT

I. The Elections Clause Does Not Stack the Deck for the General Assembly

In a casino, the house always wins; in a redistricting case, the House enjoys no such advantage, nor the Senate. Under binding decisional law, when the General Assembly and the Governor disagree about a proposed congressional plan, the Elections Clause deals the General Assembly nothing—*zero*—in the nature of special powers, freestanding authority, or entitlement to judicial deference.

The Special Master’s Report endorses a radical theory of the General Assembly’s prerogatives that is contrary to controlling precedents and ruinous to the separation of powers. In the proceedings below, the Senate Republicans insisted that HB 2146 “is entitled to deference from the Court.” Brief of Senate Republicans (Jan. 24, 2022), at 12. Similarly, the House Republicans urged that the Special Master “should adopt the House Plan regardless of whether it is ultimately vetoed by the Governor.” Brief of House Republicans (Jan. 24, 2022), at 12. The Report adopts this theory. Although the Special Master declined to “summarily” defer to HB 2146 without a hearing, Report at 208 ¶ 61, the Report ultimately selects HB 2146 on the grounds that courts should defer to a vetoed but otherwise constitutional congressional plan, *id.* at 216 ¶ 97.

The U.S. Supreme Court and this Court have squarely rejected this dangerous theory over and over again. The Court should put it to rest.

A. *Smiley v. Holm* Rejects Any Special Role in Redistricting for the General Assembly Vis-à-vis the Governor

In an impasse just like the one now before the Court, the 1930 Census cost Minnesota one seat in the U.S. House of Representatives, and after the Minnesota House and Senate passed a new congressional districting plan, Governor Floyd B. Olson vetoed it. *Smiley v. Holm*, 285 U.S. 355, 361 (1932). A legal dispute ensued as to whether he *could* veto it, in light of Article I, § 4 of the U.S. Constitution (the “Elections Clause”), which says: “The Times, Places and Manner of holding Elections for Senators and Representatives, shall be prescribed in each State by the Legislature thereof; but the Congress may at any time by Law make or alter such Regulations, except as to the Places of chusing Senators.” Prefiguring the Special Master’s theory, the Supreme Court of Minnesota held that the Elections Clause empowered the state legislature to act alone in congressional redistricting, and that “[i]t follows that the Governor’s veto herein was a nullity.” *State ex rel. Smiley v. Holm*, 238 N.W. 494, 499 (Minn. 1931).

The U.S. Supreme Court unanimously reversed in a decision that eliminates any notion the General Assembly has primacy in an impasse case:

We find no suggestion in the federal constitutional provision of an attempt to endow the Legislature of the state with power to enact laws in any manner other than that in which the Constitution of the state has provided that laws shall be enacted. Whether the Governor of the state, through the veto power, shall have a part in the making of state laws, is a matter of state polity.

Smiley, 285 U.S. at 367-68. In other words, the term “Legislature” in the Elections Clause refers not narrowly to the State House and State Senate, but broadly to the lawmaking power of the State, which includes a role for the Governor. *See Smiley*, 285 U.S. at 372-73 (“[T]here is nothing in Article I, section 4, which precludes a State from providing that legislative action in districting the State for congressional elections shall be subject to the veto power of the Governor as in other cases of the exercise of the lawmaking power.”).

In companion cases decided the same day as *Smiley*, the Court reiterated that where the two state houses have agreed on a congressional redistricting plan but the governor has not approved it, a state court has the power to end the impasse with a redistricting plan that differs from that passed by the two houses. *Koenig v. Flynn*, 285 U.S. 375, 379 (1932) (noting that a state court can reject a congressional plan that passed both houses but does not meet “the requirements of the Constitution of the state in relation to the enactment of laws,” including gubernatorial approval); *accord Carroll v. Becker*, 285 U.S. 380, 381-82 (1932).

This is as true in Pennsylvania in 2022 as it was in Minnesota in 1932. *See, e.g., Scarnati v. Wolf*, 173 A.3d 1110, 1120 (Pa. 2017) (“By conferring upon the Governor the authority to nullify legislation that has passed both legislative houses, [Pa. Const. art. IV,] Section 15 entrusts him with the obligation both to examine the provisions of the legislation within the ten days allotted by Section 15 and to

either approve it or return it, disapproved, for legislative reconsideration.”); *id.* (“The Governor is thereby an integral part of the lawmaking power of the state. No bill may become law without first being submitted to the Governor for approval or disapproval.” (quotation marks and citation omitted)); *id.* (“[W]e have described the Governor’s authority to veto a bill as a form of ‘limited legislative power.’” (quoting *Jubelirer v. Rendell*, 953 A.2d 514, 529 (Pa. 2008))). In other words, as a matter of Pennsylvania law, the term “Legislature” as used in the Elections Clause encompasses both the General Assembly and the Governor.

B. Post-*Smiley* Precedents Reaffirm the General Assembly’s Lack of Primacy in Congressional Redistricting Impasses

The Report cites a single U.S. district court case that extended some deference to a vetoed congressional plan. Report at 43, 216 (citing *Donnelly v. Meskill*, 345 F. Supp. 962, 963 (D. Conn. 1972)).³ *Donnelly* failed to mention *Smiley*, *Koenig*, or *Carroll* and was wrongly decided. And even the court in *Donnelly* made adjustments to the vetoed plan. See 345 F. Supp. at 965.

Since *Donnelly* the U.S. Supreme Court has reemphasized *Smiley*’s core holding. In 2015, the Court underlined that *Smiley* means that for Elections Clause

³ The Report mentions two other cases alongside *Donnelly* in its deference discussion. Report at 43 (citing *Perry v. Perez*, 565 U.S. 388 (2012) (per curiam) and *Upham v. Seamon*, 456 U.S. 37 (1982) (per curiam)). *Perry* and *Upham* are of no relevance to this issue, because both concerned congressional plans that passed the Texas House and Senate *and* were signed by the Governor.

purposes, “Minnesota’s legislative authority includes not just the two houses of the legislature; it includes, in addition, a make-or-break role for the Governor.” *Ariz. State Legislature v. Arizona Indep. Redistricting Comm’n*, 576 U.S. 787, 806 (2015); *accord id.* at 808 (“Thus ‘the Legislature’ comprises the referendum and the Governor’s veto in the context of regulating congressional elections.”).

Of dispositive significance to the present case, *Arizona* states: “Nothing in [Article I, § 4] instructs, nor has this Court ever held, that a state legislature may prescribe regulations on the time, place, and manner of holding federal elections in defiance of provisions of the State’s constitution.” *Id.* at 817-18. In Pennsylvania, a controlling “provision of the State’s constitution” is Article IV, § 15, which directs that a bill not approved by the Governor shall not become law.

Even the *Arizona* dissent acknowledged that “the state legislature need not be exclusive in congressional districting, but neither may it be excluded.” 576 U.S. at 842 (Roberts, C.J., dissenting). More recently, Chief Justice Roberts wrote a majority opinion recognizing that “[p]rovisions in state statutes and state constitutions can provide standards and guidance for state courts to apply” when evaluating congressional plans that exhibit “excessive partisan gerrymandering.” *Rucho v. Common Cause*, 139 S.Ct. 2484, 2507 (2019). *Rucho* forecloses any suggestion that the Elections Clause obligates state courts to rubber-stamp even

congressional plans passed by both houses and signed by the governor, let alone vetoed plans.

In Pennsylvania, this Court has recognized both that “the primary responsibility for drawing congressional districts rest[s] squarely with the legislature,” *League of Women Voters of Pa. v. Commonwealth*, 181 A.3d 1083, 1085 (Pa. 2018), and that “legislature” in this context means the General Assembly *plus* the Governor, *see id.* (“[I]n the eventuality of the General Assembly not submitting a plan to the Governor, or the Governor not approving the General Assembly’s plan within the time specified, it would fall to this Court expeditiously to adopt a plan”); *id.* at 1086 (“The General Assembly failed to pass legislation for the Governor’s approval, thereby making it impossible for our sister branches to meet the Court’s deadline.”). That decision is fully consistent with *Smiley* and *Arizona*, and it eliminates any inkling that Pennsylvania law entitles the General Assembly, acting alone, to deference or special treatment when an impasse forces a court to draw a congressional plan.

C. The Special Master’s Deference Theory Would Radically Alter the Separation of Powers

Apart from being barred by nearly a century of precedent, the Special Master’s deference theory would work an astonishing reallocation of power among Pennsylvania’s three co-equal branches of government. Under this theory, every time the General Assembly and Governor negotiate a congressional plan, the

General Assembly gets dealt an extra ace. If there is an impasse, the General Assembly can play its ace, by marching into court and demanding judicial “deference” to its preferred plan—deference neither the Governor nor any other party would enjoy.

For the General Assembly to clinch permanent advantage over the Governor, and a superpower before the judiciary, would represent a stunning departure from basic constitutional principles of checks and balances. It should not be countenanced by this Court. *See generally* The Federalist No. 48 (James Madison) (J.R. Pole ed., 2005) (“It is agreed on all sides, that the powers properly belonging to one of the departments, ought not to be directly and compleatly administered by either of the other departments. It is equally evident, that neither of them ought to possess directly or indirectly, an overruling influence over the others in the administration of their respective powers. It will not be denied, that power is of an encroaching nature, and that it ought to be effectually restrained from passing the limits assigned to it.”).

II. Several Plans, Including the Ali Plan, Manage Splits and Communities of Interest Better Than HB 2146

The Special Master followed a two-step process: (1) screen the proposed plans for the bare constitutional minimum and (2) then identify the purportedly best plan from among those that passed the constitutional bar. The first step is one courts have been doing for many years, assisted in recent years by well-established

advances in political science and mathematics. The second step—the selection of a plan from among viable options—presents a judgment call that should not be left to a single jurist randomly chosen on the Commonwealth Court wheel. That is particularly true here where the Special Master arbitrarily zeroed in on splits in Pittsburgh and Bucks County while ignoring unnecessary and harmful splits elsewhere, like HB 2146’s splits in of the Capital Region and Northeastern urban areas. Giving pride of place to intactness for Pittsburgh and Bucks County is certainly one way to draw a map, but it is not the only way. The Special Master’s recommendation rests on unsupported policy judgments, not legal principle, and pays only lip service to maintaining communities of interest. As such it is entitled to no weight in this Court. Instead, the Court should select (or draw) a plan with better treatment of all these communities.

A. The Special Master Wrongly Elevated Not Splitting Pittsburgh to Quasi-Constitutional Status

The Report’s analysis begins on page 137 with a discussion of “Traditional Neutral Criteria.” The Report identifies six supposedly “traditional” criteria: (1) contiguity, (2) population equality, (3) political subdivision splits, (4) compactness, (5) *splitting of Pittsburgh*, and (6) communities of interest. The first four are standard fare in redistricting cases. The last—communities of interest—is another traditional criterion, albeit one that can be difficult to apply.

But the treatment of Pittsburgh is not a “traditional” criterion on par with matters like compactness and equipopulation.

The Special Master proclaimed that any plan that splits Pittsburgh must be rejected as a matter of law, regardless of its merits in other respects. Report at 151, FF16; *see also* Report at 194, ¶ 27. The Report elevated a “never split Pittsburgh” rule to quasi-constitutional status based on the following reasoning:

It cannot be gainsaid that, under the standards listed in the Pennsylvania Constitution and applied to congressional redistricting by our Supreme Court, boundaries such as those of City of Pittsburgh should not be divided across multiple districts unless it is *absolutely necessary* to achieve population equality. *See* Pa. Const. art. II, § 16 (“Unless absolutely necessary no county, city, incorporated town, borough, township or ward shall be divided”); *LWV II*, 178 A.3d at 816-17 (congressional districts shall not “divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population”).

Report at 148, CL1.

The analysis is deeply flawed. The “absolutely necessary” language of Article II, § 16 refers first to counties; yet all of the plans split numerous counties. No single county split is “absolutely necessary,” but many such splits *are* necessary when a statewide plan is considered in the aggregate. For the same reason, there is nothing magical about keeping the City of Pittsburgh in one district. Indeed, by splitting Pittsburgh the Ali Plan ensures Allegheny County is split only twice, and also keeps most of Pittsburgh intact, keeps Black communities whole, and respects suburban communities of interest. Expert Report of Sarah

Andre at 11-12 (attached as Exhibit to Brief of Amici Khalif Ali *et al.* (Jan. 24, 2022)). The Special Master could just as easily have excluded all plans that split Dauphin County, the Capital Region, or the Wilkes Barre/Scranton/Hazleton area. By summarily rejecting any split of Pittsburgh, the Special Master made a political judgment that the integrity of that city’s boundaries must be given primacy. The Court should not adopt this simplistic approach.

B. The Special Master’s Treatment of Bucks County Was Equally Flawed

The Special Master made a similar error regarding the division of Bucks County, declaring a split of this county unacceptable under any circumstance. Report at 195, ¶ 31 (“[A]ny map that divides Bucks County for the first time since the 1860s, including Governor Wolf’s map, is not an appropriate choice.”). Again, the Special Master failed to look at the entire map in context.

It is common ground that given the size of Philadelphia County, at least one Philadelphia district must incorporate population from a neighboring county—Bucks, Montgomery or Delaware. Report at 149, FF6. The Special Master concluded that splitting Bucks County was inappropriate as a matter of law. Under a sort of cartographic stare decisis theory, the Special Master reasoned that Bucks County has been together in one district for many years, so it would be unacceptable to split it now. There is no logic in this, and indeed, the position is inconsistent with the Special Master’s rejection of the “least change” approach on

the ground that “it focuses on the preexisting status of a map’s boundary lines” when “in the past 10 years, there has been dramatic population shifts in Pennsylvania,” Report at 156-57, FF13. Plans are redrawn after each census for a reason, and district boundaries must change to reflect new demographic realities. The Special Master’s denigration of proposed plans that append population from Bucks County, rather than Delaware County, reflects the preferences of the Special Master, not any reasoned legal rule. The thin findings on the subject are conclusory and ultimately rest on subjective testimony about the nature of the Philadelphia collar counties by a biased expert. *See* Report at 210-11, FF70-75. The Special Master’s conclusion that Bucks County (and not Delaware County) must be held together at all costs should be rejected.

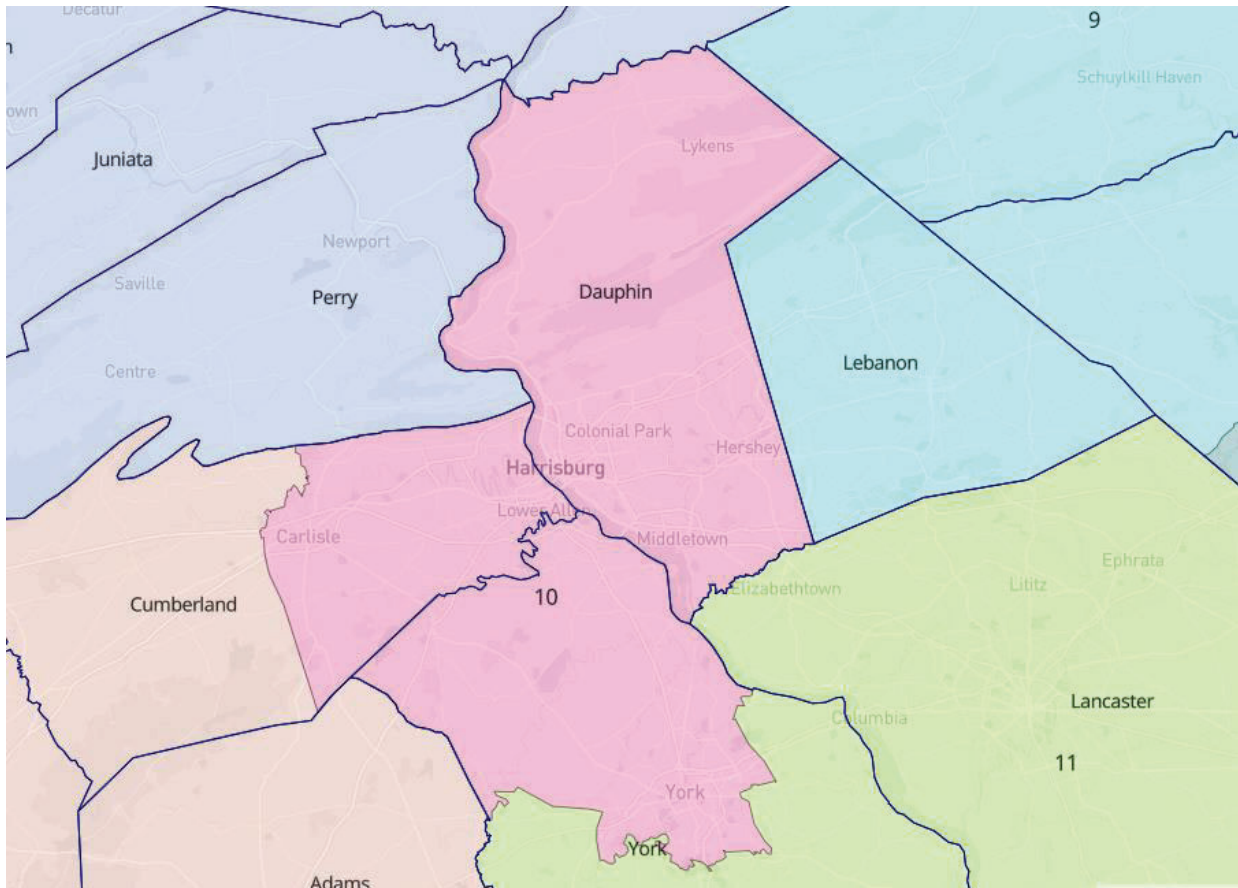
C. The Special Master Arbitrarily Ignored Other Communities of Interest That This Court Grouped Together in the 2018 Plan

While heavy on discussion of Pittsburgh and Bucks County, the Report barely addresses the treatment of Harrisburg and Northeastern Pennsylvania, including the cities of Scranton, Wilkes Barre, and Hazleton. In these areas, HB 2146 departs dramatically from the plan this Court adopted just four years ago.

1. The Harrisburg Area

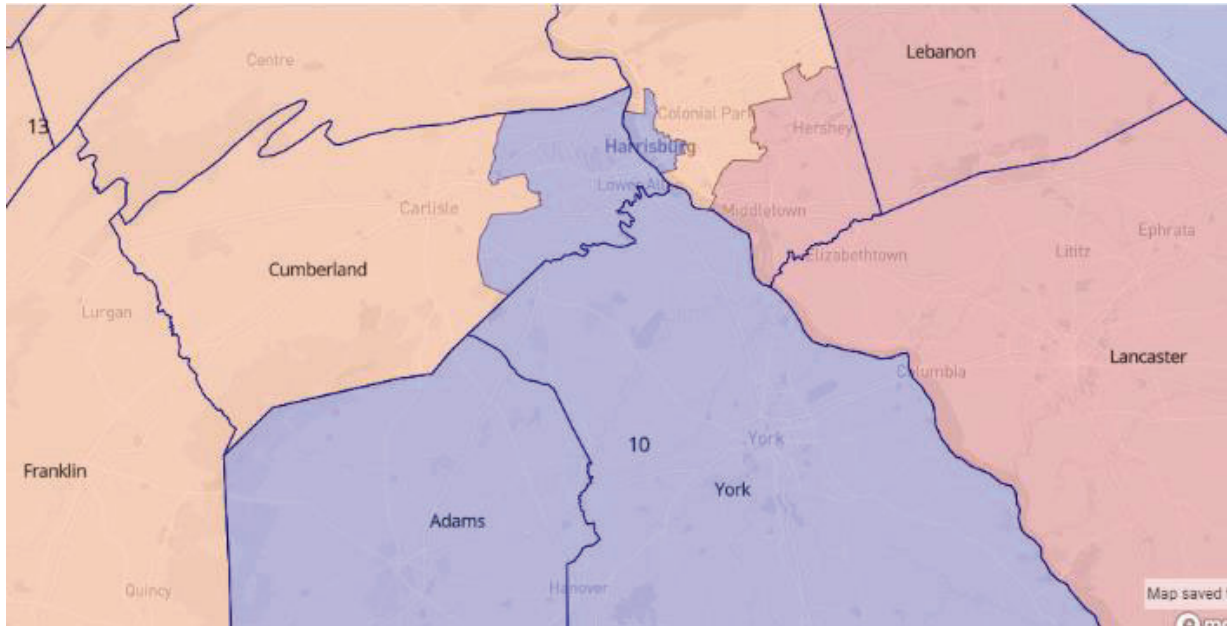
According to the 2020 Census, Dauphin County has 286,401 residents. The ideal population for a Pennsylvania congressional district is 765,536. Thus, as with

Pittsburgh, it is readily possible to put all of Dauphin County in a single district. The current District 10, as drawn by this Court in 2018, does just that. District 10 encompasses the entirety of Dauphin, eastern Cumberland County including Carlisle, and northern York County including the city of York:



See League of Women Voters of Pa. v. Commonwealth, 181 A.3d 1083, 1097 (Pa. 2018).

HB 2146 trisects Dauphin County. It separates the City of Harrisburg from its southeastern suburbs, as well as the airport, and then carves out the northern suburbs, splitting off Penbrook and Colonial Park:



See Brief of Senate Republicans (Jan. 24, 2022), at 191. No good reason was offered for dividing these communities of interest.

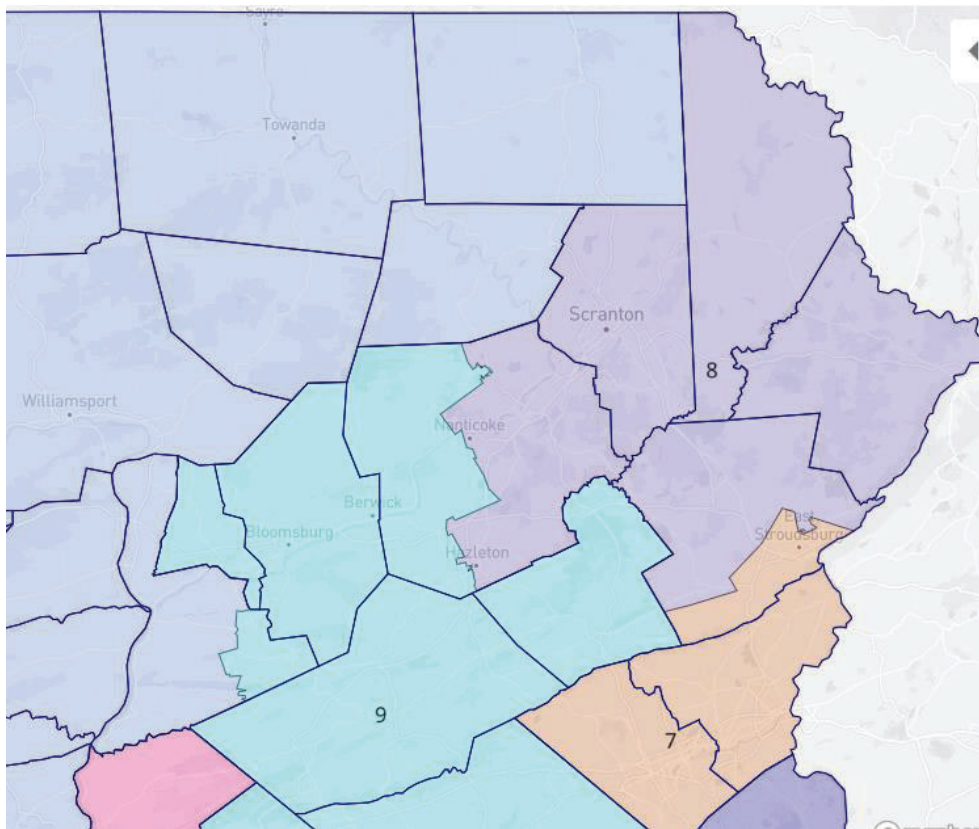
This configuration directly harms the Capital Region community of interest by cleaving the Black and Latino population in Dauphin County into two parts, undermining the ability of these groups to elect a representative of their choice. Expert Report of Sarah Andre at 10 (attached as Exhibit to Brief of Amici Khalif Ali *et al.* (Jan. 24, 2022)). This configuration breaks up the long-standing economic community of interest that surrounds the Capital Region. *Id.* (describing the Capital Region’s economic community of interest).

Nor does the Report acknowledge that the proffered configuration in HB 2146 is an outlier. Of the proposed plans, only HB 2146 and the Congressional

Republicans’ plans fracture Dauphin County into three parts. All the rest followed this Court’s lead in the current plan, leaving these communities of interest intact.

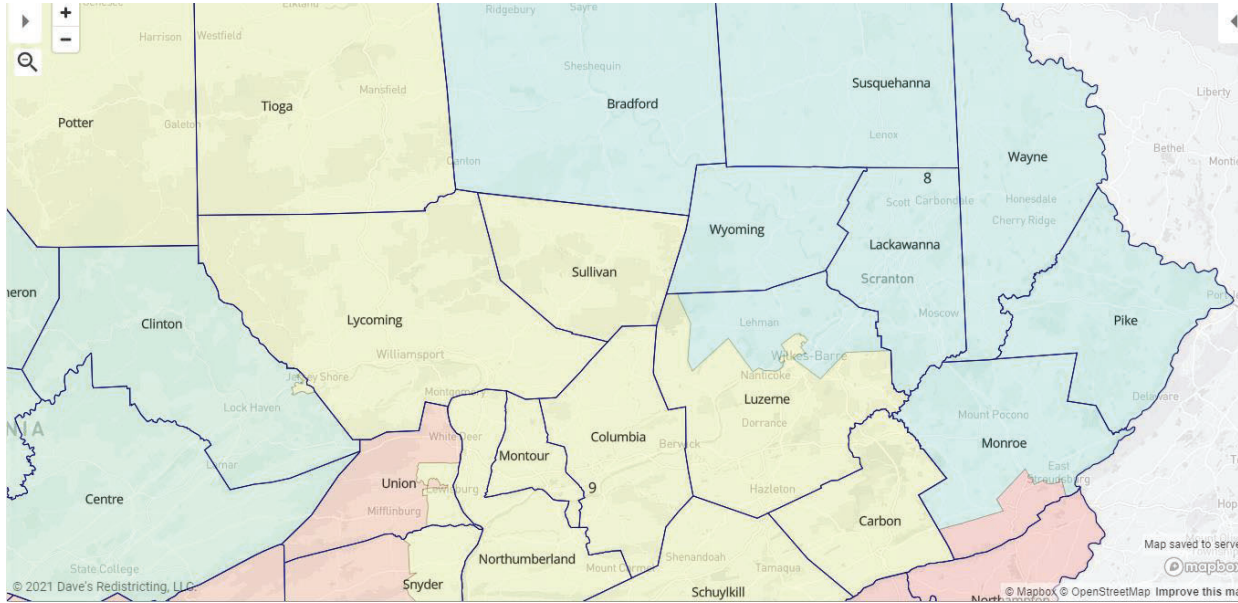
2. Northeastern Pennsylvania

The Northeastern Pennsylvania region is anchored by the community of interest connecting Scranton, Wilkes-Barre, and Hazelton. The current plan groups these cities in a single district, District 8:



See 181 A.3d at 1095.

HB 2146 would divide the municipalities of Scranton/Wilkes-Barre/Hazelton into two separate districts:



See Brief of Senate Republicans (Jan. 24, 2022), at 189-90. HB 2146 and the Congressional Republicans’ plans were the only proposals to split these cities. Wilkes-Barre, Scranton, and Hazleton have significant Latino and Black populations. Holding these communities in a single district would allow these groups to have a greater voice in electing a representative of their choice. Expert Report of Sarah Andre at 7 (attached as Exhibit to Brief of Amici Khalif Ali *et al.* (Jan. 24, 2022)).

D. The Court Should Make its Own Determination, Prioritizing Communities of Interest

The reality is that there is no “one true map,” and reducing the mapmaking process to a simple yet arbitrary rule like “never split Pittsburgh” is an inadequate way to solve a complicated problem. The Court must now make its own determination based on neutral principles. In doing so, the Court has a special duty

to respect communities of interest. *LWW-PA*, 178 A.3d at 816. That requires much more than noting the boundaries of the City of Pittsburgh or Bucks County. This Court should rely on publicly available historic, economic, and cultural resources as well as the testimony on communities of interest provided to the Governor’s Redistricting Commission, the Pennsylvania General Assembly through its online portal, and the LRC’s online comment portal. *See* Expert Report of Sarah Andre at 1 (attached as Exhibit to Brief of Amici Khalif Ali *et al.* (Jan. 24, 2022)). In short, the Pennsylvania Constitution requires an affirmative and unbiased investigation by the Court to ensure that an individual’s vote is “equalized to the greatest degree possible with all other Pennsylvania citizens.” *LWW-PA*, 178 A.3d at 817.

Happily, the proceedings below have produced a diversity of plans for the Court to choose from; or, of course, the Court can draw its own plan, as it did during the remedial mapping process in 2018. To assist the Court in the analysis, Amici identify how each plan treats the splitting of four important communities of interest discussed at length across the briefing: Pittsburgh, Bucks County, the Capital Region, and the Northeast.

Plan	Pittsburgh	Bucks	Capital Region	Northeast Region
Ali	Split	Split	Whole	Whole
Carter	Whole	Whole	Whole	Whole
Gressman	Whole	Split	Split	Whole
Senate Dem Caucus #1	Split	Split	Whole	Whole
Senate Dem Caucus #2	Split	Split	Split	Whole
Congressional Rs #1	Whole	Whole	Split	Split
Congressional Rs #2	Whole	Whole	Split	Split
Wolf	Split	Split	Split	Whole
House Dem Caucus	Whole	Split	Split	Whole
HB 2146	Whole	Whole	Split	Split
CCFD	Whole	Whole	Split	Whole
Draw the Lines	Split	Whole	Split	Whole
Citizen-Voters	Whole	Whole	Split	Whole
Voters of PA	Whole	Whole	Split	Whole

Amici submit that to the extent the Court prioritizes intactness for any specific subset of local government units and communities of interest, it should focus primarily on keeping both the Capital Region and the Northeast Region cities intact, for the reasons set forth above and at greater length in the Expert Report of Sarah Andre (attached as Exhibit to Brief of Amici Khalif Ali *et al.*, (Jan. 24, 2022)). This would narrow the field to three plans: Ali, Carter, and Senate Democratic Caucus #1.

III. As a Tiebreaker, the Court Should Select a Plan Based on Prisoners' Home Addresses

In drawing new legislative districts, the LRC has made adjustments to U.S. Census Bureau data so that legislative districts will not continue the practice of “prison-based gerrymandering.” It has done so by adjusting residence data to return nearly 30,000 state prisoners to their home addresses from their cell addresses. *See* LRC Resolution 4A (Aug. 24, 2021), *available at* <https://www.redistricting.state.pa.us/resources/press/Resolution%204A.pdf>; LRC Resolution 5A (Sept. 21, 2021), *available at* <https://www.redistricting.state.pa.us/resources/press/Resolution%205A.pdf>. The Special Master should not have rejected the Ali Plan for using the LRC’s prisoner-adjusted data. *See* Report at 56, FF 25; 107, FF 296; 133-34; 139-40, FF 5, CL 5-7; 192-93, ¶¶ 19-21; 199.

In light of Pennsylvania’s equipopulation requirement, and principles of fairness and consistency, this Court should select a congressional districting plan that makes use of the same adjusted address data as the LRC’s maps. The Ali Plan is the only plan before the Court drawn based on these prisoner-adjusted data. Although Amici do not contend at this juncture that the 2022 congressional plan *must* be drawn on the basis of the LRC’s adjusted data, the Court should consider

the Ali Plan's use of this data set as a plus factor that further supports adoption of the Ali Plan.⁴

A. Counting Prisoners in their Cells Unfairly Distorts Districts

As the LRC rightly noted:

The practice of counting inmates as residents of their prisons rather than from the districts from which they came artificially inflates the population count of districts where prisons are located and artificially reduces the population count of districts from which the inmates came, likely continue to have ties to and likely will return to post incarceration.

LRC Resolution 4A (Aug. 24, 2021). Before this redistricting cycle, home address information for prisoners was unavailable to mapmakers in Pennsylvania,⁵ who thus had no choice but to use unadjusted Census data, which counts prisoners at their cells regardless of state residency laws.⁶ As a result, in previous decades'

⁴ The Special Master noted that House Resolution 165 rejected the use of the LRC's prisoner-adjusted data set for congressional redistricting. Report at 193 ¶ 21. This Resolution was never presented to the Governor, and should not be a factor in this Court's decision, as detailed in Section I.

⁵ The LRC's adjusted address data set reassigns most but not all incarcerated people to their home addresses, omitting people who will be incarcerated beyond April 1, 2030, as well as those in federal and county facilities. LRC Resolution 5A (Sept. 21, 2021). In spite of these omissions, any correction to address data for incarcerated people is better than none. *See Fletcher v. Lamone*, 831 F. Supp. 2d 887, 897 (D. Md. 2011) (three-judge panel) ("Because some correction is better than no correction, the State's adjusted data will likewise be more accurate than the information contained in the initial census reports, which does not take prisoners' community ties into account at all."), *aff'd without opinion*, 567 U.S. 930 (2012).

⁶ *See generally Fletcher* 831 F.Supp.2d at 895-96 ("According to the Census Bureau, prisoners are counted where they are incarcerated for pragmatic and

districting plans for Pennsylvania, prisoners swelled the populations of regions near state correctional institutions, even though prisoners cannot vote if serving felony sentences and have no say in those regions' civic life. At the same time, imprisoned people's hometowns—where their families still live, where their children attend school, and where prisoners normally will return when released—have seen their representation diluted in Pennsylvania's congressional delegations. These distortions have especially weakened electoral strength for Black and Latino communities, both because they are overrepresented in the prison population, and because Pennsylvania's state correctional institutions are largely located in areas with few Black or Latino residents.

Amici John Thompson and Cynthia Alvarado have experienced the harms of prison-based gerrymandering firsthand. They are both Philadelphians who have recently returned home after spending a combined total of nearly fifty years in faraway State Correctional Institutions. Today they live in, and regularly work or volunteer in, communities that are among the hardest-hit by the reduced representative power that flows from prison-based gerrymandering. In particular, as a Black man and a Latino woman, both have seen how even after regaining the

administrative reasons, not legal ones. . . . [A]lthough the Census Bureau was not itself willing to undertake the steps required to count prisoners at their home addresses, it has supported efforts by States to do so.”).

right to vote, many former prisoners feel discouraged from participating in democracy because they do not believe their communities are fairly represented in congressional elections.

Through using prisoner home addresses, Philadelphia gains 7,019 residents. And cities including Pittsburgh, Reading, Allentown and Lancaster gain 839, 619, 519, and 450 residents, respectively. Expert Report of Sarah Andre at 3 (attached as Exhibit to Brief of Amici Khalif Ali *et al.* (Jan. 24, 2022)).

B. State Law Treats Prisoners as Residents of Their Homes

The Pennsylvania Election Code states:

Except as otherwise provided in this subsection, no individual who is confined in a penal institution shall be deemed a resident of the election district where the institution is located. The individual shall be deemed to reside where the individual was last registered before being confined in the penal institution, or, if there was no registration prior to confinement, the individual shall be deemed to reside at the last known address before confinement.

25 Pa.C.S. § 1302(a)(3). In other words, Pennsylvania law defines prisoners to be residents of their hometowns, not their cells. This is consistent with the long-established general legal principle that incarceration does not automatically change one's residence. *See, e.g., United States v. Stabler*, 169 F.2d 995, 998 (3d Cir. 1948); *McKenna v. McKenna*, 422 A.2d 668, 670 (Pa. Super. Ct. 1980).

Since the last redistricting cycle, this Election Code provision has taken on new significance. Congressional districts must be “as nearly equal in population as practicable.” *LWW-PA*, 178 A.3d 737, 816 (Pa. 2018). Specifically, this Court

clarified that the equipopulation mandate requires a plan to “accord equal weight to the votes of *residents* in each of the various districts.” *Id.* at 814 (emphasis added). In other words, the equipopulation standard in Pennsylvania focuses on “residents” of districts, and pursuant to state law prisoners are residents of their home addresses, not their cells.

Under *LWV-PA*, the population distortions caused by prison-based gerrymandering also create tension with Article I, § 5, the Free and Equal Elections Clause. By relying on incarcerated people to meet population requirements in districts with state correctional institutions, past congressional plans have inaccurately reflected where Pennsylvanians actually live. This inequality of voting power is precisely what the Free and Equal Elections Clause restricts. This Court has explained that Article I, § 5 “guarantees, to the greatest degree possible, a voter’s right to equal participation in the electoral process for the selection of his or her representatives in government[,]” and “mandates that all voters have an equal opportunity to translate their votes into representation.” *LWV-PA*, 178 A.3d at 804. Thus, “any legislative scheme which has the effect of impermissibly diluting the potency of an individual’s vote for candidates for elective office relative to that of other voters will violate the guarantee of ‘free and equal’ elections afforded by Article I, Section 5.” *Id.* at 809. This is all the more true when the inequality disproportionately weakens representation for Black and Latino communities.

C. Districting Plans Can Be Based On Adjusted Census Data

Although the Census Bureau reports imprisoned people's cell addresses, nothing in federal or state law limits the Commonwealth from adjusting Census data to correct for prisoners' home addresses before drawing congressional districts. In the last redistricting cycle, two states made such adjustments to the official 2010 Census data, and courts upheld the resulting maps in both states. *Fletcher v. Lamone*, 831 F. Supp. 2d 887 (D. Md. 2011) (three-judge panel) (congressional districts), *aff'd without opinion*, 567 U.S. 930 (2012); *Little v. N.Y. State Legislative Task Force on Demographic Research & Reapportionment*, No. 2310-2011 (N.Y. Sup. Ct. Dec. 1, 2011) (state legislative districts), *available at* http://www.prisonersofthecensus.org/little/Decision_and_Order.pdf. More recently, the Supreme Court of Oklahoma found no federal constitutional barriers to a proposed ballot question to end prison-based gerrymandering for congressional and legislative districts that would mandate adjustments to Census data like those made by the LRC. *In re Initiative Petition No. 426, State Question No. 810*, 465 P.3d 1244, 1249-55 (Okla. 2020).

In the current redistricting cycle, at least seven states are making adjustments like this to prisoners' addresses for congressional redistricting. *See* Cal. Elec. Code § 21003; Colo. Rev. Stat. § 2-2-902; Md. Code Ann., Elec. Law,

§ 8-701; Nev. Rev. Stat. §§ 304.065, 360.288; N.J.S.A. §§ 52:4-1.1 to -1.6; Va. Code Ann. § 24.2-304.04(9); Wash. Rev. Code § 44.05.140.

Moreover, numerous states, including the Commonwealth, adjust Census data in other ways when redrawing districts, for example by excluding transient populations such as nonresident military members. *Evenwel v. Abbott*, 578 U.S. 54, 60 & n.3 (2016); *cf. also Bethel Park v. Stans*, 449 F.2d 575, 582 n.4 (3d Cir. 1971) (“Although a state is entitled to the number of representatives in the House of Representatives as determined by the federal census, it is not required to use these census figures as a basis for apportioning its own legislature.”). In Pennsylvania, the LRC has routinely made technical adjustments to the official Census reports before drawing legislative districts, such as correcting voting-district code and name discrepancies, municipality name discrepancies, late precinct changes, and problems with split blocks. *See, e.g., Holt v. 2011 Legislative Reapportionment Comm’n*, 38 A.3d 711, 719 & n.6 (Pa. 2012); LRC, *The Legislative Guide to Redistricting in Pennsylvania* (last updated May 8, 2013), <https://tinyurl.com/twmpdcx4>. Nothing restricts the Commonwealth from additionally adjusting prisoners’ addresses when redistricting. And especially since Pennsylvania’s new state legislative districts are being drawn on the basis of prisoners’ home addresses, considerations of consistency militate in favor of using the same adjusted data set for drawing congressional districts.

CONCLUSION

The Court should reject the recommendations of the Special Master and should instead select a superior congressional plan. Of the numerous constitutional, fair, and neutral plans before the Court, the Ali Plan is the best option, and the Court should select it, or in the alternative should draw its own plan according to the principles reflected in the Ali Plan.

Respectfully submitted,

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Dated: February 14, 2022

CERTIFICATE OF COMPLIANCE

I certify that this filing complies with the provisions of the Case Records Public Access Policy of the Unified Judicial System of Pennsylvania that require filing confidential information and documents differently than non-confidential information and documents.

I further certify that this brief complies with the length limitation set forth in Pa.R.A.P. 531(b)(3). According to the word count of the word-processing system used to prepare this brief, the brief contains 6,974 words, not including the supplementary matter as described in Pa.R.A.P. 2135(b).

/s/ Benjamin D. Geffen
Benjamin D. Geffen

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IN THE SUPREME COURT OF PENNSYLVANIA

Carol Ann Carter, Monica Parrilla,	:	CASES CONSOLIDATED
Rebecca Poyourow, William Tung,	:	
Roseanne Milazzo, Burt Siegel,	:	
Susan Cassanelli, Lee Cassanelli,	:	
Lynn Wachman, Michael Guttman,	:	
Maya Fonkeu, Brady Hill, Mary Ellen	:	
Balchunis, Tom DeWall,	:	
Stephanie McNulty and Janet Temin,	:	
Petitioners	:	

v.	:	No. 7 MM 2022
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Leigh M. Chapman, in her official	:
capacity as the Acting Secretary of the	:
Commonwealth of Pennsylvania;	:
Jessica Mathis, in her official capacity	:
as Director for the Pennsylvania Bureau	:
of Election Services and Notaries,	:
Respondents	:

Philip T. Gressman, Ron Y. Donagi;	:
Kristopher R. Tapp; Pamela Gorkin;	:
David P. Marsh; James L. Rosenberger;	:
Amy Myers; Eugene Boman;	:
Gary Gordon; Liz McMahan;	:
Timothy G. Feeman; and Garth Isaak,	:
Petitioners	:

v.	:
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Leigh M. Chapman, in her official	:
capacity as the Acting Secretary of the	:
Commonwealth of Pennsylvania;	:
Jessica Mathis, in her official capacity	:
as Director for the Pennsylvania Bureau	:
of Election Services and Notaries,	:
Respondents	:

**EXCEPTIONS OF DRAW THE LINES PA AMICUS PARTICIPANTS
TO THE FEBRUARY 7, 2022 REPORT AND RECOMMENDATION**

AND NOW, this 14th day of February, 2022, pursuant to the Court’s Order of February 2, 2022, Amicus Participants Adam Dusen, Sara Stroman, Mike Walsh, Myra Forrest, Athan Biss, Michael Skros, Susan Wood, Jean Handley, Daniel Mallinson, Jesse Stowell, Sandra Strauss, Rick Bryant, Jeffrey Cooper, Kyle Hynes, Priscilla McNulty and Joseph Amodei, each of whom is affiliated in some manner with the Draw the Lines PA project (the “DTL Amicus Participants”), take the following exceptions to the February 7, 2022 Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendation of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule (the “Report”):

1. The DTL Amicus Participants take exception to the Report’s inappropriate deference to the House Bill 2146 (“H.B. 2146”) Plan proposed by the Republican Legislative Intervenors, a map that was vetoed by Governor Wolf in accordance with the Pennsylvania Constitution and has not been adopted into law. See Pa. Const. art. IV, § 15. According to the United States Supreme Court, a plan that has been vetoed is not entitled to deference or owed any more than “thoughtful consideration.” *Sixty-Seventh Minnesota State Sen. v. Beens*, 406 U.S. 187, 197 (1972); *see also O’Sullivan v. Brier*, 540 F. Supp. 1200, 1202 (D. Kan. 1982) (citing *Beens*, 406 U.S. at 197, for the proposition that deference is not owed to “any plan

that has not survived the full legislative process to become law”). While the Report ostensibly “review[ed] [H.B. 2146] along with the other plans submitted to the Court to assess its compliance with the constitutional . . . [and] non-constitutional factors,” Report at 43, the Report improperly accorded deference to H.B. 2146 as “functionally tantamount to the *voice and will of the People*, . . . a device of monumental import [that] should be honored and respected by all means necessary, *id.* at 214 (emphasis added). In the same vein, the Report erroneously concluded that “the Court must find that the decisions and policy choices expressed by the legislative branch are presumptively reasonable and legitimate, absent a showing of an unconstitutional defect or deficiency.” *Id.* at 213. In contrast, the Report did not accord any deference to the plan proposed by Governor Wolf, who is himself a representative chosen by a majority of statewide electors (and not solely a particular subset of the state population). Thus, this Court should reject the Special Master’s Report as improperly deferential to H.B. 2146.

2. The DTL Amicus Participants take exception to the Report’s inappropriate focus on the treatment of one single municipality, the City of Pittsburgh, to the exclusion of consideration of other municipalities throughout the Commonwealth. In particular, the Report erroneously states that the Citizens’ Map proposed by the DTL Amicus Participants and various other maps proposed by other parties and Amicus Participants would split the City of Pittsburgh across

congressional districts for the first time “in the history of the Commonwealth.” *Id.* at 194. This is incorrect. To the contrary, Pittsburgh was regularly split among multiple Congressional districts until the 1980s redistricting cycle. *Id.* at 148; *see also* <https://www.redistricting.state.pa.us/> for redistricting summaries from 1943, 1951, 1962 and 1972, each including splits of Pittsburgh). There are several legitimate reasons why it would be appropriate to split the City of Pittsburgh among two Congressional districts, such as achieving compactness, which the Report acknowledges is better achieved with a split of Pittsburgh, Report at 155, and political competitiveness, *see infra* ¶ 3. While the Report generally references H.B. 2146’s jurisdictional splits, it provides no specific analysis of such splits, in contrast to extended discussion of the proposed split of Pittsburgh in several proposed maps. *See, e.g.*, Report at 144, 148–52. Of the four reasons cited in the Report for rejecting the Citizens’ Plan, three concerned the Plan’s proposed split of Pittsburgh. *Id.* at 201. Similarly, four of the five reasons cited in the Report for rejecting Governor Wolf’s proposed map, and three of the five reasons cited for rejecting Senate Democratic Caucus Plans 1 and 2, concerned the maps’ proposed split of Pittsburgh. *Id.* at 200–02. The Report’s inappropriate focus on the treatment of a single municipality, the City of Pittsburgh, to the exclusion of analysis of the treatment of other municipalities warrants its rejection by this Court.

3. The DTL Amicus Participants take exception to the Report’s recommendation that the Citizens’ Map should not be adopted. *Id.* at 201. The Citizens’ Map is superior to the other maps submitted to the Commonwealth Court in terms of the constitutional factors of “compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality” recognized by this Court. *See League of Women Voters v. Commonwealth*, 178 A.3d 737, 816–17 (Pa. 2018). As noted in the Report, the Citizens’ Map scores at or near the top of several compactness metrics, *see* Report at 141, tbl. 1 (depicting the high scores of the Citizens’ Map—referred to therein as the “CitizensPlan”—in the Polsby-Popper, Reock and Pop-Polygon metrics), and, according to Governor Wolf’s expert, Dr. Moon Duchin, ranks approximately third among all plans in terms of overall compactness, *id.* at 147. Although omitted from the Report’s comparison, the Citizens’ Map ties with the Senate Democratic Caucus 2 Plan for the least total number of jurisdictional divisions of any map submitted to the Court (46). *See id.* at 147. Finally, all districts in the Citizens’ Map are composed of either 764,864 or 764,865 people—a deviation of one person, which the Report noted is “as nearly equal in population as practicable.” *Id.* at 137. The Citizens’ Map is compliant with the Voting Rights Act and, as Dr. Duchin noted, “[is] far superior at leveling the partisan playing field,” particularly in comparison to H.B. 2146, which “consistently convert[s] close elections to heavy Republican representational advantages.” *Id.* at

82 (internal citation omitted). The Citizens' Map, the final product of five public mapping competitions, was created with unprecedented public engagement and input and reflects the values that over 7,200 Pennsylvanians, representing 40 of Pennsylvania's 67 counties, have declared as important to them. For these reasons, the Court should reject the Report's recommendation that the Citizens' Map should not be adopted as the plan of the Commonwealth.

4. The DTL Amicus Participants take exception to each and every subsidiary question within the issues identified in these Exceptions.

Dated: February 14, 2022

Respectfully submitted,

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Statement of Interest of Draw the Lines Amicus Curiae Participants

The Draw the Lines (“DTL”) Amicus Participants are members of Draw the Lines PA, a civic engagement project founded in 2016 and developed and hosted by the Committee of Seventy, Pennsylvania’s oldest and largest 501(c)3 nonpartisan good government organization. Draw the Lines PA is a nonpartisan education and engagement initiative that has attempted to demonstrate that ordinary Pennsylvanians, when given the same digital tools and data used in the political redistricting process, can, through a fair and transparent process, produce voting districts that are objectively better by standard mapping metrics.

Draw the Lines PA created the Citizens’ Map with the input of more than 7,200 Pennsylvania citizens. To do so, Draw the Lines PA hosted competitions open to anyone in Pennsylvania and compiled more than 1,500 maps drawn by individuals and teams throughout the state to create the Citizens’ Map.

The DTL Amicus Participants have a direct interest in the outcome of this case, as they have submitted the Citizen’s Map to the Court and believe it to be the best plan the Court will consider. The Citizen’s Map has not only scored at or near the top in every metric compared to the other maps submitted, but also best reflects the priorities of everyday Pennsylvania citizens.

SUMMARY OF ARGUMENT

Amicus Participants Adam Dusen, Sara Stroman, Mike Walsh, Myra Forrest, Athan Biss, Michael Skros, Susan Wood, Jean Handley, Daniel Mallinson, Jesse Stowell, Sandra Strauss, Rick Bryant, Jeffrey Cooper, Kyle Hynes, Priscilla McNulty and Joseph Amodei, each of whom is affiliated in some manner with the Draw the Lines PA project (the “DTL Amicus Participants”), respectfully submit this brief pursuant to the Court’s Order of February 2, 2022 in support of their three exceptions to the Special Master’s February 7, 2022 Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendation of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule (the “Report”). First, the Report erroneously accorded deference to the plan proposed in House Bill 2146 (“H.B. 2146”). Second, the Report inappropriately made splitting the City of Pittsburgh disqualifying and failed to conduct the proper constitutional analysis, which would have demonstrated that the Citizens’ Map proposed by the DTL Amicus Participants (also referred to as the “Draw the Lines’ Plan”) was the most successful plan in minimizing splits of political subdivisions. Third, the Report failed to recognize that in consideration of all of the constitutional factors of compactness, contiguity, minimization of the division of political subdivisions and maintenance of population equality, the Citizens’ Map is superior to the other maps submitted.

ARGUMENT

I. **The Plan Proposed In House Bill 2146 is Entitled to No Deference.**

The Special Master erroneously afforded the plan proposed in H.B. 2146, a bill that was vetoed by the Governor and never signed into law, special and deferential treatment to which it was not entitled. There is no precedent that suggests partisan proposals are somehow more authoritative than congressional redistricting plans that have been thoroughly and thoughtfully authored with comment and participation from non-partisan groups and individual citizens. The Report acknowledges extensive precedent recognizing that redistricting maps that were merely proposed by a branch of government but not adopted into law are owed no deference. Report at 42. However, the Report nevertheless accords substantial deference to the plan proposed in H.B. 2146 as purportedly “functionally tantamount to the voice and will of the People”, and in doing so disregards Supreme Court precedent on point, and the weight of authority to the contrary. In deciding that the plan proposed in H.B. 2146 was entitled to deference, the Special Master circumvented, and failed to conduct, the proper constitutional analysis of determining which map is the best proposal for Pennsylvania voters. If that had been done, the Citizens’ Map would have been selected, for the reasons discussed, *infra*.

A. The Report Failed to Follow the Applicable Legal Precedent.

First, in concluding that the plan proposed by the Republican Legislative Intervenor -- H.B. 2146 -- was entitled to deference the Report ignored extensive relevant precedent. According to the United States Supreme Court, a plan that has been vetoed is not owed any more than “thoughtful consideration[.]” *Sixty-Seventh Minnesota State Sen. v. Beens*, 406 U.S. 187, 197 (1972); *see also O’Sullivan v. Brier*, 540 F. Supp. 1200, 1202 (D. Kan. 1982) (citing *Beens*, 406 U.S. at 197, for the proposition that deference is not owed to “any plan that has not survived the full legislative process to become law.”); *Johnson v. Wisconsin Elections Comm’n*, 967 N.W.2d 469, 490 n.8 (Wis. 2021); *Hartung v. Bradbury*, 33 P.3d 972, 979 (Or. 2001) (rejecting the argument that deference is owed to the Legislative Assembly’s plan of reapportionment vetoed by the Governor); *Wilson v. Eu*, 823 P.2d 545, 576 (Cal. 1992) (rejecting argument that “special deference be given to the various plans passed by the Legislature but vetoed by the Governor.”).

The Report’s efforts to avoid this substantial authority are unavailing and should be rejected. The Report erroneously cited *Upham v. Seamon*, 456 U.S. 37 (1982) and *Perry v. Perez*, 132 S. Ct. 934, 941 (2012) for the propositions that district courts are not free to disregard the political program of state legislatures when fashioning reapportionment plans and legislative backed plans deserve deference. Report at 43. But *Upham* and *Perry* did not involve partisan

redistricting bills that had been vetoed by the Governor, and in fact, involved a very different process whereby under Texas law the district court had to pre-clear the legislature’s plan. Furthermore, the U.S. Supreme Court has recognized that, under the Elections Clause, “legislative action in districting the state for congressional elections shall be subject to the veto power of the Governor as in other cases of the exercise of the lawmaking power.” *See Smiley v. Holm*, 285 U.S. 355, 372-73 (1932); *see also Arizona State Legis. v. Arizona Indep. Redistricting Comm’n*, 576 U.S. 787, 806 (2015) (reaffirming *Smiley*). In this Commonwealth, the Governor has the authority under the Commonwealth’s constitution to veto election-related legislation. The Governor exercised that authority to veto H.B. 2146. Thus, the Report erred in ignoring the Supreme Court’s guidance in *Beems* that vetoed reapportionment plans are entitled to no more than “thoughtful consideration.”

B. The Report Erred in According Deference to the Plan Proposed In H.B. 2146.

The Report is deferential to the plan proposed in H.B. 2146 not because it is a superior plan but simply because it was proposed by the General Assembly – or, more specifically, by the Republican Legislative Intervenors whose caucus currently controls the General Assembly. The Report declared that it would analyze H.B. 2146 in the same manner as the other plans submitted. Report at 208, para. 61. However, the Report failed to follow its own proclamation and relied on

logical fallacy in its decision to treat H.B. 2146 more favorably than any other proposed redistricting plan.

First, the Report erroneously asserts that the legislative branch is entitled to greater deference than the executive branch and “the decisions and policy choices expressed by the legislative branch are presumptively reasonable and legitimate, absent a showing of an unconstitutional defect or deficiency.” Report at 213, ¶ 90. There is no legal authority cited by the Report for the breathtaking and fallacious conclusion that “policy choices” incorporated in a bill passed by the General Assembly that is vetoed and not adopted into law “are presumptively reasonable and legitimate[.]” *Id.* The Report also states that “HB 2146 represents ‘[t]he policies and preference of the state,’ ... and constitutes a profound depiction of what the voters in the Commonwealth of Pennsylvania desire, through the representative model of our republic and democratic form of government, when compared to the Governor or any other of the parties or their *amici*.” Report at 214, ¶ 93. The Report concludes that “the interests of the Commonwealth ... would best be served by factoring in and considering that *HB 2146 is functionally tantamount to the voice and will of the People* ... and should be honored and respected by all means necessary.” Report at 214, ¶ 94 (emphasis added).

There is no basis, however, to assume that the policy choices of the legislative branch in drawing a redistricting plan are presumptively reasonable and

legitimate, while assuming the choice of the duly elected governor to reject the redistricting plan is not. Additionally, the Report offers no explanation why the plan proposed by Governor Wolf, who is himself a representative chosen by a majority of statewide electors (and not solely a particular subset of the state population), was not entitled to similar weight. Notably, Pennsylvania’s Constitution provides a path for the General Assembly to override a Governor’s veto and enact a vetoed plan into law—a path the Republican Legislative Intervenor has not attempted to take with respect to H.B. 2146. *See* Pa. Const. art. IV, § 15; *see also* Am. Post-Hearing Submission of Intervenor-Resp. Gov. Tom Wolf at 46 (explaining that, based upon the initial votes on H.B. 2146, the legislature would not be able to obtain the requisite supermajority required to override the Governor’s veto). H.B. 2146, a bill that “never obtained the official status of a duly enacted statute” (Report at 213, ¶ 91), should be afforded no deference in judicial review and should stand on the same footing as the other plans submitted. Thus, this Court should reject the Report’s recommendation that this Court adopt and implement HB-2146 because it was based on unwarranted deference.

II. The Report Inappropriately Gave Splitting the City of Pittsburgh Near-Dispositive Weight, And Ignored Overall Performance on Minimizing Splits of Political Subdivisions.

As discussed further below, the Citizens' Map was the best of all the maps on the constitutional criteria of minimizing the division of political subdivisions, with only 46 subdivisions. The Report, however, ignored this completely – not even mentioning this excellent performance in its summary. Report at 147 (FF39), 193 (¶ 23). Instead, the Report focused myopically on the City of Pittsburgh alone and, inexplicably, suggested that the parties had a burden (not found in the law) to prove why splitting the City of Pittsburgh was necessary. The Report then concluded that splitting the City of Pittsburgh was disqualifying and rendered the Citizens' Map less desirable than H.B. 2146 or other maps that kept together the City of Pittsburgh but split many more jurisdictions. Report at 201 (citing splitting the City of Pittsburgh as three of the four reasons for rejecting the Citizens' Plan); *see also* Report at 200-02 (citing splitting the City of Pittsburgh as three of the four reasons for rejecting the Governor's Plan and three of the five reasons for rejecting the Senate Democratic Caucus Plans 1 and 2). Nowhere does the Report offer an explanation as to why the City of Pittsburgh should be treated differently than other political subdivisions. Moreover, in connection with this improper focus on the City of Pittsburgh, the Report misstates the history of congressional redistricting.

A. The DTL Amicus Participants Were Not Required to Prove the “Necessity” of Splitting the City of Pittsburgh Specifically.

The Report reasoned that neither the DTL Amicus Participants nor any other party proposing a Pittsburgh split had produced “any credible evidence as to why it was ‘necessary’ to split [Pittsburgh][.]” Report at 194, ¶ 27. This requirement is not found anywhere in the law. Instead, it appears the Special Master arrived at this evidentiary requirement based on an erroneous reading of both the Pennsylvania Constitution and this Court’s opinion in *League of Women Voters v. Commonwealth*, 178 A.3d 737 (Pa. 2018) (“*LWV II*”). First, the Report cited to the Pennsylvania Constitution Article II, Section 16, which states that: “[u]nless absolutely necessary *no county, city, incorporated town, borough, township or ward shall be divided...*” Report at 148 (CL1) (emphasis added). However, the Pennsylvania Constitution creates no special burden to prove the necessity of splitting the City of Pittsburgh in particular, just as it would create no special burden for splitting any other specific individual municipality. Rather, as indicated by this Court in *League of Women Voters II*, any proposed redistricting plan must endeavor to minimize jurisdictional splits overall, which the Citizens’ Map has done. *See LWV II*, 178 A.3d at 814-15.

Second, the Report concluded that splitting Pittsburgh was disqualifying because it was not necessary to “ensure equality of population.” Report at 148

(CL1), citing *LWW II*, 178 A.3d at 816-717 (congressional districts shall not “divide any county, city, incorporated town, borough, township, or ward, *except where necessary to ensure equality of population*”) (emphasis added). While it is true that some maps achieved population equality without splitting Pittsburgh, they did so by splitting more total political subdivisions. For example, the H.B. 2146 plan and the Gressman Plan both create 49 total splits, the Reschenthaler Plans 1 and 2 split 54 and 53 respectively, and the Carter Plan creates 57 total splits. Report at 143-146 (FF7-34); 157 (FF15). This Court’s *League of Women Voters II* decision did not require that a proposed redistricting plan afford any special deference to the City of Pittsburgh in balancing the neutral criteria of achieving population equality while minimizing jurisdictional divisions. Further, nowhere does the Report address why the Republican Legislative Intervenors were not required to justify the necessity of splitting any of the 16 municipalities the H.B. 2146 plan would split. Here, it is undisputed that the Citizens’ Map achieves the highest level of population equality (with a population deviation of only 1 person), and the lowest number of jurisdictional splits (46) of all plans proposed. *See infra* at p.19. In contrast, the H.B. 2146 plan would leave the City of Pittsburgh intact but create 49 total splits. The Report’s focus on the City of Pittsburgh to the exclusion of consideration of other jurisdictional splits was inappropriate and should be rejected.

B. The Special Master’s Report Inappropriately Overweighted Secondary Factors in Concluding that Splitting Pittsburgh Into Two Congressional Districts was a Dispositive Issue

The Citizens’ Map was superior to H.B. 2146 and other maps which propose to keep Pittsburgh in a single Congressional district because, *inter alia*, it had substantially fewer splits of political subdivisions – a key constitutional neutral criteria. Despite this, the Report concluded that three other secondary factors weighed against plans that proposed splitting Pittsburgh: eschewing proportionality, preserving historical practice, and preserving Pittsburgh as a “community of interest[.]” Report at 201. Though the Report recognized that these factors should be viewed as secondary to the constitutional neutral criteria, it not only afforded these issues substantial weight, but also relied on erroneous conclusions of law, incorrect factual statements, and incredible expert opinion to justify rejecting any plan that proposed to split Pittsburgh into two Congressional districts.

1. *The Citizens’ Map Does Not Propose to Impermissibly Create Proportional Political Representation by Splitting Pittsburgh.*

The Pennsylvania Citizens’ Map is the result of 7,200 Pennsylvanians sharing their opinions and priorities about the best way to create new congressional districts in their state. In addition to optimizing for constitutionally required criteria, the Citizens’ Map’s creators identified increasing political competitiveness within a congressional district as one of Pennsylvanians’ top priorities. Report at

201 (citing Villere Report at 4). Splitting the City of Pittsburgh not only achieves lower jurisdictional splits and increased overall compactness without sacrificing population equality, it also increases political competitiveness by creating two competitive districts where one non-competitive Democratic district had existed.

Id. To the extent increasing political competitiveness (and therefore *decreasing* the likelihood that one part or another has a guaranteed advantage) is a “political factor,” this Court has explicitly stated that these “political factors can operate at will” so long as they do not contravene constitutional requirements. *Holt v. 2011 Legis. Reapportionment Comm’n*, 67 A. 3d 1211, 1235-36 (Pa. 2013). However, in an effort to frame splitting Pittsburgh as an impermissibly political recommendation, the Report mischaracterizes both Pennsylvania and federal law to reach the conclusion that increasing political competitiveness constitutes an unlawful “balancing the representation of the political parties[.]” Report at 176.

The Report confuses the Citizens’ Plan’s goal of creating more competition within a single congressional district with an effort to advantage the Democratic Party state-wide. This is incorrect. Some level of partisan consideration is permissible in redistricting. *See Holt*, 67 A.3d at 1235-36. Notably, the H.B. 2146 plan is far *more* partisan than the Citizens’ Map: H.B. 2146 advantages Republicans by 6.3% according to Dr. DeFord (Report at 173) while the Citizens’ Map advantages Republicans by only 3.5% as discussed *infra*). The Special Master

nevertheless concludes with no evidence that the Citizens' Map's motivations for splitting Pittsburgh are impermissibly partisan. Report at 178. The Report also cites *Vieth v. Jubelirer* for the principle that "the Constitution guarantees no right to proportional representation." 541 U.S. 267, 352 fn7 (2004) (citations omitted). However, the Report neglects to explain that in this decision the Supreme Court defines "proportional representation" as "a set of procedural mechanisms used to guarantee, with more or less precision, that a political party's *seats in the legislature* will be proportionate to its share of the vote." *Id.* (emphasis added). Plainly, this definition does not encompass increasing political competitiveness within a single congressional district. In fact, increasing competitiveness actually *decreases* the likelihood of proportional representation by decreasing the number of congressional seats guaranteed to be won by one party or another.

2. *Splitting Pittsburgh Among Two Congressional Districts Aligns with Historical Pennsylvania Redistricting Maps.*

The Report also erroneously stated that the Citizens' Map proposed by the DTL Amicus Participants and four other maps proposed by other parties and Amicus Participants would split the City of Pittsburgh across congressional districts "apparently for the first time in the history of the Commonwealth." Report at 194, 201. While it is true that "preservation of prior district lines" is a legitimate "subordinate" factor (Report at 161), the notion that Pittsburgh has "remained within a single congressional district in all previous districting plans" is

factually incorrect. To the contrary, the City of Pittsburgh was routinely split into multiple congressional districts up until the 1980s. Report at 148; *see also* <https://www.redistricting.state.pa.us/maps/> (redistricting summaries from 1943, 1951, 1962 and 1972, each including splits of Pittsburgh). Thus, to the extent historical practice be given any consideration, in recent history the City of Pittsburgh has been split into multiple Congressional districts at least as often as not. The Report's reliance on the erroneous conclusion that splitting Pittsburgh is a "novel proposition" should be given no weight in this Court's decision.

3. *The Special Master's Unsupported Conclusion that Pittsburgh is a "Community of Interest" Cannot Be the Basis for Rejecting the Citizens' Map.*

Finally, as further justification that Pittsburgh should not be split, the Report wrongfully elevated the goal of preserving communities of interest above constitutional criteria. To do this, the Report concluded without citation to any precedent that "although compactness, contiguity, and respect for municipal boundaries are undoubtedly the primary tool for evaluating the constitutionality of a redistricting plan, we understand these principles serve to advance the Free and Equal Elections Clause's overarching goal of protecting the interest of communities." Report at 153. Even if the preservation of communities of interest generally were a dispositive factor in evaluating redistrict plans, it is anything but clear that the City of Pittsburgh constitutes one singular community of interest.

The Special Master relies on the testimony of Dr. Keith Naughton, who gave analysis on how the different maps under considerations addressed communities of interest. Dr. Naughton “has ‘no particular experience in redistricting,’ and has never served as an expert in redistricting litigation before.” Report at 93 (FF215). Further, “Dr. Naughton explained that ‘much of [his] professional career has been dedicated to helping Republican candidates in Pennsylvania win their seats.’” *Id.* at 94 (FF218). Given this lack of expertise and potential for partisan bias, the Court should accord Dr. Naughton’s opinion that the City of Pittsburgh constitutes a community of interest the same weight as the lay opinion of any other Pennsylvanian.

There is not a uniform legal definition in this Commonwealth of a “community of interest.” The Report recognizes that the term encompasses “school districts, religious communities, ethnic communities, geographic communities which share a common bond due to locations of rivers, mountains and highways[.]” Report at 153, quoting *Holt*, 38 A.3d at 746. Michigan’s Constitution provides an alternate definition, stating that “communities of interest may include, but shall not be limited to populations that share cultural or historical characteristics or economic interests.” Mich. Const. art. IV, § 6(13)(c). Both definitions leave room for interpretation of what groups or neighborhoods have shared interests.

One person may feel strongly that Pittsburgh's municipal boundaries are sacrosanct and must be held together in a single Congressional District. But another person may believe that as soon as you cross the Monongahela River and go through the Fort Pitt Tunnel, you may technically still be in Pittsburgh but you have entered an entirely new community, with different needs and a different culture.

Ultimately, Draw the Lines leaned on the weight of its mappers, particularly those from Allegheny County, that were drawing their own districts. From the 1,500 maps submitted to the Draw the Lines competition, a plurality of them used the three rivers confluence as a natural dividing line around Pittsburgh. Thus, what makes the Citizens' Map so strong is that it was developed using input from 7,200 Pennsylvanians, each of whose opinions are just as credible as Dr. Naughton's on something as basic as Pennsylvania culture and what their neighborhood should be like.

In the end, the Report's conclusion that it was impermissible to split the City of Pittsburgh into two Congressional Districts arose from numerous legal and factual errors. Here, the Citizens' Plan split less political subdivisions than any other plan, and under the neutral constitutional criteria, that is much more important than whether any one jurisdiction was split.

III. The Citizens' Map is Superior to the Other Maps Submitted.

The Report erroneously failed to give sufficient weight to the constitutional neutral factors that this Court has explained govern congressional redistricting. Instead, it focused on partisan fairness, but turned this analysis on its head to require that Republican majorities be preserved. When the correct constitutional analysis is applied, it is clear that the Citizens' Map proposed by the DTL Amicus Participants is superior to the other maps submitted. In addition to excelling in all the constitutional criteria, the Citizens' Map was created with unprecedented public engagement and input and reflects the values that over 7,200 Pennsylvanians, representing 40 of Pennsylvania's 67 counties, have declared as important to them.

A. Neutral Constitutional Criteria Favor the Citizens' Map.

In *League of Women Voters II*, this Court laid out the congressional redistricting standards that are necessary to comply with the Free and Equal Elections Clause in the Pennsylvania Constitution, Article I, Section 5. Specifically, this Court explained that the key factors were “the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts.” *LWV II*, 178 A.3d at 817. The evidence demonstrates that the Citizens' Map for congressional

redistricting is far superior to the H.B. 2146 Plan that the Report recommended when evaluated under these criteria.

Dr. Moon Duchin, an expert retained by Governor Wolf, is a Professor of Mathematics and a Senior Fellow at Tufts University who has published numerous scholarly works on redistricting. Report at 74-75 (FF112-13). Dr. Duchin also runs an interdisciplinary research lab focused on geometric and computational and analytical aspects of redistricting. Report at 75 (FF114). Dr. Duchin placed the Draw the Lines Plan in the top tier (Tier One) on neutral criteria (along with Governor’s Plan, Voters of the Commonwealth and Reschenthaler I). Report at 79-80 (F138) (recognizing it as meeting “a high excellence standard for traditional criteria”). H.B. 2146, in contrast, was not in either Dr. Duchin’s “high excellence standard” tier of plans or the lower “excellence standard” tier. *Id.* at 79-80 (FF138-39).

Looking at the neutral criteria one by one yields the same result. In each category, the Citizens’ Map is either equal or superior to the H.B. 2146 plan. First, the Citizens’ Map satisfied the contiguity requirement, as did the other proposed maps. Report at 137 (CL1-3). Second, as to population equality, Citizens’ Map met the standard that districts be created “as nearly equal in population as practicable,” with a deviation of only 1 person, consistent with most other plans, and better than the Carter Plan and House Democratic Plan. Report at 138 (CL1-

2). However, with respect to the other two neutral factors, the Citizens' Map is clearly superior. As to compactness, the Citizens' Map scores at or near the top of several compactness metrics (Polsby-Popper, Reock, Pop-Polygon metrics) and is superior to HB-2146 in four out of five of these metrics. Report at 141(FF4 tbl 1). According to Dr. Duchin, the Citizens' Map ranks approximately third or fourth among all maps submitted in terms of overall compactness, while the H.B. 2146 plan was not ranked as highly. Report at 147 (FF1-3). And as to minimization of the division of political subdivisions, the Citizens' Map was at the top -- tied with the Senate Democratic Caucus 2 Map for the least total number of jurisdictional divisions of any map submitted to the Court. Report at 145 (FF23-24) (concluding that the Citizens' Map had 46 subdivisions); Report at 144 (FF19) (Senate Democratic Caucus 2 Map had 46 subdivisions); Report at 147 (FF39) and 193 (¶ 23) (stating that the plan which divided the fewest political subdivisions was the Senate Democratic Caucus 2 with 46 subdivisions, but failing to mention the Citizens' Map). Thus, under the constitutional factors the Citizens' Map should be adopted as the plan of the Commonwealth.

B. Partisan Fairness Also Favor the Citizens' Map.

In addition to the neutral factors, "partisan gerrymandering" is impermissible under the Pennsylvania Constitution because it "dilutes the votes of those who in prior elections voted for the party not in power to give the party in

power a lasting electoral advantage[.]” *LWV II*, 178 A.3d at 813-14, 817 (where the neutral criteria are subordinated to “gerrymandering for unfair partisan political advantage” the congressional districting plan violates the Pennsylvania Constitution). When examining the Citizens’ Map properly under the lens of partisan fairness, it is superior to H.B. 2146 and the other alternate plans.

As Dr. Duchin explained, the Governor’s Plan and the Draw the Lines’ Plan “are far superior at leveling the partisan playing field,” whereas H.B. 2146 “consistently convert[ed] close elections to heavy Republican representational advantages.” Report at 82 (FF151). The Report erred in discounting this testimony and instead reasoning that due to the geographic clustering of Democrats in Pennsylvania, it is a *fait accompli* that any map that attempts to minimize the inherent advantage awarded to the Republican Party is a partisan gerrymander. *Id.* at 197, ¶ 40 (concluding it was partisan gerrymandering when the lines drawn “negate a natural and undisputed Republican tilt that results from the objective, traditional, and historical practice whereby Democratic voters are clustered in dense and urban areas”). Yet, there is no law that says a political party is guaranteed a certain share of representation based simply on such geographic distribution. Rather, maps must minimize partisan bias for either party to the greatest extent possible under Pennsylvania’s Free and Equal Elections Clause, consistent with the other Constitutional criteria. *See LWV II*, 178 A.3d at 817.

That is what the Citizens' Map accomplishes. In selecting the H.B. 2146 map, the Report improperly concluded that a map giving "heavy Republican representational advantages" was permissible, but a map that was superior in all constitutional criteria was not because it attempted to neutralize that advantage.

The Report also erred in concluding that "based on its credited efficiency gap score, [the Citizens' Map] provides a partisan advantage to the Democratic party in contravention to the natural state of political voting behavior and bias towards Republicans in Pennsylvania." Report at 201. In fact, the publicly available website PlanScore gives the Citizens' Map an efficiency gap of 3.5% in favor of Republicans when not factoring in the power of incumbency. *See* <https://planscore.campaignlegal.org/plan.html?20220112T114256.829958524Z>; *see also* Report at 113-14 (FF335) (explaining the 3.5% efficiency gap in favor of Republicans). This means Republicans would win an extra 3.5% of 17 seats, or an extra half-seat. *Id.* (FF335) When factoring incumbency, there is a 0.2% gap in favor of Republicans. Report at 114 (FF336). Moreover, when analyzing the Citizen Map's mean-median difference, Dr. DeFord concluded that it was 1.6% in favor of Republicans. Report at 170-71 (FF20).

To conclude that the Citizens' Map provides a partisan advantage to Democrats, the Report also relied heavily on an unreliable analysis from Dr. Michael Barber. Dr Barber agreed that his analysis did not consider a number of

variables, including the voting results of all recent statewide elections, Voting Rights Act requirements, equal population requirements (his simulations improperly allowed for a variance of 30), the splitting of wards, or communities of interest concerns. Report at 92-93 (FF212). Moreover, Dr. Barber does not have the proper credentials to serve as a reliable expert. As Legislative Reapportionment Commission Chairman Mark Nordenberg noted, Dr. Barber “has not published a single academic article in the areas for which his expert testimony was being presented.” *See* Meeting of the Pennsylvania Legislative Reapportionment Commission Approval of a Final Plan, at p. 18 (Feb. 4, 2022) (available at www.redistricting.state.pa.us/resources/Press/2022-02-04%20Chairmans%20Statement.pdf.) Chairman Nordenberg largely dismissed Dr. Barber’s analysis on the legislative maps because other academics could not accurately replicate his work. *Id.* The Court should do the same here.

Lastly, the Report erroneously concluded that Draw the Lines’ incumbent pairings showed greater partisan influence.¹ Specifically, the Report noted that since Pennsylvania lost one seat in the U.S. House of Representatives, one set of incumbents must be paired in a single district, and that how these incumbents are

¹ The Report acknowledged that protection of incumbents is not “a constitutionally required, or necessarily dispositive consideration,” and “wholly subordinate” to the constitutional criteria as stated in *LVW II*, 178 A.3d at 817, but still considered this factor. Report at 178 (CL1).

paired could be used to assess whether a proposed plan was partisan. Report at 178-79 (FF1-2). The Report concluded that it would be most non-partisan and desirable if the two Democratic incumbents who were not seeking re-election (Lamb and Doyle) were paired with each other or other Democratic incumbents. Report at 179 (FF4-5). Because Draw the Lines did not do so, but paired three Republican incumbents with one Democrat, the Report wrongly concluded that its map was more partisan. Report at 181 (FF24-25). In fact, six Republican-held districts require adding people to meet the new population target (764,865), while all but two Democratic-held districts will need to shed population to meet the target population.² This will require more Republican-held districts to expand geographically. Thus, it makes more sense to pair Republican incumbents together in light of the neutral constitutional criteria, as the Citizens' Map has done.

In conclusion, the Citizens' Map is superior to the H.B. 2146 Republican map selected by the Report both on the constitutional neutral criteria, and the additional metrics that are important to Pennsylvanians, like competitiveness, and limiting partisan bias (as discussed further below).³ Moreover, it was created with

² See <https://data.census.gov/cedsci/table?g=0400000US42%245000000&y=2020&d=DEC%20Redistricting%20Data%20%28PL%2094-171%29&tid=DECENNIALPL2020.P1> (2020 census data reflecting total population in each PA district).

³ In addition, the Report acknowledges that the Citizens' Map has the same number of majority-minority districts as H.B. 2146 (and most of the other maps) and that it

unprecedented public engagement and input. It is a composite map that incorporates what over 7,200 Pennsylvanians, representing 40 of Pennsylvania's 67 counties, collectively mapped through public Draw the Lines competitions over the last four years, and reflects the values that mappers declared as important to them. The Citizens' Map, in effect, represents the everyday Pennsylvania, and the Special Master erred in not recommending it.

IV. CONCLUSION

For the foregoing reasons, the Exceptions of the DTL Amicus Participants should be granted, and this Court should adopt the Citizens' Map as the final Congressional redistricting plan.

Dated: February 14, 2022

Respectfully submitted,

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was likely to be compliant with Section 2 of the Voting Rights Act. Report at 182-183.

CERTIFICATE OF COMPLIANCE

I hereby certify that this filing complies with the provisions of the Public Access Policy of the Unified Judicial System of Pennsylvania: Case Records of the Appellate and Trial Courts that require filing of confidential information and documents differently than non-confidential information and documents.

/s/ John P. Lavelle, Jr.
John P. Lavelle, Jr. (Pa. ID No. 5427)

CERTIFICATE OF SERVICE

I hereby certify that I am this day serving the foregoing document upon the persons and in the manner indicated below, which service satisfies the requirements of Pa.R.A.P. 121:

Service by PACFile eService as follows:

All counsel of record

Dated: February 14, 2022

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IN THE SUPREME COURT OF PENNSYLVANIA

Carol Ann Carter; Monica Parrilla; : CASES CONSOLIDATED

Rebecca Poyourow; William Tung; :

Roseanne Milazzo; Burt Siegel; : No. 7 MM 2022

Susan Cassanelli; Lee Cassanelli; :

Lynn Wachman; Michael Guttman; : **AMICUS PARTICIPANTS'**

Maya Fonkeu; Brady Hill; Mary Ellen; : **("CITIZEN-VOTERS")**

Balchunis; Tom DeWall, Stephanie : **EXCEPTIONS TO REPORT**

McNulty and Janet Temin, : **CONTAINING PROPOSED**

: **FINDINGS OF FACT AND**

Petitioners, : **CONCLUSIONS OF LAW**

v. : Counsel of Record for Amicus
: Participants ("Citizen-Voters"):

Leigh Chapman, in her official :
capacity as the Acting Secretary of : Dillon, McCandless, King,
the Commonwealth of Pennsylvania; : Coulter & Graham L.L.P.

Jessica Mathis, in her official :
capacity as Director for the : Thomas W. King III
Pennsylvania Bureau of Election : PA. ID No. 21580
Services and Notaries, : tking@dmkcg.com

Respondents, : Thomas E. Breth
: PA. ID No. 66350
: tbreth@dmkcg.com

Phillip T. Gressman; Ron Y. Donagi; :
Kristopher R. Tapp; Pamela Gorkin; : Jordan P. Shuber
David P. Marsh; James L. : PA. ID No. 317823
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Boman; Gary Gordon; Liz :
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: 724-283-2200 (phone)
Petitioners, : 724-283-2298 (fax)

v.

Leigh Chapman, in her official :
capacity as the Acting Secretary of :

the Commonwealth of Pennsylvania;:
Jessica Mathis, in her official :
capacity as Director for the :
Pennsylvania Bureau of Election :
Services and Notaries, :

Respondents, :

Leslie Osche, Kim Geyer, Michael T. :
Slupe, Candee Barnes, Thomas :
Reep, Brandy Reep, Kenneth :
Lunsford, Tammy Lunsford, James :
Thompson, Pamela Thompson, :
Joseph Renwick, Stephanie :
Renwick, Louis Capozzi, David Ball, ;
Mary E. Owlett, Kristine Eng, Justin :
Behrens, James P. Foreman, :
Matthew J. Stuckey, Anthony J. :
Luther, Linda C. Daniels, Jeffrey :
Piccola, James Vasilko, Jay :
Hagerman, and Evan P. Smith, :

Amicus Participants, :

v. :

Leigh Chapman, in her official :
capacity as the Acting Secretary of :
the Commonwealth of Pennsylvania;:
Jessica Mathis, in her official :
capacity as Director for the :
Pennsylvania Bureau of Election :
Services and Notaries, :

Respondents.

**AMICUS PARTICIPANTS’ (“CITIZEN-VOTERS”) EXCEPTIONS TO
REPORT CONTAINING PROPOSED FINDINGS OF FACT AND
CONCLUSIONS OF LAW**

Amicus Participants (“Citizen-Voters”)¹, by and through their undersigned counsel, hereby file the within Exceptions to the Master’s Report (authored by the Hon. Patricia McCollough) Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendations of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule (“Master’s Report”).

Introduction

The Master’s Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendations of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule (“Master Report”) was a well-reasoned and thorough review of the maps submitted in the present matter. Citizen Voters recognize the efforts set forth by the parties to the present matter as well as the Master

¹ Leslie Osche, Kim Geyer, Michael T. Slupe, Candee Barnes, Thomas Reep, Brandy Reep, Kenneth Lunsford, Tammy Lunsford, James Thompson, Pamela Thompson, Joseph Renwick, Stephanie Renwick, Louis Capozzi, David Ball, Mary E. Owlett, Kristine Eng, Justin Behrens, James P. Foreman, Matthew J. Stuckey, Anthony J. Luther, Linda C. Daniels, Jeffrey Piccola, James Vasilko, Jay Hagerman, and Evan P. Smith.

in accomplishing, “the ‘unwelcome obligation’” of choosing an appropriate congressional redistricting plan on a heavily restricted timeline.

Notwithstanding the Master’s thorough and well-reasoned report, several matters regarding the “Citizen-Voters” map and submission necessitate the filing of the present exceptions. While the Master’s recommended map, HB 2146, certainly satisfies the constitutional requirements for a proposed congressional map in the Commonwealth of Pennsylvania, the “Citizen-Voters” map, and in the alternative, the “Reschenthaler 1” map, perform better than HB 2146 in several of the metrics used by the Master in determining which map to recommend to this Court. In light of these alleged errors, Amicus Participants file the within Exceptions to the Master’s Report, stating in support thereof as follows:

Exception One

The Master erred in extending deference to the HB 2146 Map for the sole reason that HB 2146 had gone through the proper legislative channels prior to the present litigation as the “Citizen-Voters” map, and in the alternative, the “Reschenthaler 1” map, better satisfy the constitutional requirements of a proposed congressional district map in the Commonwealth of Pennsylvania and in particular with respect to “splits” or divisions of counties.

Exception Two

The Master erred in declining to recommend the adoption of the “Citizen-Voters” map because “it has a two-person difference in population from the largest to their smallest districts, while the majority of other plans were able to achieve a one-person deviation.” See Master’s Report, at pg. 204. As noted in the Master Report’s Proposed Findings of Fact, Conclusions of Law, and Adoption of Map Recommendation, Finding 18 on p. 192, the Carter Plan and the House Democratic Plan are the only plans that result in a two-person deviation. See Master’s Report, FF 18, at pg. 192. Moreover, a review of the “Citizen-Voters” map shows that the population deviation for each district is set forth on the face of the map and such figures show that no district deviated by more than one person. A true and correct copy of the data sheets utilized in drafting the Citizen Voters proposed 17-district congressional map, showing a maximum deviation of one person, is attached hereto as “Exhibit A.”

Exception Three

The Master erred in declining to recommend adoption of the Citizen-Voter’s Plan because “it was not accompanied by an expert report or testimony consequently, the Court received no testimonial or written explanation concerning why the map drew the lines in the particular manner

that it did and to demonstrate why the divides in the maps were absolutely necessary to achieve population equality as opposed to some other secondary or impermissible goal.” See Master’s Report, at pg. 204. As noted by the Commonwealth Court’s Order dated January 14, 2022, “Amicus Participants who wish to submit for the Court’s consideration one (1) proposed 17-district congressional redistricting map/plan . . . and, *if the Amicus Participant chooses to do so*, a supporting brief and/or a support expert report, by 5:00 p.m. on Monday, January 24, 2022.” (emphasis added). Accordingly, an expert report was not mandated nor required for an Amicus Participant’s map(s) to be considered by the Master.

Exception Four

The Master erred in finding that, “[t]he Citizen Voters did not provide an expert report to support their map. Consequently, the Court received no expert testimonial or written explanation concerning why the map drew the lines in the particular manner that it did, and, perhaps, more importantly, to demonstrate why the divides in the maps were absolutely necessary to achieve population equality as opposed to some other secondary or impermissible goal. There was no discussion or evidence whatsoever presented by Citizen Voters that their district lines preserved communities of interests. Left with this evidentiary mode of speculation, the Court provides

little to no weight to the map submitted by the Citizen Voters.” See Master’s Report, FF 11 at pg. 156. On the contrary, the Amicus Participants’ (“Citizen-Voters”) Proposed Map of Congressional Districts, filed on January 24, 2022, clearly shows “Citizen-Voters” efforts to maintain communities of interest. See Amicus Participants’ (“Citizen-Voters”) Proposed Map of Congressional Districts, at Pg. 1-2.

Exception Five

In the alternative, the Master erred in declining to adopt Reschenthaler 1 Map as the Reschenthaler 1 Map had the lowest county split of all the maps presented (13 Counties), had the lowest “county pieces” (29), had the lowest municipal splits (16 Municipalities), tied for the lowest number of “municipal pieces” (33), and “[is] consistent with the Free and Equal Elections Clause of the Pennsylvania Constitution, and, also, the aspirations and ideals expressed by that constitutional provision as pronounced by the Court in LWV II due to [its] compactness, degree of partisan fairness, and specific development of congressional districts.” See Master’s Report, at FF 24 (pg. 193); FF 54 (pg. 206); FF 57 (pg. 207).

Exception Six

The Master erred in finding that, “the Senate Democratic Caucus 2 Plan, the House Democratic Caucus Plan, the Draw the Lines Plan, the Reschenthaler 1 Plan, and the Citizen-Voters Plan have three incumbent pairings and as such will be given less weight in this regard,” as the “protection of incumbents,” is a factor to be wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts. See *League of Women Voters v. Commonwealth*, 178 A.3d 737, 817 (Pa. 2018). The Reschenthaler 1 Map and the Citizen-Voters Map in actuality have only one incumbent pairing.

WHEREFORE, Amicus Participants (“Citizen-Voters”) respectfully request that this Honorable Court sustain their exceptions to the Master’s Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendations of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule (“Master Report”) and request that this Honorable Court adopt the Citizen-Voters’ map or, in the alternative, the Reschenthaler 1 map, as the map closest in accomplishing the Citizen-Voters’ “aim to maintain county line integrity in the plan.”

Respectfully submitted,

**DILLON, McCANDLESS, KING,
COULTER & GRAHAM, L.L.P.**

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District	Total Population	Deviation
District 1	764865	0
District 2	764865	0
District 3	764864	-1
District 4	764865	0
District 5	764865	0
District 6	764865	0
District 7	764864	-1
District 8	764865	0
District 9	764864	-1
District 10	764865	0
District 11	764865	0
District 12	764865	0
District 13	764865	0
District 14	764864	-1
District 15	764865	0
District 16	764865	0
District 17	764864	-1

EXHIBIT A

A2370

CERTIFICATE OF COMPLIANCE

I certify that this filing complies with the provisions of the Public Access Policy of the Unified Judicial System of Pennsylvania: Case Records of the Appellate and Trial Courts that require filing confidential information and documents differently than non-confidential information and documents.

/s/ Thomas W. King, III
Thomas W. King, III

CERTIFICATE OF SERVICE

I certify that this filing was served via PACFile upon all counsel of record this 14th day of February, 2022.

/s/ Thomas W. King, III
Thomas W. King, III

Leigh Chapman, in her official
capacity as the Acting Secretary of
the Commonwealth of
Pennsylvania; Jessica Mathis, in
her official capacity as Director for
the Pennsylvania Bureau of
Election Services and Notaries,

Respondents,

Leslie Osche, Kim Geyer, Michael
T. Slupe, Candee Barnes, Thomas
Reep, Brandy Reep, Kenneth
Lunsford, Tammy Lunsford, James
Thompson, Pamela Thompson,
Joseph Renwick, Stephanie
Renwick, Louis Capozzi, David
Ball, Mary E. Owlett, Kristine Eng,
Justin Behrens, James P.
Foreman, Matthew J. Stuckey,
Anthony J. Luther, Linda C.
Daniels, Jeffrey Piccola, James
Vasilko, Jay Hagerman, and Evan
P. Smith,

Amicus Participants,

v.

Leigh Chapman, in her official
capacity as the Acting Secretary of
the Commonwealth of
Pennsylvania; Jessica Mathis, in
her official capacity as Director for
the Pennsylvania Bureau of
Election Services and Notaries,

Respondents.

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**AMICUS PARTICIPANTS’ (“CITIZEN-VOTERS”) BRIEF IN SUPPORT
OF EXCEPTIONS TO REPORT CONTAINING PROPOSED FINDINGS
OF FACT AND CONCLUSIONS OF LAW**

Amicus Participants (“Citizen Voters”)¹, by and through their undersigned counsel, hereby file the within Brief in Support of Amicus Participants’ Exceptions to the Master’s Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendations of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule (“Master’s Report”), stating in support thereof as follows:

I. Summary of Argument.

Amicus Participants (“Citizen Voters”) except to the Master’s Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendations of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule as the Court erred in extending deference to the HB 2146 Map for the sole reason that such map had been submitted to, and approved by, Pennsylvania’s General Assembly; erred in declining to consider the Citizen Voters plan for the reason that the

¹ Leslie Osche, Kim Geyer, Michael T. Slupe, Candee Barnes, Thomas Reep, Brandy Reep, Kenneth Lunsford, Tammy Lunsford, James Thompson, Pamela Thompson, Joseph Renwick, Stephanie Renwick, Louis Capozzi, David Ball, Mary E. Owlett, Kristine Eng, Justin Behrens, James P. Foreman, Matthew J. Stuckey, Anthony J. Luther, Linda C. Daniels, Jeffrey Piccola, James Vasilko, Jay Hagerman, and Evan P. Smith.

plan was unaccompanied by an expert report; erred in concluding that Citizen Voters plan, “has a two-person difference in population from the largest to their smallest districts;” and, in the alternative, erred in declining to adopt the Reschenthaler 1 plan as the Master’s recommended map for adoption by the Pennsylvania Supreme Court.

The Court’s Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendations of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule concluded that

[b]ased on all of the foregoing, the Court does not recommend adopting the Citizen Voters’ Plan for the congressional districts in the Commonwealth of Pennsylvania because:

- 1) It was not accompanied by an expert report or testimony consequently, the Court received no testimonial or written explanation concerning why the map drew the lines in the particular manner that it did and to demonstrate why the divides in the maps were absolutely necessary to achieve population equality as opposed to some other secondary or impermissible goal;
- 2) It has a two-person difference in population from the largest to their smallest districts, while the majority of other plans were able to achieve a one-person deviation.

See Master’s Report, at pg. 204.

As an initial matter, the Court’s Order permitting Amicus Participants to submit a proposed map for the Master’s consideration did not require the submission of an expert report as a condition for the Master’s consideration

of any submitted maps. Respectfully, the Master's refusal to consider maps submitted without an expert report is in error as Amicus Participant Citizen-Voters' map submission included a supporting brief which brief set forth the Citizen-Voters' reasons for drafting their map in the manner that they did.

Further, the Master erred in determining that Citizen-Voters' map had, "a two-person difference in population from the largest to their smallest districts, while the majority of other plans were able to achieve a one-person deviation," as the Citizen-Voters' map did not have any districts exceeding a variation of "-1."

The Master additionally erred in declining to recommend the adoption of Citizen-Voters' map as Citizen-Voters' map satisfies all of the constitutional requirements for a proposed congressional district map in the Commonwealth of Pennsylvania and was one of the plans dividing the fewest counties, cities, incorporated towns, boroughs, townships, and wards, thereby displaying the Citizen-Voters' efforts to maintain communities of interest.

Lastly, in the alternative, the Master erred in declining to adopt the Reschenthaler 1 Map as such map satisfies all of the constitutional requirements for a proposed congressional district map; satisfies the ideals and goals expressed by the Free and Equal Elections Clause, as set forth

by the Pennsylvania Supreme Court; and consistently outperformed other maps in virtually every metric set forth by this Court. Importantly, to this Amicus Participant, it has the lowest number of county splits or divisions.

II. Argument.

A. The Master’s Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendations of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule improperly disqualified Amicus Participants Citizen-Voters’ Proposed Congressional Map.

The Master’s Report expressly did not recommend the adoption of the Citizen Voters’ map because: 1) Citizen Voters did not submit an expert report or testimony concerning, “why the map drew the lines in the particular manner that it did;” and 2) Citizen Voters map allegedly had a two-person difference in population from the largest to their smallest districts, while the majority of other plans were able to achieve a one-person deviation.

1. Citizen-Voters’ were not required to submit an expert report for the consideration of their map.

On January 14, 2022, following oral argument on the ten applications to intervene filed in the present matter, the Court issued an Order denying the applications for leave to intervene filed by Voters of the Commonwealth of Pennsylvania, Citizen Voters, Draw the Lines-PA, and Khalif Ali, *et al.*

Pursuant to the Court's January 14, 2022, Order, Voters of the Commonwealth of Pennsylvania, Citizen Voters, Draw the Lines-PA, and Khalif Ali, *et al.* were permitted to participate in the present matter as "Amicus Participants." Amicus Participants were permitted to participate in the present matter as follows,

Amicus Participants who wish to submit for the Court's consideration one (1) proposed 17-district congressional redistricting map/plan that is consistent with the results of the 2020 Census shall file the proposed map/plan and, if the Amicus Participant chooses to so, a supporting brief and/or a supporting expert report, by 5:00 p.m. on Monday, January 24, 2022.

As shown by Court's Order dated January 14, 2022, Amicus Participants were not required to submit an expert report for the consideration of their proposed congressional map.

Despite the fact that an expert report was not mandated for the consideration of a proposed 17-district congressional redistricting map/plan, the Master refused to consider or recommend the adoption of Citizen Voters' proposed map, stating that,

[t]he Citizen Voters did not provide an expert report to support their map. Consequently, the Court received no expert testimonial or written explanation concerning why the map drew the lines in the particular manner that it did and, perhaps, more importantly, to demonstrate why the divides in the maps were absolutely necessary to achieve population equality as opposed to some other secondary or impermissible goal. There was no discussion or evidence whatsoever presented by Citizen Voters that their district lines preserved communities of interests. Left

with this evidentiary mode of speculation, the Court provides little to no weight to the map submitted by the Citizen Voters.

See Master's Report, FF 11, at pg. 156.

While Citizen Voters acknowledge that an expert report was not submitted with their proposed map, and Citizen Voters were not permitted to offer testimony at the evidentiary hearings held in this matter due to their status as an Amicus Participant, the Citizen Voters did submit a brief with their proposed map. The Citizen Voters' brief sets forth the efforts to maintain communities of interest as well as the reasons for the layout of their map as follows:

The proposed Congressional Redistricting Map submitted by the Citizen-Voters restores the following counties which were split by Pennsylvania's 2018 Congressional District Map: Washington, Cambria, Butler, and Centre. The proposed map endeavors to maintain communities of interest in one congressional district. For example, the Citizen Voters' proposed Map includes the City of Pittsburgh and the South Hills of Allegheny County in one district in District 17. In drafting the Citizen Voters' proposed map, efforts were taken to ensure that the proposed map split fewer municipalities than Pennsylvania's 2018 Congressional District Map, with fewer than sixteen (16) municipalities split by the Citizen Voters' map as compared to the nineteen (19) municipalities split by Pennsylvania's 2018 Congressional District Map. Further, the Citizen Voters' Map splits fewer than One Hundred and Nine (109) school districts as compared to the One Hundred and Twenty-Four (124) school districts split by Pennsylvania's 2018 Congressional District Map.

See Amicus Participants Citizen Voters' Brief, at Pg. 1-2.

Citizen Voters' proposed map, and the accompanying Brief in Support, set forth the Citizen-Voters' efforts to maintain communities of interest, as opposed to some other secondary or impermissible goal. Accordingly, the Master erred in providing, "little to no weight," to the map submitted by the Citizen Voters.

2. The Master erred in finding that Citizen-Voters' map had a two-person difference in population from the largest to their smallest districts, as the Citizen-Voters' map had a maximum deviation of one-person.

The Master refused to recommend the adoption of the Citizen Voters' map because, "it has a two-person difference in population from the largest to their smallest districts, while the majority of other plans were able to achieve a one-person deviation." See Master's Report, at Pg. 204. However, this finding is in error as the Citizen-Voters' map does not contain any districts which have a deviation greater than one person.

Seemingly, the fact that Citizen-Voters' map does not have a district with a deviation greater than one-person was recognized by the Master earlier in the report. The Master's Report's Finding of Fact 18 provides, "[h]owever, ***unlike the other plans that have a maximum population deviation of one person***, the Carter Plan and the House Democratic Plan both result in districts that have a two-person deviation." See Master's Report, FF 18, at Pg. 192. (emphasis added).

An examination of the map submitted by Citizen Voters reveals that the population deviation is set forth on the face of the map and that such deviation does not exceed one in any of the proposed districts therein. Citizen Voters' proposed 17th District, 14th District, 9th District, and 7th District have a deviation of one person, while the remaining proposed districts do not deviate at all. A true and correct copy of the data sheets utilized in drafting the Citizen Voters proposed 17-district congressional map, showing a maximum deviation of one person, is attached hereto as "Exhibit A."

Accordingly, the Master erred in refusing to consider Citizen-Voters' proposed map because, "[i]t has a two-person difference in population from the largest to their smallest districts," as Citizen-Voters' proposed map did not create any districts with a deviation greater than one person.

3. The Master erred in refusing to adopt Citizen-Voters' map as such map satisfies all of the constitutional requirements of a proposed congressional district map in the Commonwealth of Pennsylvania.

The Master's Report concluded that it does not recommend the adoption of Citizen-Voters' map in the present matter, and instead recommended the adoption of the HB 2146 Map. See Master's Report, FF 97, at Pg. 216. While the Court's analysis of the HB 2146 Map was well reasoned and thoroughly conducted, the Court ultimately extended great deference to HB 2146 simply by virtue of the map having gone through the

legislative process. However, an analysis of the Citizen-Voters' map reveals that it better satisfies all of the constitutional requirements for a proposed congressional map in the Commonwealth of Pennsylvania and consistently outperformed other maps in several metrics utilized by the Master to determine which map to recommend to this Court for adoption.

Article I, Section 5 of the Pennsylvania Constitution provides that, “[e]lections shall be free and equal; and no power, civil or military, shall at any time interfere to prevent the free exercise of the right of suffrage.”

The Pennsylvania Supreme Court has had occasion to review Pennsylvania's Free and Equal Elections Clause and has interpreted the same to prohibit, “any legislative scheme which has the effect of impermissibly diluting the potency of an individual's vote for candidates for elective office relative to that of other voters.” *League of Women Voters v. Commonwealth*, 178 A.3d 737, 809 (Pa. 2018); *citing City of Bethlehem v. Marcincin*, 515 A.2d 1320, 1323-24 (Pa. 1986). In so holding, the Court established “neutral benchmarks” to measure a congressional district map's compliance with Article I, Section 5 by drawing upon Article II, Section 16 of the Pennsylvania Constitution. Article II, Section 16 of the Pennsylvania Constitution provides,

[t]he Commonwealth shall be divided into fifty senatorial and two hundred three representative districts, which shall be composed

of compact and contiguous territory as nearly equal in population as practicable. Each senatorial district shall elect one Senator, and each representative district one Representative. Unless absolutely necessary no county, city, incorporated town, borough, township, or ward shall be divided in forming either a senatorial or representative district.

Pa. Const. Art. II, §16.

Upon review of Article II, Section 16, this Court held that to satisfy the requirements of Article I, Section 5 of the Pennsylvania Constitution, a congressional district map must be, “composed of compact and contiguous territory; as nearly equal in population as practicable; and which do not divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population.” *League of Women Voters*, 178 A.3d at 816-17.

In addition to the factors established by Article II, Section 16, the Court noted that other factors such as, “the preservation of prior district lines, protection of incumbents, or the maintenance of the political balance which existed after the prior reapportionment.” *Id.* at 817. One such additional factor to be reviewed by a Court in adopting a proposed congressional redistricting plan is, “whether the plans operate to dilute the voting impact of any minority,” under Section 2 of the Voting Rights Act of 1965, 42 U.S.C. § 1973. *See Mellow v. Mitchell*, 607 A.2d 204, 208 (Pa. 1992). While such factors are permissible to consider in determining the constitutionality of a proposed

congressional district map, these factors are, “wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts.” As stated by this Court,

[w]e recognize that other factors have historically played a role in the drawing of legislative districts, such as the preservation of prior district lines, protection of incumbents, or the maintenance of the political balance which existed after the prior reapportionment. However, we view these factors to be wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts.

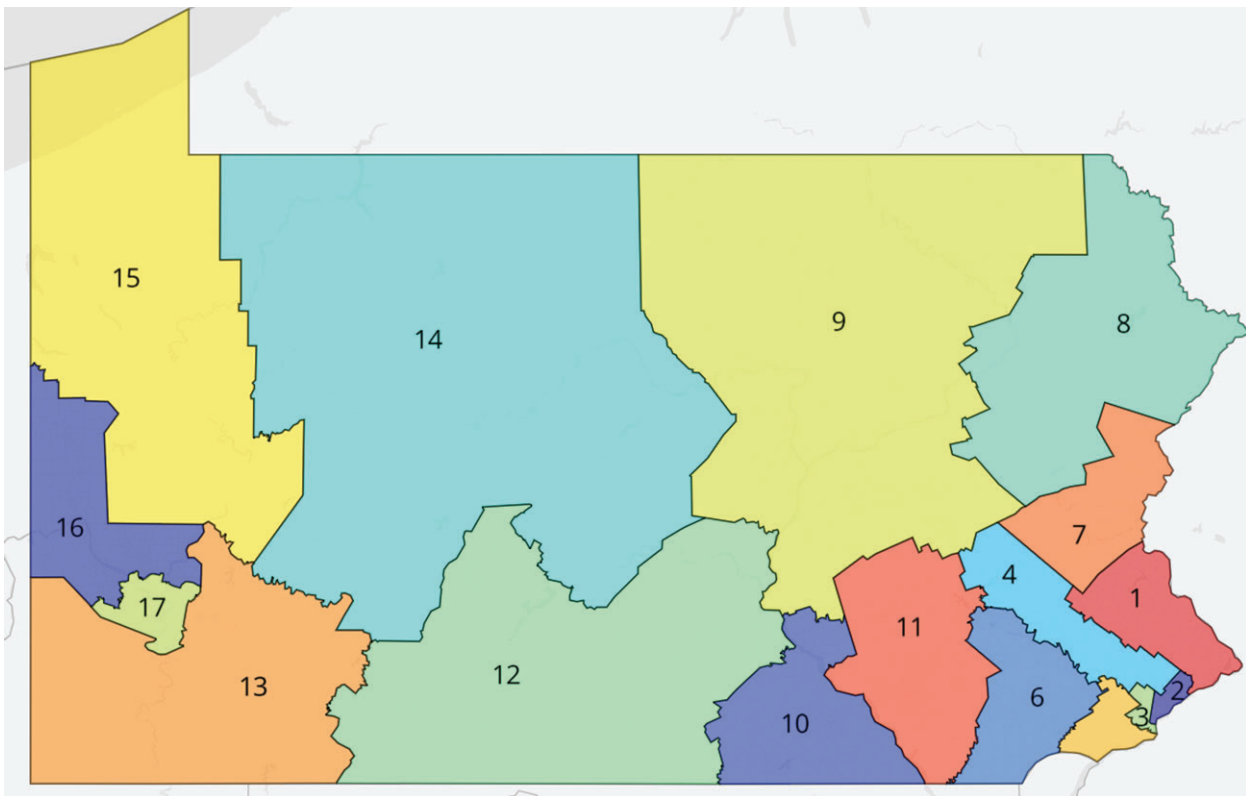
League of Women Voters, 178 A.3d at 817; *citing Holt v. 2011 Legislative Reapportionment Com’n*, 38 A.3d 711, 1235 (Pa. 2011).

Citizen-Voters’ proposed map satisfies the constitutional requirements that a proposed map be, “composed of compact and contiguous territory; as nearly equal in population as practicable; and which do not divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population.” *League of Women Voters*, 178 A.3d at 816-17.

Beginning with the requirement that a proposed map be composed of compact and contiguous territory, Citizen-Voter’s map was given a Polsby score of 0.3494, a Schwartzberg score of 1.714, and a Reock score of

0.4406. As noted by the Master, “[a]ll plans presented to the Court met the contiguous requirement. All plans proposed districts of contiguous territory. See Master’s Report, CL 1, at Pg. 137; *citing* Duchin Expert Rebuttal 2. As shown by the Citizen-Voters’ proposed congressional district map below, such map satisfies the constitutional requirement that maps be composed of company and contiguous territory.

Citizen-Voters’ Proposed Map



In regard to the requirement that a proposed map be nearly equal in population as practicable, Citizen-Voters’ proposed map out-performed the Carter Plan, House Democratic Plan, and the Ali Plan. See Master’s Report,

at Pg. 137-38. The ideal district population for each of the Commonwealth's 17 reapportioned congressional districts is approximately 764,864 or 764,865 persons. See Master's Report, FF 2, at Pg. 138. Of the 17 plans submitted to the Master for consideration, all plans but the Carter Plan and the House Democratic Plan were able to reach a maximum deviation from the ideal district population of one individual. Additionally, the Master concluded that the Ali Plan, "cannot appropriately be compared to other maps," because of its reliance on Data Set #2, which provides for the reallocation of prisoners to their addresses prior to incarceration.

Citizen-Voters' plan also satisfies the constitutional requirement that a proposed redistricting map, "not divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population." The Citizen-Voters' Plan divided 14 counties, 16 municipalities, and 21 wards. These figures place the Citizen-Voters' map in the lowest number of municipal splits of the maps submitted to the Master and the second fewest in county splits. See Master's Report, FF 36-38, at Pg. 146.

Lastly, Citizen-Voters' plan satisfies the extra-constitutional considerations regarding the adequacy of a proposed congressional map such as, "the preservation of prior district lines, protection of incumbents, or the maintenance of the political balance which existed after the prior

reapportionment.” As noted in the Brief filed by the Citizen-Voters, the Citizen-Voters’ map restores the counties of Washington, Cambria, Butler, and Centre, which were split by Pennsylvania’s 2018 Congressional District Map, thereby preserving the historical district lines of these counties. Further, Citizen-Voters’ map maintains communities of interest by maintaining the City of Pittsburgh in one contiguous district together with the South Hills of Allegheny County. See Citizen-Voters’ Brief, at Pg. 1.

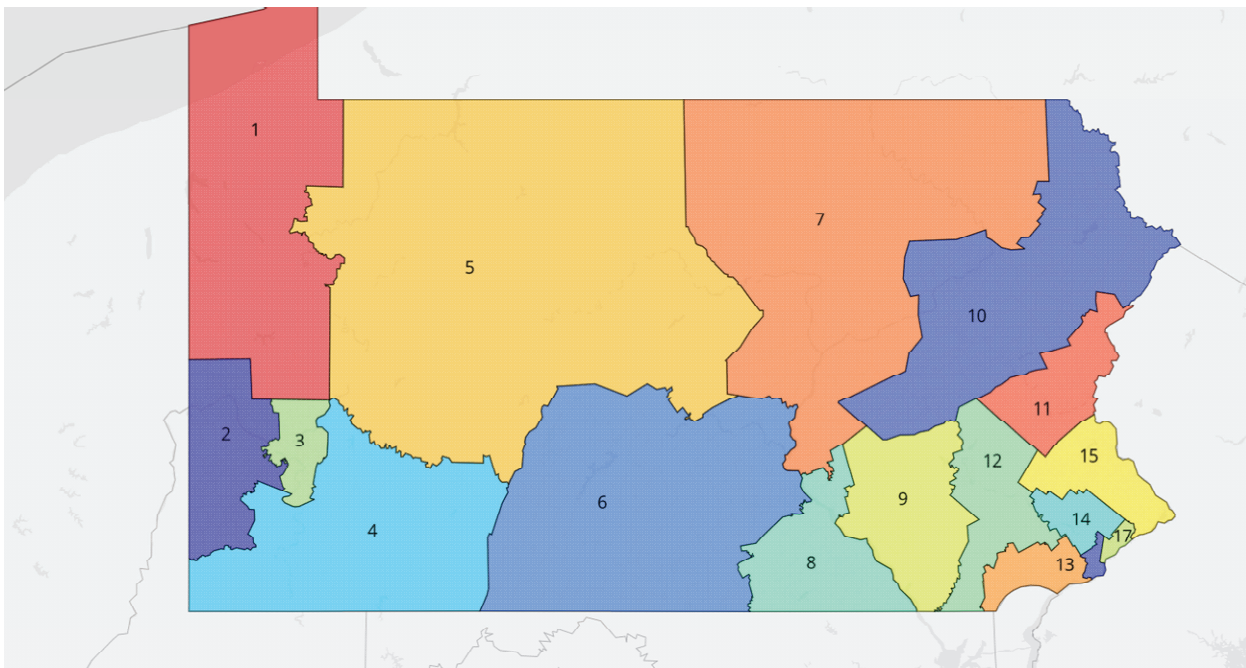
Accordingly, as Citizen-Voters’ map satisfy the constitutional requirements for a proposed redistricting map in the Commonwealth of Pennsylvania and has exceed other maps in several metrics reviewed by this Court, the Master has erred in refusing to recommend the adoption of Citizen-Voters’ map.

B. The Master’s Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendations of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule improperly disqualified the Reschenthaler 1 Proposed Congressional Map.

In the alternative to Section A, the Master’s Report erred in failing to recommend the adoption of the Reschenthaler 1 proposed congressional map as such map best meets the criteria set forth by the Pennsylvania Supreme Court’s prior case law and best satisfies the criteria reviewed by the Master below.

As noted by Dr. Duchin, and as further shown by the map below, the Reschenthaler 1 map is contiguous, closely balanced in terms of population, and “reasonably compact,” thereby satisfying the first constitutional requirement for a proposed district map. See Master’s Report, FF 168, at Pg. 85. Further, the Reschenthaler 1 map had the lowest county split of all maps submitted, showing an “aggressive pursuit of county integrity,” and had the lowest number of municipal splits. See January 27, 2022, Transcript, at Pg. 459. Lastly, the Reschenthaler 1 map was able to produce 17-congressional districts with no population deviation greater than one person. See Master’s Report, CL 2, at Pg. 138.

Reschenthaler 1 Proposed Map



The Reschenthaler 1 map represents a “first-tier” standard of excellence in the drafting of a proposed 17 district congressional plan and easily satisfies both the neutral criteria set forth by this Court in *League of Women Voters*, as well as the extra-constitutional considerations for a proposed congressional map. See Master’s Report, FF 51, at Pg. 206. The Reschenthaler 1 map’s satisfaction of these considerations together with its preservation of communities of interest make it the clear choice to be recommended for adoption by this Court. The Reschenthaler 1 map consistently outperformed almost every other map in each metric that the Master utilized in reviewing the maps.

Accordingly, should this Court decide not to adopt Citizen-Voters’ proposed congressional map, Amicus Participants Citizen-Voters urge this Court to adopt the Reschenthaler 1 map as it satisfies all of the neutral criteria for the creation of a congressional district map in the Commonwealth of Pennsylvania, satisfies all of the extra-constitutional considerations such as the maintaining of communities of interest, and consistently outperformed the other maps submitted to the Master.

III. Conclusion.

The Master's Report in the present matter sets forth a very well-reasoned and thorough legal analysis of the multiple maps submitted to the Court on an expedited basis. The efforts of the Master to create such an extensive report in a timely manner are recognized and deeply appreciated by Amicus Participants Citizen-Voters.

However, notwithstanding the thorough legal analysis, several findings of fact in the Master's Report were incorrect and necessitate the filing of the present exceptions. The Citizen-Voters were not required to submit an expert report in order to have their map considered by the Master, and the Master erred in finding that Citizen-Voters' map deviated by more than one person per district.

In conclusion, Amicus Participants Citizen-Voters urge this Court to accept and consider Citizen Voters' proposed 17-district congressional map for adoption in the Commonwealth of Pennsylvania as Citizen-Voters' map was improperly disqualified by the Master and satisfies all of the constitutional requirements for a proposed congressional redistricting plan in the Commonwealth of Pennsylvania.

In the alternative, Amicus Participants Citizen-Voters urge this Court to accept and consider the Reschenthaler 1 map in the Commonwealth of

Pennsylvania as such map also satisfies all of the constitutional requirements for a proposed congressional redistricting plan and consistently outperformed other maps submitted to the Master for consideration.

Respectfully submitted,

**DILLON, McCANDLESS, KING,
COULTER & GRAHAM, L.L.P.**

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District	Total Population	Deviation
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District 10	764865	0
District 11	764865	0
District 12	764865	0
District 13	764865	0
District 14	764864	-1
District 15	764865	0
District 16	764865	0
District 17	764864	-1

EXHIBIT A

A2395

CERTIFICATE OF COMPLIANCE

I certify that this filing complies with the provisions of the Public Access Policy of the Unified Judicial System of Pennsylvania: Case Records of the Appellate and Trial Courts that require filing confidential information and documents differently than non-confidential information and documents.

/s/ Thomas W. King, III
Thomas W. King, III

CERTIFICATE OF SERVICE

I certify that this filing was served via PACFile upon all counsel of record this 14th day of February 2022.

/s/ Thomas W. King, III
Thomas W. King, III

IN THE SUPREME COURT OF PENNSYLVANIA

Carol Ann Carter; Monica Parrilla; : CASES CONSOLIDATED
 Rebecca Poyourow; William Tung; :
 Roseanne Milazzo; Burt Siegel; : No. 7 MM 2022
 Susan Cassanelli; Lee Cassanelli; :
 Lynn Wachman; Michael Guttman; : **AMICUS PARTICIPANTS’**
 Maya Fonkeu; Brady Hill; Mary : **(“CITIZEN-VOTERS”) STATEMENT**
 Ellen Balchunis; Tom DeWall, : **OF INTEREST FOR BRIEF IN**
 Stephanie McNulty, and Janet : **SUPPORT OF EXCEPTIONS**
 Temin, :

Petitioners, : Counsel of Record for Amicus
 Participants (“Citizen-Voters”):

v.

Leigh Chapman, in her official :
 capacity as the Acting Secretary of :
 the Commonwealth of :
 Pennsylvania; Jessica Mathis, in :
 her official capacity as Director for :
 the Pennsylvania Bureau of :
 Election Services and Notaries, :

Respondents, : tking@dmkcg.com
 : tbreth@dmkcg.com

Phillip T. Gressman; Ron Y. :
 Donagi; Kristopher R. Tapp; :
 Pamela Gorkin; David P. Marsh; :
 James L. Rosenberger; Amy :
 Myers; Eugene Boman; Gary :
 Gordon; Liz McMahon; Timothy G. :
 Freeman; and Garth Isaak, :

Petitioners, : 128 West Cunningham Street,
 : Butler, Pennsylvania 16001
 : 724-283-2200 (phone)
 : 724-283-2298 (fax)

v.

Leigh Chapman, in her official capacity as the Acting Secretary of the Commonwealth of Pennsylvania; Jessica Mathis, in her official capacity as Director for the Pennsylvania Bureau of Election Services and Notaries,

Respondents,

Leslie Osche, Kim Geyer, Michael T. Slupe, Candee Barnes, Thomas Reep, Brandy Reep, Kenneth Lunsford, Tammy Lunsford, James Thompson, Pamela Thompson, Joseph Renwick, Stephanie Renwick, Louis Capozzi, David Ball, Mary E. Owlett, Kristine Eng, Justin Behrens, James P. Foreman, Matthew J. Stuckey, Anthony J. Luther, Linda C. Daniels, Jeffrey Piccola, James Vasilko, Jay Hagerman, and Evan P. Smith,

Amicus Participants,

v.

Leigh Chapman, in her official capacity as the Acting Secretary of the Commonwealth of Pennsylvania; Jessica Mathis, in her official capacity as Director for the Pennsylvania Bureau of Election Services and Notaries,

Respondents.

AMICUS PARTICIPANTS' ("CITIZEN-VOTERS") STATEMENT OF INTEREST FOR BRIEF IN SUPPORT OF EXCEPTIONS

Amicus Participants ("Citizen-Voters"), by and through their undersigned counsel, hereby file the within Statement of Interest for Amicus Participants' Brief in Support of Exceptions to Report Containing Proposed Findings of Fact and Conclusions of Law, stating as follows:

Pursuant to Rule 531 of the Pennsylvania Rules of Appellate Procedure, the Republican Federal Committee of Pennsylvania (PAC) contributed to the payment of counsel for the preparation of Amicus Participants' Brief in Support of Exceptions to Report Containing Proposed Findings of Fact and Conclusions of Law. No other person or entity paid in whole or in part for the preparation of this brief or authored any part of this brief.

Respectfully submitted,

**DILLON, McCANDLESS, KING,
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CERTIFICATE OF COMPLIANCE

I certify that this filing complies with the provisions of the Public Access Policy of the Unified Judicial System of Pennsylvania: Case Records of the Appellate and Trial Courts that require filing confidential information and documents differently than non-confidential information and documents.

/s/ Thomas W. King, III
Thomas W. King, III

CERTIFICATE OF SERVICE

I certify that this filing was served via PACFile upon all counsel of record this 15th day of February 2022.

/s/ Thomas W. King, III
Thomas W. King, III

**IN THE SUPREME COURT OF PENNSYLVANIA
MIDDLE DISTRICT**

No. 7 MM 2022

Carol Ann Carter; Monica Parrilla; Rebecca Poyourow; William Tung; Roseanne Milazzo; Burt Siegel; Susan Cassanelli; Lee Cassanelli; Lynn Wachman; Michael Guttman; Maya Fonkeu; Brady Hill; Mary Ellen Bachunis; Tom DeWall; Stephanie McNulty; and Janet Temin,

Petitioners,

v.

Leigh M. Chapman, in Her Capacity as Acting Secretary of the Commonwealth of Pennsylvania; and Jessica Matthis, in Her Acting Capacity as Director of the Bureau of Election Services and Notaries,

Respondents.

**BRIEF OF *AMICI CURIAE* VOTERS OF THE COMMONWEALTH OF
PENNSYLVANIA IN SUPPORT OF SPECIAL MASTER'S REPORT**

Supporting Report Containing Proposed Findings of Fact and Conclusions of Law of the Honorable Patricia A. McCullough of the Commonwealth Court of Pennsylvania Supporting Her Recommendation of a Redistricting Plan

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STATEMENT OF INTEREST OF *AMICI CURIAE*

Haroon Bashir, Valerie Biancaniello, Tegwyn Hughes, and Jeffrey Wenk (“Voters of PA”) are individuals who reside in Pennsylvania, are registered to vote in Pennsylvania, and consistently vote in each election. The Voters of PA intend to advocate and vote for Republican candidates in the upcoming 2022 primary and general elections. As such, they represent the “mirror-image” interests of the Carter Petitioners, who have averred that they are Pennsylvania registered voters who intend to advocate and vote for Democratic candidates in the upcoming 2022 primary and general elections.

Insofar as “the right to vote is personal” and “the rights sought to be vindicated in a suit challenging an apportionment scheme are ‘personal and individual,’” *Albert v. 2001 Legislative Reapportionment Comm’n*, 790 A.2d 989, 994–95 (Pa. 2002), no two voters have precisely the same interest in cases such as these consolidated matters, in which the Court has stated it will adopt the next congressional districting plan. To that end, the Voters of PA sought leave to intervene in this action. Although no proposed voter intervenor groups were granted intervention in this action, the Voters of PA were permitted to participate as amici. Accordingly, the Voters of PA submitted a brief and proposed congressional redistricting plan in order to have their voices and preferences heard. Following the hearing before the Special Master, the Honorable Patricia A. McCullough, the Voters of PA’s proposed

congressional redistricting plan was one of three maps submitted that is “consistent with the Free and Equal Elections Clause of the Pennsylvania Constitution, and, also, the aspirations and ideals expressed by that constitutional provision as pronounced by the Court in [*League of Women Voters v. Commonwealth*, 178 A.3d 737 (Pa. 2018)].”

Pursuant to Rule 531 of the Pennsylvania Rules of Appellate Procedure, the Fair Lines America Foundation contributed to the payment for the preparation of this brief. No other person or entity paid in whole or in part for the preparation of this brief or authored any part of this brief.

DETERMINATION IN QUESTION

Before the Court is the “Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendation of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule” (the “Report”) filed by the Special Master, the Honorable Patricia A. McCullough, on February 7, 2022.

STATEMENT OF THE CASE

Pennsylvania's current congressional map is based upon the 2010 Census data, when Pennsylvania had a population of 12,702,379. Dividing the population by the 18 congressional districts apportioned to Pennsylvania, the ideal population for each of Pennsylvania's congressional districts was 705,688. Based on the results of the 2020 Census, Pennsylvania has a population of 13,002,700. Beginning with this year's congressional election, Pennsylvania will have only 17 congressional districts. Thus, the ideal population for each of Pennsylvania congressional districts beginning in 2022 will be 764,865. Thus, at this moment, each congressional district in Pennsylvania will be malapportioned for the 2022 congressional election.

On December 17, 2021, the Carter Petitioners and the Gressman Petitioners—individuals registered to vote in Pennsylvania—each filed a Petition Review in the Commonwealth Court pursuant to its original jurisdiction. On December 20, 2021, the Commonwealth Court consolidated the two actions. Also on December 20, the Commonwealth Court set a deadline of December 31, 2021, for applications to intervene to be filed.

The Voters of PA timely filed an application for leave to intervene on December 31. A total of 10 groups of proposed intervenors sought leave to intervene. The parties to the action filed timely responses. The Commonwealth

Court held a hearing on all of the applications for leave to intervene on January 6, in which the Voters of PA participated.

On January 14, 2022, the Commonwealth Court entered an order denying the Voters of the Commonwealth's Application for Leave to Intervene. In that same order, the Commonwealth Court denied all other applications for leave to intervene filed by individual voters. Also in the order, the Commonwealth Court granted the applications to intervene filed by current officeholders.

On January 24, 2022, the Voters of PA, as amicus participants, submitted a brief and proposed congressional redistricting plan. On January 27 and 28, 2022, the Honorable Patricia A. McCullough presided over an evidentiary hearing regarding the various congressional redistricting plans that were submitted.

On January 29, 2022, the day after the evidentiary hearing concluded, the Carter Petitioners filed an Emergency Application for Extraordinary Relief Under 42 Pa.C.S. § 726 and Pa. R.A.P. 3309, requesting the Court to assume extraordinary jurisdiction over this action. On February 2, 2022, this Court granted the application, designating the Honorable Patricia A. McCullough to serve as Special Master.

Consistent with the Court's Order of February 2, 2022, the Honorable Patricia A. McCullough filed her Report on February 7, 2022. The Report set forth the Special Master's proposed findings of fact and conclusions of law. In the Report, the Honorable Patricia A. McCullough found that:

As a result of its credibility and weight determinations, the Court finds that the map submitted by the Voters of PA *Amici*, the Congressional Intervenors' maps (especially Reschenthaler 1), and the map of the Republican Legislative Intervenors (known as HB 2146) are consistent with the Free and Equal Elections Clause of the Pennsylvania Constitution, and, also, the aspirations and ideals expressed by that constitutional provision as pronounced by the Court in [*League of Women Voters v. Commonwealth*, 178 A.3d 737 (Pa. 2018)] due to their compactness, degree of partisan fairness, and specific development of congressional districts.

Report at 207 ¶ 57. The Special Master thus concluded:

For the above-stated reasons, and as its penultimate suggestion, the Court respectfully, yet firmly, **recommends that our Supreme Court adopt and implement HB 2146 as a matter of state constitutional law as it meets all of the traditional criteria of the Free and Equal Elections Clause, and does so in respects even noted by the Governor's expert, as well as the other considerations noted by the courts, it compares favorably to all of the other maps submitted herein, including the 2018 redistricting map, it was drawn by a non-partisan good government citizen, subjected to the scrutiny of the people and duly amended, it creates a Democratic leaning map which underscores its partisan fairness, and, otherwise, is a reflection of the "policies and preferences of the State, as expressed in statutory and constitutional provisions or in the reapportionment plans proposed by the state legislature."**

Report at 216 ¶ 97 (emphasis in original).

On February 9, 2022, the Court issued an Order temporarily suspending the General Primary Election calendar.

Pursuant to the Court's Order of February 2, 2022, the parties and amicus participants have until February 14, 2022, to file exceptions to the Report. By subsequent order, the Court also instructed any parties and amicus participants to

file briefs in support of the Report by February 14. Argument on the exceptions is scheduled to take place on February 18, 2022.

SUMMARY OF ARGUMENT

Nearly four years ago, to prevent violations of the Free and Equal Elections Clause of the Pennsylvania Constitution, the Supreme Court of Pennsylvania adopted a set of criteria to serve as a “floor” to ensure that extraneous considerations, including partisan interests, did not subordinate traditional, more neutral factors in the development of a congressional redistricting plan. *See League of Women Voters v. Commonwealth*, 178 A.3d 737, 817 (Pa. 2018). With the General Assembly and Governor unable to reach an agreement on a new redistricting plan, the “unwelcomed obligation” to navigate the “rough terrain” of this “notoriously political endeavor” again falls to this Court. *Carter v. Chapman*, No. 7 MM 2022, Order filed Feb. 2, 2022 (Dougherty, J., concurring statement at 3–5).

The Honorable Patricia A. McCullough, serving as Special Master, ably presided over a complex evidentiary hearing in which more than a dozen congressional redistricting plans were vetted. Having carefully considered the credibility of the expert witnesses who testified, she recommended the adoption of HB 2146, the redistricting plan submitted by the Republican leadership of the General Assembly. This decision was made somewhat easier by the significant number of redistricting plans that failed to satisfy one or more “neutral criteria” that this Court adopted in *LWW*. This Court should adopt the Special Master’s Report and Recommendation, and specifically should adopt HB 2146. Alternatively, this

Court should adopt the Voters of PA’s Plan, one of just three redistricting plans that the Special Master found to be “consistent with the Free and Equal Elections Clause of the Pennsylvania Constitution, and, also, the aspirations and ideals” expressed by this Court in *LWV*. Report at 207–08 ¶¶ 57–59.

ARGUMENT

I. The Court's Role in Congressional Redistricting

Courts have long recognized that “the primary responsibility and authority for drawing federal congressional legislative districts rests squarely with the state legislature.” *League of Women Voters v. Commonwealth*, 178 A.3d 737, 821 (Pa. 2018) (“*LWV*”) (citing U.S. CONST. art. I, § 4; *Butcher v. Bloom*, 216 A.2d 457, 458 (Pa. 1966)); accord *Grove v. Emison*, 507 U.S. 25, 34 (1993) (stating that “the Constitution leaves with the States primary responsibility for apportionment of their federal congressional and state legislative districts.”). “Congressional redistricting becomes a judicial responsibility only when, as here, the state legislature has not acted after having had an adequate opportunity to do so.” *Mellow v. Mitchell*, 607 A.2d 204, 214 (Pa. 1992) (citing *White v. Weiser*, 412 U.S. 783, 794–95 (1973); *Reynolds v. Sims*, 377 U.S. 583, 586 (1964)).

Regardless of whether the legislative or judicial branch is tasked with reapportionment, the goal is the same: to make “as nearly as is practicable one man’s vote in a congressional election ... worth as much as another’s.” *Mellow*, 607 A.2d at 214 (quoting *Wesberry v. Sanders*, 376 U.S. 1, 8 (1964)). “This requirement is the ‘preeminent if not the sole, criterion’ for appraising the validity of redistricting plans.” *Id.* (quoting *Chapman v. Meier*, 420 U.S. 1, 23 (1964)). This goal derives directly from the U.S. Constitution, which mandates that the U.S. House of

Representatives “shall be apportioned among the States ... according to their respective Numbers.” U.S. CONST. art I, § 2.

The last time a congressional redistricting plan was before this Court, the Court noted that Article I, Section 5 of the Pennsylvania Constitution provided additional grounds for achieving this goal. *See LWV*, 178 A.3d at 804. This section provides:

Elections shall be free and equal; and no power, civil or military, shall at any time interfere to prevent the free exercise of the right of suffrage.

PA. CONST. art. I, § 5. The Court noted that the Free and Equal Elections Clause “mandates that all voters have an equal opportunity to translate their votes into representation.” *LWV*, 178 A.3d at 804. Thus, the Free and Equal Elections Clause prohibits any governmental action that “dilutes the vote of any segment of the constituency,” *City Council of Bethlehem v. Marcinin*, 515 A.2d 1320, 1323–24 (Pa. 1986), including with respect to redistricting plans, *LWV*, 178 A.3d at 817. Like Article I, Section 2 of the U.S. Constitution, Pennsylvania’s Free and Equal Elections Clause prohibits “the creation of congressional districts which confer on any voter an unequal advantage by giving his or her vote greater weight in the selection of a congressional representative” than other voters. *Id.* at 816.

II. Neutral Redistricting Criteria Must Predominate

To determine whether a congressional redistricting plan violates the Free and Equal Elections Clause, this Court adopted the same “neutral benchmarks” for

congressional redistricting that are set forth in Pennsylvania’s Constitution to prevent the dilution of individual’s votes in state legislative districts. Thus, to ensure that all voters have an equal opportunity to translate their votes for congressional representatives into representation, the essential inquiry is whether the congressional districts created under a redistricting plan are:

Composed of compact and contiguous territory; as nearly equal in population as practicable; and which do not divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population.

LWV, 178 A.3d at 816; *see also* PA. CONST. art. II, § 16 (governing the creation of legislative districts). “These neutral criteria provide a ‘floor’ of protection for an individual against the dilution of his or her vote in the creation of such districts.”

LWV, 178 A.3d at 817.

Other factors have historically played a role in the drawing of districts, including “preservation of existing ... districts, protection of incumbents, avoiding situations where incumbent legislators would be forced to compete for the same new seat.” *Holt v. 2011 Legislative Reapportionment Comm’n*, 67 A.3d 1211, 1235 (Pa. 2013) (“*Holt II*”). But these factors must remain “wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts.” *LWV*, 178 A.3d at 817. The subordination of the “neutral criteria” constitutes a violation of the Free and Equal Elections Clause, regardless of whether

such subordination was intentional. *Id.* (citing *In re New Britain Borough Sch. Dist.*, 145 A. 597 (Pa. 1929)).

Other means may be available to determine whether a redistricting plan violates the Free and Equal Elections Clause. *Id.* at 817. For example, communities “have shared interests for which they can more effectively advocate when they can act as a united body and when they have representatives who are responsive to those interests.” *Holt v. 2011 Legislative Reapportionment Comm’n*, 38 A.3d 711, 745 (Pa. 2012) (“*Holt I*”). “Historically, reapportionment bodies have considered ‘communities of interest’ as one legitimate factor in drawing fair and politically sensitive districts.” *Id.* (quoting Gormley, *Racial Mind-Games and Reapportionment*, 4 U. PA. J. CONST. L. 735, 779–81 (2002)). Thus, a map may sacrifice compactness in order to encompass a “dispersed community of interest.” *LWV*, 178 A.3d at 828 (Baer, J., concurring and dissenting).

III. The Special Master Properly Recommended Excluding Certain Maps for Failing to Satisfy Constitutional Criteria

The Honorable Patricia A. McCullough properly recommended that the Court not adopt several of the submitted maps because they fail to satisfy one or more of the criteria this Court held “provide a ‘floor’ of protection for an individual against the dilution of his or her vote in the creation of such districts.” *LWV*, 178 A.3d at 817. Regardless of the merits of the extraneous considerations used in drawing those maps, these maps’ failure to meet the requirements of Article II, § 16 of the

Pennsylvania Constitution—made applicable to congressional redistricting plans in *LWV*—renders them constitutionally infirm and disqualifies them from adoption by the Court.

A. The Carter Plan, House Democratic Plan, and Ali Plan Fail to Achieve Population Equality

The Constitution of the United States provides in relevant part that the U.S. House of Representatives “shall be apportioned among the States ... according to their respective Numbers.” U.S. CONST. art. I, § 2. This requires that congressional districts be drawn to “achieve population equality ‘as nearly as is practicable.’” *Karcher v. Daggett*, 462 U.S. 725, 730 (1983) (quoting *Wesberry v. Sanders*, 376 U.S. 1, 7–8 (1964)). This standard “requires that the State make a good-faith effort to achieve precise mathematical equality. *Kirkpatrick v. Preisler*, 394 U.S. 526 (1969) (citing *Reynolds v. Sims*, 377 U.S. 533, 577 (1964)). “Unless population variances among congressional districts are shown to have resulted despite such effort, the State must justify each variance, no matter how small.” *Id.* Departures from “mathematical perfection” are justified only to “avoid fragmentation of local government territories and the splitting of election precincts; effectuating adequate representation of a minority group; creating compact and contiguous districts; maintaining relationships of shared community interests; and not unduly departing from the useful familiarity of existing districts.” *Mellow*, 607 A.2d at 206.

Three of the plans submitted to the Special Master fail this basic requirement. Both the Carter Plan and the House Democratic Plan feature a population deviation of 2; the other plans achieve “mathematical perfection” by having a population deviation of only 1.¹ But neither the Carter Petitioners nor the House Democratic Intervenors offer any compelling justification for failing to achieve mathematical perfection. Their plans are no more compact than competing plans. Their plans do not boast fewer splits than their competitors. They offered no persuasive evidence that the additional population deviation was used to effectuate adequate representation of a minority group. And while the Carter Petitioners suggest that their plan best preserves the cores and boundaries of the existing 18-district plan—by only a marginal amount—this is an “extraneous consideration” which must be “wholly subordinate” to the neutral criteria of population equality. *LWV*, 178 A.3d 737.

A third plan—submitted by the *Ali Amici*—fails to satisfy the population equality standard by a significantly larger margin. In developing their plan, the *Ali Amici* used Legislative Redistricting Commission “Data Set #2,” which adjusts

¹ The Special Master’s Report also finds that the Citizen Voters’ Plan has a two-person difference in population between the largest and smallest districts. Report at 204. Although the Citizen Voters did not submit an expert report of their own, experts of other parties opined that their plan had a population deviation of only 1. To the extent the Citizen Voters’ Plan has a population deviation greater than 1, their plan fails for the same reason.

Pennsylvania’s population to use the home addresses of state prisoners, so as to avoid the practice of so-called “prison-based gerrymandering.” (Ali Br. at 9). But this Court refused to utilize this data set just 4 years ago when it crafted the remedial congressional redistricting plan in 2018. *See League of Women Voters v. Commonwealth*, 181 A.3d 1083, 1087 n.8 (Pa. 2018). Thus, when measured against the data set consistently used in past congressional redistricting plans in Pennsylvania (including the one most recently adopted by the Court), the Ali *Amici*’s plan features a population deviation of more than 8,000, several orders of magnitude greater than every other plan submitted to the Court for consideration.

The Carter Plan, the House Democratic Plan, and the Ali *Amici* Plan each fail to offer the justification needed to fail to achieve mathematical perfection in population equality when the other submitted plans meet that standard. Thus, these submitted plans are unconstitutional as a matter of federal and state law. Accordingly, the Special Master properly recommended that these plans not be adopted.

B. The Governor’s Plan, the Senate Democratic Plans, the Draw the Lines Plan, and the Ali Plan Unconstitutionally Split Pittsburgh

No fewer than 5 proposed plans fail because they ignore the basic constitutional requirement that no city shall be divided “unless absolutely necessary.” PA. CONST. art. II, § 16; *see also LWV*, 178 A.3d at 816–17. Each of these plans splits Pennsylvania’s second largest city, despite the fact that it easily

fits within a single congressional district. Historically, this significant community of interest has remained a single congressional district in prior districting plans and the plan proponents who would split the city offer no compelling rationale for doing so. Certainly, they fail to establish, as required under *LWV* and the Pennsylvania Constitution, that splitting the City of Pittsburgh is “*absolutely necessary*.”

Testimony at the evidentiary hearing confirmed that the splitting of Pittsburgh was not for the purpose of population equality, but rather to either improve compactness scores (N.T. at 216–17, 436), or to create two Democratic-leaning districts rather than one, (N.T. at 526–27). The latter, of course, is an extraneous, partisan, consideration that the Court has expressly required be “subordinated” to the neutral criteria of contiguity, compactness, equal population, and minimization of political subdivision splits. *LWV*, 178 A.3d at 817; *Holt II*, 67 A.3d at 1239.

The numerous plans that do not split Pittsburgh put the lie to any claim that dividing the city into two districts is “absolutely necessary.” Numerous plans achieve similar—or, in the Voters of PA’s case, *better*—compactness scores with comparable or fewer total political subdivision splits without splitting Pittsburgh. The evidentiary record is devoid of any evidence—and in fact disproves—that the division of Pittsburgh was “absolutely necessary” to achieve equal population or any other neutral criteria.

In a similar vein, although the House Democratic Plan kept the City of Pittsburgh intact, that plan includes a district with a “Freddy-Krueger like claw” that reaches into Allegheny County to “grab” Pittsburgh to combine it with Republican-leaning areas in the North. The House Democrats offer no rationale for doing so. Its effect is the same as those plans that would split Pittsburgh, attempting to harvest a second Democratic-leaning district in and around this city without regard to communities of interest. This Court cannot endorse such a blatant attempt to have partisan interests subordinate the neutral criteria in direct contravention of this Court’s recent dictate. Accordingly, the Special Master properly discounted the plans of the Governor,² Senate Democrats, House Democrats, Draw the Lines PA, and *Ali Amici* and properly recommended the Court not adopt these plans.

² The Governor’s Plan also would split Bucks County for the first time in 150 years (despite Pennsylvania having more congressional districts for much of that period). Like Pittsburgh, it is not “absolutely necessary” to split Bucks County, whose residents generally share the same community of interests. Rather, the primary purpose of splitting Bucks County appears to be to turn a Republican-leaning district into a Democratic-leaning one. The Governor’s proposed splitting of Bucks County serves as an additional basis for rejecting his plan, as the Special Master properly did.

IV. The Special Master Properly Did Not Rely on “Partisan Fairness” Metrics to Compare the Merits of the Plans

A. “Partisan Fairness” Is a Slippery Slope that Risks Subordinating the Neutral Criteria

Several plan proponents have argued that their plans are superior based, at least in part, on scores obtained using one metric of “partisan fairness” or another. Although the Court successfully used partisan fairness metrics to determine whether partisan considerations subordinated the neutral criteria, the Court should avoid the siren song of using these metrics to determine the relative adequacy of one redistricting plan versus another. The Honorable Patricia A. McCullough resisted this temptation, and the Court would be well advised to do likewise.

First, the partisanship and “maintenance of the political balance which existed after the prior reapportionment” are factors that must be “wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts.” *Id.* at 817.

Second, Pennsylvania’s political geography—wherein Democratic voters are clustered and Republican voters are a bit more spread out across different geographies of Pennsylvania—creates a natural geographic advantage for Republicans. *Id.* at 774. Partisan fairness metrics would either ignore or run directly counter to the natural distribution of voters within the Commonwealth.

Third, the use of partisan fairness metrics in the selection of a redistricting plan would be akin to creating a right to proportional party representation, which would be directly at odds with Pennsylvania and federal precedent. *See Vieth v. Jubelirer*, 541 U.S. 267, 288 (2004) (holding that “the Constitution provides no right to proportional representation” and that nothing in the United States Constitution commands “that farmers or urban dwellers, Christian fundamentalists or Jews, Republicans or Democrats, must be accorded political strength proportionate to their numbers”); *Rucho v. Common Cause*, 139 S. Ct. 2484, 2499 (2019) (“The Founders certainly did not think proportional representation was required”); *Holt II*, 67 A.3d at 1236 (holding that the Court “need not credit” arguments that a plan resulted in one party’s “dominance out of proportion to party registration and party voting patterns in the Commonwealth”); *see also* Nathaniel Persily, *In Defense of Foxes Guarding Henhouses: The Case for Judicial Acquiescence to Incumbent-Protecting Gerrymanders*, 116 HARV. L. REV. 649, 672–73 (2002) (“So long as the state’s majority has its advocate in the executive, is it necessarily true that the state’s majority should control the legislature as well?”); *Johnson v. Wis. Elections Comm’n*, 399 Wis. 2d 623, 649 (Wis. 2021) (quoting *Rucho* and *Vieth* and declining to consider the partisan makeup of districts in crafting judicial remedies in the event of a legislative impasse). The use of a partisan fairness metric to select a redistricting plan would necessarily require the Court to enshrine a particular definition of

“fairness,” despite the lack of an adequate evidentiary record or legal precedent to do so here.

Fourth, incorporation of one or more metrics of partisan fairness in the selection of a map would quickly prove unworkable. Indeed, the inability to craft a manageable judicial standard led the U.S. Supreme Court to hold that partisan gerrymandering claims present political questions beyond the reach of the federal courts: “Even assuming the court knew which version of fairness to be looking for, there are no discernible and manageable standards for deciding whether there has been a violation.” *Rucho*, 139 S. Ct. at 2501.

Declining to use partisan fairness metrics to *select* a map does not mean such metrics have no place in redistricting jurisprudence. This Court successfully utilized metrics such as the mean-median gap and the efficiency gap to determine the extent to which the 2011 congressional redistricting plan constituted a partisan gerrymander that subordinated traditional, neutral criteria. *LWV*, 178 A.3d 774, 777. In *LWV*, the court used these partisan fairness metrics to confirm the 2011 Plan’s “outlier status” and to rule out other potential causes for the partisan breakdown of that plan. *Id.* at 773–77. Judge McCullough did likewise in the evidentiary hearing, finding that the House Democratic Plan “has a more favorable efficiency gap outcome for Democrats than 100% of [Dr. Barber’s] simulated maps.” Report at 176 ¶ FF23.

B. The Gressman Plan and the Draw the Lines Plan Subordinate Neutral Criteria in Favor of Partisan Fairness

Despite the Court’s express command that extraneous considerations—especially partisanship—be subordinated to the neutral criteria of contiguity, compactness, population equality and minimization of political subdivision splits, the Gressman Petitioners and Draw the Lines *Amici* did the exact opposite. As aptly noted by the Special Master, the Gressman Petitioners deliberately created their plan using an algorithm that sought to optimize on partisan fairness. Report at 178 ¶ FF2. Likewise, the Draw the Lines *Amici* admitted to splitting Pittsburgh into two congressional districts to maximize political competitiveness. Report at 178 ¶ FF3. These plans undoubtedly could have featured better compactness scores and fewer political subdivision splits had they not subordinated these neutral criteria to the pursuit of “partisan fairness” as they measured it. Given the political geography of Pennsylvania that naturally lends itself to a Republican advantage, the Gressman Plan’s skewing to a Democratic-advantaged map functions as a partisan gerrymander subordinating the neutral criteria enshrined in *LWV*. Accordingly, the Honorable Patricia A. McCullough properly recommended against the adoption of the Gressman and Draw the Lines Plans for their express prioritization of partisan fairness.

V. **The Special Master Correctly Held that the Evidentiary Record Did Not Support Voting Rights Act Considerations, rendering the Gressman Plan an Unconstitutional Racial Gerrymander**

The Honorable Patricia A. McCullough correctly concluded that there is no record evidence that the Black or Hispanic voters of Philadelphia require a majority-minority district, or some other district drawn to a racial target, to have an equal opportunity to elect representatives of their choice to Congress. Report at 19.

“The Equal Protection Clause forbids ‘racial gerrymandering,’ that is, intentionally assigning citizens to a district on the basis of race without sufficient justification.” *Abbott v. Perez*, 138 S. Ct. 2305, 2314 (2018). The Fourteenth Amendment prohibits “the deliberate segregation of voters into separate districts on the basis of race.” *Shaw v. Reno*, 509 U.S. 630, 641 (1993). “[C]ourts may not order the creation of majority-minority districts unless necessary to remedy a violation of federal law.” *Voinovich v. Quilter*, 507 U.S. 146, 156 (1993). Three threshold elements, must first be proven: (1) the relevant minority group must be “‘sufficiently large and geographically compact to constitute a majority’ in some reasonably configured legislative district”; (2) the relevant minority group must be “politically cohesive,” and (3) the “district’s white majority ... ‘vote[s] sufficiently as a bloc’ to usually ‘defeat the minority’s preferred candidate.’” *Cooper v. Harris*, 137 S. Ct. 1455, 1470 (2017) (quoting *Thornburg v. Gingles*, 478 U.S. 30 (1986)).

The Gressman Plan boasts the creation of three would create three minority opportunity districts. But the Gressman Petitioners did not offer any expert opinion on the *Gingles* factors under the Voting Rights Act, and, in fact, their expert conceded that candidate win rates in Philadelphia suggested that minority-preferred candidates are not usually defeated by white bloc voting. (N.T. at 283). The Gressman Petitioners appear to simply take the view that “more is always better” when it comes to the creation of minority opportunity districts. But U.S. Supreme Court authority confirms this is not the case. Absent sufficient evidence to satisfy each of the *Gingles* factors for each proposed minority opportunity district, the Gressman Petitioners’ Plan constitutes an unconstitutional racial gerrymander that cannot be adopted. Accordingly, the Honorable Patricia A. McCullough correctly refused to recommend the Gressman Plan for adoption.

VI. The Special Master’s Recommendation to Adopt the HB 2146 Plan Was Proper; Alternatively, the Court Should Adopt the Voters of PA Plan

As set forth *supra*, the plans proposed by the Carter Petitioners, Gressman Petitioners, Governor, House Democrats Intervenors, Senate Democrats Intervenors, Draw the Lines *Amici*, and Ali *Amici* fail on multiple, constitutional grounds.³ By process of elimination, then, only three plan proponents remain: (1) the General

³ Depending on the count, the Citizen-Voter *Amici* Plan may also fail on the ground of excessive population deviation. In any event, the Citizen-Voter Plan was unsupported by any expert report, rendering analysis of that plan more challenging than for those plans which provided an evidentiary predicate.

Assembly's Republican Leadership (via the HB 2146), the Congressional Intervenors, and the Voters of PA. The Honorable Patricia A. McCullough did not err in recommending HB 2146; however, to the extent the Court declines to adopt that recommendation, the Court should adopt the plan proposed by the Voters of PA.

A. Compactness⁴

In addition to avoiding the constitutional defects suffered by the plans discussed *supra*, both HB 2146 and the Voters of PA Plans score well on compactness. As noted by the Governor's expert witness, Dr. Duchin, "the maps [submitted to the Court] are quite good across the board." (N.T. at 334).

The Voter of PA Plan, in fact, offers the most compact plan submitted. This is confirmed by the Dr. Duchin, who, as the Governor's witness, had no interest in supporting the Voter of PA Plan: "By far the two most compact plans, considering these metrics overall, are VotersOfPA and GovPlan. The next two, some ways behind the leaders, are Reschenthaler1 and CitizensPlan." (Duchin Resp. Report at 2). Voters of PA's own analysis bears this out: it boasts the highest mean Reock Score, the highest mean Polsby-Popper Score, and the highest mean Schwartzberg Score among all of the submitted plans. *See* Sean Trende Declaration, attached as

⁴ The Voters of PA Plan, like all of the submitted plans, includes fully contiguous districts. Similarly, like most of the other plans, the Voters of PA Plan also features "mathematical perfection" with respect to its population deviation. *See* Sean Trende Declaration, attached as Appx. B, at 9.

Appx. B, at 10–14. Thus, on a plan-wide basis, the Voters of PA’s plan is the most compact. *Id.*

The Voters of PA Plan achieves the highest compactness scores without sacrificing any districts. As reflected in the attached Declaration of Sean Trende, The Voters of PA Plan also features the highest Reock Score for its least compact district—by a substantial margin—while also featuring Polsby-Popper and Schwartzberg Scores for its least compact district that place it in the top half of all plans submitted. *Id.*

Map	Mean Reock	Map	Least Compact (Reock)
Voters of the Commonwealth	0.442	Voters of the Commonwealth	0.343
Draw the Lines	0.436	Reschenthaler 1	0.307
Reschenthaler 1	0.426	Reschenthaler 2	0.307
Citizen Voters	0.418	House Republicans	0.270
Concerned Citizens	0.416	Gressman	0.264
Reschenthaler 2	0.414	Ali	0.234
Carter	0.413	Draw the Lines	0.227
Ali	0.407	House Democrats	0.226
Governor Wolf	0.401	Carter	0.214
Gressman	0.395	Citizen Voters	0.210
House Democrats	0.392	Senate Democrats 1	0.209
House Republicans	0.383	Governor Wolf	0.203
Senate Democrats 2	0.379	Concerned Citizens	0.199
Senate Democrats 1	0.373	Senate Democrats 2	0.197

Map	Mean Polsby-Popper
Voters of the Commonwealth	0.396
Governor Wolf	0.381
Draw the Lines	0.379
Reschenthaler 1	0.363
Ali	0.352
Concerned Citizens	0.352
Reschenthaler 2	0.352
Citizen Voters	0.349
Gressman	0.348
Senate Democrats 2	0.335
Carter	0.321
House Republicans	0.321
Senate Democrats 1	0.315
House Democrats	0.279

Map	Least Compact (Polsby-Popper)
Reschenthaler 1	0.246
Concerned Citizens	0.244
Senate Democrats 2	0.242
Citizen Voters	0.234
Draw the Lines	0.233
Voters of the Commonwealth	0.229
Senate Democrats 1	0.220
Governor Wolf	0.219
Reschenthaler 2	0.216
Ali	0.208
House Republicans	0.194
Gressman	0.187
Carter	0.172
House Democrats	0.148

Map	Mean Schwartzberg	Map	Least Compact (Schwartzberg)
Voters of the Commonwealth	0.626	Resenthaler 1	0.496
Governor Wolf	0.613	Concerned Citizens	0.494
Draw the Lines	0.611	Senate Democrats 2	0.491
Resenthaler 1	0.599	Citizen Voters	0.484
Concerned Citizens	0.591	Draw the Lines	0.483
Resenthaler 2	0.591	Voters of the Commonwealth	0.478
Ali	0.590	Senate Democrats 1	0.469
Citizen Voters	0.589	Governor Wolf	0.468
Gressman	0.585	Resenthaler 2	0.464
Senate Democrats 2	0.577	Ali	0.456
Carter	0.562	House Republicans	0.440
House Republicans	0.561	Gressman	0.432
Senate Democrats 1	0.558	Carter	0.415
House Democrats	0.521	House Democrats	0.385

B. Political Subdivision Splits

Both HB 2146 and the Voters of PA Plans score well on the splits of political subdivisions, not only for minimizing the number of political subdivisions that are cut, but in the reasons and manner of splitting same. Both HB 2146 and the Voters of PA Plan contain 15 county splits. Report at 146 ¶ FF33 and 209 ¶ 67; Sean Trende Declaration at 15. Neither plan splits Bucks County. Report at 210–211; Sean Trende Declaration at 15. HB 2146 splits just 16 municipalities, while the Voters of PA Plan splits 17 municipalities. Report at 146 ¶ FF33 and 209 ¶ 67. Neither plan splits the City of Pittsburgh.

More critically, the Voters of PA Plan avoids any three-way splits of counties (except for Philadelphia, whose population requires a three-way split). Sean Trende Declaration at 18. Multiple splits of a single county plague every other map that was submitted and dilute the power of voters in those counties. *Id.* By avoiding multiple splits of a single county, the Voters of PA tie for the least number of county “pieces” or “segments.”

Plan	# Splits	3-Way Montgomery Split?	Extends Montgomery Into Berks?	Splits Pittsburg?	Splits Bucks?	Splits Counties 3 Ways?
Ali	16	Yes	Yes	Yes	Yes	Yes
Carter	13	Yes	Yes	No	No	Yes
Citizen Voters	13	Yes	Yes	No	No	Yes
Concerned Citizens	16	No	No	Yes	No	Yes
Draw The Lines	14	Yes	No	Yes	No	Yes
Governor Wolf	16	Yes	Yes	Yes	Yes	Yes
Gressman	14	No	Yes	No	Yes	Yes
House Democrats	16	No	Yes	No	Yes	Yes
House Republicans	15	No	No	No	No	Yes
Resenthaler 1	13	Yes	No	No	No	Yes
Resenthaler 2	13	Yes	No	No	No	Yes
Senate Democrats 1	17	No	No	Yes	Yes	Yes
Senate Democrats 2	16	Yes	Yes	Yes	Yes	Yes
Voters of the Commonwealth	15	No	No	No	No	No

C. Incumbency Pairings

It is a logical necessity that in dropping from 18 congressional seats to 17, at least 2 incumbents must be paired in the upcoming election. As the Honorable Patricia McCullough observed, however, some of the plans stand out as pairing more incumbents from one party than another. Report at 180 FF17. For example, Senate Democrat Plan 2 and the Draw the Lines Plan both pair a Republican incumbent

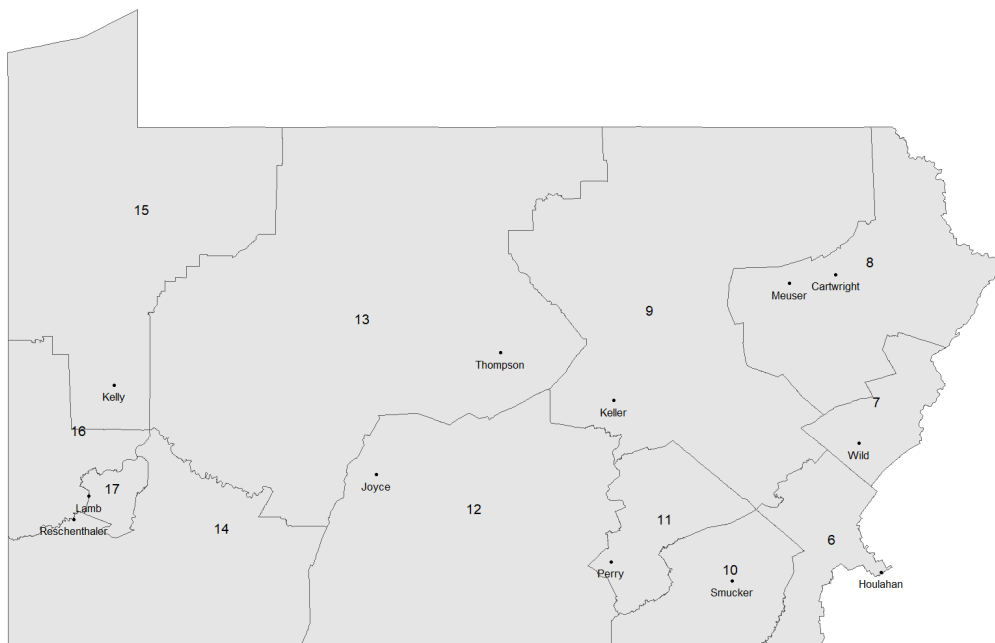
with a Democratic incumbent in the same district, while another district within that plan pairs two other Republican incumbents. Uncontroverted testimony at the evidentiary hearing—and common sense—confirms that the pairing of three Republicans and only one Democrat particularly favors Democrats. Conversely, the Reschenthaler 1 Plan and the Citizen-Voters Plan both pair a Republican incumbent with a Democrat incumbent in a single district, while another district pairs two Democratic incumbents, plans which particularly favor Republicans.

In contrast, HB 2146 pairs a Republican and a Democrat in a single district, while also pairing Representatives Lamb and Doyle in a single district; but neither Representative Lamb nor Representative Doyle is seeking reelection.

The Voters of PA Plan scores even better on this measure, eliminating concern of partisanship with respect to incumbency protection. Under the Voters of PA Plan, there are two districts which each pair a Republican with a Democrat: Representative Fitzpatrick, a Republican, is paired with Representative Boyle, a Democrat, while Representative Cartwright, a Democrat, is paired with Representative Meuser, a Republican. In addition, one district is retained as an open district, although it is very close to the residence of Democratic Representative Boyle. The pairing of incumbents under the Voters of PA Plan is thus neutral from a partisan perspective,

or even potentially favoring Democrats slightly.⁵ See Sean Trende Declaration at 19–20, ¶¶ 50–51. The location of the incumbents in the Voters of PA’s Plan are set forth below and in the Declaration of Sean Trende, attached hereto.

Proposed Map, With Locations of Incumbents, Philadelphia Area Excluded



⁵ As noted in their Application for Leave to Intervene, the Voters of PA are registered electors who intend to support and vote for Republican candidates.

Proposed Map, With Locations of Incumbents, Philadelphia Area



D. Partisanship

Pennsylvania courts have not prohibited the use of partisanship in the redistricting process. Our Founders readily observed the political nature of redistricting, noting that whoever draws the district maps might “mould their regulations as to favor the candidates they wished to succeed.” 2 Records of the Federal Convention of 1787, at 241 (Max Farrand ed. 1911). The Supreme Court of Pennsylvania likewise acknowledged that “redistricting has an inevitably legislative, and therefore an inevitably political, element; but the constitutional commands and restrictions on the process exist precisely as a brake on the most overt of potential excesses and abuse.” *Holt I*, 38 A.3d at 745. This Court has clarified that “partisan gerrymandering dilutes the votes of those who in prior elections voted for the party

not in power to give the party in power a lasting electoral advantage.” *LWV*, 178 A.3d at 814. Yet, this Court did not adopt a particular measure to determine the extent to which partisan considerations governed the drawing of a map; instead, it adopted the neutral criteria of Article II, Section 16 to “provide a ‘floor’ of protection for an individual against the dilution of his or her vote in the creation of such districts.” *Id.* at 817.

As argued *supra*, the use of partisan fairness metrics to select a map—as opposed to determining whether a challenged plan is a partisan outlier that subordinated neutral criteria—opens the door to a host of problems. Nevertheless, to the extent the Court determines that partisan fairness metrics have a place in selecting a redistricting plan, the Voters of PA Plan scores well here as well. The Special Master expressly found that both HB 2146 and the Voters of PA “persuasively create a sufficient number of competitive, ‘toss up’ congressional districts which could go either way, depending upon the particular election and/or office at issue and the qualifications and political platforms of the individual candidates.” Report at 208 ¶ 59. Further, the Voters of PA Plan performs well in the efficiency gap and mean-median measures utilized by the Court in *LWV*. See Sean Trende Declaration at 24–25.

E. The Special Master’s Credibility Determinations Are Entitled to Special Weight

Although the Court’s standard of review in this matter is *de novo*, the Court has recognized that the Special Master’s findings of fact are owed “due consideration, as the jurist who presided over the hearings was in the best position to determine the facts.” *LWV*, 178 A.3d at 801 n.62 (quoting *Annenberg v. Commonwealth*, 757 A.2d 338, 343 (Pa. 2000)).

The Court’s interest in affording the Special Master’s proposed findings of fact “due consideration” is particularly high here, given the heightened need for transparency. In *LWV*, Justice Baer objected to the lack of transparency of the Court’s process of adopting a remedial congressional plan. See *LWV*, 178 A.3d at 831 (Baer, J., concurring and dissenting). Court adoption of a redistricting plan stands in stark contrast to the comparably open legislative process. During the legislative process, voters may contact their representative and senator to provide input regarding maps under consideration. The public may also provide comments or maps of their own via the Public Comment Ports., <https://portal.pennsylvania-mapping.org/#gallery>. But the procedure utilized by the Court does not allow for public comment. Rather, the only means by which interested citizens could have their voices heard was their participation in the evidentiary hearing before the Special Master. Disregarding the Special Master’s credibility determinations would

serve to cheapen the value of the evidentiary hearing and renew the public's concerns regarding the integrity of how Pennsylvania's congressional lines are drawn.

VII. The Voters of PA Take No Position Regarding the Primary Election Calendar

The Voters of PA take no position regarding the primary election schedule or any proposed revisions thereto.

CONCLUSION

Unlike the vast majority of redistricting plans that were submitted, both HB 2146 and the Voters of PA Plans are fully compliant with the standards announced by the Supreme Court of Pennsylvania in *LWV*. Both satisfy the one-person, one-vote requirement, create seventeen contiguous districts, and produce the same number of majority-minority districts as the existing map. The Voters of PA's Plan has better mean compactness scores than the remedial map adopted by the Supreme Court and every other submitted plan. The Voters of PA's Plan minimizes county and municipal splits, and the Voters' Map does not "sacrifice" any county or municipality with more splits or transverses than are necessary. The Voters' Map also scores well within the normal range on conventional partisanship metrics. These metrics combine to provide a high level of assurance that the traditional, neutral criteria predominated in the drafting of the Voters' Map. When so many of the submitted plans were disqualified on constitutional grounds, HB 2146 and the Voters of PA Plan serve as exemplary choices. Even the Governor's expert witness, Dr. Duchin, commended the Voters of PA Plan as the most compact and in the highest "tier" of adherence to the traditional principles.

For the reasons set forth above, *amici curiae* Voters of PA respectfully request that this Honorable Court adopt the Special Master's Report and, by extension, HB 2146 as the congressional redistricting plan for the 2022, 2024, 2026, 2028, and 2030

congressional elections. Alternatively, the Voters of PA submit that to the extent the Court chooses not to adopt HB 2146, the Voters of PA's proposed congressional redistricting plan should be adopted for the use in the 2022, 2024, 2026, 2028, and 2030 congressional elections.

Respectfully submitted,

GALLAGHER GIANCOLA LLC

Dated: February 14, 2022

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Commonwealth of Pennsylvania,
Haroon Bashir, Valerie Biancaniello,
Tegwyn Hughes, and Jeffrey Wenk*

Exhibit A

Declaration of Sean Trende

**IN THE COMMONWEALTH COURT OF
PENNSYLVANIA**

Carol Ann Carter, <i>et al.</i> , Petitioners	:	CASES CONSOLIDATED
	:	
v.	:	No. 464 M.D. 2021
	:	
Leigh Chapman, <i>et al.</i> , Respondents	:	
	:	
	:	
Philip T. Gressman, <i>et al.</i> , Petitioners	:	
	:	
v.	:	No. 465 M.D. 2021
	:	
Leigh Chapman, <i>et al.</i> , Respondents	:	
	:	

DECLARATION OF SEAN P. TRENDE

1. I am over the age of 18 and am competent to testify regarding the matters discussed below.
2. I have been retained in this matter by *Amici Curiae* Voters of the Commonwealth Legislative Defendants, and am being compensated at \$400.00 per hour for my work in this case.
3. My *curriculum vitae* is attached to this report as Appendix 1.
4. I have been asked to summarize and opine as to the properties of the various maps that have been submitted to this Court by the parties and amici. In particular, I was asked to emphasize and explore the plans' compactness and competitiveness.

EXPERT CREDENTIALS

5. I joined RealClearPolitics in January of 2009 after practicing law for eight years. I assumed a full-time position with RealClearPolitics in March of 2010. My title is Senior Elections Analyst. RealClearPolitics is a company of around 50 employees, with offices in Washington D.C. It produces one of the most heavily trafficked political websites in the world, which serves as a one-stop shop for political analysis from all sides of the political spectrum and is recognized as a pioneer in the field of poll aggregation. It produces original content, including both data analysis and traditional reporting. It is routinely cited by the most influential voices in politics, including David Brooks of *The New York Times*, Brit Hume of *Fox News*, Michael Barone of *The Almanac of American Politics*, Paul Gigot of *The Wall Street Journal*, and Peter Beinart of *The Atlantic*.

6. My main responsibilities with RealClearPolitics consist of tracking, analyzing, and writing about elections. I collaborate in rating the competitiveness of Presidential, Senate, House, and gubernatorial races. As a part of carrying out these responsibilities, I have studied and written extensively about demographic trends in the country, exit poll data at the state and federal level, public opinion polling, and voter turnout and voting behavior. In particular, understanding the way that districts are drawn and how geography and demographics interact is crucial to predicting United States House of Representatives races, so much of my time is dedicated to that task.

7. I am currently a Visiting Scholar at the American Enterprise Institute, where my publications focus on the demographic and coalitional aspects of American Politics. There, I have written on the efficiency gap, a metric for measuring the fairness of redistricting plans.

8. I am the author of *The Lost Majority: Why the Future of Government Is Up for Grabs and Who Will Take It*. In this book, I explore realignment theory. It argues that realignments are a poor concept that should be abandoned. As part of this analysis, I conducted a

thorough analysis of demographic and political trends beginning in the 1920s and continuing through the modern times, noting the fluidity and fragility of the coalitions built by the major political parties and their candidates.

9. I co-authored the 2014 *Almanac of American Politics*. The Almanac is considered the foundational text for understanding congressional districts and the representatives of those districts, as well as the dynamics in play behind the elections. PBS's Judy Woodruff described the book as "the oxygen of the political world," while NBC's Chuck Todd noted that "[r]eal political junkies get two *Almanacs*: one for the home and one for the office." My focus was researching the history of and writing descriptions for many of the newly-drawn districts, including tracing the history of how and why they were drawn the way that they were drawn.

10. I have spoken on these subjects before audiences from across the political spectrum, including at the Heritage Foundation, the American Enterprise Institute, the CATO Institute, the Bipartisan Policy Center, and the Brookings Institution. In 2012, I was invited to Brussels to speak about American elections to the European External Action Service, which is the European Union's diplomatic corps. I was selected by the United States Embassy in Sweden to discuss the 2016 elections to a series of audiences there, and was selected by the United States Embassy in Spain to fulfil a similar mission in 2018. I was invited to present by the United States Embassy in Italy, but was unable to do so because of my teaching schedule.

11. In the winter of 2018, I taught American Politics and the Mass Media at Ohio Wesleyan University. I taught Introduction to American Politics at The Ohio State University for three semesters from Fall of 2018 to Fall of 2019, and again in Fall of 2021. In the Springs of 2020 and 2021, I taught Political Participation and Voting Behavior at The Ohio State University. This course spent several weeks covering all facets of redistricting: how maps are drawn, debates

over what constitutes a fair map, measures of redistricting quality, and similar topics. I am teaching this course this semester as well.

12. It is my policy to appear on any major news outlet that invites me, barring scheduling conflicts. I have appeared on both Fox News and MSNBC to discuss electoral and demographic trends. I have been cited in major news publications, including *The New York Times*, *The Washington Post*, *The Los Angeles Times*, *The Wall Street Journal*, and *USA Today*.

13. I sit on the advisory panel for the “States of Change: Demographics and Democracy” project. This project is sponsored by the Hewlett Foundation and involves three premier think tanks: the Brookings Institution, the Bipartisan Policy Center, and the Center for American Progress. The group takes a detailed look at trends among eligible voters and the overall population, both nationally and in key states, to explain the impact of these changes on American politics, and to create population projections, which the Census Bureau abandoned in 1995. In 2018, I authored one of the lead papers for the project: “In the Long Run, We’re All Wrong,” available at <https://bipartisanpolicy.org/wp-content/uploads/2018/04/BPC-Democracy-States-of-Change-Demographics-April-2018.pdf>.

14. I am currently a doctoral candidate in political science at The Ohio State university. I received a Master’s in Applied Statistics as part of my coursework. My coursework for my Ph.D. and M.A.S. included, among other things, classes on G.I.S. systems, spatial statistics, issues in contemporary redistricting, machine learning, non-parametric hypothesis tests and probability theory. I have completed my coursework and have passed comprehensive examinations in both methods and American Politics. I expect to receive my Ph.D. in May of 2022, and have filed my application to graduate. My dissertation focuses on applications of spatial statistics to political

questions, including an article on redistricting simulations and the effect of communities of interest on partisan bias.

15. In 2021, I served as one of two special masters appointed by the Supreme Court of Virginia to redraw the districts that will elect the commonwealth's representatives to the House of Delegates, state Senate, and U.S. Congress in the following decades. The Supreme Court of Virginia accepted those maps and were praised by observers from across the political spectrum. "New Voting Maps, and a New Day, for Virginia," *The Washington Post* (Jan. 2, 2002), available at <https://www.washingtonpost.com/opinions/2022/01/02/virginia-redistricting-voting-maps-gerrymander/>; Henry Olsen, "Maryland Shows How to do Redistricting Wrong. Virginia Shows How to Do it Right," *The Washington Post* (Dec. 9, 2021), available at <https://www.washingtonpost.com/opinions/2021/12/09/maryland-virginia-redistricting/>; Richard Pildes, "Has VA Created a New Model for a Reasonably Non-Partisan Redistricting Process," *Election Law Blog* (Dec. 9, 2021), available at <https://electionlawblog.org/?p=126216>.

16. I previously authored an expert report in *Dickson v. Rucho*, No. 11-CVS-16896 (N.C. Super Ct., Wake County), which involved North Carolina's 2012 General Assembly and Senate maps. Although I was not called to testify, it is my understanding that my expert report was accepted without objection. I also authored an expert report in *Covington v. North Carolina*, Case No. 1:15-CV-00399 (M.D.N.C.), which involved almost identical challenges in a different forum. Due to what I understand to be a procedural quirk, where my largely identical report from *Dickson* had been inadvertently accepted by the plaintiffs into the record when they incorporated parts of the *Dickson* record into the case, I was not called to testify.

17. I authored two expert reports in *NAACP v. McCrory*, No. 1:13CV658 (M.D.N.C.), which involved challenges to multiple changes to North Carolina's voter laws, including the

elimination of a law allowing for the counting of ballots cast in the wrong precinct. I was admitted as an expert witness and testified at trial. My testimony discussed the “effect” prong of the Voting Rights Act claim. I did not examine the issues relating to intent.

18. I authored reports in *NAACP v. Husted*, No. 2:14-cv-404 (S.D. Ohio), and *Ohio Democratic Party v. Husted*, Case 15-cv-01802 (S.D. Ohio), which dealt with challenges to various Ohio voting laws. I was admitted and testified at trial in the latter case (the former case settled). The judge in the latter case ultimately refused to consider one opinion, where I used an internet map-drawing tool to show precinct locations in the state. Though no challenge to the accuracy of the data was raised, the judge believed I should have done more work to check that the data behind the application was accurate.

19. I served as a consulting expert in *Lee v. Virginia Board of Elections*, No. 3:15-cv-357 (E.D. Va. 2016), a voter identification case. Although I would not normally disclose consulting expert work, I was asked by defense counsel to sit in the courtroom during the case and review testimony. I would therefore consider my work *de facto* disclosed.

20. I filed an expert report in *Mecinas v. Hobbs*, No. CV-19-05547-PHX-DJH (D. Ariz. 2020). That case involved a challenge to Arizona’s ballot order statute. Although the judge ultimately did not rule on a motion in limine in rendering her decision, I was allowed to testify at the hearing.

21. I authored two expert reports in *Feldman v. Arizona*, No. CV-16-1065-PHX-DLR (D. Ariz.). Plaintiffs in that case challenged an Arizona law prohibiting the collection of voted ballots by third parties that were not family members or caregivers and the practice of most of the state’s counties to require voters to vote in their assigned precinct. My reports and testimony were admitted. Part of my trial testimony was struck in that case for reasons unrelated to the merits of

the opinion; counsel for the state elicited it while I was on the witness stand and it was struck after Plaintiffs were not able to provide a rebuttal to the new evidence.

22. I authored expert reports in *A. Philip Randolph Institute v. Smith*, No. 1:18-cv-00357-TSB (S.D. Ohio), *Whitford v. Nichol*, No. 15-cv-421-bbc (W.D. Wisc.), and *Common Cause v. Rucho*, NO. 1:16-CV-1026-WO-JEP (M.D.N.C.), which were efficiency gap-based redistricting cases filed in Ohio, Wisconsin and North Carolina.

23. I also authored an expert report in the cases of *Ohio Organizing Collaborative, et al v. Ohio Redistricting Commission, et al* (No. 2021-1210); *League of Women Voters of Ohio, et al v. Ohio Redistricting Commission, et al* (No. 2021-1192); *Bria Bennett, et al v. Ohio Redistricting Commission, et al* (No. 2021-1198). These cases were consolidated and are presently pending in original action before the Supreme Court of Ohio.¹

24. In 2019, I was appointed as the court's expert by the Supreme Court of Belize. In that case I was asked to identify international standards of democracy as they relate to malapportionment claims, to determine whether Belize's electoral divisions (similar to our congressional districts) conformed with those standards, and to draw alternative maps that would remedy any existing malapportionment.

25. I currently serve as the voting rights act expert to counsel for the Arizona Independent Redistricting Commission.

¹ I have only been excluded as an expert once, in *Fair Fight v. Raffensperger*, 1:18-CV-5391-SCJ (N.D. Ga.). The judge concluded that I lacked sufficient credentials to testify as an expert in election administration, and this case did not deal with redistricting.

EVALUATION OF MAP

26. I have been asked to analyze the map submitted on behalf of *amici curiae* Voters of the Commonwealth of Pennsylvania (“Proposed Map”) as well as those submitted by the parties and other amici, and to summarize their relevant features for the Court.

27. I have reviewed the Supreme Court of Pennsylvania’s Order in *League of Women Voters of Pennsylvania v. Commonwealth*, 178 A.3d 737 (Pa. 2018). That opinion specifically mentions the following factors as important ones: (1) contiguity; (2) compactness; (3) equality of population; and (4) splits of political subdivisions. *Id.* at 816–17. In addition, I have obtained data relating to incumbent addresses and political affiliation to see whether the map unfairly places incumbents from one party into the same district (called “double bunking”), and whether the map unduly favors one party over another.

28. To accomplish this analysis, I obtained a block assignment file for the Proposed Map from counsel. A block assignment file simply consists of a list of census blocks for the Commonwealth of Pennsylvania, and the congressional districts to which each block is assigned. I also acquired the shapefiles for those census blocks from the Redistricting Data Hub, a widely utilized resource that collects political data relevant to the redistricting process and makes it publicly available to researchers. *See* <https://redistrictingdatahub.org/>. These blocks also contain population data. Here, I utilized the population counts that were not adjusted for prisoner population.

29. I also downloaded precinct shapefiles that included political data from the Redistricting Data Hub, and matched them to the appropriate district. In addition, I downloaded a shapefile for the current congressional districts.

30. I obtained a list of addresses for incumbents from counsel and geocoded those addresses to obtain latitude and longitude data.

31. Using a widely utilized statistical and graphics programming language called R, I used the block assignment file to match the shapefile of the blocks to their respective districts. From this, I was able to create a shapefile of the districts in the Proposed Map.

CONTIGUITY AND EQUALITY OF POPULATION

32. All plans submitted to this Court are contiguous. Most plans contain the minimum population deviation that is possible: 12 districts with a population of 764,865 and five districts with a population of 764,864, for a population deviation of five. The exceptions are as follows:

- The map submitted by the Carter plaintiffs contains four districts with populations of 764,866 and nine districts with populations of 764,864, for a total population deviation of 13.
- The maps submitted by the House Democrats have two districts with populations of 764,866 and seven districts with populations of 764,864, for a total population deviation of 9.
- The map submitted by the Ali *amici* utilizes the Group Quarter Adjusted population (i.e. “prisoner adjusted” population). It is balanced under that count but has total population deviations of 29,479 residents using the unadjusted census counts.

COMPACTNESS

33. To evaluate the compactness of the districts, I employed three commonly used metrics: Reock, Polsby-Popper and Schwartzberg. All three metrics are based on comparing the drawn district to a circle, which is the most compact shape.

34. The Reock score looks at the ratio of the area of the district to the area of the smallest circle that would enclose the district (also known as a “minimum bounding circle”). Ernest Reock, “A Note: Measuring Compactness as a Requirement of Legislative Apportionment,” 1 *Midwest Jnl. Pol. Sci.* 70 (1961). This ratio will fall as the district becomes distorted lengthwise; it therefore punishes long, bacon-like districts. Note, however, that a district that weaves back-and-forth in a serpentine fashion could score reasonably well on the Reock scoring. This illustrates the importance of looking at multiple standards of compactness. A “perfect” Reock score is 1, while a zero reflects a theoretical perfectly non-compact district.

35. The Polsby-Popper score looks at the ratio of the area of a district to the area of a circle that has the same perimeter as the district. Daniel D. Polsby & Robert D. Popper, “The Third Criterion: Compactness as a Procedural Safeguard Against Partisan Gerrymandering,” 9 *Yale L. & Pol. Rev.* 301 (1991). To understand the motivation behind Polsby-Popper, sketch out a circle. Then erase some of the edge of the circle, and have a narrow tendril snake into the district toward the center. The Reock score would not change much, since the size of the minimum bounding circle remains the same and the area of the district changes only slightly. The Polsby-Popper score, however, would fall significantly, since the perimeter of the district would be greatly increased. A “perfect” Polsby-Popper score is 1, while a theoretical perfectly non-compact district would score a zero.

36. Finally, I computed the Schwartzberg score. The Schwartzberg score takes the perimeter of the district and compares it to the perimeter (circumference) of a circle that has the same area as the district. *See* Joseph E. Schwartzberg, “Reapportionment, Gerrymanders, and the Notion of Compactness,” 50 *Minn. L. Rev.* 443 (1965). By taking the inverse (dividing the number “1” by this score), the scores are, like the above scores, scaled from 0 to 1, with 1 representing a perfectly compact district.

37. The following table provides the mean Reock, Polsby-Popper, and Schwartzberg scores for the maps. I also provide the minimum of each score. This tells us whether the map drawer is “cheating” by drawing one or two badly non-compact districts and then balancing out the average by drawing the remainder of the districts in a fairly compact manner. For example, the Carter plaintiffs’ map generally draws compact districts, but then draws a truly grotesque district extending from the Philadelphia border almost to Schuylkill County.

Table 1: Comparison of Compactness Measures
All Maps

Measure	Amici					Parties								
	Ali	Cit. Voters	Conc. Cits.	DTL	PA Voters	Carter	Gov. Wolf	Gressman	House Ds	House Rs	Resch 1	Resch 2	Senate Ds 1	Senate Ds 2
Reock														
Mean	0.407	0.418	0.416	0.436	0.442	0.413	0.401	0.395	0.392	0.383	0.426	0.414	0.373	0.379
Minimum	0.234	0.210	0.199	0.227	0.343	0.214	0.203	0.264	0.226	0.270	0.307	0.307	0.209	0.197
Polsby-Popper														
Mean	0.352	0.349	0.352	0.379	0.396	0.321	0.381	0.348	0.279	0.321	0.363	0.352	0.315	0.335
Minimum	0.208	0.234	0.244	0.233	0.229	0.172	0.219	0.187	0.148	0.194	0.246	0.216	0.220	0.242
Schwartzberg														
Mean	0.590	0.589	0.591	0.611	0.626	0.562	0.613	0.585	0.521	0.561	0.599	0.591	0.558	0.577
Minimum	0.456	0.484	0.494	0.483	0.478	0.415	0.468	0.432	0.385	0.440	0.496	0.464	0.469	0.491

38. This is an admittedly dense chart. To help digest it better, the following table focuses only on the Reock Score. It sorts the maps by the mean Reock Score and the minimum Reock Score (recall that a higher score is more compact).

Map	Mean Reock	Map	Least Compact (Reock)
Voters of the Commonwealth	0.442	Voters of the Commonwealth	0.343
Draw the Lines	0.436	Reschenthaler 1	0.307
Reschenthaler 1	0.426	Reschenthaler 2	0.307
Citizen Voters	0.418	House Republicans	0.270
Concerned Citizens	0.416	Gressman	0.264
Reschenthaler 2	0.414	Ali	0.234
Carter	0.413	Draw the Lines	0.227
Ali	0.407	House Democrats	0.226
Governor Wolf	0.401	Carter	0.214
Gressman	0.395	Citizen Voters	0.210
House Democrats	0.392	Senate Democrats 1	0.209
House Republicans	0.383	Governor Wolf	0.203
Senate Democrats 2	0.379	Concerned Citizens	0.199
Senate Democrats 1	0.373	Senate Democrats 2	0.197

39. As you can see, the Voters of the Commonwealth map has the best mean Reock score, and its least compact district scores better than any of the other least compact districts. In fact, its least compact district is almost as compact as the average district in the Senate Democrats' maps.

40. Likewise, the Voters of the Commonwealth map has the best overall Polsby-Popper scores, and scores well with respect to the least compact district.

Map	Mean Polsby-Popper
Voters of the Commonwealth	0.396
Governor Wolf	0.381
Draw the Lines	0.379
Resenthaler 1	0.363
Ali	0.352
Concerned Citizens	0.352
Resenthaler 2	0.352
Citizen Voters	0.349
Gressman	0.348
Senate Democrats 2	0.335
Carter	0.321
House Republicans	0.321
Senate Democrats 1	0.315
House Democrats	0.279

Map	Least Compact (Polsby-Popper)
Resenthaler 1	0.246
Concerned Citizens	0.244
Senate Democrats 2	0.242
Citizen Voters	0.234
Draw the Lines	0.233
Voters of the Commonwealth	0.229
Senate Democrats 1	0.220
Governor Wolf	0.219
Resenthaler 2	0.216
Ali	0.208
House Republicans	0.194
Gressman	0.187
Carter	0.172
House Democrats	0.148

41. Finally, we provide the same chart for the Schwartzberg scores:

Map	Mean Schwartzberg	Map	Least Compact (Schwartzberg)
Voters of the Commonwealth	0.626	Resenthaler 1	0.496
Governor Wolf	0.613	Concerned Citizens	0.494
Draw the Lines	0.611	Senate Democrats 2	0.491
Resenthaler 1	0.599	Citizen Voters	0.484
Concerned Citizens	0.591	Draw the Lines	0.483
Resenthaler 2	0.591	Voters of the Commonwealth	0.478
Ali	0.590	Senate Democrats 1	0.469
Citizen Voters	0.589	Governor Wolf	0.468
Gressman	0.585	Resenthaler 2	0.464
Senate Democrats 2	0.577	Ali	0.456
Carter	0.562	House Republicans	0.440
House Republicans	0.561	Gressman	0.432
Senate Democrats 1	0.558	Carter	0.415
House Democrats	0.521	House Democrats	0.385



42. Once again, the Voters of the Commonwealth map has the best overall compactness, and performs well on the “Least Compact” metric.

43. In summary, the Voters of the Commonwealth map scores the best on four of the six measures, and is in the top half on the other two metrics.

SPLITS OF POLITICAL SUBDIVISIONS

44. The final consideration explicitly addressed by the Supreme Court of Pennsylvania is the number of political subdivisions split. I begin by analyzing county splits in the proposed map. As shown in Table 4, the map splits only 15 counties between the 17 districts.

Table 4: County Splits, Proposed Map

County	Districts
Allegheny County	16,17
Berks County	6,9
Chester County	5,6
Cumberland County	11,12
Dauphin County	9,11
Delaware County	3,5
Forest County	13,15
Lackawanna County	8,9
Lawrence County	15,16
Monroe County	7,8
Montgomery County	4,6
Philadelphia County	1,2,3
Tioga County	9,13
Washington County	14,16
York County	10,11

45. The map splits counties in a manner consistent with the way counties have historically been split in the Commonwealth. Bucks County appears to have only been split once in any congressional map since Pennsylvania adopted district-based elections in the Second Congress, *see* Congressional District Law, Mar. 16, 1791 (C. XIII); Congressional District Law

Apr. 28, 1873 (N. 58) (splitting Bucks between the 7th and 10th Congressional Districts). The Proposed Map keeps Bucks County intact today.

46. Additionally, since 1822 Montgomery County has traditionally had a congressional district wholly assigned to it; when it did not, that district has almost always been paired with the City of Philadelphia or Bucks County. In the 1980s, the 13th Congressional District was almost entirely within Montgomery County, paired with a few western Philadelphia precincts. In the 1990s, the 13th Congressional District was entirely within Montgomery County. In the 2000s, the portions of the 13th Congressional District that were not in Montgomery County were paired with northeastern Philadelphia; the same was true of the map used in the early 2010s. The current 4th district is entirely within the boundaries of Montgomery County, except for a small protrusion into Berks County. *See also* Congressional District Law, Apr. 8, 1822 (C. CLXXIV) (Montgomery County and the 5th Congressional District were coterminous); Congressional District Law, June 9, 1832 (Montgomery County and the 5th Congressional District were coterminous); Congressional District Law, Mar. 25, 1843 (N. 57) (placing all of Montgomery County in the 5th Congressional District, while pairing it with Delaware County); Congressional District Law, May 1, 1852 (placing all of Montgomery County in the 5th Congressional District, while pairing it with what is today northeastern Philadelphia County); Congressional District Law, Mar. 4, 1862 (N. 409) (placing all of Montgomery County in the 6th Congressional District, while pairing it with Lehigh County); Congressional District Law Apr. 28, 1873 (N. 58) (placing all of Montgomery County in the 7th Congressional District, while pairing it with portions of Bucks County); Congressional District Law, May 19, 1887 (N.81) (placing Montgomery County entirely in the 7th Congressional District, while pairing it with the entirety of Bucks County); Congressional District Law, July 11, 1901 (N. 331) (placing

Montgomery County entirely in the 8th Congressional District, while pairing it with the entirety of Bucks County) ; Congressional District Law, May 10, 1921 (N. 216) (placing Montgomery County entirely in the 9th Congressional District, while pairing it with the entirety of Bucks County); Congressional District law, June 27, 1931 (N.361) (Montgomery County and the 17th Congressional District were coterminous); Congressional District Law, Feb. 25, 1942 (Montgomery County and the 17th Congressional District were coterminous) (N. 1); Congressional District Law, May 8, 1943 (Montgomery County and the 16th Congressional District were coterminous) (N. 119); Congressional District Law Dec. 22, 1951 (N. 464) (Montgomery County and the 13th Congressional District were coterminous); Congressional District Law, Jan. 29, 1962 (Montgomery County and the 13th Congressional District were coterminous); Congressional District Law, Mar. 8, 1966 (placing the 13th Congressional District entirely within Montgomery County); Congressional District Law Jan. 25, 1972 (N. 3) (placing 13th Congressional District entirely within Montgomery County).

47. There are three counties in Pennsylvania that must be split due to their population: Philadelphia, Montgomery and Allegheny. Outside of these mandatory splits, the splits in the Proposed Map impact just 25.1% of the population. In addition, the map avoids multiple traversals of a district. That is to say, when a district crosses a county boundary, it does so only once.

48. The Proposed Map also splits relatively few municipal divisions, as illustrated in Table 5. Notably, the only large city the Proposed Map splits in Philadelphia (which must be split due to its population). Large cities such as Pittsburgh, Allentown, Erie, and Reading are kept intact. Most of the municipal splits are confined to places with small populations.

Table 5: MCD Splits, Proposed Map

MCD	Districts	Population
Carbondale city	8,9	8,828
Chartiers township	14,16	8,632
Darby township	3,5	9,219
Delmar township	9,13	2,856
Easttown township	5,6	10,984
Hampden township	11,12	32,761
Jenks township	13,15	3,629
Limerick township	4,6	20,458
Mount Lebanon township	16,17	34,075
Neshannock township	15,16	9,843
Philadelphia city	1,2,3	1,603,797
Pocono township	7,8	10,844
Spring Garden township	10,11	13,683
Springettsbury township	10,11	27,058
Upper Darby township	3,5	85,681
Upper Paxton township	9,11	4,161
York township	10,11	29,719

49. In summary: The Voters of the Commonwealth map does split more counties than some maps, but it does so by avoiding the three-way splits that plague every other map and dilute the power of voters in those counties. Even setting that issue aside, the Voters of the Commonwealth map and the House Republicans map are the only ones that neither include a needless three-way split of Montgomery County, nor extends the Montgomery County district into Berks County, nor splits Pittsburgh, nor splits Bucks County.

Plan	# Splits	3-Way Montgomery Split?	Extends Montgomery Into Berks?	Splits Pittsburg?	Splits Bucks?	Splits Counties 3 Ways?
Ali	16	Yes	Yes	Yes	Yes	Yes
Carter	13	Yes	Yes	No	No	Yes
Citizen Voters	13	Yes	Yes	No	No	Yes
Concerned Citizens	16	No	No	Yes	No	Yes
Draw The Lines	14	Yes	No	Yes	No	Yes
Governor Wolf	16	Yes	Yes	Yes	Yes	Yes
Gressman	14	No	Yes	No	Yes	Yes
House Democrats	16	No	Yes	No	Yes	Yes
House Republicans	15	No	No	No	No	Yes
Resenthaler 1	13	Yes	No	No	No	Yes
Resenthaler 2	13	Yes	No	No	No	Yes
Senate Democrats 1	17	No	No	Yes	Yes	Yes
Senate Democrats 2	16	Yes	Yes	Yes	Yes	Yes
Voters of the Commonwealth	15	No	No	No	No	No

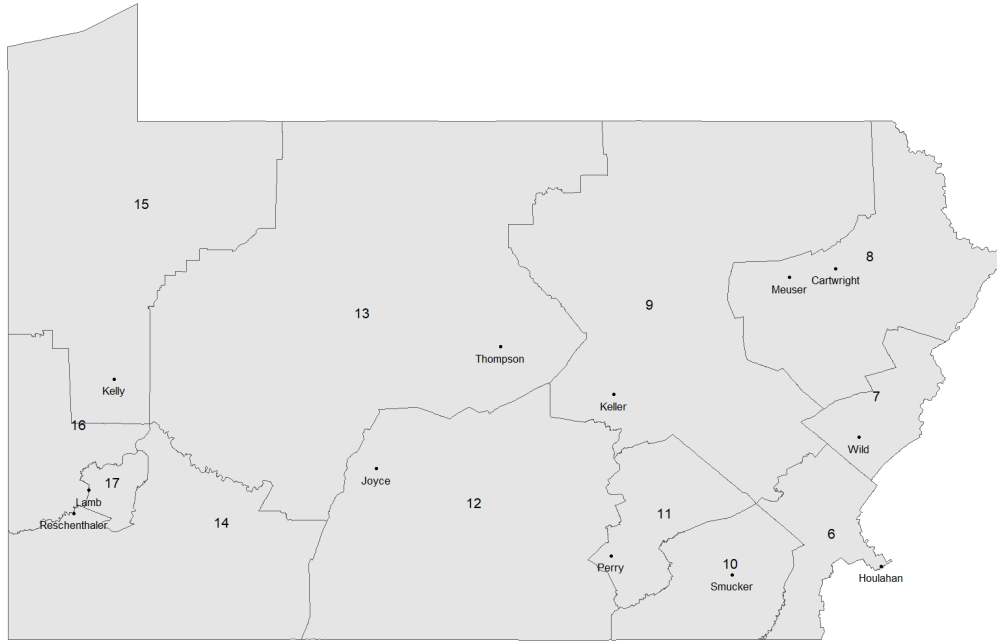
INCUMBENCY

50. The Supreme Court of Pennsylvania has acknowledged that incumbency protection is a factor that has historically played a role in the drawing of districts, and may be pursued and considered, so long as their accommodation does not subordinate the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintaining equal population among congressional districts. I have examined whether the Proposed Map unfairly places incumbents in districts together.

51. Using the incumbency file referenced above, I have plotted the addresses of the existing incumbents who have declared that they will be seeking re-election in 2022. Under the Proposed Map, the 2nd and 17th Congressional Districts are open districts. Most incumbents are placed in a district by themselves. The exceptions are Rep. Matt Cartwright and Rep. Dan Meuser, who are placed together in the 8th Congressional District, and Rep. Brendan Boyle and

Rep. Brian Fitzpatrick, who are placed together in the 1st district. Notably, however, Rep. Boyle lives close to the 2nd District, which is retained as an open district.

Proposed Map, With Locations of Incumbents, Philadelphia Area Excluded



Proposed Map, With Locations of Incumbents, Philadelphia Area



PARTISANSHIP

52. Finally, although it was not mentioned as a factor in *LWW*, I was asked by counsel to evaluate the existing and proposed plan under various proposed measures of partisanship. This is a difficult endeavor, because there are, at the very least, dozens of proposed metrics for partisan gerrymandering (just as there are for compactness). Some of them are difficult to explain, some are difficult to interpret, and some are both. For purposes of this report, I have drawn on two of the most common, straightforward metrics: the efficiency gap and mean-median.

53. Before exploring those metrics, some foundation must be laid. One must first decide how to assess the partisanship of a district when no elections have yet been held in it. One of the most common ways of doing so is to look at previously held elections. But which ones? No fewer than eleven statewide partisan elections have been held in Pennsylvania over the past three election cycles. But the farther one goes back, the more difficult it becomes to assess whether the election is relevant to current outcomes. Election totals from Chester County in 2012, when Mitt Romney narrowly carried the county, are likely to be significantly less probative of outcomes in the 2020s than the election totals from 2020, when Joe Biden carried the county by 20 points.

54. Even then, Donald Trump may have unique appeal among voters for a Republican candidate in certain areas of the state, while turning otherwise-Republican voters off in other portions of the state. This would counsel examining multiple elections. But it may also be the case that Trump represents the future of the Republican Party, and therefore particular heed should be paid to the results of elections in which he was a candidate.

55. Because of this, I have examined three different sets of election results: The Biden/Trump race alone, all the statewide partisan elections from 2020, and all of the non-judicial partisan statewide elections from 2016 to 2020. The results were downloaded from the Redistricting Data Hub, disaggregated to the census block level using R (weighting by VAP), and then aggregated back up to the relevant map shapefile.

56. While aggregating races can be problematic in a state like Maryland or Massachusetts, where Republican overperformances in gubernatorial races can twice the “true” partisanship of a district, the races in Pennsylvania are reasonably consistent. Narrow Republican wins are not uncommon, nor are substantial Democratic victories.

57. Mean-median is the difference between a party’s statewide vote share and its vote share in the middle district in the state. The goal is to keep a party’s share of the seats in which it performs better than it performed statewide roughly the same as the party’s share of the seats where it performed worse than it performed statewide.

58. The efficiency gap proceeds from the following intuition: When a party seeks to gerrymander, it seeks to waste the other party’s votes. It wastes the other party’s votes by either clumping them into a few districts where the other party will win overwhelmingly (packing), or by spreading them out over many districts where they have little chance of winning (cracking). The efficiency gap is simply the percentage of the statewide vote total that consists of wasted Democratic votes (votes either cast in districts Democrats lose or those beyond 50% of the vote in districts they win) minus the percentage of the statewide vote total that consists of wasted Republican votes.

59. The following table gives the mean-median and efficiency gap scores for the plans using different races as indicators.

race	Amici					Parties								
	Ali	Cit.Voters	Conc.Cits	DTL	PA.Voters	Carter	Gov	Gressman	House.Ds	House.Rs	Rens.1	Rens.2	Sen.Ds.1	Sen.Ds.2
Mean-Median														
Trump/Biden	0.0	2.2	0.3	0.3	3.0	0.3	-1.8	0.3	-1.7	2.8	1.4	1.4	0.6	-1.6
All 2020	0.0	0.9	0.2	0.2	2.0	0.0	-1.1	0.1	-0.8	1.9	0.5	0.5	0.3	-1.3
2016-2020	0.4	1.0	0.3	0.3	2.2	0.5	0.3	0.2	0.1	2.1	1.4	1.4	0.9	-0.2
Efficiency Gap														
Trump/Biden	-2.9	3.6	-3.1	-3.0	3.6	-3.0	-2.9	-3.0	-8.7	3.5	3.6	3.6	-3.0	-2.9
All 2020	-9.0	3.0	-3.7	-3.6	3.0	-9.1	-3.5	-9.0	-9.3	3.0	3.0	3.0	3.1	-3.5
2016-2020	-6.3	-0.9	-6.5	-6.4	5.6	-6.4	-1.0	-6.3	-12.1	5.5	-0.9	-0.9	0.3	-6.3

60. One downside of the various partisan fairness metrics is that, while they attempt to quantify the amount of partisanship involved in the line drawing, they do not answer the question of “how much gerrymandering is too much.” As you can see, all of the maps exhibit some degree of partisan bias. It is just difficult to say how much is “excessive” or when partisanship comes to predominate.

61. To put this in perspective, when I participated in the map drawing in Virginia, we concluded that our congressional maps, which had a mean-median gap of 2.1, did not “unduly favor” one party or the other. Plaintiffs in the case of *Common Cause v. Rucho* (the “efficiency gap” case that eventually made its way to the Supreme Court of the United States) suggested an efficiency gap of 7.5 as a threshold for a state with a relatively large number of Congressional Districts. 279 F. Supp. 3d 587, 662 (M.D.N.C. 2018), *vacated and remanded*, 138 S.Ct. 2679 (2018).

62. One way to look at this is to ask ourselves “what is the maximum efficiency gap we see” under the various iterations of the map. To measure this, I take the absolute value of the efficiency gaps below, so that a Republican efficiency gap is treated the same as a Democratic efficiency gap. As the following chart makes clear, the Voters of the Commonwealth Map

performs well here, landing in the bottom half, and never exceeds the thresholds suggested in earlier cases:

Table 8: Ranked Maximum Efficiency Gaps
All Maps

Plan	Max E.G.
House.Ds	12.1
Carter	9.1
Ali	9.0
Gressman	9.0
Conc.Cits	6.5
DTL	6.4
Sen.Ds.2	6.3
PA.Voters	5.6
House.Rs	5.5
Cit.Voters	3.6
Rens.1	3.6
Rens.2	3.6
Gov	3.5
Sen.Ds.1	3.1

63. Of course, the efficiency gap is not without its problems (as I have testified previously), and it is particularly inappropriate for non-competitive states (where some of its stranger properties become relevant). I am generally of the mind that the traditional redistricting criteria, perhaps combined with computer simulations, are the best way to evaluate a map. I include these metrics simply because they have become popular, and because the Court may find them to be of interest.

64. In other words, the Voters of the Commonwealth map performs well on the metrics that this Court laid out in *LCV*, and also performs well on metrics such as the efficiency gap and mean-median. Adopting the Voters of the Commonwealth plan would be consistent with

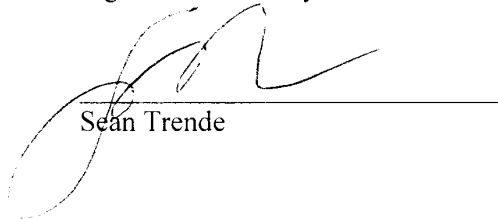
this Court's earlier instructions to lower courts as to what factors they should consider when evaluating plans.

CONCLUSION

65. The Voters of the Commonwealth map is the most compact map offered according to most metrics and respects the geography of Pennsylvania better than any of the proposed maps, save, perhaps, the House Republican maps. Its partisan bias is small by historic standards. If the Court were not to accept the magistrate judge's recommendations to accept the House Republican maps, it would be the best plan for this Court to adopt.

I declare under penalty of perjury under the law of the Commonwealth of Pennsylvania that the foregoing is true and correct.

Signed on: February 14, 2022, at Delaware County, Ohio, United States of America



Sean Trende

4891-5716-4549 v.1

Appendix 1

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EDUCATION

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J.D., Duke University School of Law, *cum laude*, 2001; Duke Law Journal, Research Editor.

M.A., Duke University, *cum laude*, Political Science, 2001. Thesis titled *The Making of an Ideological Court: Application of Non-parametric Scaling Techniques to Explain Supreme Court Voting Patterns from 1900-1941*, June 2001.

B.A., Yale University, with distinction, History and Political Science, 1995.

PROFESSIONAL EXPERIENCE

Law Clerk, Hon. Deanell R. Tacha, U.S. Court of Appeals for the Tenth Circuit, 2001-02.

Associate, Kirkland & Ellis, LLP, Washington, DC, 2002-05.

Associate, Hunton & Williams, LLP, Richmond, Virginia, 2005-09.

Associate, David, Kamp & Frank, P.C., Newport News, Virginia, 2009-10.

Senior Elections Analyst, RealClearPolitics, 2009-present.

Columnist, Center for Politics Crystal Ball, 2014-17.

Gerald R. Ford Visiting Scholar, American Enterprise Institute, 2018-present.

BOOKS

Larry J. Sabato, ed., *The Blue Wave*, Ch. 14 (2019).

Larry J. Sabato, ed., *Trumped: The 2016 Election that Broke all the Rules* (2017).

Larry J. Sabato, ed., *The Surge: 2014's Big GOP Win and What It Means for the Next Presidential Election*, Ch. 12 (2015).

Larry J. Sabato, ed., *Barack Obama and the New America*, Ch. 12 (2013).

Barone, Kraushaar, McCutcheon & Trende, *The Almanac of American Politics 2014* (2013).

The Lost Majority: Why the Future of Government is up for Grabs – And Who Will Take It (2012).

PREVIOUS EXPERT TESTIMONY

Dickson v. Rucho, No. 11-CVS-16896 (N.C. Super. Ct., Wake County) (racial gerrymandering).

Covington v. North Carolina, No. 1:15-CV-00399 (M.D.N.C.) (racial gerrymandering).

NAACP v. McCrory, No. 1:13CV658 (M.D.N.C.) (early voting).

NAACP v. Husted, No. 2:14-cv-404 (S.D. Ohio) (early voting).

Ohio Democratic Party v. Husted, Case 15-cv-01802 (S.D. Ohio) (early voting).

Lee v. Virginia Bd. of Elections, No. 3:15-cv-357 (E.D. Va.) (early voting).

Feldman v. Arizona, No. CV-16-1065-PHX-DLR (D. Ariz.) (absentee voting).

A. Philip Randolph Institute v. Smith, No. 1:18-cv-00357-TSB (S.D. Ohio) (political gerrymandering).

Whitford v. Nichol, No. 15-cv-421-bbc (W.D. Wisc.) (political gerrymandering).

Common Cause v. Rucho, No. 1:16-CV-1026-WO-JEP (M.D.N.C.) (political gerrymandering).

Mecinas v. Hobbs, No. CV-19-05547-PHX-DJH (D. Ariz.) (ballot order effect).

Fair Fight Action v. Raffensperger, No. 1:18-cv-05391-SCJ (N.D. Ga.) (statistical analysis).

Pascua Yaqui Tribe v. Rodriguez, No. 4:20-CV-00432-TUC-JAS (D. Ariz.) (early voting).

COURT APPOINTMENTS

Appointed as Voting Rights Act expert by Arizona Independent Redistricting Commission (2020)

Appointed special Master by the Supreme Court of Virginia to redraw maps for the Virginia House of Delegates, the Senate of Virginia, and for Virginia's delegation to the United States Congress for the 2022 election cycle.

Appointed redistricting expert by the Supreme Court of Belize in *Smith v. Perrera*, No. 55 of 2019 (one-person-one-vote).

INTERNATIONAL PRESENTATIONS AND EXPERIENCE

Panel Discussion, European External Action Service, Brussels, Belgium, *Likely Outcomes of 2012 American Elections*.

Selected by U.S. Embassies in Sweden, Spain, and Italy to discuss 2016 and 2018 elections to think tanks and universities in area (declined Italy due to teaching responsibilities).

Selected by EEAS to discuss 2018 elections in private session with European Ambassadors.

TEACHING

American Democracy and Mass Media, Ohio Wesleyan University, Spring 2018.

Introduction to American Politics, The Ohio State University, Autumn 2018, 2019, 2020, Spring 2018.

Political Participation and Voting Behavior, Spring 2020, Spring 2021.

REAL CLEAR POLITICS COLUMNS

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CERTIFICATE OF COMPLIANCE

I hereby certify that this brief contains fewer than the 7,000 words permitted under Pa. R.A.P. 2135(a)(1), excluding the cover page, table of contents, and table of authorities. This word count relies upon the word count of the word processing software used to prepare this brief.

GALLAGHER GIANCOLA LLC

Dated: February 14, 2022

/s/ Kathleen A. Gallagher

Kathleen A. Gallagher

Russell D. Giancola

**CERTIFICATE OF COMPLIANCE
WITH PUBLIC ACCESS POLICY**

I certify that this filing complies with the provisions of the *Public Access Policy of the United Judicial System of Pennsylvania: Case Records of the Appellate and Trial Courts* that require filing confidential information and documents differently than non-confidential information and documents.

GALLAGHER GIANCOLA LLC

Dated: February 14, 2022

/s/ Kathleen A. Gallagher

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IN THE SUPREME COURT OF PENNSYLVANIA

No. 7 MM 2022

CAROL ANN CARTER, et al, Petitioners,

v.

LEIGH M. CHAPMAN, et al., Respondents.

Review of the Recommended Findings of Fact and Conclusions of Law of the Commonwealth Court of Pennsylvania, entered on February 7, 2022, at Nos. 464 MD 2021 & 465 MD 2021.

**BRIEF OF AMICI CURIAE
CONCERNED CITIZENS FOR DEMOCRACY
IN SUPPORT OF PETITIONERS**

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Constitutional and Statutory Authorities

Pennsylvania Constitution, Article I, Section 5	7, 8, 9, 10, 14, 15
Pennsylvania Constitution, Article II, Section 16	4, 5, 6, 7, 8, 9, 17, 24
Voting Rights Act, 52 U.S. Code § 10101, et seq.	19, 24

INTEREST OF AMICUS CURIAE

Concerned Citizens for Democracy (CCFD) is a think-tank composed of lawyers, computer scientists, and engineers dedicated to developing nonpartisan, judicially manageable standards for redistricting in Pennsylvania. Since February 2017, CCFD, a 501(c)(3) non-partisan, Pennsylvania non-profit association, has been studying partisan redistricting techniques and how to prevent them. When, as here, the political processes have broken down and the political actors are unable to agree upon fair redistricting maps, the Court will benefit from guidance provided by nonpartisan groups such as CCFD. Such groups not only have proposed individual maps to govern a particular election, but also have developed standards for drawing fair maps and for determining when the resultant electoral districts provide for free and equal elections.

INTRODUCTION

This Court set forth standards for evaluating partisan gerrymandering in *League of Women Voters of Pa. v. Commonwealth of Pa.*, 645 Pa. 1, 178 A.3d 737 (Pa. 2018) (“*LWV*”). This Court noted four neutral criteria – compactness, contiguity, population equality, and minimization of political subdivision splits – set out in Article II, Section 16 of the Pennsylvania Constitution, which set a constitutional floor for the fair drafting of electoral districts. But the Court recognized that these four factors might not be sufficient to ensure the fair representation of Pennsylvania’s citizens. In order to satisfy Article I, Section 5’s separate requirement of “free and equal” elections, this Court should explicitly hold, contrary to the Special Master’s reasoning, that “partisan fairness” is a crucial fifth criterion for evaluating the constitutional

validity of voting districts.

This Court today faces the unenviable task of choosing among several redistricting proposals, at least several of which arguably satisfy the relevant constitutional criteria that the Court heretofore has developed. In addition to choosing a map to decide this case, it would be helpful if the Court were to discuss in more detail the neutral line-drawing procedures that are most likely to result in legislative districts that satisfy constitutional requirements. To that end, in Part III of this brief, CCFD describes its simple, step-by-step redistricting procedure that results in nonpartisan, fair and equal electoral districts. The CCFD method can be used to draft any legislative map while concomitantly serving as a judicially manageable standard to evaluate maps that have been drawn and then are challenged as the product of impermissible gerrymandering.

CCFD is also submitting an expert report (Exhibit A). One of its authors, Anne Hanna, is a data scientist who testified as an expert witness in *Agre v. Wolf*, 284 F. Supp. 3d 591 (E.D. Pa. 2018), the federal anti-gerrymandering case that challenged the 2011 Pennsylvania congressional map before a federal three-judge panel. The report (a) presents a model 17-seat Congressional redistricting map drafted utilizing the CCFD method, (b) identifies the subordinate criteria that then were chosen to be incorporated into the draft CCFD map, and explains why that was done, and (c) details, in a transparent manner, how the draft map was modified to accommodate the subordinate criteria. The report also analyzes the Special Master's Report, specifically the Report's findings and conclusions and map selection recommendations.

I. IN CHOOSING AMONG MAPS, THE COURT SHOULD BE GUIDED BY THE CONSTITUTION’S OVERARCHING GOAL OF ACHIEVING *EQUAL* VOTING RIGHTS, WHICH REQUIRES CONSIDERATION OF THE PARTISAN FAIRNESS OF ANY PROPOSED MAP.

In *League of Women Voters of Pennsylvania*, this Court held that the Commonwealth’s citizens are entitled to free and equal participation in the electoral process and that electoral maps cannot be drawn to benefit one political party over another. This Court concluded that, contrary to the Pennsylvania Constitution’s guarantees of free and equal elections, the Congressional redistricting plan the State Legislature adopted in 2011 was an impermissible gerrymander. This Court created a judicially manageable standard in *LWV*, and the expert the Court appointed used that standard to create a fair, non-gerrymandered Congressional map.

For redistricting purposes, the two relevant provisions of the Pennsylvania Constitution are Article II, Section 16 and Article I, Section 5. Article II, Section 16 provides:

§ 16. Legislative districts.

The Commonwealth shall be divided into 50 senatorial and 203 representative districts, which shall be composed of compact and contiguous territory as nearly equal in population as practicable. Each senatorial district shall elect one Senator, and each representative district one Representative. Unless absolutely necessary no county, city, incorporated town, borough, township or ward shall be divided in forming either a senatorial or representative district. (Apr. 23, 1968, P.L. App. 3, Prop. No. 1)

The second provision, Article I, Section 5 – the Free and Equal Elections Clause (“FEEC”) – is more general. It provides: “Elections shall be free and equal; and no power, civil or military, shall at any time interfere to prevent the free exercise of the right of suffrage.” This Court gave a full-throated support of the broadest possible interpretation of the FEEC. *See, e.g.*, 178 A.3d at 804, 814 (“the Clause should be given the broadest interpretation, one which

governs all aspects of the electoral process . . .”)

This Court provided clear guidance for determining the minimum criteria that a legislative redistricting map must meet to satisfy constitutional requirements. This Court found that a legislative redistricting plan must:

- (1) be composed of compact and contiguous territory;
- (2) be as nearly equal in population as practicable; and
- (3) not divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population.

178 A.3d at 742 (citing Order, 1/22/18 at ¶ “Fourth”). These four criteria essentially required compactness, contiguity, equal population, and minimization of divisions of political subdivisions.¹

After quoting from Article II, Section 16, this Court in *LWV* noted that, in addition to the four essential criteria, there were additional factors, such as the maintenance of prior district lines or incumbent protection, that historically had played a role in the drawing of districts. *LWV*, 178 A.3d at 817. This Court held that such other factors, if they are considered, must be “wholly subordinate” to the four mentioned criteria. *Id.* These criteria provide a “‘floor’ of protection for an individual against the dilution of his or her vote” in the creation of legislative districts, and subordination of these neutral criteria to other considerations, particularly partisan gerrymandering, creates a constitutional violation. *Id.* at 816-17.

To be sure, there are a multitude of maps that can satisfy the four criteria. But it is clear that partisan advantage cannot play *any* role in the construction of a permissible electoral map.

¹ Although *LWV* dealt with Congressional districts that the Pennsylvania state legislature drew, the rationale and holdings of *LWV* apply to both state and federal redistricting.

As this Court noted:

When . . . it is demonstrated that, in the creation of congressional districts, these neutral criteria have been subordinated, *in whole or in part*, to extraneous considerations such as gerrymandering for unfair partisan political advantage, a congressional redistricting plan violates Article I, Section 5 of the Pennsylvania Constitution. . . . [T]his standard *does not* require a showing that the creators of congressional districts *intentionally* subordinated these traditional criteria to other considerations in the creation of the district in order for it to violate Article I, Section 5; rather, it is sufficient to establish a violation of this section to show that these traditional criteria were subordinated to other factors.

178 A.3d at 817 (emphasis added). This language, which highlights the requirement that the four criteria not be subordinated to other considerations, ensures that, as a practical matter, applying the four criteria must be the first step in constructing a map that adheres to constitutional requirements.

In *League of Women Voters*, this Court was keenly aware that satisfying the four criteria enumerated in Article II, Section 16 – compactness, contiguity, equal population, and minimization of divisions of political subdivisions – constituted a floor, not the ceiling, of what the Constitution requires.

These neutral criteria provide a “floor” of protection for an individual against the dilution of his or her vote As we have repeatedly emphasized throughout our discussion, the overarching objective of this provision of our constitution is to prevent dilution of an individual’s vote by *mandating that the power of his or her vote in the selection of representatives be equalized to the greatest degree possible with all other Pennsylvania citizens*. We recognize, then, that there exists the possibility that advances in map drawing technology and analytical software can potentially allow mapmakers, in the future, to engineer congressional districting maps, which, although minimally comporting with these neutral “floor” criteria, nevertheless operate to *unfairly dilute the power of a particular group’s vote* for a congressional representative.

178 A.3d at 817 (emphasis added).

When, as now, the Court has before it a number of proposed maps that satisfy the four

“floor criteria” explicit in Section 16, then the Court must determine what additional factor or factors will be necessary to satisfy Article I, Section 5’s requirement of “free and equal” elections.

The crucial next factor for the Court to consider is partisan fairness. Partisan fairness can be defined as attempting to ensure that the anticipated seat shares of the parties (Democratic, Republican, or other parties) of a proposed electoral map will approximate the statewide vote share of each party, based on statewide elections, over a reasonable period of time. For example, if the vote shares of two parties over the last decade had been 53% and 47%, respectively, then the anticipated statewide seat share of a fairly drawn 17-seat map, should be 9-8, but no more pronounced. Stated alternatively, a party’s anticipated seat share should not exceed the party’s vote share in statewide elections over a reasonable period of time. For a more detailed analysis of partisan fairness, *see* Ex. A (CCFD Expert Report).

The Special Master mistakenly concluded that it *violates* the Free and Equal Elections Clause to attempt to minimize any partisan advantage that results from concentrations of political party supporters in, for example, urban versus rural areas. *See* Report at 197, para. 40. The opposite is true. The Pennsylvania Constitution’s guarantee of equal voting rights for individuals does not recognize any so-called “natural advantage” for one set of voters or one political party over another. Nothing in *LWV* supports such a conclusion. Indeed, as this Court noted, “any legislative scheme which has the *effect* of impermissibly diluting the potency of *an individual’s vote* for candidates for elective office relative to that of other voters will violate the guarantee of ‘free and equal’ elections afforded by Article I, Section 5.” *LWV*, 178 A.3d at 809 (emphasis added); *see also id.* at 812 (“The [FEEC] was specifically intended to equalize the power of

voters in our Commonwealth’s election process, and it explicitly confers this guarantee.”).

Equalizing the voting power of individuals necessarily implies that each voter should have an equal opportunity to have his party obtain majority status in a legislature when a majority of the state’s voters agree with his or her voting preference. Democracy is not well-served when (a) large numbers of like-minded voters are packed together in districts where their votes are likely to be wasted, and (b) control of the legislature systematically favors a small number of voters in a different geographic area. As this Court observed:

By placing voters preferring one party’s candidates in districts where their votes are wasted on candidates likely to lose (cracking), or by placing such voters in districts where their votes are cast for candidates destined to win (packing), the non-favored party’s votes are diluted. *It is axiomatic that a diluted vote is not an equal vote*, as all voters do not have an equal opportunity to translate their votes into representation. This is the antithesis of a healthy representative democracy. Indeed, for our form of government to operate as intended, each and every Pennsylvania voter must have the same free and equal opportunity to select his or her representatives.

178 A.3d at 814 (emphasis added). That is why, in *LWV*, this Court explicitly adopted a “broad interpretation” of Article I, Section 5 – to “guard[] against the risk of unfairly rendering votes nugatory, artificially entrenching representative power, and discouraging voters from participating in the electoral process because they have come to believe that the power of their individual vote has been diminished to the point that it ‘does not count.’” 178 A.3d at 814.

The egregious violation of the four “floor” criteria in Pennsylvania’s 2011 Congressional map, in pursuit of extreme, durable, and disproportionate partisan advantage, was the basis of this Court’s decision to overturn that map as an unconstitutional partisan gerrymander. The 2011 map was egregious precisely because, by design, the anticipated share of Republican seats far exceeded the anticipated share of seats for Democratic candidates. Indeed, and as demonstrated

by the elections of 2012, 2014, and 2016, the predictable result of these elections was 13 seats for Republican candidates and 5 seats for Democratic candidates, despite close to even state-wide election results.

In Pennsylvania, at the present time, there is a tendency for Democratic voters to self-pack in cities, suburbs, and factory towns, making them easy targets for packing and cracking. If this Court were to ignore this phenomenon and allow parties to carefully draw maps with subtle gerrymanders that further pack Democratic voters into cities and towns, this would permanently dilute the equal power of these voters to influence both the state legislature and Congress.² As is evident from the various expert reports submitted, maps drawn with complete indifference to partisan outcomes have a tendency to pack voters who prefer Democratic candidates in cities and inner ring suburbs, thereby putting a finger on the scales against their representation interests, despite their approximately equal statewide prevalence.

In February 2022, the North Carolina Supreme Court, in *Harper v. Hall*, NC Supreme Court Case No. 21 CVS 200085 (Feb. 4, 2022), interpreting its analogous state constitution,

² In selecting the map proposed by the Republican Legislators, the Special Master repeatedly stated that the map satisfied the principal goal underlying the holding in *LWV*: protecting “communities of interest.” *See, e.g.*, Report at 152, n.46. This is a misconstruction of *LWV*’s holding. *LWV* did not hold that protecting communities of interest (“COI”) is the principal—or even a significant—criterion in drawing a map that protects an individual voter’s right to an undiluted vote. Rather, *LWV* held that the FEEC applies to ensure that electoral redistricting is not marred by partisan unfairness. As such, under *LWV*, where mapping decisions intended to prevent partisan unfairness impinge to some degree on the COI issue, the policy of preventing partisan fairness must supersede concerns with alleged COI. This conclusion is bolstered by the fact that (1) the four neutral criteria themselves go a long way to ensuring the protection of COI, and (2) the concept of a “community of interest”—unlike the four neutral criteria—is amorphous and subjective and, as such, currently does not and cannot provide a judicially manageable standard.

agreed that partisan balance is a crucial determinant, not a subsidiary factor, in determining whether an individual’s equal voting right is infringed. That Court held unconstitutional a legislatively approved redistricting plan that “systematically makes it harder for one group of voters to elect a governing majority than another group of voters of equal size,” finding that the plan “unconstitutionally infringe[d] upon [the] fundamental right to vote.” Order at 5, para. 4. The Court noted that “[t]he fundamental right to vote includes the right to enjoy ‘substantially equal voting power and substantially equal legislative representation.’” *Id.*³

This Court should similarly hold that the FEEC prohibits redistricting maps that either are intended to or have the effect of incorporating a partisan advantage into them. This conclusion requires the drafter to make some level of adjustments to their maps (as in Step 6 of the CCFD method, *see infra*) to ensure that electoral districts do not confer unfair partisan advantage to any political party in violation of the FEEC.

When boundary adjustments are made to achieve partisan fairness, two principles must be respected. First, the mapmaker should explicitly note and explain the basis of any adjustment so that a reviewing court (or Commission) can see and understand the changes. Second, the adjustments should be limited to the minimum number and degree necessary to accomplish the goal of partisan fairness. For example, adjustments to increase a political party’s expected seat share can meet, but not exceed, a party’s likely statewide vote share. So if a party has a 10-year

³ *Cf. League of Women Voters of Ohio v. Ohio Redistricting Comm.*, Slip Op. No. 2022-Ohio-65 (January 12, 2022) (Ohio Constitution, as amended by voters, requires that “[t]he statewide proportion of districts whose voters, based on statewide state and federal partisan general election results during the last ten years, favor each political party shall correspond closely to the statewide preferences of the voters of Ohio.” Slip Op at 4 (quoting Ohio Constitution, Article XI, Section 6)).

statewide average vote share of 53%, the party can make minor adjustments in boundary lines to seek an anticipated seat share of 53%, but not one seat higher. Thus, if we are looking at a proposed 17-seat Congressional map, and a party with a vote share of 53%, that party's anticipated seat share should be nine seats, and the anticipated seat share of the party with 47% of the statewide vote should be eight seats. It is important for a reviewing court to carefully examine this step to ensure that a drafter has not engaged in stealth gerrymandering by over-adjusting in the name of "partisan fairness."⁴

II. INCUMBENT PROTECTION SHOULD BE DISFAVORED, SINCE IT FAILS TO ADVANCE THE CENTRAL GOALS OF FREE AND EQUAL ELECTIONS.

One redistricting consideration that has often played a role in maps that state legislatures in particular have drawn is "incumbent protection," *i.e.*, designing districts that minimize the chance that incumbent legislators will lose their seats. Incumbent protection can take various forms, *e.g.*, keeping the centers of prior district boundaries from changing to preserve the advantage of incumbency or making competitive seats either more conservative or more liberal by adding or subtracting territory to achieve the drafter's intended partisan advantage. The goal of incumbent protection is inconsistent with this Court's reasoning in *LWV*. This Court emphasized at the very beginning of its opinion that "[i]t is a core principle of our republican

⁴ Although voter preferences are not fixed from election to election, non-partisan political analysts are able to calculate likely seat share and vote share ranges using *objective numerical standards*. Likely seat share and vote share ranges can be determined by evaluating a particular map against a representative sample of statewide and district elections from the most recent election cycles preceding the redistricting. The results of many such analyses have been accepted as reliable in past redistricting cases in Pennsylvania and across the nation. As a result, this guidance can provide a neutral basis for redistricting authorities, courts, and their experts to ensure defensible, fair maps. For a more extensive analysis, *see* Ex. A.

form of government ‘that the voters should choose their representatives, not the other way around.’” 178 A.3d at 740-41. Incumbent protection, of course, is the quintessential example of representatives choosing their voters, rather than the other way around. Indeed, the desire to protect incumbents places the interests of elected representatives above the interests of the voters themselves.

A plan designed to protect incumbents also impermissibly favors one group of political candidates over another. As this Court noted in *LWV*, the first version of the Free and Equal Elections Clause declared that “all elections ought to be free; and that all free men having a sufficient evident common interest with, and attachment to the community, have a right to elect officers, *or to be elected into office.*” Pa. Const. of 1776, Art. I, § VII; 178 A.3d at 806-07 (emphasis added). Thus, the initial version of the FEEC included the right not only to cast a free and equal vote, but also a free and equal right to be elected into office. Although the language was changed in the final version of Article I, Section 5, that language was “revised to remove all prior ambiguous qualifying language,” 178 A.3d at 808, *i.e.*, in order to expand, not restrict, its scope. As this Court further explained:

The broad text of the first clause of this provision mandates clearly and unambiguously, and *in the broadest possible terms*, that all elections conducted in this Commonwealth must be “free and equal.” In accordance with the plain and expansive sweep of the words “free and equal,” we view them as indicative of the framers’ intent that *all aspects of the electoral process*, to the greatest degree possible, be kept open and unrestricted to the voters of our Commonwealth, and, also, conducted in a manner which guarantees, to the greatest degree possible, a voter’s right to equal participation in the electoral process for the selection of his or her representatives in government.

178 A.3d at 804 (emphasis added).

Incumbent protection, *even if done on a bipartisan basis*, serves to entrench the power of

the current Congressional representatives, making it more difficult for voters to change elected representatives who have displeased them. As this Court noted:

adoption of a broad interpretation [of Article I, Section 5] guards against the risk of unfairly rendering votes nugatory, *artificially entrenching representative power*, and discouraging voters from participating in the electoral process because they have come to believe that the power of their individual vote has been diminished to the point that it “does not count.”

178 A.3d at 814.

This Court’s only express discussion of incumbent protection in *LWV* implied that the practice would not be permissible since the goal of incumbent protection must be subordinated to the four criteria. *See* 178 A.3d at 818 n.74 (“Dr. Chen also credibly rebutted the notion that the 2011 Plan’s outlier status derived from a hypothetical attempt to protect congressional incumbents – *which attempt still, in any event, subordinated the traditional redistricting factors to others . . .*”) (emphasis added). To the extent that incumbent protection is considered at all when drawing district boundaries, it should be *wholly subordinate* to the other more neutral redistricting criteria adopted by this Court. District boundaries that are moved to accommodate incumbents should be examined by courts with careful scrutiny.

This Court also should be aware that partisan party mapmakers, rather than protecting incumbents, sometimes attempt to gain unfair advantage through gerrymandered districts that target, rather than protect, incumbents. Partisan mapmakers can purposefully create districts that pit the opposing party’s incumbents against each other, thereby dramatically increasing the odds that at least one of the opposing party’s incumbents will be defeated in a primary or general election. Regardless of whether the goal is to protect or attack incumbents, drafting decisions that are designed to help or hurt individual candidates deprive all candidates of an equal opportunity

to be elected, and therefore are inconsistent with Article 1, Section 5 of the Pennsylvania Constitution. .⁵

III. CCFD’S REDISTRICTING METHOD PROVIDES A STEP-BY-STEP GUIDE TO NEUTRAL REDISTRICTING THAT CAN ASSIST THIS COURT IN EVALUATING THE PROPOSED MAPS.

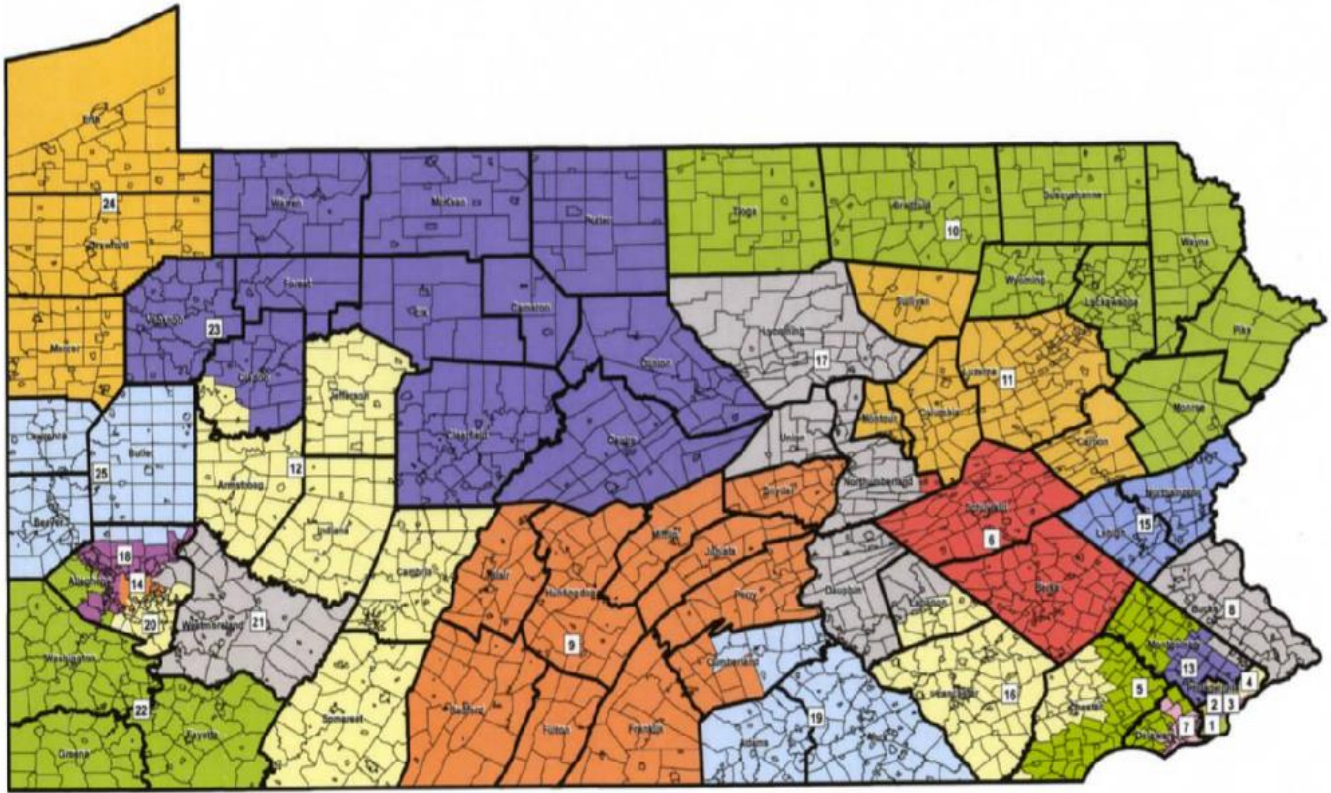
A. The History and Development of the CCFD Method

The CCFD method of redistricting was developed by examining the characteristics of the Pennsylvania Congressional maps from the 1930s to the 1970s. Such maps appeared to have been drawn in good faith to provide the requisite number of seats required by each census; blatant partisan gerrymandering by cracking and packing opposing party voters was absent. We observed that such districts invariably were uniformly compact and composed of unbroken counties, townships, and other political subdivisions. We further observed that after the United States Supreme Court’s decision in *Wesberry v. Sanders*, 376 U.S. 1 (1964), the Congressional maps consisted of districts composed of whole counties assembled compactly and portions of larger population counties divided compactly.

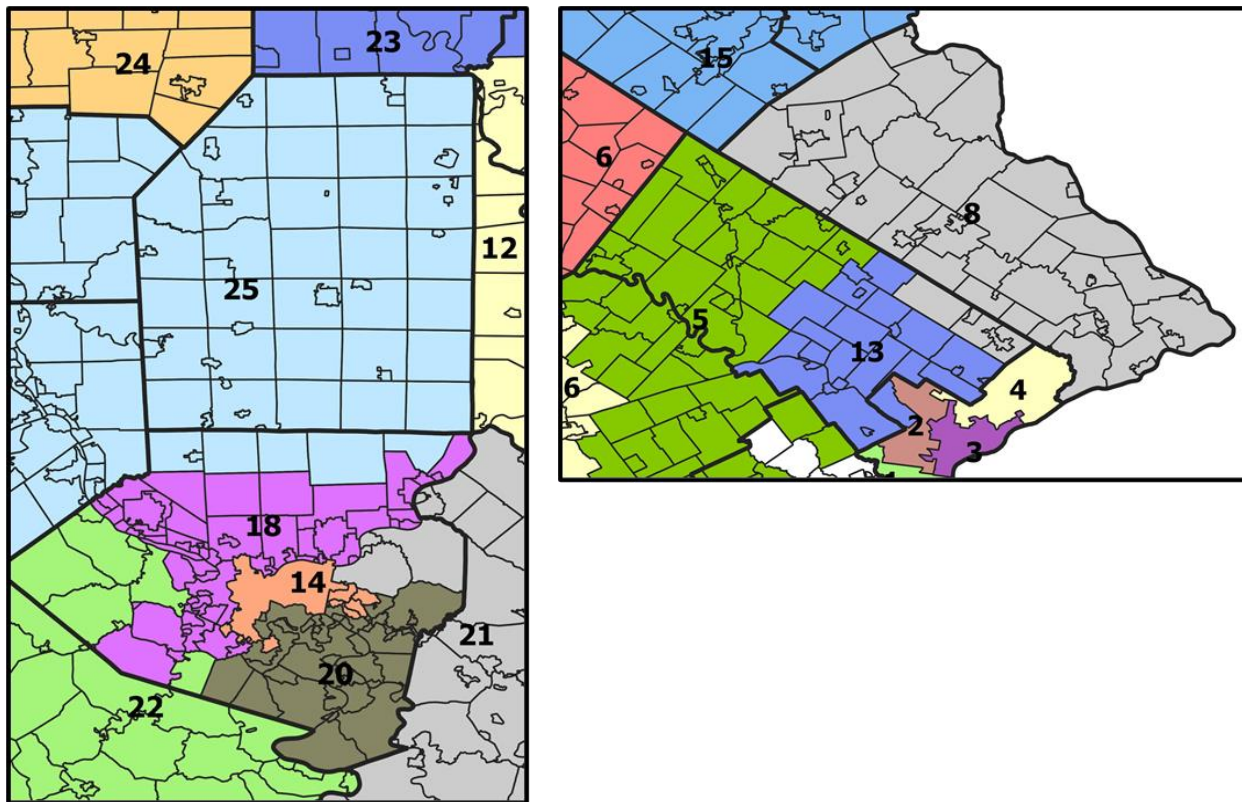
The 1972 Pennsylvania Congressional map was the true inspiration for the CCFD method

⁵ If the drafter is permitted to separate incumbent candidates in drafting their districts, this should be done so as not to give any party a seat share in excess of what is anticipated (looking at statewide vote shares over enough elections to ensure partisan fairness). When the division of incumbents into separate districts is done by exchanging territory with a similar partisan vote history, the statewide seat share will be unaffected. On the other hand, where conservative territory is exchanged for liberal voting territory to separate incumbents, or vice versa, separating incumbents can be used as an excuse for seeking partisan advantage. Again, a court must look carefully at any final adjustments to an electoral map to make sure that final proposed map approximates the will of the voters.

and is still relevant for ideal reapportionment today.



Specifically, the boundary choices along the Bucks County-Montgomery County border and the Allegheny County-Butler County border in that map are still a model for redistricting today. *See* District 8 on the Eastern border in grey and District 26 on the western border in light blue.



In each of the above instances, equal population was achieved by adding territory composed of whole townships and other political subdivisions in layers along a common border.

CCFD members then considered the following: “What if there were a set of rigorous design guidelines for drawing maps, consistent with Article II, Section 16 of the Pennsylvania Constitution, that made it extremely difficult to draw a unfair map, that is, a partisan gerrymandered map?” Thus, the CCFD method was developed. Rooted in Article II, Section 16 of the Pennsylvania Constitution, all districts must be composed of compactly assembled counties or other larger political subdivisions, and then whole pieces consisting of the next smaller political subdivision are added in layers along the district boundaries until equal population is achieved. In many ways, the layering of whole political subdivisions along a

common border is simply a means to create highly compact districts.

To make the method easier for map drawers to apply, CCFD devised a step-by-step guide to neutral redistricting, which was submitted to this Court in two amicus briefs in 2018 during the *LWV* litigation. We have worked to improve the articulation of the method over time.

B. A Step-by-Step Guide to Neutral Redistricting (for Congressional Maps)

The CCFD method utilizes the following step-by-step approach to neutral redistricting:

Step 1. The drafter of a new Congressional map should divide the state by the number of required districts based on the most recent decennial apportionment. In this case, 17 districts should be formed using whole counties or whole pieces of the largest political subdivisions in a visually compact manner.

For a political subdivision with a population larger than a single Congressional district, the drafter first must draw as many districts as possible within that political subdivision, using as much of the subdivision's territory as possible in a compact manner. The drafter then should add any unused territory to no more than two adjacent districts in need of additional population.

For a political subdivision with a population smaller than a single Congressional district, the drafter should begin by assembling larger political subdivisions (*e.g.*, counties) compactly to create the required number of districts. If necessary to divide a larger political subdivision, it should not be divided between more than two districts.

Step 2. The drafter then should add or subtract whole territory of the next smaller political subdivisions along the borders of counties or other larger political subdivisions in a compact manner.

In practice, this usually means that additional whole townships, towns, or boroughs are added along the whole length of a common boundary of a larger political subdivision (*e.g.*, counties) before moving to the next layer of smaller political subdivisions. The drafter shall continue to add whole political subdivisions of the next smaller size, in a layer-by-layer manner, until nearly equal population is achieved.

This layered method creates compact districts in the first instance and deprives the drafter of discretion to, for example, produce long “tentacles”

or odd-shaped districts, reaching from one district into another for purposes of partisan gerrymandering.

Step 3. The drafter then should divide one, and only one, smaller political subdivision along the common border between two proposed districts to achieve the target population of each district (plus or minus one resident), that is, population equality, based on the 2020 Census.

The division of this single political subdivision should be accomplished in a compact manner using the layered approach set forth in Step 2. For example, one can add precincts one by one to the boundary of a township to reach population equality.

Step 4. The drafter then should measure the compactness of the resulting districts using commonly accepted mathematical compactness measures such as Polsby-Popper, Schwartzberg, and Reock scores. Districts that perform poorly when measured in this manner, given constraints imposed by other mandatory criteria, should be adjusted to bring them into compactness ranges considered acceptable for these measures.

Step 5. The drafter then should verify that the resulting map does not inadvertently divide racial or linguistic minority groups and make adjustments necessary to ensure that the map does not violate the Voting Rights Act, 52 U.S. Code § 10101, et seq. (“VRA”). Often, little or no further adjustment will be required as compact districts generally result in intact community representation, which leads to compliance with the VRA.

Step 6. The drafter should then make adjustments, if any, needed to achieve the fifth primary criterion—assuring partisan fairness—and making the most minimal adjustments to achieve any subordinate goals/criteria that do not result in, or serve simply as proxies for, partisan gerrymandering.

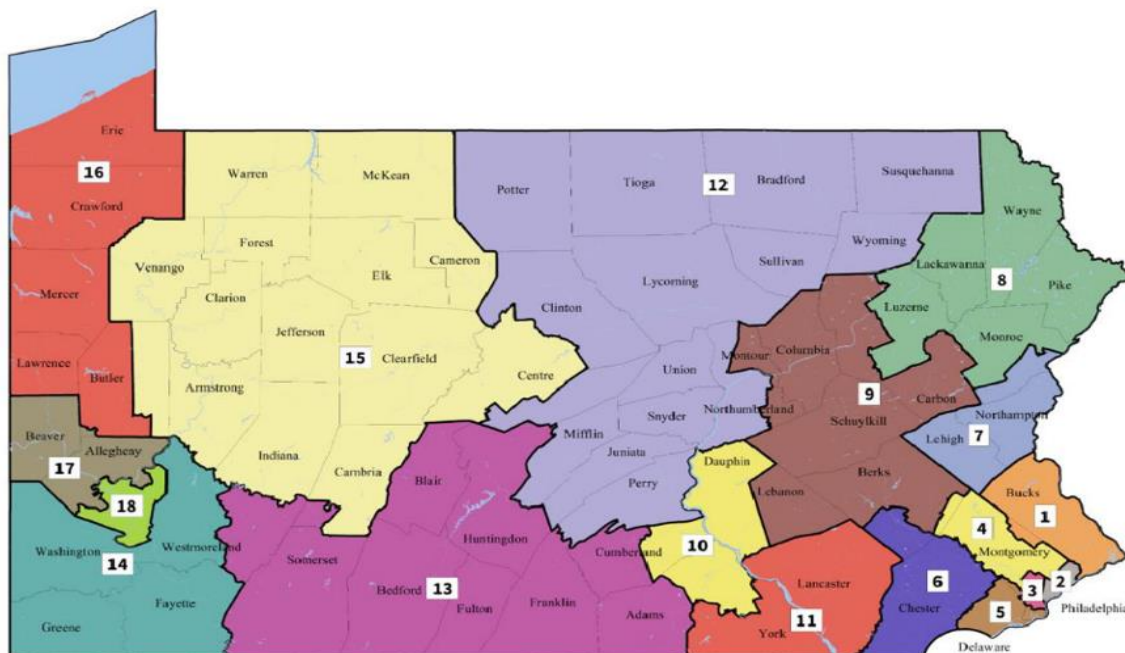
The CCFD method results in a map that (a) does not consider partisan leanings of residents until after, if at all, a draft map is formed, (b) is transparent, because the decisions made to draw district lines result from the rigorous application of this method, and (c) provides for a judicially manageable redistricting standard, because courts can easily see when other maps choose boundaries that are non-compact and contain split political subdivisions or irregular boundaries in the absence of a layered approach to equalizing population.

C. The Court's 2018 Remedial Map Largely Comports with the CCFD Method.

A detailed CCFD review of the 2018 remedial Congressional map below revealed that this Court's expert appears to have used the CCFD method of assembling counties compactly in the first instance and then layering whole townships and other political subdivisions at the district boundaries to equalize population. Assembling counties compactly can be seen clearly in districts 1-5, 7, 8, 10, 11, and 15-17. Layering smaller political subdivisions can be seen in districts 1 and 4 (Bucks-Montgomery County border), districts 7 and 8 (the Northampton-Monroe County border), and districts 15 and 16 (the Butler-Armstrong County border). The technique of minimizing county and other political subdivision splits can be seen throughout the 2018 remedial map.

The 2018 remedial map led CCFD to other insights about the merits of applying in a strict or rigorous manner the four criteria mandated by *LWV*. First, the remedial map resulted in a fair distribution of seats. The map was tested twice, in the 2018 and 2020 elections. In both, the 2018 map resulted in a 9-9 Republican-Democratic seat share for a state whose voters vote fairly evenly on a statewide basis. In addition, highly compact districts deprive the partisan drafter of discretion he/she otherwise would have to crack and pack opposing party voters.

D. The Emergence of a Judicially Manageable Standard



By requiring that districts be composed of compactly assembled whole political subdivisions, this Court has created a neutral, judicially manageable standard. Each of the four criteria are subject to mathematical analysis and comparison. Compactness can be measured by common mathematical techniques, which can be used to compare one proposed map to another. Divided political subdivisions can be totaled up and compared from one map to another. Maps with elongated districts or many municipal splits are strong evidence of partisan drafting. Packing opponent's voters, cracking concentrations of an opponent's voters, and carefully distributing votes to give the drafter's party an electoral advantage often require drawing districts with irregular borders or split municipalities. Likewise, partisan fairness, the fifth criterion that we urge this Court to adopt, can be proven mathematically as noted above and in the attached expert report, by using commonly accepted metrics of partisan fairness. *See* Ex. A.

Where a drafter deviates from the principles enshrined in these criteria, this Court should find that a *prima facie* case of gerrymandering has occurred. Given a well-defined model for fair electoral mapmaking, the burden should shift to a map's proponent to offer a neutral explanation for any deviations, which the competing parties then could debate. There could be innocent explanations, for example, leftover territory between two well drafted districts, or ensuring diversity of representation in a legislature. However, where the final map's adjustments from the neutral criteria cannot be adequately explained by the drafter, then the process has gone awry. Either the parties should repair the map or this Court should step in to repair the map for them.

E. CCFD Endorses Other Amici Maps That Follow the Principles Reflected in the Court's 2018 Remedial Map and Offers an Illustrative 17-Seat Congressional Map Applying Its Methodology.

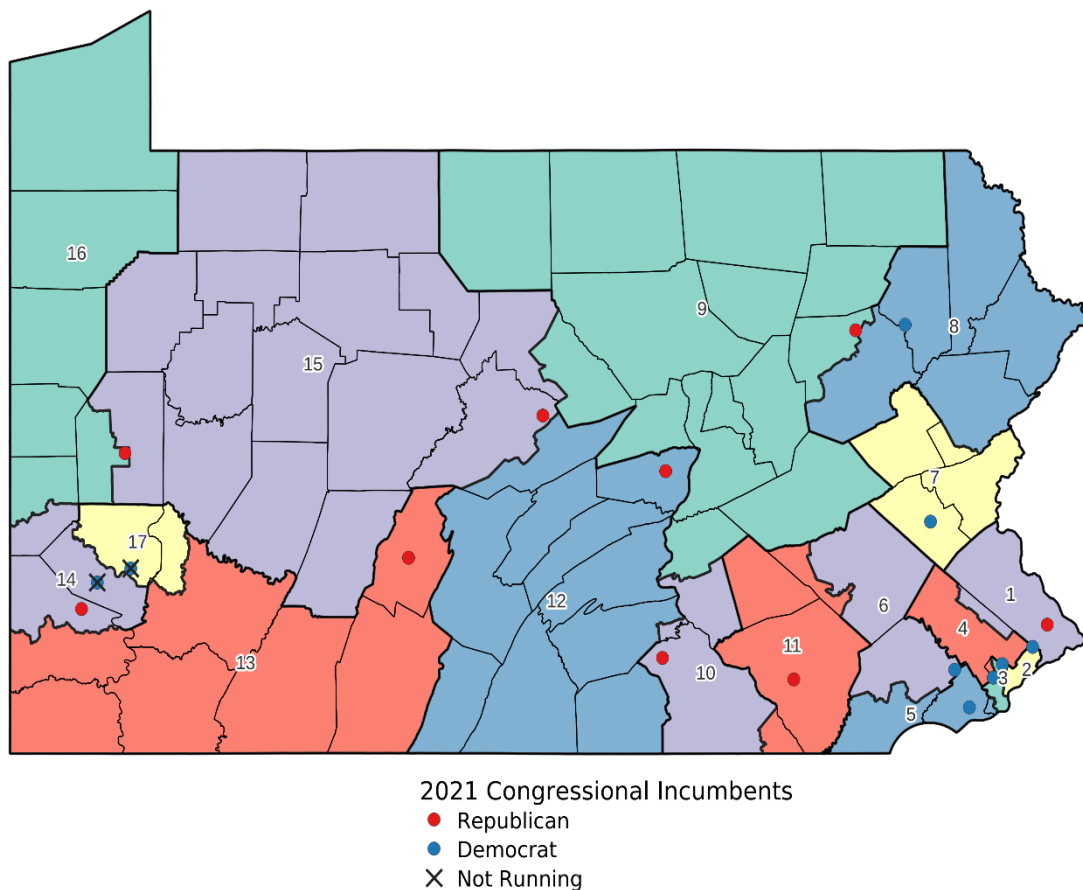
CCFD endorses the following four maps that the following parties and amici have submitted as excellent examples of applying the principles embodied in the 2018 remedial map to a 2022 17-seat Congressional map: the Carter petitioners (Prof. Jonathan Rodden); the Gressman Petitioners; the Governor Wolf map (Prof. Moon Duchin); and the Draw the Lines Map (citizen mappers). These maps rigorously apply this Court's four criteria as well as the recommended additional requirement that maps incorporate partisan fairness. Each of these maps are highly compact and contiguous, minimize split political subdivisions, and (if relevant) do not exceed the anticipated seat share of the drafting party. For additional information regarding these recommendations See Ex. A CCFD Expert Report at ___

In order to demonstrate how principles reflected in the 2018 map can be applied to a 17-seat Congressional map, CCFD offers the following map, which can be accessed on Dave's

Redistricting at the following link:

<https://davesredistricting.org/join/19665c18-15a3-4b94-a254-f93d3feb984c>

The full map data also can be downloaded from Dave’s Redistricting for analysis in and by other redistricting software. The following figure is an image of the CCFD proposed 17-seat



Congressional map showing the location of incumbent Members of Congress.

The technical data for this CCFD map is attached hereto as Exhibit A.

We also note that the CCFD map has the following characteristics: the districts are (1) highly compact; (2) where additional territory is needed to equalize population, whole townships or other political subdivisions are added in layers at county borders; and (3) the map achieves

partisan fairness with an anticipated seat share that matches the statewide distribution of voters.

Highly compact districts can be seen in districts 1 to 4, 6 to 8, 10 to 12, and 14 and 15. The remaining districts, 5, 9, 13, and 16, which are slightly less compact, can be explained by neutral separation of incumbent members of Congress, or geographic constraints. The anticipated seat share of the 17-seat CCFD map, based on recent statewide elections, is nine Democrats and eight Republicans.

The aforementioned four fair maps and the CCFD map all have the following favorable attributes:

- a) 17 equal population districts (plus or minus one person) based on the 2020 Census;
- b) Districts are compact, which is healthy for representative democracy and resistant to partisan gerrymandering;
- c) Districts composed of compactly assembled political subdivisions result in seats that reflect regional political views;
- d) Compact districts in areas with conservative, moderate, and liberal voters tend to create a healthy number of competitive districts where candidates usually will have to cross party and ideological lines to get elected; and
- e) The presence of some competitive seats is a desired outcome for the following reasons: (1) competitive seats often generate moderate candidates who compete for votes from members of all parties and independent voters; (2) competitive seats tend to depolarize legislatures; and (3) competitive seats tend to promote dialogue across party lines, compromise, and effective

functioning of legislatures to pass laws.

IV. CONCLUSION

One of the greatest threats to democracy is partisan gerrymandering. The best weapon to end partisan gerrymandering is compliance with all of the following: the four neutral criteria enumerated in Article II, Section 16, the requirement of partisan fairness embodied in Article I, Section 5, and the federal requirement of fair minority representation as defined by the Voting Rights Act.

In general, compact districts, composed of whole political subdivisions, restrain partisan gerrymandering. While it is possible to weaponize compactness as a tool to pack Democrats in cities and inner ring suburbs, in most instances compactness will result in a fair distribution of seats for all political parties, and it therefore is a useful tool for this Court to use to police partisan maps. As long as courts remain open to evidence of compactness being used to achieve an outsized seat share based upon the statewide vote share of a party, this criterion can be policed to prevent partisan gerrymandering.

The United States Supreme Court in *Vieth v. Jubelirer*, 541 U.S. 267, 307-308 (2004), and *Rucho v. Common Cause*, No. 18-422, 139 S. Ct. 2484, 2487, 588 U.S. ____ (2019), said it is impossible to create a judicially manageable standard to evaluate and judge partisan maps, but that is not the case. This Court already has created and applied such a standard in *LWV*, and the resulting remedial map. This standard needs to be honored, reiterated, and extended by this Court in this redistricting cycle. This Court should continue to follow the drafting criteria in *LWV*, and adopt “partisan fairness” (with its attendant accounting for statewide party vote shares) as an

explicit additional primary criterion, thereby preserving the most important tool for fighting partisan gerrymandering that any court in the United States has ever articulated.

Respectfully submitted,

/s Brian A. Gordon

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On behalf of
Concerned Citizens for Democracy

IN THE SUPREME COURT OF PENNSYLVANIA

Carol Ann Carter, et al.
Petitioners

v.

7 MD 2022

Leigh M. Chapman, et al.
Respondents.

CERTIFICATE OF SERVICE

On this date, February 14, 2022, I served a true and correct copy of the foregoing pleading to all parties in this matter via e-filing with this Court's Unified PA Judicial website.

Respectfully submitted,

/s Brian A. Gordon

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On behalf of
Concerned Citizens for Democracy

Exhibit A

Report on Proposed Map of Concerned Citizens for Democracy

Anne Hanna and Robert Hess

Carter v. Chapman, 7 MM 2022 (Supreme Court of Pennsylvania)

February 14, 2022

This report presents the proposed remedial 17-seat Congressional map of Concerned Citizens for Democracy (CCFD), analyzes its features, compares it with the present 18-seat Congressional map, and addresses some of the technical issues raised in the Special Master's report to the Court.

This map was designed using the CCFD hand-design mapping methodology, which easily produces districts satisfying the four traditional neutral redistricting criteria of compactness, contiguity, population equality, and minimization of political subdivision splits. In this methodology (set forth in the associated legal brief), one first constructs an initial draft by following four simple steps to produce a first-stage map satisfying the traditional neutral criteria, without yet considering other factors. After this first-stage map is complete, it may then be adjusted, altering some of the initial discretionary decisions while continuing to follow the guidance of the first four steps, to address vote dilution concerns under the federal Voting Rights Act or the Free and Equal Elections Clause (FEEC) of the Pennsylvania Constitution (Article I, Section 5), as well as to incorporate desired subordinate criteria. Given the politically charged nature of the present process, the design process for the CCFD proposed map included incumbent contest avoidance (but *not* intentional incumbent advantage) as a subordinate criterion, in order to produce a final result that may be more palatable to a broader range of stakeholders, while still prioritizing all legal mapping requirements.

1. Qualifications and Experience

Anne Hanna designed and analyzed the CCFD proposed map. She is a data scientist who testified as an expert witness in *Agre v. Wolf*, 284 F. Supp. 3d 591 (E.D. Pa. 2018), the federal anti-gerrymandering case that challenged the 2011 Pennsylvania congressional map before a federal three-judge panel. Her education includes a B.S. in Physics (California Institute of Technology, 2001) and an M.S. in Physics (University of Illinois at Urbana-Champaign, 2005), and she is presently a Ph.D. student in mechanical engineering at the Georgia Institute of Technology, developing data-driven numerical modeling methods for the study of the material properties of composites with complex microstructures. She is a two-time winner of Draw the Lines Congressional mapping competitions. In addition to her work with CCFD, she is a volunteer member of the Draw the Lines Citizen Map Corps and provides mapping and analytical support to Fair Districts PA. She has lived in Philadelphia since 2009.

Robert Hess, Ph.D., CFA® analyzed the Special Master’s proposed findings of fact and conclusions of law, as well as her mapping recommendations. He is a research analyst and economist with more than 40 years’ experience, specializing in regional economic analysis, regional impact analysis, and real estate investing. He received his Ph.D. in Economics from the University of Colorado in 1978. He completed his undergraduate studies in physics at the Colorado School of Mines (1969). He holds an M.S. degree in Aerospace Engineering Sciences from the University of Colorado (1971). He became a Chartered Financial Analyst (CFA) charter holder in November 2000.

Dr. Hess retired in March 2010 from Prudential Real Estate Investors (now PGIM Real Estate) as a Principal, accumulating more than 16 years of experience providing expertise in the quantitative analysis of regional markets, market selection strategies and investment portfolio analysis. An active industry participant, he served as Chair of the Research Committee of the National Association of Real Estate Investment Fiduciaries (NCREIF) from 2007 to 2009 and served on the NCREIF-PREA (Pension Real Estate Association) Reporting Standards Council from 2011 to 2016. During his working career, he also served on staff research positions at several other financial institutions, consulting firms, and government offices. He has provided data analysis and mapping support to CCFD since 2017.

2. Data Sources and Tools

All map design and most analysis in this report were performed in Dave’s Redistricting App (DRA), a free, publicly-available online redistricting mapping and analysis tool available at <http://www.davesredistricting.org>. The population dataset used was DRA’s “Total Population 2020” Census data for Pennsylvania, which does *not* include the prisoner residence adjustments that were used by the Pennsylvania Legislative Reapportionment Commission (LRC).

The site offers a variety of election datasets from 2016 forward. The specific election dataset used for each analysis will be noted in each case.

Some additional analyses were performed offline using QGIS, a free, open-source GIS suite available at <http://www.qgis.org>. For these analyses, underlying population and geographical data were derived from the “2021 Data Set #1 (Without Prisoner Reallocation)” files provided by the LRC on its website at <https://www.redistricting.state.pa.us/maps/>.

Incumbent address data, for incumbent contest identification, was obtained from the Pennsylvania Department of State’s publicly-accessible version of its voter registration database,

obtained via <https://www.pavoterservices.pa.gov/Pages/PurchasePAFULLVoterExport.aspx> on July 12, 2021.

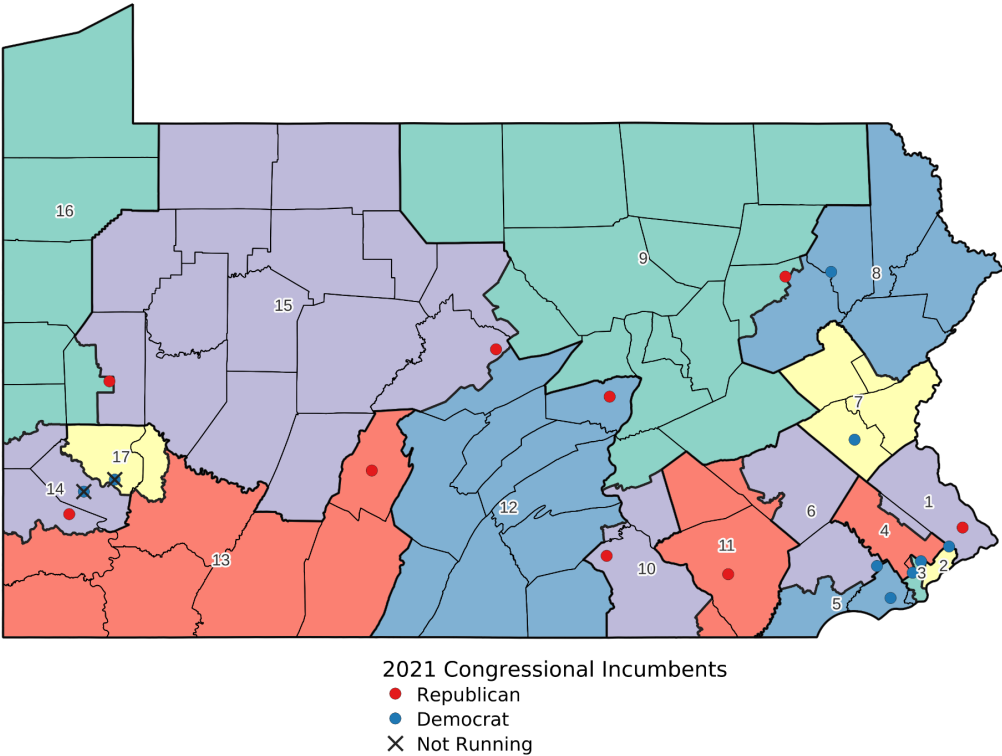
3. The CCFD Proposed Map

The CCFD proposed map can be accessed on Dave’s Redistricting at the following link:

<https://davesredistricting.org/join/19665c18-15a3-4b94-a254-f93d3feb984c>

Full map data can also be downloaded from DRA for analysis in other redistricting software. Figure 1 below is an image of the map.

Fig. 1: CCFD Proposed 17-Seat Map



The map was designed by following the CCFD methodology. There were two major design stages — producing an initial draft solely based on the four traditional neutral criteria, and then adjusting that draft to avoid vote dilution and address certain subordinate criteria.

4. Map Design Stage 1 (Methodology Steps 1-4)

In the first stage, an initial draft was produced by following steps 1-4 of the CCFD methodology, without close attention to details of partisan impact, incumbent locations, or racial composition of districts, albeit with unavoidable influence from the mapper's knowledge of community and regional identities in our state and previous district designs.

The overriding concerns in this initial draft were simply following the traditional neutral criteria, using methodology steps 1-4 as guides. Rough district prototypes were created as compact assemblages of whole counties, splitting each county no more than necessary,¹ and splitting no more than one county at each boundary between two districts, to begin the population equalization process. District populations were then fully equalized to 12 districts with 764,865 people and 5 districts with 764,864 people by subsequently splitting one municipality at each county split, one political ward in that municipality, and one precinct in that political ward, to equalize district populations while minimizing political subdivision splits.

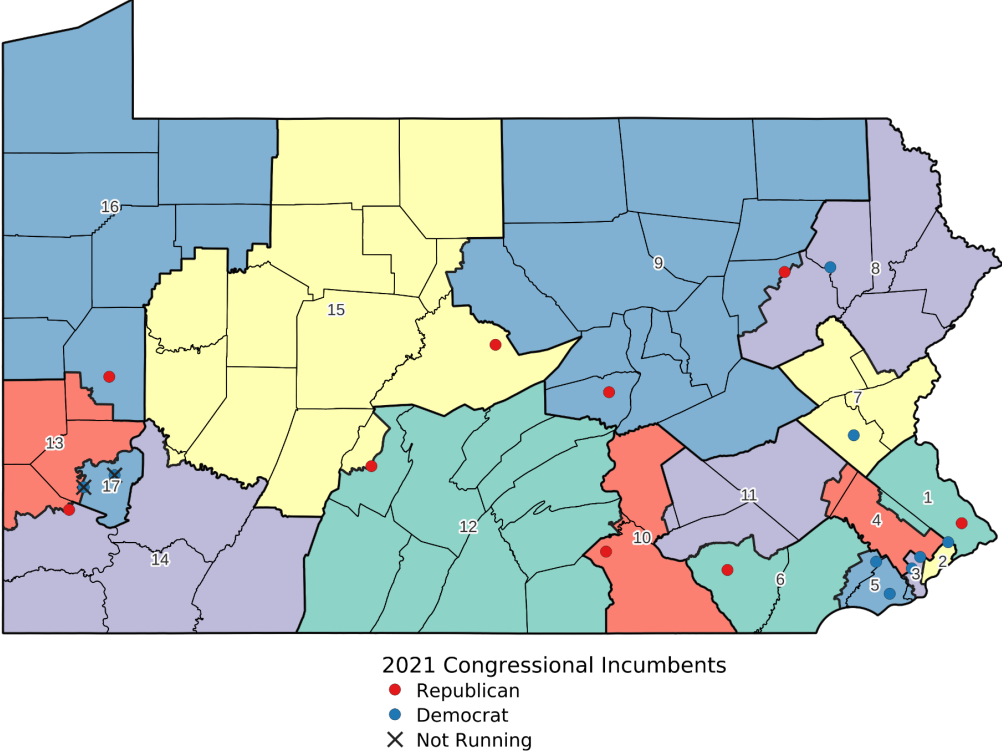
The usual number of county, municipal, ward, and precinct splits by this method is the number of districts minus 1 at each level, i.e., 16 of each type of split on a 17-district map. It is sometimes possible to find clever ways of achieving fewer splits, while additional mapping concerns or anomalies may occasionally require more splits. Larger numbers of districts also tend to produce more variability in the number of splits required, as there may be more anomalous regions to contend with. However, "the number of districts minus 1" is a good rule of thumb to estimate the lowest reasonably feasible number of splits in most maps.

The final results of the first mapping stage are shown in Figure 2 below and may be accessed in more detail at the following URL:

<https://davesredistricting.org/join/ed075229-5210-4e51-b4fe-0d5ea9ce59fb>

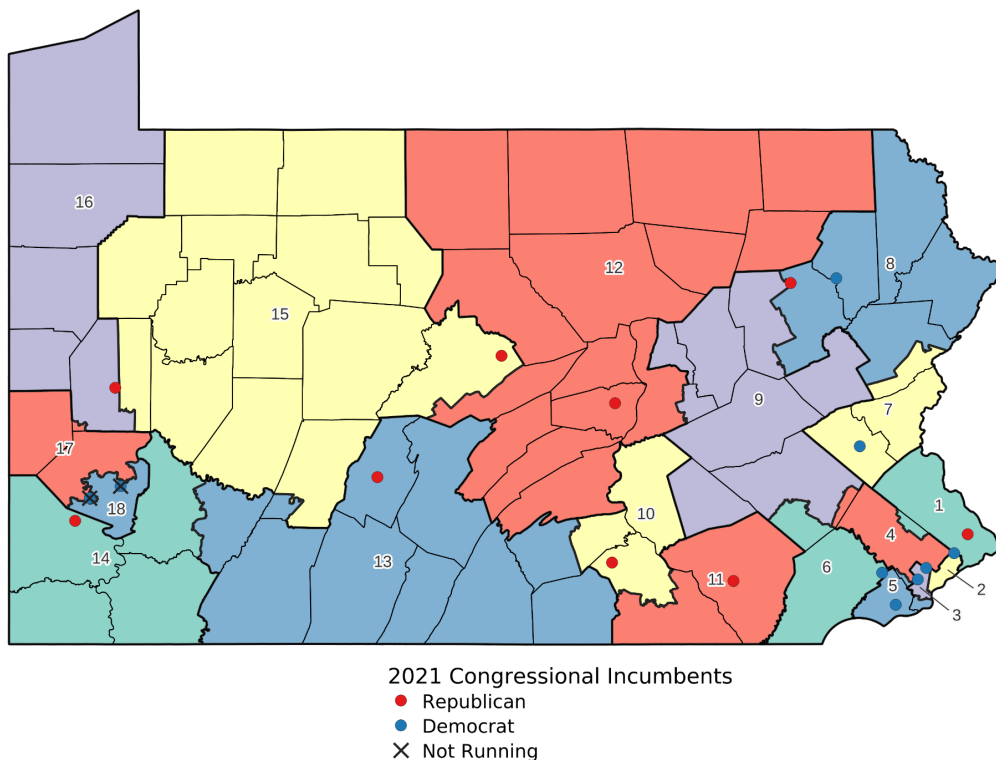
¹ Counties with population less than an ideal district (i.e., the total population of the Commonwealth divided by 17) were split no more than once (i.e., between two districts). Counties with population larger than an ideal district were split amongst no more than the number of districts that could fit entirely within the county, plus 2. (The "plus 2" comes first from the fact that the "remainder" population above the maximum number of whole districts *must* be assigned to at least one additional district, and then from the fact that there are sometimes theoretical or practical limits in certain unusual map topologies that make one additional split beyond the bare minimum necessary or preferable.)

Fig. 2: First design stage of CCFD Proposed 17-Seat Map (traditional neutral criteria only)



The current Congressional map was imposed by the Pennsylvania Supreme Court as part of its 2018 decision in *League of Women Voters v. Pennsylvania*, 159 MM 2017 (LWV), to remedy the extreme partisan gerrymander of 2011, and was therefore presumptively legal when enacted. As a result, we will use it as a point of comparison for our proposed map, albeit with some caution because of the different number of Congressional seats (18 seats in the current map, vs. a coming reduction to 17). Figure 3, below, shows an image of this map.

Fig. 3: Current 18-Seat Congressional map (as of *LWV v. PA*, 2018)



Many of the districts in the CCFD first-stage map bear some resemblance to their counterparts in the current Congressional map, and with good reason — both maps are constrained by the same traditional neutral criteria, and influenced by the same Pennsylvania mapping traditions and underlying state geography, such as:

- Avoiding splitting Bucks County (which has never been split at the Congressional level)
- Keeping most of Montgomery County in one district (as it is slightly larger than one district in population and was badly and illegally split amongst 6 and 5 districts, respectively, in the gerrymandered 2002 and 2011 maps)
- Keeping the Lehigh Valley in one district
- Keeping Scranton/Wilkes-Barre in one district
- Keeping Reading, Lancaster, York, Harrisburg, and State College mostly together with their respective near suburbs
- Avoiding splitting the city of Pittsburgh
- Avoiding splitting Erie County

The above traditions of privileging certain specific counties, metropolitan areas, and cities for extra attention in split avoidance do not, of course, have the intrinsic status of legal requirements,

although they may, like any mapping decision, have meaningful impacts (positive or negative) on legal questions related to traditional neutral criteria and vote dilution, or on desired subordinate criteria. Rather, following in the tracks of the 2018 *LWV* decision and most past Pennsylvania maps in avoiding splitting these regions, those traditions served as a simple, non-partisan, tiebreaker factor in regions where meaningful mapping discretion existed in this first stage of traditional-neutral-criteria-only mapping.

The changed mapping conditions since 2018 also result in some necessary large-scale structural differences between the present 18-seat Congressional map and this first-draft 17-seat Congressional map, including:

- A decrease in the total number of districts from 18 to 17, requiring each of the remaining districts to absorb a larger total population and thus to increase its land area
- Relative population declines in rural and western Pennsylvania, and relative population increases in urban and eastern Pennsylvania, resulting in districts in the former regions needing to grow more than in the latter

Nevertheless, the traditional neutral criteria statistics of this initial draft are comparable to or better than those of the 2018 *LWV*-imposed Congressional map that is currently in effect, as shown in Table 1 below.

Table 1: Traditional neutral criteria for CCFD first-stage map

	2018 <i>LWV</i> 18-seat map	CCFD 17-seat map, first stage
Contiguous	Yes	Yes
Maximum-minimum district population difference	1 person (at enactment)	1 person
Polsby-Popper compactness	0.3270	0.3682
Reock compactness	0.4278	0.4328
County splits (Split counties)	18 (14)	16 (15)
Municipal splits (Split municipalities)	19 (18)	16 (15)
Precinct splits	32 (at enactment)	16

Note that an 18-seat map likely requires one more split at each level (expected minimum of 17 splits) than would be needed for a 17-seat map (expected minimum of 16 splits). The first-stage CCFD map achieves the minimum for its seat count of 16 splits of 15 counties (with Philadelphia

split twice), while the 2018 *LWW* map had slightly more than the expected minimum, at 18 splits of 14 counties (Berks, Butler, Montgomery, and Philadelphia all split twice). In all cases except Philadelphia, the second split in each twice-split county of the *LWW* map was a small sliver removed to equalize populations with a neighboring district, and the bulk of each county was in a single district, rendering these excess splits relatively non-disruptive. As Philadelphia has enough population for more than two districts, in both 17-seat and 18-seat maps, a minimum of two splits are always required there.

5. Map Design Stage 2 (Methodology Steps 5-6)

The traditional neutral criteria are not the only factors in play in Pennsylvania redistricting. Concerns about vote dilution based on federal VRA considerations (racial, ethnic, or linguistic minority status) or on Pennsylvania FEEC considerations (other group memberships such as partisan preference) may also be present. Other wholly subordinate considerations, such as avoidance of incumbent contests, may also be present. These considerations necessitate a second design stage, described in steps 5-6 of the CCFD methodology. In these last two steps, the initial map is modified to address considerations beyond the traditional neutral criteria while maintaining the traditional neutral criteria statistics as much as possible. For the second mapping stage of our proposed 17-seat map, we considered the following three factors:

- Majority-minority districts (note that this should not be construed as a full VRA analysis, merely a simple first-order test)
- Partisan proportionality and symmetry (to respect the Pennsylvania FEEC)
- Incumbent contest avoidance, but not incumbent advantage (to improve political palatability of the map; this criterion was considered wholly subordinate to the others)

The relevant statistics for our first-stage 17-seat map, as compared to the 2018 *LWW* map, are in Table 2 below.

Table 2: Racial, partisan, and incumbent statistics for CCFD first-stage map

	2018 LWV 18-seat map	CCFD 17-seat map, first stage
Majority-minority districts	<p>District 2: 59.74% minority 26.97% <i>Black</i> 23.00% <i>Hispanic</i> 9.77% <i>other minority</i></p> <p>District 3: 64.78% minority 51.33% <i>Black</i> 5.04% <i>Hispanic</i> 8.41% <i>other minority</i></p>	<p>District 2: 58.49% minority 26.09% <i>Black</i> 22.14% <i>Hispanic</i> 10.26% <i>other minority</i></p> <p>District 3: 62.95% minority 48.72% <i>Black</i> 5.47% <i>Hispanic</i> 8.76% <i>other minority</i></p>
Ideal proportional seat count	18 seats: 9.44 D, 8.56 R	17 seats: 8.92 D, 8.08 R
Likely seat count	9.31 D, 8.69 R	8.35 D, 8.65 R
Raw seat count	10 D, 8 R	9 D, 8 R
Seats bias (+ favors Rs)	+5.07% (+0.91 seats)	+8.05% (+1.37 seats)
Votes bias (+ favors Rs)	+1.79%	+2.74%
Mean-median gap (+ favors Rs)	+0.07%	+0.88%
Incumbent contests	None (at enactment)	<p>District 5: Mary Gay Scanlon (D) Chrissy Houlahan (D)</p> <p>District 9: Dan Meuser (R) Fred Keller (R)</p>

Partisan statistics for Table 2 were computed using the DRA “Composite 2016-2020” election dataset, an average of several of the most recent statewide elections. This dataset has a statewide two-party vote share of 52.46% for Democrats and 47.54% for Republicans. Corresponding proportional seat counts for this statewide result are shown in the table.

“Likely” seat counts use DRA’s seat win probability estimates to get expected results for an actual election, ignoring incumbent advantage and other variability. “Raw” seat counts assume that the party which is ranked by the election data as having the highest vote share in that district wins the seat, even if narrowly, still ignoring the effects of individual candidate qualities.

Seats bias and votes bias use DRA's model of how precinct-level election outcomes change as the overall statewide vote shares of the two major parties shift, to see whether either party is at a disadvantage. Specifically:

- Seats bias: How much less than half the seats does a party win when it receives 50% of the statewide 2-party vote?
- Votes bias: How much more than 50% of the statewide 2-party vote would a party need to receive in order to win half of the available seats?

Positive numbers mean the Democratic Party is at a disadvantage and the Republican Party has an advantage, while negative numbers indicate the reverse.

The mean-median gap measures the difference between the overall statewide 2-party vote share and the 2-party vote share of the median district. A large difference means that the 2-party vote share distribution of the districts is skewed in favor of one party — more districts are more favorable to them than one would expect. A positive number in the table indicates a Republican advantage.

From this table we can see several points of potential improvement for the first-stage map relative to the vote dilution criteria and our subordinate criterion of incumbent contest avoidance:

Minority-majority districts

While the CCFD first-stage map has approximately the same two majority-minority districts as the 2018 map, Districts 2 and 3, and while the total minority populations of both districts are similar, District 3 is slightly less than majority-Black in the CCFD first-stage map, while it is narrowly majority-Black in the present map. While creating supermajority-minority districts sometimes runs the risk of unnecessarily packing both Black voters and Democratic voters, advocacy groups are often skeptical of changes which push a district from having a majority of a single racial or ethnic group to requiring a cross-ethnic coalition for victory.

Fortunately, the percentage change in racial composition of District 3 is small, and is easily remedied in the final version of the map, without too much change to neighboring district statistics. This is accomplished via relatively minor boundary shifts — a slightly whiter region of Northwest Philadelphia moves to join most of Montgomery County in District 4, allowing District 3 to include more of heavily-Black West Philadelphia. The cost is a single additional county/municipal split in Philadelphia, for a total of 4 Philadelphia splits, still meeting our county split limit for the city, and balanced by the removal of a split in Berks County that was previously providing extra population to District 4.

Incumbent Contests

Two pairs of incumbents are placed into potential contests in the CCFD first-stage map, which was designed without detailed reference to their locations. Two Democrats meet in Democratic-leaning District 5, while two Republicans meet in strongly-Republican District 9. This outcome at least penalizes both parties equally, and so does not impact the partisan fairness of the map, but nevertheless fails to avoid incumbent contests as well as the 2018 *LWV* map did.

The fact that Pennsylvania is losing one seat this year does not intrinsically force any incumbent contests, as one Democratic incumbent (Mike Doyle, District 18) is retiring, and another (Conor Lamb, District 17) has announced a run for the U.S. Senate. However, there is somewhat of a “traffic jam” of Representatives concentrated in eastern Pennsylvania, which produces the two incumbent contests in our initial incumbent-blind draft. These contests therefore require some specific attention, in order to satisfy the incumbent contest avoidance subordinate criterion.

Resolving the Scanlon/Houlahan contest

Houlahan lives in Chester County, right at the corner where Chester, Montgomery, and Delaware Counties meet. Scanlon lives approximately in the center of Delaware County. The first-stage map puts both in a 5th District that consists of all of Delaware County, a small piece of southwestern Philadelphia, and a number of border municipalities in eastern Chester County. As Houlahan lives in one of those border municipalities, to keep the two Representatives apart, it is necessary to have the 5th District either “go around” her to keep her out of the 5th district, or push the 5th into Montgomery County or further into Philadelphia.

Taking more of Philadelphia would in turn push Philadelphia’s 2nd District partway into Bucks County (which we and others have prioritized not splitting), while adding part of Montgomery County threatens to pull Madeleine Dean into the 5th District, as she lives near the southern tip of Montgomery County. So, instead, the 5th District’s Chester County portion was reshaped to include the southern portion of the county, along its borders with Delaware and Maryland, moving Houlahan into the 6th District. This unfortunately created a new incumbent contest with Republican Lloyd Smucker, who lives near Lancaster, and so the 6th District was migrated to include most of Berks County (to the north), instead, while the 11th gave up most of Berks and took the rest of Lancaster instead.

The final result was Scanlon remaining in the 5th District, Houlahan moving to the 6th District, and Smucker moving to the 11th District.

The impacts of resolving this contest were relatively localized and did not result in a net increase in political subdivision splits. The new 5th District is somewhat less compact than before, but, as we will see below, the overall impact on the map compactness statistics is small.

Resolving the Meuser/Keller contest

Separating Meuser and Keller has a somewhat broader impact. Snyder County, where Keller lives, is shifted from the 9th District to the 12th, the remainder of Blair County, where Republican John Joyce lives, is shifted to the 13th District, along with Bedford County, and Potter County moves to the 9th to help make up for the population loss of Snyder. There are several additional smaller adjustments around Harrisburg, northern Dauphin County, southern Centre County, and northern Clinton County, to help complete the population rebalancing without introducing excess splits and while keeping districts reasonably compact.

To make up for other population losses, the 15th District now also pushes westward to include Warren, Forest, Venango, and most of Butler County (halted only by the presence of Republican Mike Kelly in the center of Butler County). This, in turn, pushes the 16th District down into the northern half of Beaver County, and moves the 14th District down, out of Butler County and further into the northern portion of Washington County. The Allegheny portion of the 14th District must be reoriented to keep the 14th and 17th Districts compact, but the choice of precisely *how* to reorient it is a matter for the partisan fairness discussion.

The net result of these changes is:

- two additional county/municipal/precinct splits, resulting from:
 - splitting off the northern half of Dauphin County to maintain the population of the 9th District
 - splitting Beaver County to maintain the population of the 16th District
- a slight decrease in overall map compactness, with the most significant contribution arising from the east-west narrowing and north-south lengthening of the 16th District

As with the previous incumbent contest resolution, however, the overall statistics remain well within the reasonable traditional neutral criteria range. (The final results will be summarized in Table 3, below.)

Partisan fairness

At first glance, Table 2 appears to show that both the 2018 *LWV* map and the first-stage CCFD map produce closely balanced maps. The seat count statistics (both raw and likely) hover around 9D/9R to 10D/8R for the *LWV* map and 8D/9R to 9D/8R for the first-stage CCFD map, under the election dataset used. All of this might seem superficially reasonable for our “purple” state.

However, it is important to note that “eyeball” results from a single election dataset, even a multi-election, multi-year average dataset such as the DRA Composite 2016-2020 data underlying that table, are an inadequate measure of the partisan fairness of a map. First, while

Pennsylvania is generally considered to be a well-balanced “purple” state, the 2-party vote share of that dataset is actually 52.46% for Democrats and 47.54% for Republicans. This may seem like a small difference, but, converted proportionally into a district share, the difference in vote shares corresponds to 0.88 of a district on an 18-seat map and 0.84 of a district on a 17-seat map. In other words, one might expect that, if recent Pennsylvania elections averaged around a 52.46% Democratic seat share, Democrats would be expected to win, on average, nearly a full seat more than Republicans. One would therefore expect that analyses of a “fair” map performed using such an underlying election dataset would show a small but meaningful seat count advantage for Democrats.

In this light, even the seat count analysis already shows some warning signs in regard to the partisan fairness of the first-stage CCFD map. While the 2018 *LWV* map shows a slight “likely seat” advantage for Democrats of 9.31 D seats to 8.69 R seats, as one might expect from an election dataset with a slight Democratic advantage, the first-stage CCFD map actually shows a slight “likely seat” disadvantage under the same election data: 8.35 D seats to 8.65 R seats. Other statistics show even more of an imbalance — while both maps show a Republican advantage in seats bias (half the expected seat difference in a 50/50 election) and votes bias (the excess votes above 50% that a party has to win to receive half the seats), both bias scores show a more than 50% greater disadvantage for Democrats in the CCFD first-stage map than in the *LWV* map. The first-stage CCFD map also has a small mean-median gap favoring Republicans (i.e., more districts are more favorable to their candidates than one would expect), compared to the almost zero gap in the *LWV* map.

Despite the strong traditional-neutral-criteria statistics of the CCFD first-stage map, these significantly larger bias scores could potentially raise Free and Equal Elections Clause concerns about whether voters’ ability to convert their votes into representation is being unfairly diluted based on their party preference. Thus, adjustments to the initial draft are potentially warranted to address this issue while still preserving the traditional neutral criteria statistics of the map as much as possible.

Fortunately, adjustments for partisan fairness do not, in this case, conflict with the previous adjustments made to preserve majority-minority districts and avoid incumbent contests. The majority-minority voting district adjustments primarily affected strongly Democratic-voting regions of the state and so had little impact on the overall partisan balance of the map. The incumbent contest avoidance adjustments actually improved the partisan balance of the map in several ways:

- Undoing suburban packing in Delaware and eastern Chester Counties
- Shifting more-rural northern Dauphin County into the 9th District, while incorporating more of eastern Cumberland County into the 10th District (reducing, although not eliminating, division of the more Democratic-leaning Harrisburg region)
- Moving more-rural Warren, Forest, Venango and eastern Butler Counties out of the 16th district and including more of somewhat more industrialized northern Beaver County in the district, thereby undoing some division of Pennsylvania’s western “Rust Belt” region

The major partisan balance issue which remained after these adjustments was the potential for packing of the Pittsburgh region. The “tradition” of not dividing the city of Pittsburgh during redistricting is relatively recent, unlike most other non-division traditions. In the early part of the 20th Century, when Pennsylvania had more than 30 Congressional seats (for a maximum of 36 from 1913-1933), Congressional district populations were small enough that Pittsburgh was divided amongst multiple districts. This continued until the 1982 redistricting, when Pennsylvania’s apportionment fell from 25 to 23 seats, and Pittsburgh was undivided in Congressional redistricting for the first time. Since then, seat counts in Pennsylvania have continued to fall, as other regions of the country grow faster than Pennsylvania, and Pittsburgh has remained undivided ever since.

Avoiding the division of municipalities is not only a traditional neutral redistricting criterion, it can also be important for avoiding cracking, that is, fragmenting the representation of small communities to the point where they are unable to have a meaningful voice in the selection of representatives of their choice. This is the rationale behind the traditions of avoiding division of small metropolitan areas such as the Lehigh Valley, Scranton/Wilkes-Barre, Harrisburg, State College, Lancaster, Reading, York, and Erie — these regions are relatively populous compared to surrounding rural areas, but not so populous that the majority preferences of the residents of those regions can be translated into actual representation if the regions are divided amongst multiple districts. However, the Pittsburgh metropolitan area, while not as large as the Philadelphia region, is still significantly larger than any other metropolitan area in the state.

While Pittsburgh itself, with a population of 302,971 as of the 2020 Census, is smaller than an ideal 17-seat Congressional district (764,864 or 764,865 people), its metropolitan area includes more than 2 million people (2,370,930) across 7 counties, equivalent to 3.14 Congressional districts. The next-largest metropolitan area in the state is the Lehigh Valley, which, at 861,889 people, is only a little larger than 1 Congressional district (1.14 districts), small enough that it could easily be cracked by careless or malicious map design. The Pittsburgh region, on the other hand, is large enough to potentially face the opposite challenge, that of being “packed” into as few districts as possible, to reduce the substantial ability of voters in the region to translate their votes into representation. An insistence on abiding by the aforementioned relatively modern

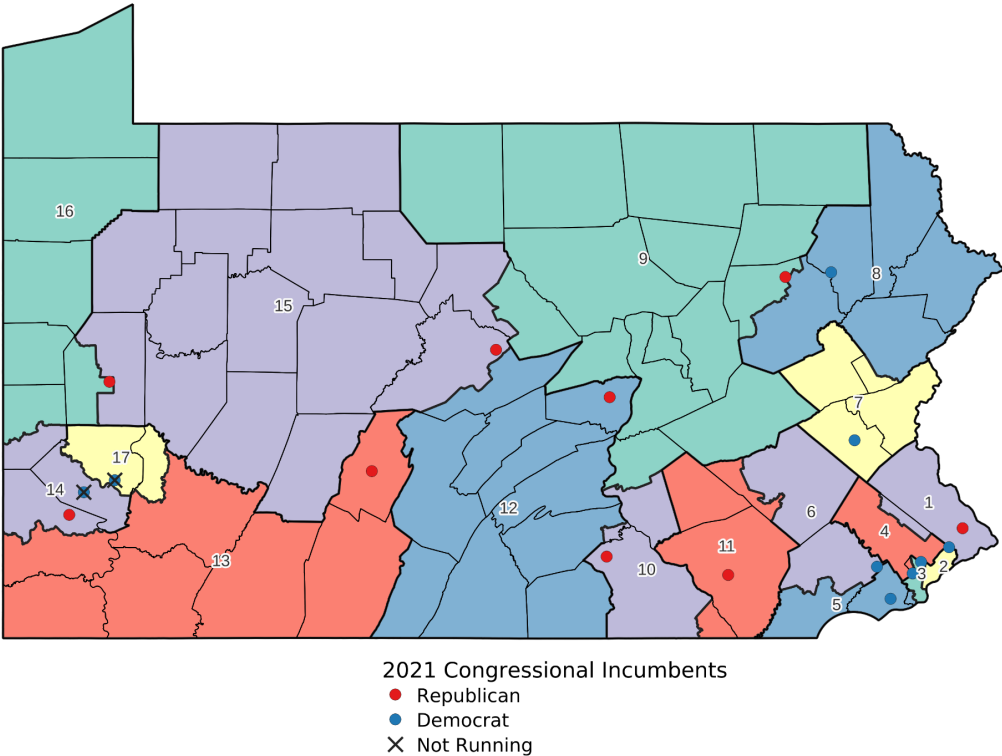
“tradition” of refusing to split the city of Pittsburgh, the single largest concentration of voters in the region, significantly exacerbates this risk of packing

Moreover, Pittsburgh has the largest concentration of Democratic voters in the southwestern part of the state, and the second-largest such concentration in the entire state. A short-lived pseudo-tradition of privileging one specific municipality above all others for split avoidance may be a reasonable mapping criterion in a vacuum, but it becomes difficult to justify in the face of the overriding legal requirement to reduce the partisan bias of the map in order to abide by the Free and Equal Elections Clause of the state constitution.

Thus, the final major adjustment for partisan fairness in the CCFD 17-seat map was to split the city of Pittsburgh between the 14th and 17th Districts, along the natural dividing line at the Monongahela and Ohio Rivers, which cut the city approximately in half. This relieves the previous packing of Democratic Pittsburgh voters solely into the 17th District, by somewhat reducing the overwhelming Democratic supermajority there (previously 68.69% Democratic 2-party vote share in the Composite 2016-2020 election data, now 62.88%). Combined with previous changes for incumbent contest avoidance, the 14th District now moves from being a solidly-Republican district with a 38.97% Democratic 2-party vote share to being a competitive district with a 54.74% Democratic 2-party vote share, only slightly more Democratic than the dataset’s statewide average Democratic vote share of 52.46%.

The end result of this second mapping stage is our final proposed map, which is shown again in Figure 4.

Fig. 4: CCFD Proposed 17-Seat Map (reprise)



6. Key Metrics of the CCFD Proposed Map

Together, the second-stage adjustments described above significantly improve the majority-minority, incumbent, and partisan fairness statistics of the CCFD proposed map, bringing it well in line with the example set by the Supreme Court’s 2018 *LWV* map without significant harm to traditional neutral criteria statistics, as shown in Tables 3 and 4 below.

Table 3: Traditional neutral criteria for both map stages

	2018 <i>LWV</i> 18-seat map	CCFD 17-seat map, first stage	CCFD 17-seat map, second (final) stage
Contiguous	Yes	Yes	Yes
Maximum-minimum district population difference	1 person (at enactment)	1 person	1 person
Polsby-Popper compactness	0.3270	0.3682	0.3461
Reock compactness	0.4278	0.4328	0.4162
County splits (Split counties)	18 (14)	16 (15)	18 (16)
Municipal splits (Split municipalities)	19 (18)	16 (15)	18 (16)
Precinct splits	32 (at enactment)	16	18

The number of county/municipal/precinct splits, while increased relative to the first-stage map, is still only 2 more than the expected minimum, identical to the excess in the 2018 map. The Reock and Polsby-Popper compactness scores have both slightly decreased, but the Polsby-Popper score remains higher than in the 2018 map, although Reock is now slightly lower. The contiguity and population equality are maintained, so that overall the second-stage map, our final proposed map, is comparable, on traditional neutral criteria grounds, to the 2018 map.

Table 4: Racial, partisan, and incumbent statistics for both map stages

	2018 LWV 18-seat map	CCFD 17-seat map, first stage	CCFD 17-seat map, second (final) stage
Majority-minority districts	<p>District 2: 59.74% minority 26.97% Black 23.00% Hispanic 9.77% other</p> <p>District 3: 64.78% minority 51.33% Black 5.04% Hispanic 8.41% other</p>	<p>District 2: 58.49% minority 26.09% Black 22.14% Hispanic 10.26% other</p> <p>District 3: 62.95% minority 48.72% Black 5.47% Hispanic 8.76% other</p>	<p>District 2: 58.49% minority 26.09% Black 22.14% Hispanic 10.26% other</p> <p>District 3: 65.40% minority 51.37% Black 5.41% Hispanic 8.62% other</p>
Ideal proportional seat count	18 seats: 9.44 D, 8.56 R	17 seats: 8.92 D, 8.08 R	17 seats: 8.92 D, 8.08 R
Likely seat count	9.31 D, 8.69 R	8.35 D, 8.65 R	8.96 D, 8.04 R
Raw seat count	10 D, 8 R	9 D, 8 R	10 D, 7 R
Seats bias (+ favors Rs)	+5.07% (+0.91 seats)	+8.05% (+1.37 seats)	+4.60% (+0.782 seats)
Votes bias (+ favors Rs)	+1.79%	+2.74%	+1.54%
Mean-median gap (+ favors Rs)	+0.07%	+0.88%	+0.88%
Incumbent contests	None (at enactment)	<p>District 5: Mary Gay Scanlon (D) Chrissy Houlahan (D)</p> <p>District 9: Dan Meuser (R) Fred Keller (R)</p>	None (of those running)

The 3rd District is now reinstated as a majority-Black district, with similar racial balance to the 2018 3rd District, and all incumbent contests are removed. The likely seat count almost exactly matches the ideal proportional seat count for this election dataset, and the votes bias and seats bias are dramatically reduced to even below the levels found in the 2018 map. The mean-median gap, relatively small to begin with, did not significantly change.

Overall, this map demonstrates that the CCFD methodology enables mappers to easily and simultaneously meet the standards of the 2018 *LWV* decision with respect to the traditional neutral criteria, protection against vote dilution based on race or political views, and incumbent contest avoidance. Neither traditional neutral criteria nor incumbent contest avoidance requires maps to enshrine discrimination against particular groups of voters. Any map which must be defended by claims that unfair and disproportionate vote dilution is simply “natural” should be considered highly suspect. The CCFD second-stage map sets a standard which any adopted map should be expected to meet or exceed.

With this in mind, we turn to an analysis of the Special Master’s proposed map selection methodology.

7. Response to the Special Master’s Proposed Findings of Fact and Conclusions of Law (Section V)

The remaining portion of this report addresses Sections V and VI of the Special Master’s (SM) report. These sections presented, respectively, her proposed findings of fact and conclusions of law (Section V) and her map selection recommendations (Section VI).

First, we address Section V. In this section, the SM itemized many criteria for judging the suitability of the maps. For purposes of SM’s discussion, the criteria fall into two groups: 1) the “Traditional Neutral Criteria” arising from requirements in the Pennsylvania Constitution and other court judgements; and (2) “Extra-Constitutional Considerations” drawn from the reports of the expert witnesses.

Table 5 (below) tabulates all of the criteria and applicable metrics the SM assembled in Section V.

Traditional Neutral Criteria

1) Contiguity

The SM found that all of the maps satisfy this criterion.

Comment: With the development of several online tools for creating districts (e.g. Dave’s Redistricting App), the process ensuring contiguity has become relatively easy. This is particularly true at the Congressional level, as the number of discrete boundaries tends to be relatively small. As a result, achieving contiguity no longer requires focused effort.

2) Population Equality

The SM addressed two aspects of the population equality criterion: 1) selection of the proper database of population figures: all but the Ali Plan use the approved Legislative

Reapportionment Commission (LRC) Dataset #1; 2) the variation of populations among the districts: the SM noted that the Carter plan and the House Democratic Caucus plan achieve a variation of 2 persons, while all others achieve a variation of 1 person.

Comment: Selection of the proper dataset for computing populations seems, on the surface, to be a simple decision. However, the LRC certified two different datasets: 1) one relatively consistent with the Census Redistricting database; and 2) one adjusted for prisoner residence to home instead of the prison location. Complicating the issue somewhat is the fact that Dave’s Redistricting App, one of the online redistricting software tools, continues to apply the Census Redistricting populations. This has little impact on the populations of districts except when differences between the Census and the LRC Datasets lie across a district boundary.

The U.S. Supreme Court has ruled that there are no *de minimis* population variations that satisfy the requirements of one person, one vote. Nonetheless, in *Karcher v. Daggett*, the case that rejected a New Jersey redistricting plan with 0.7% population deviation, the problem was not the population deviation itself, but that New Jersey “did not meet their burden of proving that the population deviations in the plan were necessary to achieve a consistent, nondiscriminatory legislative policy.” The 2 person variation in the Carter and House Democratic Caucus plans are allowable as the submissions articulate explicit justification for the plans they submit. According to the National Conference of State Legislatures, 14 other states have population deviations of greater than 1 person in their Congressional districts, with no precedent establishing that those deviations *automatically* violate the Constitutional requirement of one person, one vote.

As a matter of fact, very small population uncertainties exist in all population statistics. From an enumeration point of view, knowing the exact populations of districts is impossible. Many factors can contribute to uncertainties in the tabulation of region membership at any point in time. Examples include reporting errors (or even deliberate mis-reporting) on the part of individual households, tabulation errors creating misidentification of actual address locations, deliberate adjustment of small-area data points by the Census to insure resident anonymity. Beyond tabulation errors, populations change over time, so that even if the population was known on April 1, 2020 to perfect precision, it would not apply beyond that moment due to births, deaths, internal relocations by citizens, and in- and out-migration by non-citizens.

As a result, distinguishing between a population variation of 1 or of 2 in a district total population of over 750,000 persons is a distinction without a difference.

3) Compactness

The SM noted Dr. Duchin’s expert witness testimony to stipulate that all of the maps satisfy the constitutional compactness criterion.

Comment: Maps can achieve maximal compactness by assembling counties compactly (or dividing more populous counties compactly) and then adding or subtracting whole townships and other political subdivisions, one at a time, along a county boundary, in layers until equal population is achieved. Then one and only one municipal subdivision need be divided along an electoral district’s border. This uniform approach would allow a reviewing court to detect even subtle gerrymandering, such as where a boundary is both non-compact and non-uniform. This non-uniformity can then be analyzed by the Court and the parties to determine if a boundary line is the result of innocent drafting, or the result of an impermissible attempt to engage in partisan gerrymandering, that is, gaining anticipated seat share beyond the party’s state-wide vote share.

We believe that compactness scores can highlight important strengths and weaknesses of individual district designs within a redistricting plan. Moreover, identifying outliers among the districts with particularly poor compactness scores can provide guidance for incorporating important improvements in the overall plan. We find it disappointing that the SM deferred careful analysis of this important criterion in the assessment of the plans.

4) Subdivision Splitting

The SM noted that Drs. Barber, deFord and Duchin provided expert analyses of plan splits (of political subdivisions) and the SM relied on them. The SM also noted, however, that not much “... evidence challenging ... methodology” came from testimony and participant reviews. For analytical purposes, the SM consolidated the enumerations of splits for counties, municipalities and wards from the three expert sources to construct a single tabulation of the splits for each plan.

Comment: Like population deviation, enumerating splitting of political subdivisions provides a specific quantitative, verifiable metric. Setting forth these splits arguably creates a simple and clear measurement of a plan’s compliance with a constitutional requirement. The splitting criterion can conflict at times (but not always) with the compactness criterion and the population equality criterion, though careful drafting can balance these criteria.

As discussed in Section 3 above, theory suggests, and the CCFD methodology strongly supports, that there is a lower reasonable limit to the number of subdivision splits required at each subdivision scale (county, municipality, ward, precinct) when district populations must be exactly equal.

The CCFD methodology achieves this theoretically best possible result (lowest number of splits possible) with its step-down sequence, which calls for incorporating whole subdivisions when possible in sequence along a district border until adding the next subdivision would exceed the population limit. At that point, the subdivision will be split by including, again in sequence, subdivisions of the next smaller scale (e.g. municipalities of a county when the entire county population is too large) until adding the next subdivision would exceed the allowable population, and so on.

Special Issue – Splitting Pittsburgh

The SM highlighted certain specific splits, deeming them “... an important consideration ...”.² Quoting Dr. Barber, the SM noted that splitting has the capacity, particularly as it applies to the city of Pittsburgh to “... serve partisan ends.”³ As a result, the SM concluded that the five plans that split Pittsburgh should be viewed less favorably than those that keep Pittsburgh within a single district. In addition, the SM identified one plan that retains Pittsburgh in a single district but distorts the district design by surrounding it in a way that violates this requirement in an indirect way.

Comment: In general terms, we agree that good districting designs avoid unnecessary splitting of subdivisions. However, all residents of every subdivision benefit from avoiding the dilution of their representation due to splitting.

We believe that the SM should have addressed splitting issues associated with all subdivisions containing populations above some floor. For example, at least 10 counties have populations exceeding that of Pittsburgh, but the SM did not consider the implications of splitting any of these. Moreover, as discussed above, the greater Pittsburgh metropolitan area hosts a population far greater than that of a single district. Considerations extending beyond the Pittsburgh county boundary may very well apply and deserve attention.

Special Issue – Splitting Bucks County

The SM acknowledged that subdivision splitting shares importance with other “communities of interest” considerations. Highlighting Bucks County, the SM noted that both Dr. Naughton and Dr. Duchin expressed opinions about keeping communities of interest whole in district design plans. Noting strong sentiment that residents desire Bucks County to remain whole, the SM indicated that plans splitting Bucks County should carry lower weight. In addition, the SM added the additional consideration to the district containing Bucks County that the additional population needed to achieve the target district population should come from Montgomery

² SM Report at 148.

³ SM Report at 149, quoting Barber report at 28.

County and not from Philadelphia County, citing communities of interest considerations mentioned in Dr. Naughton's report.

Comment: We agree that communities of interest considerations can take place in the context of determining final district designs. However, there are many, many such considerations that could take place throughout the state. We believe that focusing on Bucks County considerations without doing so in a more comprehensive manner weakens the importance of this single consideration. In any event, the Supreme Court emphasized in *LWW* that all criteria other than the four neutral criteria are “wholly subordinate” to the four criteria.

Moreover, the argument that Bucks remain whole because this has been the case for many years⁴ relies on a “least change” argument, a consideration that the SM dismissed in the context of the Carter submission.⁵

Special Issue – Splitting Philadelphia County

The Philadelphia County population is large enough to accommodate two whole districts plus part of a third. The map designs have the option to attach the surplus Philadelphia population to districts in the neighboring counties of Bucks, Delaware, and Montgomery. The SM noted the recommendation of Dr. Naughton that the surplus should be attached to a district in Delaware County as a result of communities of interest considerations.

Comment: This consideration is comparable to the Bucks County situation, even though it addresses the allocation of a surplus population rather than the acquisition of population to address a shortfall. Thus, our comments concerning the Bucks County designs apply here equally. There are many specific circumstances in every design in which residents of a political subdivision are grouped or split. The SM's highlighting of some such subdivision splits, while ignoring others, appears arbitrary.

Extra-Constitutional Considerations

The SM continued collecting factual information from the experts relating to other design considerations, but noted that “Our inquiry into these subordinate considerations is strictly circumscribed.”⁶ This is consistent with the cautionary language of the Pennsylvania Supreme Court in *LWW* regarding subordinate criteria.⁷

⁴ SM Report at 157, paraphrasing Dr. Naughton's testimony.

⁵ SM Report at 183 ff.

⁶ SM Report at 161.

⁷ SM Report at 161 referencing *LWW*: 178 A.3d at 817.

1) Partisan Fairness

The SM found as a matter of fact that the distribution of partisan residents within the state tilts in favor of Republicans. From a standpoint of political geography, at least in Pennsylvania, Democrats are concentrated in large metropolitan areas, while Republicans are distributed throughout the state with a much lower propensity to congregate in densely populated areas. Accordingly, the SM noted that this will have a bearing on issues of partisan advantage.

The Special Master noted three approaches to measuring partisan fairness articulated in the expert witness testimony – Mean-Median scores, the Efficiency Gap, and Simulations.

2) Mean-Median Scores

The SM listed mean-median scores computed for the plans from seven expert witness statements, although not all experts provided such scores for every plan. In addition, the SM referred to testimony of an expert witness in *LWV* that a typical mean-median score ranges from -4% to 4%.⁸ The SM also noted that such scores are computed from specific elections and that: a) the expert witnesses did not use identical historical elections in computing their metrics, and b) that not all experts specified the elections used. After excluding the Duchin figures as not credible, the SM found that the mean-median scores for all of the plans fell within the acceptable range.

3) Efficiency Gap

The SM listed efficiency gap scores from five expert witness statements. As with mean-median scores, not all of the experts provided estimates for every plan. In addition, the SM referred to testimony of an expert witness in *LWV* that a typical efficiency gap score ranges from -20% to +20%.⁹ Finally, the SM noted that the elections selected for efficiency gap calculations were the same ones used for the mean-median calculations. After excluding the Duchin figures as not credible, the SM found that the efficiency gaps for all of the plans fell within the acceptable range.

4) Simulations

The SM noted that simulations of many plans can help to place partisan fairness issues into perspective by providing a design variation context with which to measure the fairness of any given plan. SM referenced the simulations prepared by Dr. Barber in this context. Regarding the simulations, the SM noted that all of the maps submitted “... are at least 54% more favorable to Democrats than the simulated maps” and that the House Democrats map has “... [a] more favorable efficiency gap outcome for Democrats than 100% of his simulated maps.”¹⁰

Comment: We were puzzled by the exclusion of these analyses by Dr. Duchin. Moreover, we could not find in Dr. Duchin’s report the numerical figures listed as those set forth in the

⁸ SM Report at 166 referencing *LWV*: 178 A.3d at 774.

⁹ SM Report at 172 referencing *LWV*: 178 A.3d at 777.

¹⁰ SM Report at 176.

SM's report. The testimony and report by this witness employed the use of graphical comparisons. In doing so, Dr. Duchin presented graphical representations of these metrics from twelve separate elections for three of the plans and included in the graphs representations of the results of 100,000 simulated elections.¹¹ The SM did not speak to either these simulations or the graphical representations in this context. In addition, Dr. Duchin employed the use of a seats-votes figure to elucidate the outcomes of many elections. We found the Duchin approach to provide more insight into the likely dynamic behavior of the plans than a single metric representing the aggregate results of several elections.

5) Partisan Fairness - Proportionality

Extracting statements regarding design objectives stated in and by the plan submissions, the SM stated unequivocally that “proportionality is not a requirement or goal of redistricting.”¹² She found that the “Gressman Plan was purposefully created using an algorithm that sought to optimize on partisan fairness.”¹³ In addition, the SM found that “The Draw the Lines Plan admittedly split Pittsburgh into two congressional districts to maximize political competitiveness.”¹⁴ It should be noted that the CCFD amicus brief argues for the addition of partisan fairness as another mandatory criterion in addition to four Constitutional criteria.

6) Protection of Incumbents

The SM noted that plans that avoid “pairing” incumbents in the same new district (the term “stacking” is also used) can play a role in evaluating redistricting plans. Citing *LWV* and *Mellow* cases, the SM acknowledged that these considerations are “... among the factors that a court may consider in evaluating a redistricting plan”¹⁵ Additionally, the SM claimed that the reduction in the number of Congressional districts will by necessity, create at least one such pairing. Finally, the SM stated that deliberate selection of specific pairings could “... favor one party by pairing incumbents from the other party, effectively eliminating one of them.”¹⁶ Subsequently, the SM noted that some current incumbents – Lamb (D) of the 17th District and Doyle (D) of the 18th District – are not seeking reelection, which allows one to ignore a theoretical pairing in these districts as “... less indicative of any unfair distribution”¹⁷ The SM analysis of pairings focused on the number of incumbents of the same party included in any pairings, finding five plans for which 3 incumbents from a single party would experience pairing. The SM noted that as a result, the SM would place less weight on these plans.

Comment: CCFD acknowledges that various parties have argued that the same consideration of incumbent pairs in plan design should be considered. However, we

¹¹ Moon Duchin expert witness report at 17 ff.

¹² This an following bullets from SM Report at 176-178.

¹³ SM Report at 178 referencing Gressman Petitioners Brief at 14.

¹⁴ SM Report at 178 referencing Villere Report at 4.

¹⁵ SM Report at 178.

¹⁶ SM Report at 179. The SM also noted that both Dr. deFord and Dr. Duchin cited this potential.

¹⁷ SM Report at 179.

suggest that this take place near the end of the design process. Further, we suggest that the home locations of incumbents also play a role in the analysis of this factor. Incumbents whose residences lie geographically close to each other may by simple location experience a high likelihood of pairing for that reason alone, as a district boundary would have to pass between these two residences to eliminate a pairing.

We suggest that the SM's conclusion that pairings reflect partisan design motivations carries with it the material risk of incorrectly assigning to the designer a motivation that may not in fact apply. The large number of factors playing a role in any district design can make such attributions difficult to prove.

7) VRA Considerations

The SM noted that Pennsylvania is subject to Section 2 of the VRA, and, citing Dr. Duchin's report, that the current district map includes two majority-minority districts. However, the SM also noted that no party presented evidence directed to this issue and that no party lodged a challenge to a plan based on this issue. As a consequence of this, the SM noted that "... the Court is thus unable to determine that any specific number of majority-minority districts is strictly necessary in any particular location in Pennsylvania.... The Court accordingly cannot conclude that any plan would be likely to violate section 2 of the VRA or any other requirements of federal law."¹⁸

Comment: We believe that VRA considerations not only are important but indeed are legally mandated, and should be a factor in selecting the best plan.

8) Least Change

The SM, referring to *LWW*, noted that "... preservation of prior district lines, or 'least change,' is another 'subordinate' factor the Court may consider in determining which plan to adopt."¹⁹ Only Dr. Rodden (for the Carter petitioners) presented an analysis relevant to least change considerations and the SM recognized the analysis performed by Dr. Rodden's tabulation of the "Retained Population Share" for each plan. However, lacking a measure of acceptable retention, the SM declined to use this metric, stating "... this Court is left with attempting to decipher enigmatic data."²⁰

As an alternative to comparative analysis of the plans, the SM examined past legal opinions regarding the use of least change approaches to redistricting and concludes that it is "... deeply troubled by the prospect of any court applying [this doctrine] ... because that court could theoretically continuously adopt features of its prior plans, effectively rendering impossible any

¹⁸ SM Report at 183.

¹⁹ SM report at 183.

²⁰ SM report at 185.

future challenge to the plan.”²¹ The SM further “... conclude[d] that the Carter Petitioners have misconstrued and misapplied the “Least Change” doctrine, which does not apply in this circumstance ...” and recommends that the high court not adopt the Carter Plan.²²

Comment: Focusing on the least change from a prior map, as opposed to starting fresh in redistricting, can lead to a fair map or an unfair map depending on the qualities of the map being used as a model. If the prior map was the product of a partisan gerrymander, the new map will contain elements of a partisan gerrymander.

We suggest that the Court keep in mind and analyze changes in design from two perspectives: 1) from the perspective of the resident population, who benefit from continuity of representation and continuity of group sentiment; 2) from the perspective of incumbent representatives, who benefit from continuity of their constituents’ communal concerns, and continuity of relevant administrative oversight functions.

²¹ SM report at 188.

²² SM Report at 188.

Table 5: Special Master’s Section V Analysis Metrics by Plan

Criterion	Reschenthaler Reschenthaler												
	Carter	Gressman	Governor	HB 2146	Senate Dem I	Senate Dem II	House Dem	I	II	Draw the Lines	Ali	Citizen-Voters	Voters of PA
Traditional Neutral Criteria													
Contiguity	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Population Equality													
Data Set	LRCSet #1	LRCSet #1	LRCSet #1	LRCSet #1	LRCSet #1	LRCSet #1	LRCSet #1	LRCSet #1	LRCSet #1	LRCSet #1	LRC Set #2	LRC Set #1	LRC Set #1
Metric	+1,-1	+1	+1	+1	+1	+1	+1,-1	+1	+1	+1	+1	+1	+1
Compactness	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Splitting¹													
County	13	15	16	15	17	16	16	13	13	14	16	14	15
Municipality	19	19	18	16	19	16	18	16	16	16	18	16	17
Ward	25	15	25	18	18	14	22	25	24	16	33	21	41
Focus													
Pittsburgh	Whole	Whole	Split	Whole	Split	Split	Whole/Nbr	Whole	Whole	Split	Split	Whole	Whole
Bucks			Split	Whole									
Bucks add			from PHL	not from PHL									
PHL surplus			to Bucks	to Delaware									
Extra-Constitutional Considerations													
Partisan Fairness													
Design													
Split Pittsburgh													
Simulations													
No specific references													
Mean-Median Scores²													
Dr. Barber	-0.6	1.4	-0.04	-1.5	-0.5	-0.03	0.7	-2.1	-2.2	-0.6	-1.2	-1.3	-1.2
Dr. Brunell ³							-1.86**		-1.89				
Dr. Caughy			1	-2.3	-0.7	-0.5			-2.4				
Dr. deFord ⁴	-1.6 -0.8*		-1	-2.9	-1.9	-0.3	-0.9	-2.7	-2.6	-1.2	-1.8	-2	-2.7
Dr. Duchin ⁵	-11.3	3.85	-0.77	-29.27	-13.82	1.06	-0.71	-25.24	-25.34	-10.42	-12.09	-18.47	-27.34
Dr. Rodden ⁶	?0.5	?0.5	?0.6	-2.4 ?0.7	?0.7	?0.4		-0.1	-0.1 ?0.6	?0.4	?1.4		-2.6
S. Trende ⁶			-1.1, ?0.3										?2.0, ?2.2
Efficiency Gap⁷													
Dr. Barber	3.4	3.4	3.4	-2.5	-2.5	3.4	9.3	-2.5	-2.5	3.4	3.4	3.4	-2.5
Dr. Caughy			-3.5	-6.6	-2.3	-2.4			-6.3				
Dr. deFord	-0.4	0.8	0.6	-6.3	-2.5	1	3.3	-7.8	-7.8	-1.6	-2.7	-2.6	-4.8
Dr. Duchin ⁸	-0.58	13.94	10.07	-83.36	-26.01	12.21	18.14	-110.24	-110.42	-16.78	-31.66	-40.74	-56.58
S. Trende ⁹			-3.5, -0.10										?3.0, ?5.6
Proportionality as Goal													
Incumbent Protection ¹⁰													
Pairings	1	0	2 ¹¹	1	1	2	2	2	1	2	--	2	2 ¹¹
R-R Pairing	x		x			x	x			x			
D-D Pairing			x					x				x	
D-R Pairing				x	x	x	x	x	x	x		x	x - x
VRA Considerations													
Maj-Min Districts													
Least Change	2	3	2	2	2	2	2	2	2	2	2	2	2
Retained Pop Share	86.6	72.8	81.2	78.5	72.5	72.5	73.3	76.5	76.5	78.8	81.5	82.4	80.6

Note: Red shaded cells indicate values or characteristics that the Special Master deemed important for reduced weight of plan. See additional notes and references on the following page.

Notes for Table 5:

1. SM Report at 143, ff.
2. SM Report at 168-171. Our entries here: figures in %, positive sign favors Democrats
3. Use of “**” on this row: Inconsistent in the report: 0.0186 and 1.6%
4. Use of “*” on this row: Incorrectly reported as -0.08%.
5. Strikethroughs: The SM finds these figures from Dr. Duchin to be not credible, and therefore removed them from consideration.
6. Use of “?” in this report: Dr. Rodden and S Trende did not specify score sign.
7. SM Report at 172-175.
8. Strikethroughs: The SM noted that Dr. Duchin’s figures were extreme outliers and therefore not credible
9. Use of “?” on this row: S Trende did not specify score sign for the Voters of PA analysis.
10. Dr. deFord analyzed all of the plans for incumbent pairings in his report.
11. The SM report did not address the Governor’s plan or the Voters of PA plan for pairings. These pairings are from the deFord report.

8. Response to the Special Master’s Map Selection Recommendations (Section VI)

Section VI of the SM report sets forth the recommendations arising from the facts and metrics listed in Section V.

In the simplest terms, the SM in this section selected its recommended plan by way of an elimination process, identifying and removing plans one at a time and in groups, depending on the criterion, from the acceptable collection. This process appears in Table 6 below:

Table 6: Summary of Eliminations by Plan

Reason for Exclusion	Carter	Gressman	Governor	HB 2146	Senate Dem I	Senate Dem II	House Dem	Reschenthaler I	Reschenthaler II	Draw the Lines	Alli	Citizen-Voters	Voters of PA
Plans not using LRC Dataset #1 (Page 192):											X		
Plans that split Pittsburgh (Pages 194-195):			X		X	X				X	X		
Plans that split Bucks county			X										
Pairing two Republican Incumbents (Page 195)	X				X								
Use of “least change” approach (Pages 195-196)	X												
Mean-median metric (Page 197)		X					X						
Efficiency gap metric (Page 197)	X	X	X			X	X			X			
VRA Considerations (Page 198)													
Population Variation - 2 difference (Pages 192-199)	X						X					X	
Lack of expert witness support							X					X	
Odd district shape near Pittsburgh (Page 203)							x						
Inadequate COI consideration (Page 205)		X											

Note: Green shaded columns highlight plans with no identified reasons to eliminate.

The remaining maps the SM considered from the standpoint of the Free and Equal Elections Clause are:²³

- Voters of PA plan
- Reschenthaler 1 plan
- HB 2146 plan

For these three plans, the SM listed the supporting benefits of these plans along with support statements by their experts. The SM noted that based on “... credibility and weight determinations,...” these maps “... are consistent with the Free and Equal Elections Clause ... and, also, the aspirations and ideals expressed by that constitutional provision as pronounced by the Court in *LWV*...”²⁴ The SM then turned to a more comprehensive review of the HB 2146 plan’s strengths²⁵:

²³ SM report at 207. We note from Exhibit 2 above that the Reschenthaler 2 plan also survived the exclusion process, but the SM did not include it in the list of surviving plans. We found no explanation for this in the SM’s report.

²⁴ SM report at 207.

²⁵ These points appear in the SM report, starting at 207.

- This plan arose from the legislative process laid out in the state Constitution
- The methodology laid out by the expert witness, Dr. Barber
- The plan performs well with regard to subdivision splits
- One incumbent pairing which does not impart a partisan advantage
- The plan does not split Bucks County
- The district including Bucks County draws from Montgomery County to complete
- The surplus Philadelphia population was added to a district in Delaware County
- The plan maintains two minority-majority districts
- The plan's compactness scores are near the 2018 Remedial Plan
- The plan has only a modest and unreducible partisan lean (8-D, 9-R)
- Several expert witnesses attested to the partisan fairness of the plan
- The plan has more competitive districts than the "other" plans
- The mean-median score is close to zero, indicating unbiased partisan fairness
- The efficiency gap is close to zero, indicating unbiased partisan fairness
- No parties have argued that the plan does not meet "... all the neutral, traditional redistricting criteria..."

As a final statement, the SM argued strongly for the use of HB 2146 because it arose from the constitutional legislative process and because it satisfies all precedents set in prior court judgments.

Comment: In our opinion, the elimination process the SM used fails to articulate the relative importance of the various criteria for elimination, which weakens the argument that only three plans survive this process. The criteria that the SM listed cannot be equally important. Yet the SM did not identify how or whether she prioritized them. A different process could very well employ different criteria and produce a different result. We acknowledge the difficulty of choosing a plan due to the very large number of factors which might come into play. For this reason, we would prefer that the Court employ a district construction process rather than a plan selection process going forward.

Finally, we remind the Supreme Court that CCFD offers such a district construction process that, by its very nature, satisfies the constitutional requirements, avoids partisan interference, and offers process transparency that vastly improves the opportunity for judicial oversight.

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IN THE SUPREME COURT OF PENNSYLVANIA

Docket No. 7 MM 2022

CAROL ANN CARTER, et al.
Petitioners,

v.

**LEIGH M. CHAPMAN, in her official capacity as the Acting Secretary
of the Commonwealth of Pennsylvania, et al.,**
Respondents.

BRIEF FOR *AMICUS CURIAE*
PHILADELPHIA COUNTY BOARD OF ELECTIONS
IN SUPPORT OF NEITHER PARTY

CITY OF PHILADELPHIA
LAW DEPARTMENT
Diana P. Cortes, City Solicitor

By: Benjamin H. Field (ID No. 204569)
Chief Deputy City Solicitor
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INTEREST OF AMICUS CURIAE

The Philadelphia County Board of Elections (“Philadelphia” or the “Board”) or is responsible for the operation of elections in Philadelphia County and ensuring that they are free and accessible. It requires a staff of over 100 people to prepare for elections, including processing voter registration, 25 Pa. C.S. §§ 1322, 1328, providing and evaluating nominating petitions, 25 P.S. § 2642(j), arranging polling places, *id.* §§ 2642(b), 2726(c), obtaining and distributing election materials, notices, *id.* §§ 2642(c), (h), 3041, mailing absentee and mail-in ballots, *id.* §§ 3146.5, 3150.15, staffing district election boards and training district poll workers, *id.* § 2642(d), (f), (g), setting up electronic ballot marking devices (BMDs), *id.* § 2642(c), creating and testing the ballot in multiple languages,¹ 52 U.S.C. § 10503, preparing poll books, 25 Pa. C.S. § 1402(d), and shipping BMDs to polling places, 25 P.S. §§ 2642(b), 3044. The same staff are tasked with post-election responsibilities such as the canvass and tabulation of in-person votes, absentee and mail-in ballots, and provisional ballots, the examination of poll books, and the certification of election results. *See* 25 P.S. §§ 2642(k), 3146.8, 3154; 25 Pa. C.S. § 1402(f). Because of these responsibilities and the associated

¹ *See, e.g.*, Phila Board of Elections, *Fiscal 20 Operating Budget* at 1 (last visited Feb. 14, 2022), *available at* https://files7.philadelphiavotes.com/departments-reports/FY20_Budget.pdf.

costs, the Board is necessarily interested in the matters at issue in this case which potentially impact these obligations and the timelines on which the Board conducts its pre- and post-election activities.

ARGUMENT

Amicus Curiae the Philadelphia County Board of Elections takes no position on the merits of the Petition. However, the Board wishes to apprise the Court of the deadlines under which the Board operates as those timelines impact the Board's ability to conduct free and accessible elections, including the ability to take any action necessary to comply with this Court's decision in this matter.

As an initial matter, the Board must mail absentee and mail-in ballots to voters months in advance of the election. While most can be sent within fifty days of the election, the Board must mail ballots to international and military voters seventy days before the election. *See* 25 P.S. § 3146.5(a). Delays in mailing can exacerbate these timelines.²

With regard to in-person voting, the technology and administrative requirements in Philadelphia necessitate significant lead time for the Board to prepare the voting equipment. Philadelphia's elections take place on ExpressVote

² *See, e.g.,* Wallace McKelvey, *Mail delays even worse across Pa., with 42% of Philly mail taking longer than 5 days*, PennLive (Oct. 29, 2020 11:29 p.m.), <https://www.pennlive.com/news/2020/10/mail-delays-even-worse-across-pa-with-42-of-philly-mail-taking-longer-than-5-days.html>.

XL electronic ballot marking devices (BMDs). *See Stein v. Boockvar*, No. 16-6287, 2020 WL 2063470, at *2 (E.D. Pa. 2020). Although the BMDs are electronic, they rely on a database of information to display the ballot.³ The Board must “lock” that database more than a month before an election in order to have the BMDs available for election day.⁴ Once the database is locked, the Board cannot add or remove candidates’ names from the ballot for the coming election. *Id.* After locking, the Board must conduct logic and accuracy testing on the BMDs in each required language⁵ and then ship them over multiple weeks to their respective polling places for election day. Given the number of races involved in this primary and the recent inclusion of Chinese in addition to Spanish as a

³ Robert Torres, Dep’t of State, Commonwealth of Pa., *Report Concerning the Examination Results of Elections Systems and Software EVS 6021 with DS200 Precinct Scanner, DS540 and DS850 Central Scanners, Expressvote HW 2.1 Market and Tabulator, ExpressVote XL Tabulator and Electionware EMS* at 24 (Nov. 30, 2018) [hereinafter *DOS Examination Report*], available at <https://www.dos.pa.gov/VotingElections/Documents/Voting%20Systems/ESS%20EVS%206021/EVS%206021%20Secretary%27s%20Report%20Signed%20-%20Including%20Attachments.pdf>

⁴ *See* Decl. of Joseph Lynch at 4, *Stein*, 2020 WL 2063470 (E.D. Pa. Dec. 12, 2019) (ECF 123-2) (explaining need for 50 days before the 2020 General Election, a federal election); Non-Party Philadelphia County Board of Elections’s Application To Expedite Consideration of Petition ¶ 8, *In Re: Nomination Petition of Rania Major as a Democratic Candidate for Municipal Judge in Philadelphia County*, No. 15 EAP 2021 (Pa. Mar. 31, 2021) (explaining need for 35 days before 2021 Primary Election, a municipal primary).

⁵ *See*, Torres, *DOS Examination Report*, *supra* note 3, at 38.

required Section 203 language in Philadelphia,⁶ the Board must lock the database at least 42 days in advance of the election. This timeline, therefore, requires that all candidates be finalized six weeks in advance of election day, including final determinations on challenges to nominating petitions. The Board would need additional time to prepare for a subsequent election if it were held less than three months later.

In addition, after each election, the same personnel who are involved in preparing for the election are tasked with post-election activities. It takes several weeks to finish canvassing ballots and processing provisional ballots, and even longer due to the social distancing of workers during the pandemic. *See, e.g.*, 25 P.S. §§ 3050(a.4), 3146.8(g), 3154. Additional time is required for a recount, if necessary. *See* 25 P.S. § 3154(e)-(g). Certification does not take place until 20 days after the election, during which time BMDs records must be preserved for recanvassing. *See* 25 P.S. §§ 2642(k), 3262(c). Afterwards, the ensuing months allow the Board staff to repair and perform preventative maintenance on the BMDs in preparation for the next election, as well as obtain parts, supplies for new ballots, and personal protective equipment (PPE). For instance, each separate election requires the Board to print and send a new ballot to each voter on the

⁶ *See* Voting Rights Act Amendments of 2006, Determinations Under Section 203, 86 Fed. Reg. 69611, 69616 (Dec. 8, 2021).

Permanent Mail-in Voter List. These processes can take even longer if there are supply chain complications.

Thus, for the orderly administration of the 2022 Primary Election, the Board respectfully requests that if this Court adjusts the timeline for the Primary Election, it ensure that the adjusted timeline provides that the ballot will be final at least 42 days before the date of the 2022 primary election and that if there is an additional election day before the November 2022 General Election, that any such schedule provide at least 62 days between elections as well as accounting for the possibility that impoundment of election equipment could create further delays.

CONCLUSION

For all of the reasons set forth above, the Board respectfully requests that this Court issue its decision such that the timeline for the 2022 Primary Election and final ballot is set at least 42 days before the date of the election, and that if there is an additional election before the November 2022 General Election that any schedule provides at least 62 days between elections.

Respectfully submitted,

CITY OF PHILA. LAW DEPARTMENT
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February 14, 2022

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CERTIFICATION OF COUNSEL

I hereby certify that this brief contains 1120 words within the meaning of Pa. R. App. Proc. 2135. In making this certificate, I have relied on the word count of the word-processing system used to prepare the brief.

I further certify that this filing complies with the provisions of the *Public Access Policy of the Unified Judicial System of Pennsylvania: Case Records of the Appellate and Trial Courts* that require filing confidential information and documents differently than non-confidential information and documents.

/s/ Michael Pfautz

Michael Pfautz

Deputy City Solicitor

City of Philadelphia Law Department

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February 17, 2022

VIA PACFILE

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RE: *Carter, et al. v. Chapman, et al.*, No. 7 MM 2022

Dear Ms. Dreibelbis:

I represent *Amicus Curiae* the Philadelphia County Board of Elections (the “Board”). I write to disclose that no person or entity other than *Amicus Curiae* and its counsel paid, in whole or in part, for the preparation of the Board’s *Amicus Curiae* Brief or authored, in whole or in part, the Board’s brief filed February 14, 2022.

Sincerely,

/s/ Michael Pfautz
Michael Pfautz
Deputy City Solicitor

A2547

IN THE PENNSYLVANIA SUPREME COURT

7 MM 2022

CAROL ANN CARTER, MONICA PARRILLA, REBECCA POYOUROW,
WILLIAM TUNG, ROSEANNE MILAZZO, BURT SIEGEL,
SUSAN CASSANELLI, LEE CASSANELLI, LYNN WACHMAN,
MICHAEL GUTTMAN, MAYA FONKKAU, BRADLEY HILL, MARY ELLEN
BALCHUNIS, TOM DEWALL, STEPHANIE MCNULTY, and JANET TEMIN,

Petitioners,

v.

LEIGH M. CHAPMAN, in her official capacity as the acting SECRETARY OF
THE COMMONWEALTH OF PENNSYLVANIA; JESSICA MATHIS in her
official capacity as DIRECTOR FOR THE PENNSYLVANIA BUREAU OF
ELECTION SERVICES AND NOTARIES,

Respondents.

**AMICUS BRIEF SUBMITTED BY WASHINGTON COUNTY PUBLIC
OFFICIALS**

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IN THE PENNSYLVANIA SUPREME COURT

CAROL ANN CARTER, MONICA
PARRILLA, REBECCA
POYOUROW, WILLIAM TUNG,
ROSEANNE MILAZZO, BURT
SIEGEL, SUSAN CASSANELLI,
LEE CASSANELLI, LYNN
WACHMAN, MICHAEL
GUTTMAN, MAYA FONKKAU,
BRADLEY HILL, MARY ELLEN
BALCHUNIS, TOM DEWALL,
STEPHANIE MCNULTY, and
JANET TEMIN,

Petitioners,

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LEIGH M. CHAPMAN, in her
official capacity as the acting
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COMMONWEALTH OF
PENNSYLVANIA; JESSICA
MATHIS in her official capacity as
DIRECTOR FOR THE
PENNSYLVANIA BUREAU OF
ELECTION SERVICES AND
NOTARIES,

Respondents

7 MM 2022

**AMICUS BRIEF SUBMITTED BY WASHINGTON COUNTY PUBLIC
OFFICIALS**

The following persons, namely Diana Irey Vaughn, Nick Sherman, Pete Daley, Steve Toprani, Austin J. Murphy and Bill DeWeese hereinafter “Washington

County Public Officials” by and through their counsel, James H. McCune and the law firm of Bowles Rice LLP hereby set forth the following Amicus Brief.

STATEMENT OF INTEREST

This Amicus brief is being submitted by a number of current and former Washington County elected public officials, both Democrat and Republican, who are identified below. These current and former officials believe that their interests are not represented by any of the parties to the current litigation, and that fairness, and a full opportunity to be heard, require that they be permitted to file this Amicus Brief.

The legal costs of this Amicus Brief are being paid by Friends of Diana.

ARGUMENT

This Amicus Brief is submitted to the Pennsylvania Supreme Court by the following persons, all of whom are former or current elected public officials, both Democrat and Republican, and who live and vote in Washington County,

Pennsylvania. This group will hereinafter be referred to as the “Washington County Public Officials.”

The Washington County Public Officials are the following persons:

- a. Diana Irey Vaughn, incumbent Chair of the Washington County Commissioners (R);
- b. Nick Sherman, incumbent, Washington County Commissioner (R);
- c. Peter J. Daley, former state representative (D);
- d. Steve Toprani, former Washington County District Attorney (D);
- e. Austin J. Murphy, former Congressman (D);
- f. Bill DeWeese, former state representative (D)

On February 2, 2022, the Supreme Court of Pennsylvania assumed jurisdiction over this matter pursuant to 42 Pa. C.S.A. §726.

The purpose of this Amicus Brief, submitted by the Washington County Public Officials, is to urge the Pennsylvania Supreme Court **NOT** to adopt the proposed Gressman Math/Science Congressional Plan (hereinafter “GMS Map”).

The GMS Map would create a new congressional district 14, which would consist of all of Washington County, and portions of Allegheny County including all of the City of Pittsburgh.

The Court is asked to note that Special Master Judge Patricia A. McCullough, in her exhaustive 222 page report, did not recommend the adoption of the GMS Map.

The Washington County Public Officials strongly object to the GMS Map that would place all of Washington County in a new congressional district with the City of Pittsburgh, thereby creating an illogical and absurd result.

In their brief in support of the GMS Map, the writers at Page 6 have sought perfect mathematical proportionality. The GMS Map Plan in all of Pennsylvania would seek an ideal of twelve (12) congressional districts, the population of each of which would be exactly 764,865 and five (5) congressional districts with the population of exactly 764,864 each.

Although Washington County and parts of Allegheny County have much in common, Washington County and the City of Pittsburgh have little in common and the creation of this district would place small rural communities in Washington County, such as Independence Township, with a population of approximately 1500, in direct competition for scarce public funds with the City of Pittsburgh. The Washington County Public Officials believe that a congressional district comprised of similar demographics would be much more fair.

Furthermore, the population density and the current demographic makeup of the residents of the City of Pittsburgh would mean that the City of

Pittsburgh would dominate congressional elections and choose congressional representatives to the detriment and exclusion of Washington County voters.

The Pennsylvania Constitution's Free and Equal Election Clause provides "the people of this Commonwealth an equally effective power to select the representative of his or her choice, and bars the dilution of the people's power to do so." *League of Women Voters I*, 178 A. 3rd 737 (Pa. 2018) at 814 . Furthermore, when "a congressional redistricting plan dilutes the potency of an individual's ability to select a congressional representative of his or her choice" that plan "violates the free and equal elections clause." While gerrymandering is not to be permitted, a plan such as the GMS Map plan undermines the voter's ability to exercise their right to vote in free and equal elections if that term is to be interpreted in any credible way. *Id.* at 821. In other words, the GMS Map plan will unfairly dilute the voting power of Washington County residents in favor of residents of the City of Pittsburgh. The GMS Map creates partisan unfairness, which is not permitted under the Pennsylvania Constitution.

Note that the Washington County Public Officials do not advocate in favor of or against any other plan. They submit this Amicus Brief for the purpose of pointing out the unfairness and inappropriateness of the GMS Map. Accordingly, the Washington County Public Officials request that the Pennsylvania Supreme Court not adopt the GMS Map plan.

Respectfully submitted:
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CERTIFICATE OF COMPLIANCE UNDER PA. R.A.P. 127

I certify that this filing complies with the provisions of the Public Access Policy of the Unified Judicial System of Pennsylvania: Case Records of the Appellate and Trial Courts that require filing confidential information and documents differently than non-confidential information and documents.

By: 

Received 2/14/2022 6:11:56 PM Supreme Court Middle District

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7 MM 2022

IN THE SUPREME COURT OF PENNSYLVANIA

No. 7 MM 2022

CAROL ANN CARTER, MONICA PARRILLA, REBECCA
POYOUROW, WILLIAM TUNG, ROSEANNE MILAZZO, BURT
SIEGEL, SUSAN CASSANELLI, LEE CASSANELLI, LYNN
WACHMAN, MICHAEL GUTTMAN, MAYA FONKEU, BRADY HILL,
MARY ELLEN BALCHUNIS, TOM DEWALL, STEPHANIE
MCNULTY AND JANET TEMIN,
Petitioners,

v.

LEIGH M. CHAPMAN, IN HER OFFICIAL CAPACITY AS THE
ACTING SECRETARY OF THE COMMONWEALTH OF
PENNSYLVANIA; JESSICA MATHIS, IN HER OFFICIAL CAPACITY
AS DIRECTOR FOR THE PENNSYLVANIA BUREAU OF ELECTION
SERVICES AND NOTARIES,
Respondents.

PHILIP T. GRESSMAN; RON Y. DONAGI; KRISTOPHER R. TAPP;
PAMELA GORKIN; DAVID P. MARSH; JAMES L. ROSENBERGER;
AMY MYERS; EUGENE BOMAN; GARY GORDON; LIZ MCMAHON;
TIMOTHY G. FEEMAN; AND GARTH ISAAK,
Petitioners,

v.

LEIGH M. CHAPMAN, IN HER OFFICIAL CAPACITY AS THE
ACTING SECRETARY OF THE COMMONWEALTH OF
PENNSYLVANIA; JESSICA MATHIS, IN HER OFFICIAL CAPACITY
AS DIRECTOR FOR THE PENNSYLVANIA BUREAU OF ELECTION
SERVICES AND NOTARIES,
Respondents.

**BRIEF OF *AMICUS CURIAE* WILLIAMSPORT/LYCOMING
CHAMBER OF COMMERCE AND GREATER SUSQUEHANNA
VALLEY CHAMBER OF COMMERCE URGING THIS COURT TO
ADOPT WITH ONE MODIFICATION THE SPECIAL MASTER'S
REPORT CONTAINING PROPOSED FINDINGS OF FACT AND
CONCLUSIONS OF LAW SUPPORTING RECOMMENDATION
OF CONGRESSIONAL REDISTRICTING PLAN AND
PROPOSED REVISION TO THE 2022 ELECTION
CALENDAR/SCHEDULE**

Exceptions filed from the February 7, 2022, Report issued by Special Master Judge Patricia A. McCullough of the Commonwealth Court of Pennsylvania, at No. 464 M.D. 2021 and No. 465 M.D. 2021, Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendation of Congressional Redistricting Plan and Proposed Revision to the 2022 Election Calendar/Schedule

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Chamber of Commerce*

Date: February 14, 2022

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Exhibit 1: Notes of Testimony – Pennsylvania House State Government Committee North Central Regional Public Hearing on Congressional Redistricting (October 12, 2021).

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Prosser v. Elections Board, 793 F.Supp. 859 (W.D. Wis. 1992) 8

Secondary Authority

Gormley, *Racial Mind-Games and Reapportionment*, 4 PA.J.CONST.L. 735 (2002) 7

I. INTEREST OF AMICUS CURIAE¹

The Williamsport/Lycoming Chamber of Commerce (WLCC) has been representing the business community in Lycoming County since 1885. With over 900 members, the mission of the WLCC is to preserve, protect, and defend the free enterprise system through promoting a vibrant business climate and quality of life for the businesses and people of Lycoming County. The Greater Susquehanna Valley Chamber of Commerce (GSVCC), founded in 1921, represents the business community in the Montour, Northumberland, Snyder, and Union counties region. With nearly 700 members, the mission of the GSVCC is to advance the prosperity of its communities, commerce, culture, fellow citizens, and their businesses in the region.

The WLCC and the GSVCC, have a significant interest in the outcome of this case. Their members, some 1,600 combined, employ thousands of Pennsylvania voters who live and work in Lycoming, Union, Snyder, Northumberland, and Montour counties. These members rely on the WLCC and GSVCC to be their voice in matters of public policy affecting the business community. A new configuration of

¹ This brief was written by the undersigned and paid for by the Williamsport/Lycoming Chamber of Commerce and the Greater Susquehanna Valley Chamber of Commerce. Pa.R.A.P. 531(2).

congressional districts that fractures the communities of interest that comprise the region will undermine the effectiveness of the WLCC and GSVCC by requiring them to coordinate on regional issues with multiple members of Congress. As explained herein, this was the problem with the congressional redistricting that occurred following the 2000 census, which split communities of interest in the same region into two separate districts. Moreover, as noted by Judge Patricia McCullough in her Report to this Court: “[I]f an important issue is divided across multiple districts, it is likely to receive diffuse and unfocused attention from the multiple representatives it affects, as each is pulled in other directions by the many other issues confronting their districts. However, if a discrete and unique issue is placed in one district, that representative may familiarize herself with the complexities of the issue and the stakeholders it affects.” Report at 153.

II. SCOPE AND STANDARD OF REVIEW

The Court has plenary jurisdiction over this case, but has appointed Commonwealth Court Judge Patricia McCullough as a Special Master to issue proposed findings of fact and conclusions of law. The Court's standard of review is *de novo*. When addressing findings of fact made by Judge McCullough, while those findings do not bind this Court, the Court "will afford them due consideration, as the jurist who presided over the hearings was in the best position to determine the facts." *Annenberg v. Com.*, 757 A.2d 338, 342-343 (Pa. 2000).

III. QUESTION PRESENTED

Whether this Court should adopt Special Master Judge Patricia McCullough's Report Containing Proposed Findings of Fact and Conclusions of Law Supporting Recommendation of Congressional Redistricting Plan, with the modification that the Court adopt the configuration of the 7th District in the Reschenthaler maps.

[Suggested Answer: Yes]

IV. SUMMARY OF ARGUMENT

The Greater Susquehanna Valley Chamber of Commerce (GSVCC) and the Williamsport/Lycoming Chamber of Commerce (WLCC) represent the business community in Lycoming, Union, Snyder, Northumberland, and Montour counties. These counties, along with their regional partners in Tioga, Sullivan, and Columbia counties, form communities of interest that should be grouped within a single district. While the GSVCC and WLCC urge this Court to adopt the Special Master's Report, they request that this Court use the configuration of the 7th Congressional District contained in the Reschenthaler maps in order to keep these important communities of interest together.

V. ARGUMENT: THE COURT SHOULD ADOPT THE SPECIAL MASTER'S REPORT, BUT MODIFY IT TO ADOPT THE CONFIGURATION OF THE 7TH DISTRICT DEPICTED IN THE RESCHENTHALER MAPS.

The Greater Susquehanna Valley Chamber of Commerce (GSVCC) and the Williamsport/Lycoming Chamber of Commerce (WLCC) are largely in agreement with proposed findings of fact and conclusions of law prepared by Commonwealth Court Judge Patricia McCullough, particularly her rejection of the maps submitted by Carter Petitioners, Governor Tom Wolf, and the Senate Democratic Caucus. The GSVCC and WLCC submit this brief as *amicus curia*, however, to emphasize the importance of the communities-of-interest doctrine, and to express their preference for the configuration of the 7th District depicted in the Reschenthaler maps, which group all of Snyder and Union counties into the same district, along with regional partners Lycoming, Tioga, Sullivan, Northumberland, Sullivan, Columbia, and Montour counties.

A. Communities-Of-Interest Doctrine.

“[W]hen drawing state and local legislative districts, jurisdictions are permitted to deviate somewhat from perfect population equality to accommodate traditional districting objectives, among them, preserving the integrity of political subdivisions, maintaining communities of

interest, and creating geographic compactness.” *Evenwel v. Abbott*, 578 U.S. 54, 59 (2016). As this Court has noted, communities of interest “have shared interests for which they can more effectively advocate when they can act as a unified body and when they have representatives who are responsive to those interests.” *Holt v. 2011 Legislative Reapportionment Com’n*, 38 A.3d 711, 745 (Pa. 2012) (Holt 1). Dean Gormley, whom this Court has cited with approval, stated:

At the same time, states have historically considered a broad range of such imprecise communities of interest (many of which are naturally intertwined) in exercising their sound discretion. They do so to satisfy constituents. They do so to sweep together a host of generally identifiable interest groups that wish to be given a unified voice. This is perfectly healthy and permissible. It is an important aspect of the state's prerogative, when it comes to structuring its own form of government.

Id. at 746 (quoting Gormley, *Racial Mind-Games and Reapportionment*, 4 U.PA.J.CONST.L. 735, 780-781 (2002)). Dean Gormley has further noted: “[S]chool districts, religious communities, ethic communities, [and] geographic communities[,] which share common bonds due to locations of rivers, mountains, and highways, and a host of other ‘communities of interest’ are routinely considered by districting bodies in order to construct fair and effective maps.” *Id.*

Judge McCollough strongly embraced the communities-of-interest doctrine throughout her report, bolding her language for emphasis. **“To be an effective representative, a legislator must represent a district that has a reasonable homogeneity of needs and interests; otherwise the policies he supports will not represent the preferences of most of his constituents.”** See Report at 153 (emphasis in original) (quoting *Prosser v. Elections Board*, 793 F.Supp. 859, 863 (W.D. Wis. 1992)). **“[I]f an important issue is divided across multiple districts, it is likely to receive diffuse and unfocused attention from the multiple representatives it affects, as each is pulled in other directions by the many other issues confronting their districts. However, if a discrete and unique issue is placed in one district, that representative may familiarize herself with the complexities of the issue and the stakeholders it affects.”** *Id.* (emphasis in original) (quoting *Hall v. Moreno*, 270 P.3d 961, 971 (Colo. 2012)). Application of this concept, by the reliance of unrebutted expert testimony, is evident throughout Judge McCollough’s proposed findings of fact (Report at 154-161, ¶¶1-28) and conclusions of law (Report at 194, 208, 210, 212; ¶¶ 25, 29, 60,

73, 84). This is most notable in her rejection of proposals to split the City of Pittsburgh into two congressional districts. *See supra*.

B. The Region Represented By The GSVCC And WLCC, Which Includes Lycoming, Snyder, Montour, Northumberland, & Union Counties, Are Communities Of Interest And Should Be Grouped Together.

On October 12, 2021, the Pennsylvania House State Government Committee held a regional public hearing on congressional redistricting. *See* Exhibit 1. Malcolm Derk, Chair of the GSVCC's Government Affairs Committee, testified during the hearing. *Id.* at 18-28. Jason Fink, President and Chief Executive Officer of the WLCC, also testified. *Id.* at 29-33. Because this testimony is part of the legislative record that ultimately resulted in the map contained in HB 2146, which is the map that Judge McCullough is recommending for adoption, the GSVCC and WLCC ask this Court to take judicial notice of this testimony. *See Department of Auditor General v. State Employees' Retirement System*, 836 A.2d 1053 (Pa.Cmwlth. 2003) (holding that Commonwealth Court may take judicial notice of legislative journals).

During his testimony, Mr. Derk testified about the many ways in which Snyder, Union, Northumberland, and Montour counties are tied together. In so doing, Mr. Derk stressed the natural travel patterns and

road systems that give these counties a “united feel.” *Id.* at 21-22. Mr. Derk noted in particular the Route 11/15 corridor, along which residents of these counties work, recreate, and engage in commerce. *Id.*



Mr. Derk also testified about the travel patterns of GSVCC members, which increasingly include travel to Lycoming and Columbia counties. *Id.* at 22. Mr. Derk predicted that these connections will only grow with the completion of the Central Susquehanna Valley Thruway providing connections to Interstate 80. *Id.* Aside from travel patterns, Mr. Derk

pointed to large employers in the area, such as Geisinger and UPMC health systems as well as Bucknell and Susquehanna University, which pull employees from the multi-county region of Lycoming, Columbia, Montour, Union, Snyder, and Northumberland counties. *Id.* at 22. Mr. Derk also pointed to the Central Susquehanna Regional 911 system that covers Snyder, Union, and northern Northumberland counties. *Id.* at 24. Finally, Mr. Derk pointed to other entities – such as Rabbit Transit, Community Action Agency, Agency on Aging, The Greater Susquehanna Valley United Way, Red Cross, Susquehanna Valley Visitors Bureau, and media providers such as *The Daily Item* and *WKOK 1070AM* – all of whom take a regional approach involving Snyder, Union, Northumberland, and/or Montour counties. *Id.* at 24-26. In conclusion, Mr. Derk stressed the importance of keeping counties whole whenever possible: “As our members or neighbors ask about how to contact their member of Congress, it is helpful if entire communities are kept together to avoid confusion at the ballot box or as citizens seek constitute services from their legislator.” *Id.* at 26-27.

During his testimony on behalf of the WLCC, Mr. Fink outlined the industrial, educational, and highway systems of Lycoming County,

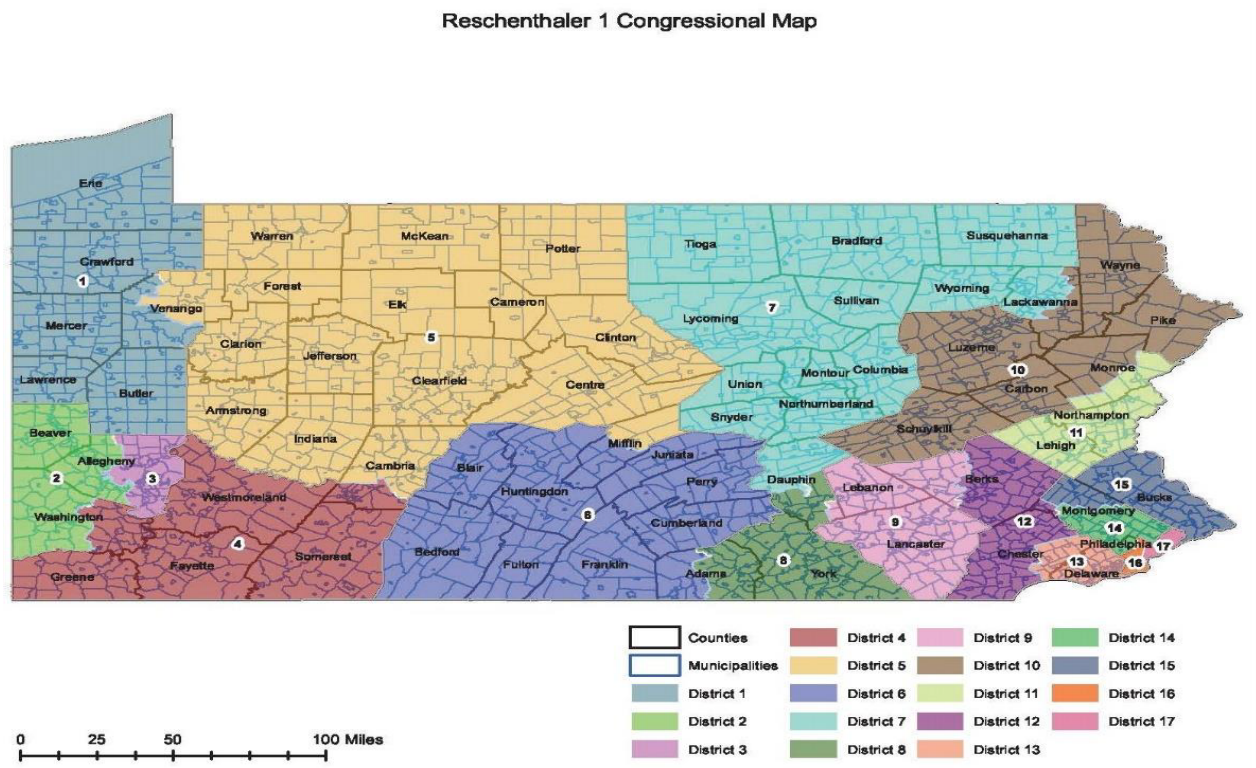
emphasizing the importance of keeping the county together. *Id.* at 31. He pointed to the period 2000-2010, during which Lycoming County was split into two congressional districts, making it difficult to work on county-wide issues. *Id.* at 31-32. Mr. Fink also urged the committee to include Lycoming County in the same district with its neighboring counties of Clinton, Tioga, Union, Northumberland, Snyder, and Sullivan counties. *Id.* at 32-33. In support thereof, Mr. Fink described the workforce development projects involving some or all of those counties, such as the SEDA-COG. *Id.* at 32.



Borrowing a term used by Mr. Derk, Mr. Fink referenced the “commute shed” travel patterns of residents between Lycoming, Clinton, Tioga, Union, Northumberland, Snyder, and Sullivan counties. *Id.* at 32. Mr.

Fink also noted that employers in Lycoming County – such as West Pharmaceuticals, Shop-Vac Corporation, L3 Harris,² Lycoming Engines, Spartonics, PMF Industries, and QorTek – draw from schools in Union (Bucknell University, SUN Area Technical Institute), Snyder (Susquehanna University), Clinton (Lock Haven University), and Tioga (Mansfield University) counties. *Id.* at 30-31, 32-33.

C. The Maps That Best Capture The Communities Of Interest Principle For Amici’s Region Are the Resenthaler Maps For The New 7th District.

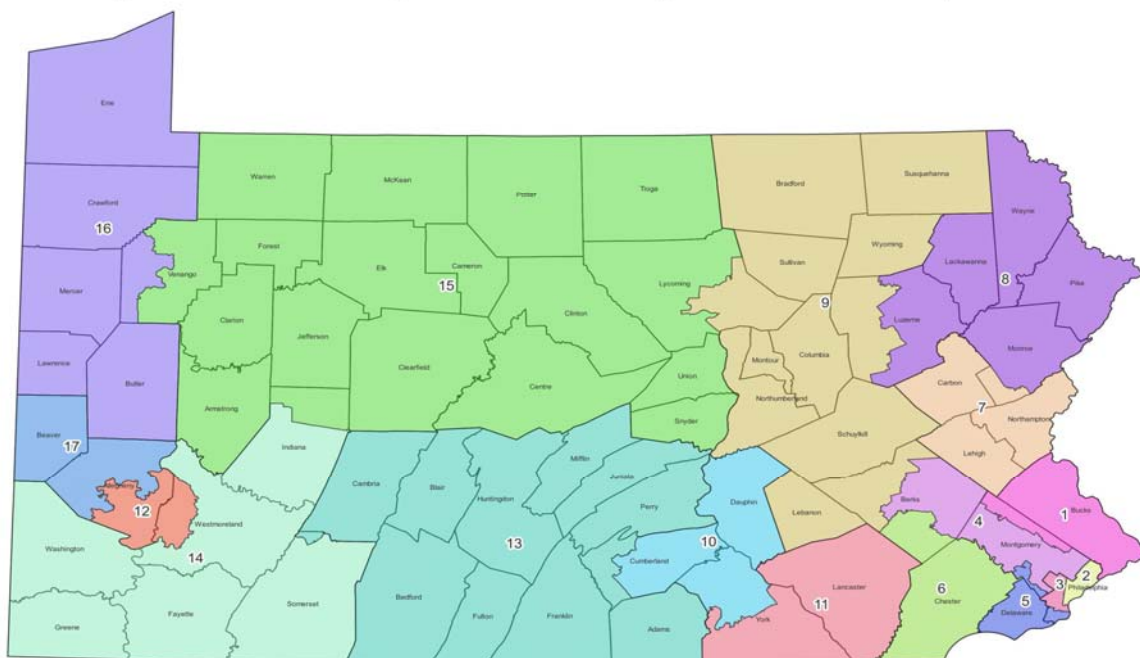


² L3 Harris is now known as Stellant Technologies.

D. The Maps Submitted By The Carter Petitioners, Governor Wolf, And The Senate Democratic Caucus Greatly Separate Amici’s Communities Of Interest.

While amici respectfully submit that the Reschenthaler maps best depict their communities of interest over the map proposed by Judge McCollough, more important to amici is the rejection of those maps that do the greatest violence to the region’s communities of interest.

Proposed PA Congressional Map: Carter et al. plaintiffs

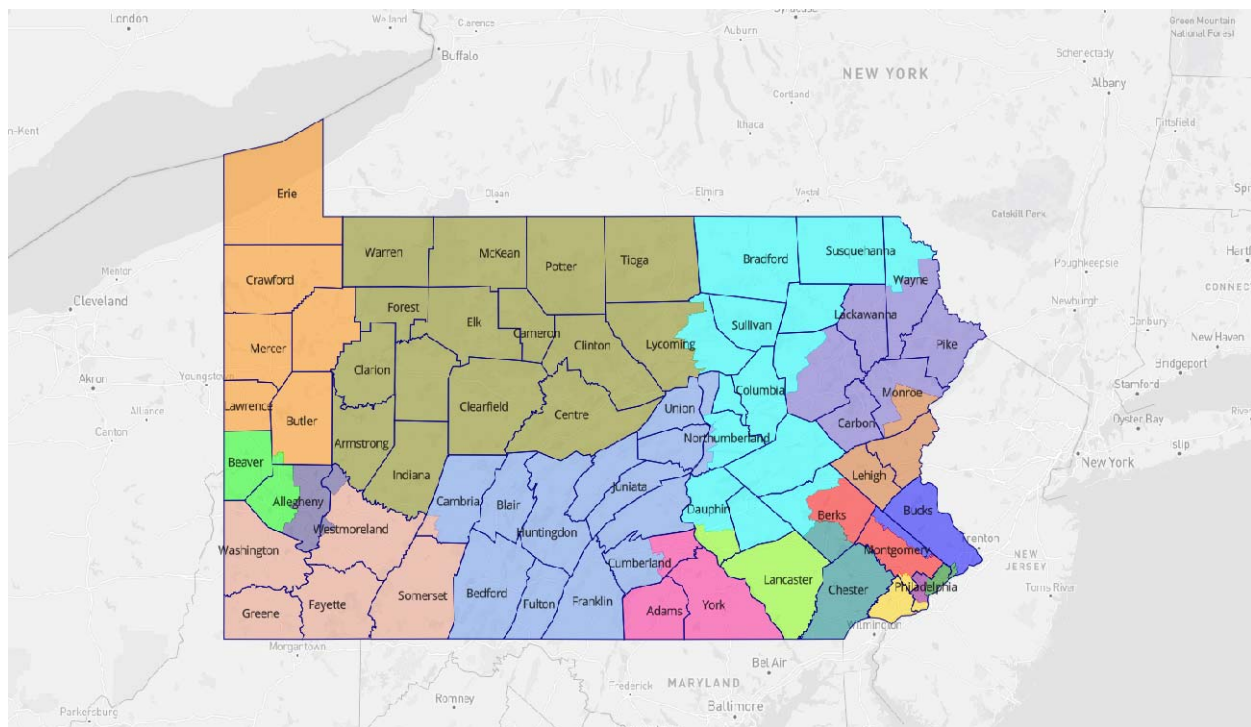


Map: Jonathan Lai (@Elaijuh)

The map above submitted by the Carter Petitioners splits Lycoming County into two congressional districts – the newly-created

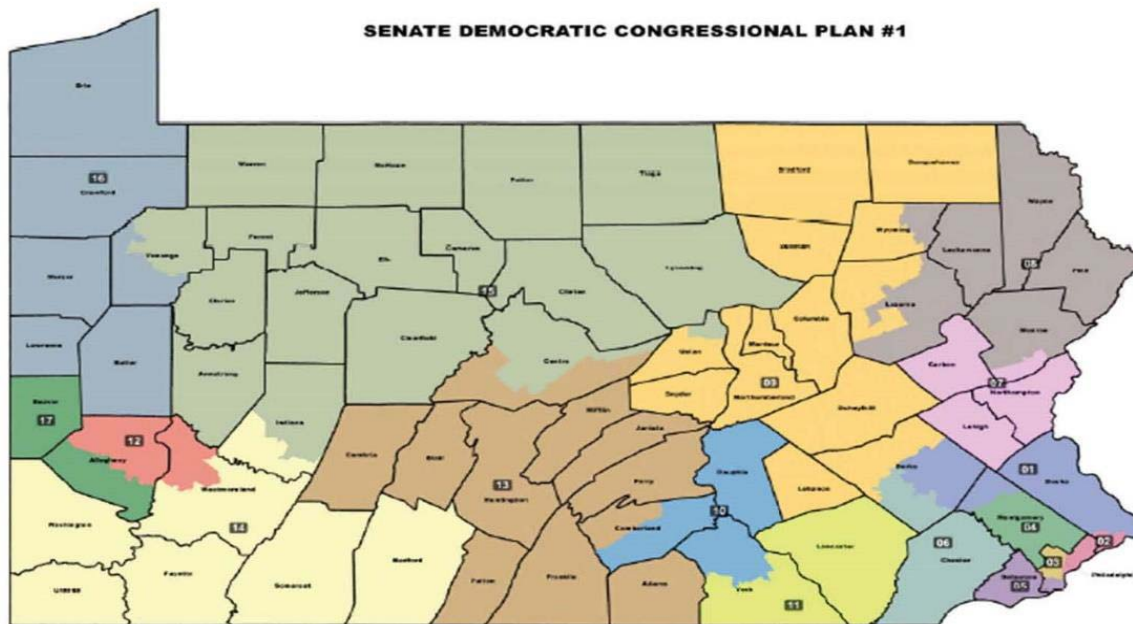
15th District (apportioning most of the county with its neighbors to the west), and the newly-created 9th District to the east. This map also groups Union and Snyder counties into the 15th District, separating them from eastern Lycoming County and their other regional partners to the east (particularly Northumberland and Montour counties).

The Governor's Map

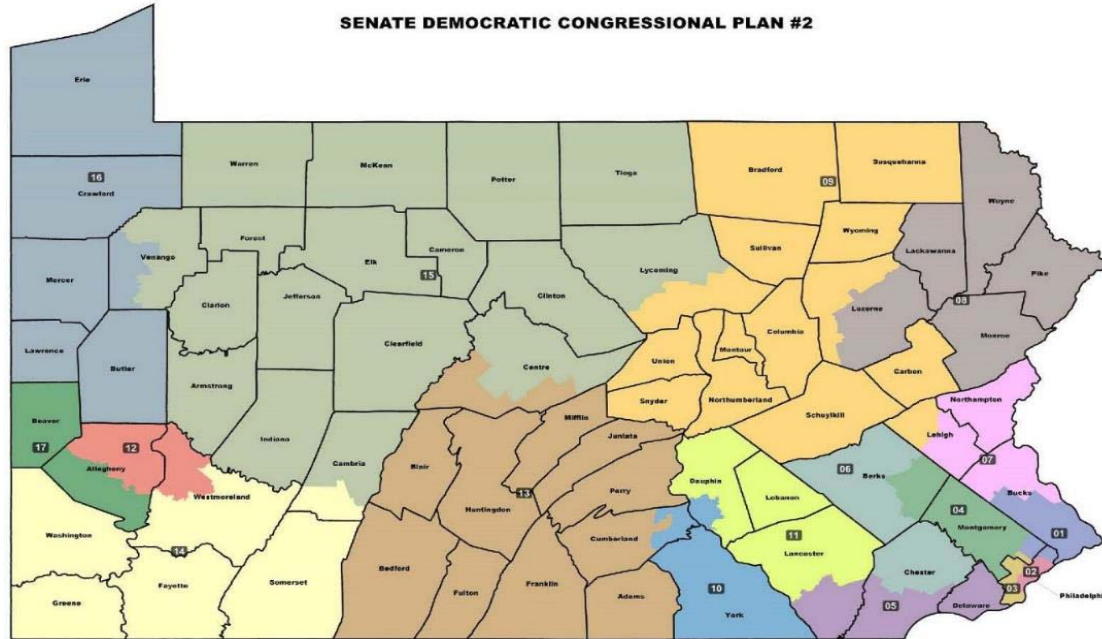


The Governor's Map splits the regions represented by the WLCC and GSVCC into three congressional districts. The western half of Lycoming County, along with all of Tioga County, are grouped with counties to their west extending all the way to Clarion and Armstrong counties into the newly-created 14th District. The northern and eastern

parts of Northumberland County, along with Union and Snyder counties, are grouped with counties to their southwest extending as far as the Maryland border into the newly-created 12th District. All that remains of the communities of interest articulated above is the newly-created 9th District, which includes the eastern half of Lycoming County (to include Williamsport), along with Bradford, Sullivan, Columbia, Montour, and most of Northumberland County.



Map #1 submitted by the Senate Democratic Caucus Intervenor severs Lycoming County, Tioga County, and the tip of Union County from its regional partners in Snyder, Northumberland, Northampton, Montour, and Sullivan counties.



Map #2 submitted by the Senate Democratic Caucus Intervenors is very similar to Map #1, except that it groups part of Lycoming County and all of Union County with its regional partners in Snyder, Northumberland, Northampton, Montour, and Sullivan counties.

The WLCC and GSVCC recognize that the drawing of a new congressional map following the 2020 census is a complicated endeavor, involving numerous factors and all counties across Pennsylvania. The purpose of this brief is not to upset the delicate balance struck by Judge McCullough. Rather, the WLCC and GSVCC seek only to modify her findings to keep communities of interest in their region together.

VI. CONCLUSION

Wherefore, for the reasons set forth herein, the Williamsport/Lycoming Chamber of Commerce and Greater Susquehanna Valley Chamber of Commerce respectfully request that this Court adopt the Special Master's Report, but adopt the formulation of the 7th Congressional District depicted in the Reschenthaler maps.

Respectfully Submitted,

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Date: February 14, 2022

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WORD COUNT CERTIFICATION

I hereby certify that the above principal brief complies with the word count limits of Pa.R.A.P. 531(b)(3). Based on the word count feature of the word processing system used to prepare this brief, this document contains 3,043 words.

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CERTIFICATE OF COMPLIANCE

I certify that this filing complies with the provisions of the *Public Access Policy of the United Judicial System of Pennsylvania: Case Records of the Appellate and Trial Courts* that require filing confidential information and documents differently from non-confidential information and documents.

Respectfully Submitted,

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COMMONWEALTH OF PENNSYLVANIA
HOUSE OF REPRESENTATIVES
STATE GOVERNMENT COMMITTEE

NORTH CENTRAL REGIONAL PUBLIC HEARING
ON CONGRESSIONAL REDISTRICTING

WELLSBORO FIRE ANNEX
EAST AVENUE
WELLSBORO, PENNSYLVANIA

TUESDAY, OCTOBER 12, 2021
4:02 P.M.

BEFORE:

- HONORABLE SETH GROVE, MAJORITY CHAIRMAN
- HONORABLE SCOTT CONKLIN, MINORITY CHAIRMAN
- HONORABLE RUSS DIAMOND (VIRTUAL)
- HONORABLE DAWN KEEFER
- HONORABLE ANDREW LEWIS (VIRTUAL)
- HONORABLE BRETT MILLER (VIRTUAL)
- HONORABLE ERIC NELSON (VIRTUAL)
- HONORABLE CLINT OWLETT
- HONORABLE FRANK RYAN (VIRTUAL)
- HONORABLE PAUL SCHEMEL (VIRTUAL)
- HONORABLE LOUIS SCHMITT (VIRTUAL)
- HONORABLE ISABELLA FITZGERALD (VIRTUAL)
- HONORABLE BENJAMIN SANCHEZ (VIRTUAL)
- HONORABLE JARED SOLOMON (VIRTUAL)

BRENDA J. PARDUN, RPR
REPORTER - NOTARY PUBLIC

Exhibit 1

A2581

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JEFFREY P. REBER VICE-CHAIR UNION COUNTY BOARD OF COMMISSIONERS MIFFLINBURG, PENNSYLVANIA	
ROGER BUNN VICE-CHAIR TIOGA COUNTY BOARD OF COMMISSIONERS WELLSBORO, PENNSYLVANIA	
MALCOLM DERK GREATER SUSQUEHANNA VALLEY CHAMBER OF COMMERCE FREEBURG, PENNSYLVANIA	
JASON FINK WILLIAMSPORT/LYCOMING CHAMBER OF COMMERCE WILLIAMSPORT, PENNSYLVANIA	
MARY ANN HESTON HECTOR TOWNSHIP, PENNSYLVANIA	
JANET GYEKIS WELLSBORO, PENNSYLVANIA	
BRYN HAMMARSTROM, RN MIDDLEBURY CENTER, PENNSYLVANIA	
AMY SHIELDS EXECUTIVE DIRECTOR ALLEGHENY HARDWOOD UTILIZATION GROUP KANE, PENNSYLVANIA	
JAMES VAN BLARCOM SUGAR BRANCH FARMS COLUMBIA CROSS ROADS, PENNSYLVANIA	
ADJOURNMENT	

1 divided amongst multiple districts would
2 create undue burden on our elected officials,
3 create confusion with our electorate, and make
4 clear communication with our state elected
5 officials more difficult. We respectfully
6 request that our congressional boundaries, as
7 currently defined, remain unchanged.

8 Thank you for your time and efforts
9 in this most important issue. Signed by the
10 Tioga County Commissioners.

11 Thank you.

12 MAJORITY CHAIRMAN GROVE: Thank you
13 so much, Commissioner Bunn. Appreciate your
14 willingness to come testify and participate
15 this evening.

16 Before we head to our next testifier,
17 if Representative Eric Nelson wants to chime
18 in and say hi, he's participating virtually.

19 REPRESENTATIVE NELSON: Hello. Thank
20 you, Mr. Chair. Appreciate being a part of
21 the hearing. Hello from Westmoreland County.

22 MAJORITY CHAIRMAN GROVE: Thank you.

23 Next testifier, Malcolm Derk, Greater
24 Susquehanna Valley Chamber of Commerce, from
25 Freeburg, Pennsylvania.

1 Mr. Derk, thank you so much for
2 coming and testifying this evening. And when
3 you're comfortable and ready, and as long as
4 that green light is on, the floor is yours.

5 MR. DERK: Thank you very much.

6 On behalf of the Greater Susquehanna
7 Valley Chamber of Commerce, the greater
8 Susquehanna Valley, please accept our
9 gratitude for the opportunity to share remarks
10 with you today to the State Government
11 Committee.

12 Representative Seth Grove and
13 Representative Scott Conklin, I thank you, as
14 chairs of this committee, for allowing us this
15 opportunity.

16 And Representative Owlett, I
17 appreciate being in Wellsboro, your home
18 district.

19 So, thank you for this opportunity.

20 I hope to share some information that
21 would be helpful to you, as you go about this
22 very important work of congressional
23 redistricting. My name is Malcolm Derk, and I
24 am the chair of the Government Affairs
25 Committee of the Greater Susquehanna Valley

1 Chamber.

2 The testimony I share today is the
3 result of several listening sessions that
4 we've held with our members, and we're a very
5 diverse chamber that has health care,
6 educational members, as well as a variety of
7 wood products industries represented. The
8 views do not necessarily reflect the views of
9 my employer or the leadership of the chamber,
10 but are the general consensus of those
11 listening sessions that we held at the Greater
12 Susquehanna Valley Chamber. We hope that you
13 find these comments to be useful as you move
14 ahead with your important work.

15 I appreciate the momentous task that
16 you now have, as we know that the census has
17 required that Pennsylvania will lose one
18 congressional representative, one seat, and it
19 requires you to look at all of the lines once
20 again, something that I don't envy.

21 As you move forward with this
22 important work, our chamber members really
23 would like you to look at three overarching
24 points: the natural travel patterns of
25 constituents; communities of interest; and

1 recognizable boundaries, specifically
2 boundaries that are familiar to residents and
3 distinguishable by voters.

4 Travel patterns in the region take
5 advantage of highways and road systems that
6 tie our region together, and in our home
7 communities -- Snyder, Union, Northumberland,
8 and Montour counties -- we're blessed with
9 having a robust system of highways and bridges
10 that tie those communities together and create
11 a network that feels very much like a unified
12 community. We live, work, recreate, and
13 engage in commerce based on the ease by which
14 we're able to travel. And along the 11 and 15
15 corridor in Snyder County, a large number of
16 retail establishments, restaurants, lodging
17 options, and grocery stores are located in
18 Shamokin Dam, Selinsgrove, and in Monroe
19 Township, and these amenities draw neighbors
20 from their surrounding counties, and it really
21 covers a large radius of the population.

22 In areas where natural travel
23 patterns are considered by a lack of connected
24 infrastructure, it really makes it difficult
25 for those communities to share common

1 interests. But we are thankful that our
2 chamber region really does have that unified
3 feel because of the reliable transportation
4 infrastructure that has been supported by
5 federal and state governments.

6 More and more, the travel patterns in
7 our region also encompass Lycoming and
8 Columbia County, as the central Susquehanna
9 Valley throughway is under construction and
10 continues to tie us closer to Interstate 80
11 and that important corridor.

12 Our large employers, such as major
13 health systems of Geisinger and UPMC, they
14 provide jobs that pull employees from a
15 multi-county region that includes Lycoming,
16 Columbia, Montour, Union, Snyder, and
17 Northumberland counties. Educational
18 institutions like Bucknell and Susquehanna
19 also require a larger area to recruit capable
20 employees that are educated and skilled
21 workers.

22 The wood products industry also is
23 not alone, and that's in Snyder and Union
24 County. We have a variety of wood products
25 industries, cabinetry makers and others that

1 require a large amount of skilled workforce
2 that pull from a multi-county area.

3 These employees are required to
4 continue to look beyond just one county
5 boundary. So, again, this creates a sense of
6 a unified feel and a community of interest in
7 the broader surrounding area.

8 While not a watershed in the
9 traditional sense, we think of the
10 transportation corridor as creating
11 communities of interest in a similar way that
12 streams, creeks, and rivers create a
13 watershed. So, we call it -- rather than a
14 watershed, we call it a job shed or an
15 employment shed, and it's the catchment basin
16 that our various large employers use to find
17 skilled workers.

18 We ask that the committee consider
19 these flows of people for work and for
20 commerce as you engage and establish new
21 congressional boundaries. I am certain that
22 each of you see similar movements within your
23 community and in the cohesion created by work
24 forces and travel patterns.

25 In our rural region, it's not

1 uncommon for many of our neighbors to commute
2 to other counties, thirty to forty minutes to
3 an hour away, to find meaningful employment
4 that's family-sustaining. Such a commute in
5 an urban area may be traveling just a few
6 miles, but in our rural community, such travel
7 times can get us thirty to fifty miles away
8 from home. And that's another area that I'd
9 like you to consider as you look at this
10 important work.

11 Communities of interest are also
12 created by the ways we collaborate with
13 neighbors, and Jeff Reber, from Union County,
14 mentioned that there are various ways that
15 counties collaborate for services. In Snyder,
16 Union, and Northumberland County, the region
17 established the central Susquehanna 911
18 system. The three-county collaboration shows
19 how small rural counties can work together to
20 improve efficiency, cost, reliability, and
21 improve scale. The 911 system also partners
22 with several other counties in using a shared
23 phone system that includes Lycoming County as
24 well.

25 Union and Snyder County and other --

1 other agencies also collaborate for
2 transportation with Rabbit Transit and
3 community action agencies that are shared
4 across county boundaries. And in our area --
5 the Snyder, Union, Northumberland County
6 region, we often refer to all three counties
7 as the SUN counties because they partner on so
8 many different varieties of social service and
9 government-administered funds.

10 Other social and nonprofit
11 organizations also function in this
12 multi-county way. The Greater Susquehanna
13 Valley United Way, the Red Cross, and the
14 Susquehanna Valley Visitors Bureau also all
15 share this regional approach. Grouping these
16 collaborative communities together in one
17 congressional district makes a lot of sense
18 because they do share this common interest.

19 Communities of interest are also
20 created by media coverage, and I think that's
21 one thing that you can appreciate in your
22 roles. The chamber has several newspapers and
23 other media providers that offer quality
24 coverage and reporting to help inform the
25 citizenry. The Daily Item, for example,

1 covers the counties of Snyder, Union, and
2 Northumberland, and Montour, and 1070 WKOK AM
3 provides coverage of local events and also a
4 talk radio program to help inform people
5 Monday through Friday of local news coverages.

6 The media assets help to inform the
7 public regarding their government decision
8 making. We are also fortunate that these
9 media markets align with the current
10 congressional districts and our chamber
11 region. Helping our members and fellow
12 citizens receive current and transparent
13 information is important to consider in
14 district lines. These media groups create
15 affinity in the region, as we seek to have an
16 informed populace. We should not
17 underestimate the importance of regional media
18 in creating communities of interest. It is
19 important for the public to know what their
20 elected officials are doing and to know how to
21 access government.

22 I would like to dedicate the final
23 portion of my testimony to the importance of
24 maintaining, wherever possible, recognizable
25 municipal boundaries. Keeping an entire

1 county within the same congressional district
2 helps to avoid confusion among voters and
3 provides an ease in recognizing districts.
4 Keeping counties whole should be a goal,
5 wherever possible. But we also realize that
6 there are population shifts that make this
7 difficult in some instances.

8 We humbly request that when that does
9 happen that you do your best to find other
10 recognizable political subdivisions that help
11 to make sure we maintain communities of
12 interest and, for example, if there has to be
13 a split of a county, perhaps there's two
14 school districts in that county, that a whole
15 school district would remain intact.

16 Likewise, if you look at smaller
17 subdivisions such as a borough or a township,
18 we ask that those be kept whole as much as
19 possible.

20 As our members or neighbors ask for
21 how to contact their congressional
22 representatives, it's helpful for entire
23 communities to be kept together to avoid
24 confusion at the ballot box or as people seek
25 constituent services.

1 Please keep municipalities and
2 communities of interest whole as much as
3 possible.

4 Thank you, again, for your time today
5 and for your interest in creating fair
6 districts and for creating this transparent
7 process where the public can engage with you
8 and your colleagues across the state.

9 Thank you again for your time.

10 MAJORITY CHAIRMAN GROVE: Thank you
11 so much.

12 Just to let you know, Rabbit
13 Transit's executive director is my HOA
14 president.

15 MR. DERK: Wonderful. Then you
16 certainly know the work.

17 MAJORITY CHAIRMAN GROVE: Right.
18 Right. That's good stuff. So, thank you so
19 much.

20 MR. DERK: Thank you.

21 MAJORITY CHAIRMAN GROVE: Appreciate
22 your time and your testimony.

23 We do have another member joining us
24 online, Representative Paul Schemel.

25 If you want to hop on, Paul, and say

1 hi, introduce yourself.

2 REPRESENTATIVE SCHEMEL: Hi. Thanks
3 so much. Look forward to the testimony.

4 MAJORITY CHAIRMAN GROVE: Thank you.

5 Next we have Jason Fink,
6 Williamsport/Lycoming Chamber of Commerce,
7 Williamsport, Pennsylvania.

8 Mr. Fink, thank you so much for
9 joining us and taking time out of your
10 schedule to do that. We look forward to your
11 testimony. And when you're comfortable and
12 ready, go ahead and begin.

13 MR. FINK: Sounds good. Thank you.

14 Good afternoon. My name is Jason
15 Fink, and I'm the president and CEO of the
16 Williamsport/Lycoming Chamber of Commerce.

17 Thank you to the House State
18 Government Committee for this opportunity to
19 address the upcoming congressional
20 redistricting here in Pennsylvania. I
21 appreciate the fact that you are doing these
22 across Pennsylvania and giving areas such as
23 ours the opportunity to voice their thoughts
24 on what should be considered for how the new
25 districts will be drawn and accommodating the

1 loss of one of our congressional seats.

2 To begin with my comments, I'd like
3 to give you a baseline of Lycoming County. We
4 have a population of roughly 114,000 people
5 and are one of fourteen MSAs here in the
6 Commonwealth. Most of our population can be
7 found in the greater Williamsport area. The
8 city itself is a population of approximately
9 28,000 people, and the greater Williamsport
10 area is just under 90,000.

11 There are eight public school
12 districts in the county. We have two
13 colleges: Pennsylvania College of Technology,
14 with a student population of 4500, and
15 Lycoming College, with a student population of
16 1500.

17 We have a strong industrial base here
18 in the county. Manufacturing is vibrant and
19 growing, as we see new industries such as
20 Digger Specialities and Chance Aluminum
21 establishing new operations here. We're also
22 seeing growth with existing manufactures, such
23 as West Pharmaceuticals and Shop-Vac
24 Corporation.

25 Additionally, we have a strong

1 presence of industry that conduct federal work
2 with the Department of Defense, including L3
3 Harris, Lycoming Engineers, Spartronics, PMF
4 Industries, and QorTek.

5 The county has major highways running
6 through it, with I-180, US 15, and US 220. It
7 has rail service with mainline service by NS
8 and short-line service with North Shore
9 Railroad. We also have the Williamsport
10 Regional Airport.

11 It should also be noted that we are
12 also home to the US Middle District Courthouse
13 in Williamsport.

14 Given the size of our county, we are
15 first and foremost concerned about ensuring
16 that any redistricting be done which keeps
17 Lycoming County whole. This has been mostly
18 the case when maps have been drawn, however it
19 hasn't always been that way. From 2000 to
20 2010, Lycoming County was split with roughly
21 two-thirds of the county being in the 5th
22 Congressional District and the remaining
23 portion in the 15th Congressional District.

24 Our congressmen during that time were
25 John Peterson and Glenn Thompson. Both were

1 great to work with, however it was difficult
2 at times for us, in trying to work with them
3 on a county-wide -- on county-wide issues
4 given the nature in which we were divided.

5 Having been through something like
6 this in our not-to-distant past, we would
7 strongly encourage those in finalizing the new
8 congressional districts to keep Lycoming
9 County whole.

10 We would next request that, as the
11 maps are drawn, that consideration been given
12 to provide us to be included with neighboring
13 counties, as is currently done. Those
14 counties that I speak of include Clinton,
15 Tioga, Union, Northumberland, Snyder, and
16 Sullivan. There are many items that we work
17 with these counties on, as all but two of
18 these are in the same local development
19 district, SEDA-COG.

20 Specifically to the chamber, we have
21 a number of workforce development
22 opportunities that we work with neighboring
23 counties here in the region. Our commute shed
24 for industries in our counties include all
25 that were mentioned. Area industries also

1 rely upon colleges in the region, including
2 Bucknell, Susquehanna, Lock Haven, and
3 Mansfield. There also is greater involvement
4 with current technical schools, such as SUN
5 vo-tech and Central Mountain.

6 It is understood that there will be
7 changes that need to be made based upon the
8 loss of our congressional seat. This is part
9 of a larger problem that we, as
10 Pennsylvanians, need to look at addressing now
11 so that we don't see this occurrence in 2030,
12 when the next census is complete.

13 For now, though, we ask that Lycoming
14 County be kept whole and that our existing
15 relationships with neighboring counties be
16 maintained as they currently are in developing
17 this new congressional map.

18 Thank you for taking this request in
19 consideration.

20 MAJORITY CHAIRMAN GROVE: Thank you
21 very much for your testimony and your time
22 this evening. Really appreciate it.

23 Next testifier is Mary Anne Heston,
24 Hector Township, Pennsylvania.

25 Mary Anne, come on up. And when you

PENNSYLVANIA; JESSICA MATHIS, IN :
HER OFFICIAL CAPACITY AS DIRECTOR :
FOR THE PENNSYLVANIA BUREAU OF :
ELECTION SERVICES AND NOTARIES, :
:
Respondents :

ORDER

PER CURIAM

AND NOW, this 23rd day of February, 2022, this Court, following full deliberation and consideration, hereby orders as follows:

First, the Pennsylvania primary and general elections for seats in the United States House of Representatives commencing in the year 2022 shall be conducted in accordance with the “Carter Plan” submitted in the record before the Special Master and as described by 2020 Census block equivalency (denominated the “Carter Plan – Block Assignments”) and ESRI shape files (denominated “Carter Plan – Shape Files”) uploaded to this Court’s website at <https://www.pacourts.us/2022-redistricting-opinions>.¹ The Carter Plan, in its constituent parts, is hereby made part of this Order, and is hereby **ADOPTED** as the division of this Commonwealth into seventeen congressional districts, unless and until the same shall be lawfully changed. For reference, images of the Carter Plan, submitted to the Court, are attached at Appendix A, and are available at the above website.

Second, Executive Respondents together with the General Assembly’s Legislative Data Processing Center (LDPC),² shall prepare textual language that describes the Carter Plan and submit the same to the Secretary of the Commonwealth without delay. The Secretary of the Commonwealth shall thereafter file with this Court’s Prothonotary a

¹ As noted, we adopt the “Carter Plan” submitted in the record before the Special Master as opposed to the additional plan submitted by Petitioner Carter in Exhibit A to the brief in support of exceptions to the Special Master’s Report.

² The LDPC was established by the Act of Dec. 10, 1968, P.L. 1158, No. 365, and routinely provides technical services relating to congressional and legislative redistricting.

certification of compliance of the preparation of the textual description of the Carter Plan, along with a copy of the textual description.

Third, Respondent Secretary of the Commonwealth shall, without delay, following the preparation of the textual description of the Carter Plan, publish notice of the Congressional Districts in the Pennsylvania Bulletin.

Fourth, this Court's February 9, 2022 order, that temporarily suspended the General Primary Election calendar, is **VACATED**. To provide for an orderly election process, the schedule for the primary election to be held May 17, 2022, for the election of Representatives to the United States Congress and statewide elections is **MODIFIED** only in the following respects:

First day to circulate and file nomination petitions	February 25, 2022
Last day to circulate and file nomination petitions	March 15, 2022
First day to circulate and file nomination papers	March 16, 2022
Deadline to file objections to nomination petitions	March 22, 2022
Last day that may be fixed by the Commonwealth Court for hearing on objections that have been filed to nomination petitions	March 25, 2022
Last day for the Commonwealth Court to render decisions in cases involving objections to nomination petitions	March 29, 2022
Last day for the County Boards of Elections to send remote military-overseas absentee ballots. See 25 Pa.C.S. §3508; 52 U.S.C. §20302(a)(8)(A)	April 2, 2022

In all other respects, the dates under the 2022 General Election Primary calendar for Congressional and statewide offices are not modified by this Order. Along these lines, it is **NOTED** that, with respect to Congressional and statewide offices, the appeal period set forth in Rule of Appellate Procedure 903(c)(1)(ii) (relating to appeals arising under the Election Code) remains in effect. This schedule shall be implemented by the Secretary of the Commonwealth and all election officers within the Commonwealth in accordance

with this Court's Order. By separate Order, this Court has temporarily suspended the General Primary Election calendar relative to seats in the Pennsylvania General Assembly. See *In re Petitions for Review Challenging the Final 2021 Legislative Reapportionment Plan*, 569 Judicial Administration docket (order dated February 23, 2022).

Fifth, should there be any congressional vacancies existing now or occurring after the entry of this Order, but prior to the commencement of the terms of the members to be elected in the General Election of 2022, the districts prescribed in the Remedial Plan adopted by this Court by Order dated February 19, 2018, shall control.

Sixth, the Secretary of the Commonwealth is directed to notify this Court by 4:00 p.m. on February 25, 2022, should it foresee any technical issues concerning the implementation of the Carter Plan.

So Ordered.

Jurisdiction retained.

Opinions to follow.

Justices Todd, Mundy, and Brobson dissent as to the selection of the Carter Plan as the congressional redistricting plan.

PENNSYLVANIA; JESSICA MATHIS, IN :
HER OFFICIAL CAPACITY AS DIRECTOR :
FOR THE PENNSYLVANIA BUREAU OF :
ELECTION SERVICES AND NOTARIES, :
:
Respondents :

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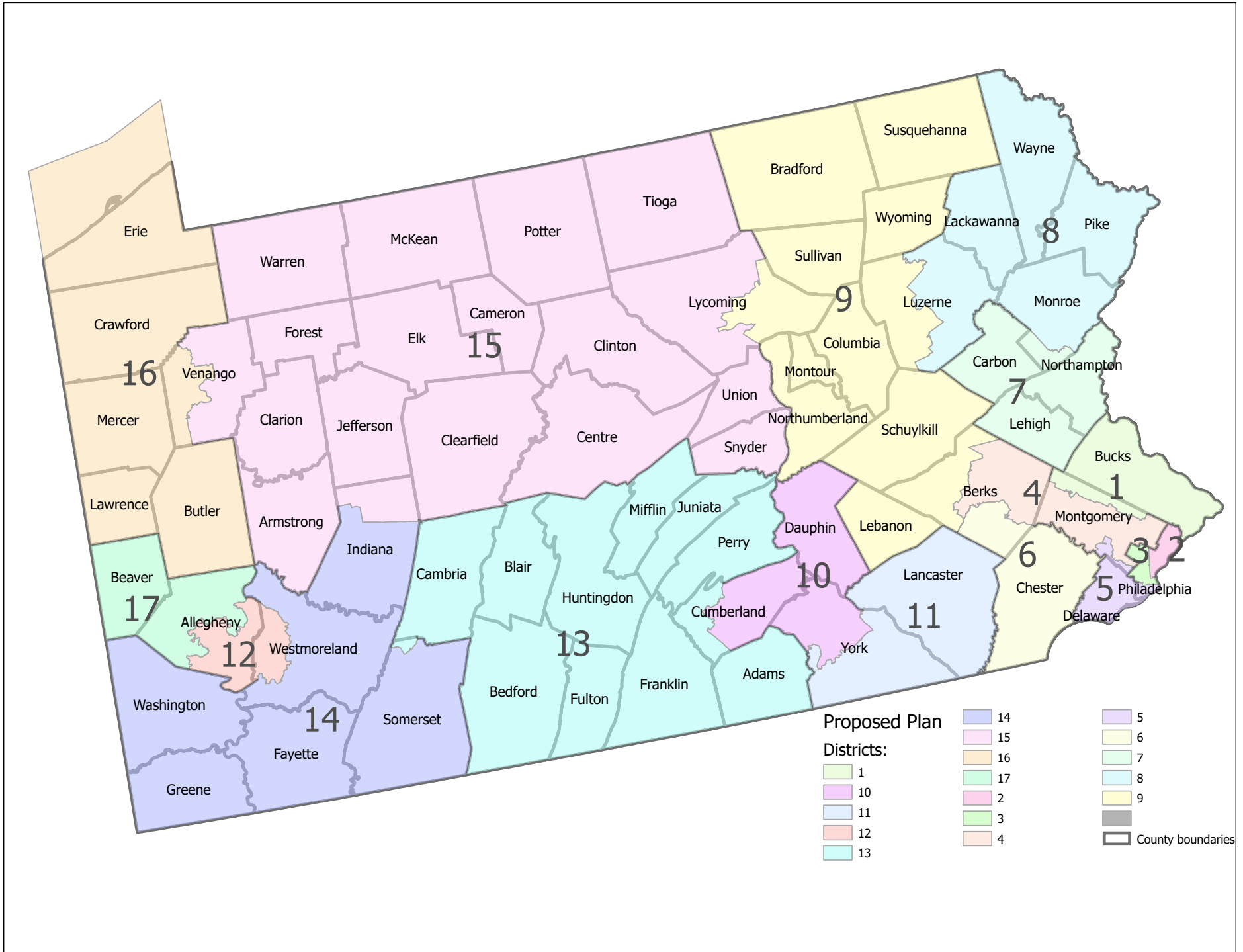
Jurisdiction retained.

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Judgment Entered 02/23/2022


DEPUTY PROTHONOTARY



[J-20-2022]
IN THE SUPREME COURT OF PENNSYLVANIA
MIDDLE DISTRICT

BAER, C.J., TODD, DONOHUE, DOUGHERTY, WECHT, MUNDY, BROBSON, JJ.

CAROL ANN CARTER, MONICA : No. 7 MM 2022
PARRILLA, REBECCA POYOUROW, :
WILLIAM TUNG, ROSEANNE MILAZZO, :
BURT SIEGEL, SUSAN CASSANELLI, LEE : ARGUED: February 18, 2022
CASSANELLI, LYNN WACHMAN, :
MICHAEL GUTTMAN, MAYA FONKEU, :
BRADY HILL, MARY ELLEN BALCHUNIS, :
TOM DEWALL, STEPHANIE MCNULTY :
AND JANET TEMIN, :

Petitioners

v.

LEIGH M. CHAPMAN, IN HER OFFICIAL :
CAPACITY AS THE ACTING SECRETARY :
OF THE COMMONWEALTH OF :
PENNSYLVANIA; JESSICA MATHIS, IN :
HER OFFICIAL CAPACITY AS DIRECTOR :
FOR THE PENNSYLVANIA BUREAU OF :
ELECTION SERVICES AND NOTARIES, :

Respondents

----- :
PHILIP T. GRESSMAN; RON Y. DONAGI; :
KRISTOPHER R. TAPP; PAMELA GORKIN; :
DAVID P. MARSH; JAMES L. :
ROSENBERGER; AMY MYERS; EUGENE :
BOMAN; GARY GORDON; LIZ MCMAHON; :
TIMOTHY G. FEEMAN; AND GARTH :
ISAAK, :

Petitioners

v.

Commonwealth Court judge as master to conduct hearings, make findings of fact, and render conclusions of law before the Court decided on an appropriate redistricting plan. *Mellow*, 607 A.2d at 206. The same procedure was adhered to in this case.

Our Special Master expended tremendous effort by expeditiously conducting hearings, making extensive findings of fact, providing a comprehensive report to this Court analyzing the merits of the various congressional redistricting plans submitted before it, and ultimately recommending the adoption of the plan created by the Pennsylvania Legislature in House Bill 2146 (“H.B. 2146”), which Governor Tom Wolf vetoed on January 26, 2022. We acknowledge and thank her for her effort.

After deliberating and affording due consideration to our Special Master’s findings and recommendation and reviewing *de novo* the relative merit of the submitted congressional plans, the Court respectfully declined to adopt the Special Master’s analysis and ultimate plan selection. Rather, on February 23, 2022, we entered a *per curiam* order, directing that the Pennsylvania primary and general elections for seats in the United States House of Representatives commencing in 2022 shall be conducted in accordance with the plan submitted to the Special Master by the Carter Petitioners, who we name herein below (“Carter Plan”).¹ Our order indicated that an opinion would follow, and this opinion is filed in accordance therewith.

In full cognizance that the redistricting of congressional districts falls squarely within the purview of the General Assembly, U.S. CONST., art. I, § 4, cl. 1, we have fulfilled our obligation to select a redistricting plan only because the Legislature was unable to do so.² In making our selection, we were guided by our decision in *LWV II*, where we applied

¹ Justices Todd, Mundy, and Brobson dissented as to the selection of the Carter Plan as the congressional redistricting plan.

² The Elections Clause of the United States Constitution provides that the “Times, Places and Manner of holding Elections for Senators and Representatives, shall be prescribed

the traditional core districting criteria requiring that congressional districts be compact, contiguous, as nearly equal in population as practicable, and which minimize divisions of political subdivisions, while taking into consideration the subordinate historical considerations, such as communities of interests, the preservation of prior district lines, and the protection of incumbents. *LWV II*, 178 A.3d at 816-17. Finally, we have ensured that the congressional districting plan that we adopted does not violate Pennsylvania's Free and Equal Elections Clause by "dilut[ing] the potency of an individual's ability to select the congressional representative of his or her choice," *id.* at 816, and complies with the Voting Rights Act, 52 U.S.C. § 10301.³

This Court acknowledges that there is no perfect redistricting plan. Each map involves trade-offs between the requisite traditional core redistricting criteria, as well as the subordinate historical redistricting considerations. The task of balancing these criteria and considerations is better suited to the Commonwealth's political branches, rather than the judiciary. Nevertheless, given our unwelcomed circumstance, we have endeavored to adopt a plan that, as phrased in *League of Women Voters of Pennsylvania v. Commonwealth*, 181 A.3d 1083, 1087 (Pa. 2018) ("*LWV III*"), is "superior or comparable" to all of the plans submitted on the designated criteria.

As evidenced by the views expressed by our esteemed colleagues and the Special Master, reasonable minds can disagree in good faith as to which submitted plan best

in each State by the Legislature thereof; but the Congress may at any time by Law make or alter such Regulations, except as to the Places of chusing Senators." U.S. CONST., art. I, § 4, cl. 1. Congress passed 2 U.S.C. § 2a, pursuant to the Elections Clause, which provides that, following the decennial census and reapportionment, the Clerk of the House of Representatives shall "send to the executive of each State a certificate of the number of Representatives to which such State is entitled" and the state shall be redistricted "in the manner provided by the law thereof."

³ The Free and Equal Elections Clause provides that "Elections shall be free and equal; and no power, civil or military, shall at any time interfere to prevent the free exercise of the right of suffrage." PA. CONST. art. I, § 5.

balances the requisite criteria and considerations. Nevertheless, for the reasons set forth below, we adopt the plan submitted to the Special Master by the Carter Petitioners as the 2022 Congressional Redistricting Plan.

II. Procedural History

This matter commenced on December 17, 2021, when two separate petitions for review were filed in the Commonwealth Court’s original jurisdiction. At Commonwealth Court docket number 464 M.D. 2021, Carol Ann Carter *et al.* (collectively referred to as “Carter Petitioners”) presented a petition for review.⁴ The Carter Petitioners identified themselves as citizens of the United States who are registered to vote in Pennsylvania. They named as respondents to their petition Veronica Degraffenreid, in her capacity as then-Acting Secretary of the Commonwealth of Pennsylvania,⁵ and Jessica Mathis, in her capacity as Director for the Pennsylvania Bureau of Election Services and Notaries (collectively referred to as “Respondents”). At Commonwealth Court docket number 465 M.D. 2021, Philip T. Gressman, *et al.* (collectively referred to as “Gressman Petitioners”) filed a petition for review.^{6 7} The Gressman Petitioners identified themselves as United States citizens who are registered to vote in Pennsylvania. They further described themselves as “leading professors of mathematics and science[.]” Gressman Petitioners’

⁴ Additional Carter Petitioners included: Monica Parrilla, Rebecca Poyourow, William Tung, Roseanne Milazzo, Burt Siegel, Susan Cassanelli, Lee Cassanelli, Lynn Wachman, Michael Guttman, Maya Fonkeu, Brady Hill, Mary Ellen Balchunis, Tom DeWall, Stephanie McNulty, and Janet Temin.

⁵ Leigh Chapman later became the Acting Secretary of the Commonwealth of Pennsylvania and was substituted for Acting Secretary Degraffenreid.

⁶ Additional Gressman Petitioners were Ron Y. Donagi, Kristopher R. Tapp, Pamela Gorkin, David P. Marsh, James L. Rosenberger, Amy Myers, Eugene Boman, Gary Gordon, Liz McMahon, Timothy G. Feeman, and Garth Isaak.

⁷ We will refer to the Carter Petitioners and the Gressman Petitioners collectively as “Petitioners.”

Petition for Review, 12/17/2021, at ¶10. The Gressman Petitioners also designated Respondents as the opposing parties.

The petitions for review were substantially similar in their alleged facts, claims presented, and relief requested. Factually, Petitioners asserted that this Court in *LWV III*, utilized data from the 2010 Census when we adopted the 2018 congressional district plan (“2018 Plan”), which appropriately divided the Commonwealth into eighteen districts. Petitioners, however, explained that the 2020 Census reflected a population shift that resulted in the Commonwealth losing one of its congressional districts, rendering the 2018 Plan unconstitutionally malapportioned.

Stated broadly, Petitioners claimed that the 2018 Plan violated their state and federal rights to cast undiluted votes. In terms of relief, Petitioners asked the Commonwealth Court to: (1) deem the 2018 Plan unconstitutional; (2) enjoin Respondents and related parties from implementing, enforcing, or giving effect to that plan; and (3) adopt a constitutionally acceptable congressional district plan in time for the impending 2022 election cycle.

On December 20, 2021, the Commonwealth Court consolidated the petitions for review and, in a separate order, established a process, in compliance with this Court’s prior decision in *Mellow, supra*, by, *inter alia*, setting deadlines for: (1) the filing of applications to intervene; (2) submitting proposed seventeen-district congressional reapportionment plans consistent with constitutional principles and the 2020 Census; and (3) conducting hearings in the event that the court would be required to choose a new map due to political gridlock.

The following day, December 21, 2021, Petitioners filed in this Court Applications for Extraordinary Relief. In those applications, Petitioners asked this Court, *inter alia*, to exercise its extraordinary jurisdiction pursuant to 42 Pa.C.S. § 726 and Pa.R.A.P. 3309

to address expeditiously the merits of the claims that they presented in their petitions for review.⁸ This Court eventually denied those applications without prejudice to reapply for similar relief, as future developments might dictate.

While these applications were pending in this Court, the Commonwealth Court held a hearing on the ten applications to intervene that had been filed in that court. By order dated January 14, 2022, the court set new deadlines regarding the judicial process that would address the petitions for review, and it granted intervenor status to the following applicants: (1) the Speaker and Majority Leader of the Pennsylvania House of Representatives; (2) the President Pro Tempore and Majority Leader of the Pennsylvania Senate; (3) Pennsylvania State Senators Maria Collett, Katie J. Muth, Sharif Street, and Anthony H. Williams; (4) Tom Wolf, Governor of the Commonwealth of Pennsylvania; (5) Senator Jay Costa and members of the Democratic Caucus of the Senate of Pennsylvania; (6) Representative Joanna E. McClinton, Leader of the Democratic Caucus of the Pennsylvania House of Representatives; and (7) Congressman Guy Reschenthaler, Swatara Township Commissioner Jeffrey Varner, Tom Marino, Ryan Costello, and Bud Shuster.

The Commonwealth Court directed that these intervenors would participate in the litigation as parties. The court directed all parties to submit at least one but no more than

⁸ Section 726 of the Pennsylvania Judicial Code provides as follows:

Notwithstanding any other provision of law, the Supreme Court may, on its own motion or upon petition of any party, in any matter pending before any court or magisterial district judge of this Commonwealth involving an issue of immediate public importance, assume plenary jurisdiction of such matter at any stage thereof and enter a final order or otherwise cause right and justice to be done.

42 Pa.C.S. § 726. Pennsylvania Rule of Appellate Procedure 3309 explains the process for applying for relief under 42 Pa.C.S. § 726.

two proposed congressional redistricting plans, along with a supporting brief and/or an expert report by January 24, 2022. The court also required each party to file a responsive brief and/or expert report by January 26, 2022. In addition, the court directed these parties to submit a joint stipulation of facts, and the court set January 27th and 28th of 2022 as the dates of the evidentiary hearings on this matter. Concerning those hearings, the court explained that each of the parties would be permitted to present one witness and to cross-examine the other parties' witnesses.

In the same order, the Commonwealth Court granted *amicus* status to the following applicants: (1) Voters of the Commonwealth of Pennsylvania; (2) Citizen-Voters; (3) Draw the Lines-PA; and (4) Khalif Ali *et al.* The court limited the *amicus* participants' litigation contribution to the submission of one proposed congressional redistricting plan and a supporting brief and/or expert report.

Subsequently, the parties and *amici* submitted congressional redistricting maps, expert reports, and briefs in support thereof. The Commonwealth Court held hearings on January 27th and 28th of 2022, at which numerous experts testified.

On January 29, 2022, the Carter Petitioners filed in this Court another Application for Extraordinary Relief, requesting that this Court immediately assume jurisdiction over the redistricting litigation. By order dated February 2, 2022, this Court granted the Carter Petitioners' Application for Extraordinary Relief, obtaining original jurisdiction over the matter.

In conformance with this Court's decision in *Mellow, supra*, we: (1) designated as a Special Master the Honorable Patricia A. McCullough, the Commonwealth Court judge who was presiding over the matter when we assumed plenary jurisdiction; (2) explained that the proceedings that already had occurred in the Commonwealth Court shall be considered part of the Special Master's record; (3) directed the Special Master to file in

this Court on or before February 7, 2022, a report containing proposed findings of fact and conclusions of law supporting her recommendation of a redistricting plan; and (4) set a schedule for the parties and *amicus* participants to file exceptions and briefs in this Court.

On February 7, 2022, the Special Master submitted her comprehensive report. While we do not provide a detailed summary of that report, we highlight that the report deemed the 2018 Plan constitutionally deficient because, *inter alia*, it created boundaries for eighteen congressional seats based upon the 2010 Census but the 2020 Census resulted in Pennsylvania being limited to seventeen congressional seats. The report further observed that the General Assembly and Governor were unable to agree upon a congressional redistricting plan to replace the 2018 Plan, thus, thrusting upon the Pennsylvania judiciary the task of selecting such a plan.

The Special Master ultimately received thirteen congressional redistricting plans to study. Although the Special Master used several metrics to choose the most desirable plan, she eliminated multiple plans from consideration due to the following alleged shortcomings: (1) the splitting of the City of Pittsburgh into separate districts; (2) the yielding of a partisan advantage contrary to Pennsylvania's political geography; and (3) the failure to achieve a maximum population deviation of one person.

Regarding the remaining plans, the Special Master ultimately chose H.B. 2146 to replace the 2018 Plan. As will be discussed in more detail *infra*, the Special Master appears to have given H.B. 2146 preferential treatment because "it is the General Assembly's prerogative, rather its constitutional mandate, to redraw the state's congressional districts under Article I, section 4 of the United States Constitution and its related provisions in the Pennsylvania Constitution and state statutes." Report at 208, ¶62; *id.* at 214, ¶94 ("The Court believes that, in the context of this case, where it must

recommend one map of many, as a matter of necessity, the interests of the Commonwealth as a sovereign state and political entity in its own right, would best be served by factoring in and considering that H.B. 2146 is functionally tantamount to the voice and will of the People[.]”).

While the Special Master provided her recommendation of a congressional district plan, we are mindful that this Court obtained original jurisdiction over this litigation when we granted the Carter Petitioners’ Application for Extraordinary Relief; accordingly, our scope of review of the matter is *de novo*. *LWV II*, 178 A.3d at 801 n.62. While Judge McCullough’s findings of fact are not binding on this Court, they are afforded due consideration, as she presided over the evidentiary hearing. *Id.*

In accordance with this Court’s order of February 2, 2022, the following parties and *amicus* participants have filed exceptions in this Court: (1) Carter Petitioners; (2) Gressman Petitioners; (3) Respondents; (4) Congressman Guy Reschenthaler, Swatara Township Commissioner Jeffrey Varner, Tom Marino, Ryan Costello, and Bud Shuster; (5) Senator Jay Costa and members of the Democratic Caucus of the Senate of Pennsylvania; (6) Tom Wolf, Governor of the Commonwealth of Pennsylvania; (7) Representative Joanna E. McClinton, Leader of the Democratic Caucus of the Pennsylvania House of Representatives; (8) Khalif Ali *et al.*; (9) Citizen-Voters; and (10) Draw the Lines-PA.

In relevant part, the exceptions challenge the way that the Special Master eliminated plans and the criteria that she utilized in choosing H.B. 2146. For example, several of the parties and *amici* are of the view that it was error for the Special Master to reject plans because they split the City of Pittsburgh, attempted to accomplish partisan fairness, or failed to achieve a maximum population deviation of one person. Some also

insist, *inter alia*, that the Special Master erroneously favored H.B. 2146 simply because it was produced by the Legislature.

The following parties have filed briefs in support of the Special Master's Report: (1) Voters of the Commonwealth of Pennsylvania;⁹ (2) the Speaker and Majority Leader of the Pennsylvania House of Representatives; and (3) the President Pro Tempore and Majority Leader of the Pennsylvania Senate. Lastly, the following parties filed *amicus* briefs in the Court: (1) Philadelphia County Board of Elections; (2) Washington County Public Officials; (3) Concerned Citizens for Democracy; and (4) Williamsport/Lycoming Chamber of Commerce and Greater Susquehanna Valley Chamber of Commerce.

On February 18, 2022, this Court heard argument on the parties' exceptions to the Special Master's Report. We would like to extend our gratitude to the parties and their counsel who participated in that hearing. Their submissions and advocacy have greatly aided this Court in completing the task of selecting an appropriate redistricting plan.

III. Case Law

In *Mellow, supra*, we explained that Pennsylvania lost two congressional districts following the 1990 census, and the General Assembly failed to enact a timely remedial reapportionment plan. State senators subsequently filed an action in the Commonwealth Court seeking: (1) a declaration that the existing congressional apportionment law was unconstitutional; (2) an injunction to enjoin the implementation of the congressional election until a valid plan could be adopted; and (3) the adoption of a valid plan in the event the Legislature was unable to do so. *Mellow*, 607 A.2d at 205. Upon the senators' request, this Court assumed plenary jurisdiction over the matter and designated a Commonwealth Court judge as special master to conduct hearings, to make findings of fact, and to render conclusions of law. *Id.* at 206.

⁹ The Voters of the Commonwealth of Pennsylvania additionally advocated in favor of the map they submitted.

In *Mellow*, this Court adopted the master’s factual findings, as well as his recommended decision regarding the selection of one of the six congressional redistricting plans submitted. *Id.* Initially, the Court examined the master’s reasons for recommending the plan, *i.e.*, the plan had a low maximum population deviation, contained minimal splits of municipalities, achieved an enlarged number of congressional districts with a majority African American population, and came closest to implementing factors relating to communities of interest. *Id.* at 206. The Court proceeded to resolve numerous exceptions to the master’s report filed by the parties, ultimately concluding that the master’s conclusions of law were sound. Notably, the Court then addressed what it termed as “Additional Criteria,” which included an examination of the political fairness of the plan, finding that the plan “results in a politically fair balance in the Pennsylvania delegation between Democrats and Republicans,” considering that it divided the two-seat congressional loss equally between both parties. *Id.* at 210.

Following *Mellow*, which was decided in 1992, this Court, once again, was faced with having to adopt a congressional redistricting map under the circumstances presented in our seminal 2018 decision in *LWV II*. Unlike the instant case, where the General Assembly and the Governor failed to enact a redistricting map after a change in Pennsylvania’s population resulted in the loss of a congressional district, voters in *LWV II* commenced an action in the Commonwealth Court challenging an existing congressional redistricting plan enacted in 2011 (“2011 Plan”). The petitioners alleged, *inter alia*, that the 2011 Plan violated the Free and Equal Elections Clause of Article I, Section 5 of the Pennsylvania Constitution by intentionally discriminating against the petitioners and other Democratic voters by using redistricting to maximize Republican congressional seats and entrench Republican power. *LWV II*, 178 A.3d at 766. They contended that the 2011 Plan had the actual discriminatory effect of disadvantaging Democratic voters and

burdening severely their representational rights. Petitioners thereafter filed an application for extraordinary relief in this Court.

We granted the application, assumed plenary jurisdiction, and remanded the matter to the Commonwealth Court for the creation of an evidentiary record. Upon review of the findings of fact and conclusions of law submitted by then-Judge, now-Justice, Brobson, this Court, on January 22, 2018, entered a *per curiam* order: (1) declaring that the 2011 Plan clearly, plainly, and palpably violated the Pennsylvania Constitution; (2) striking the 2011 Plan as unconstitutional; and (3) enjoining its use at the May 2018 primary election. *League of Women Voters of Pennsylvania*, 175 A.3d 282, 289 (Pa. 2018) (“*LWV I*”). Our *per curiam* order further afforded the General Assembly the opportunity to submit a congressional districting plan that comported with our state charter, if approved by the Governor. Absent such submission, the Court declared that it would proceed expeditiously to adopt a plan based on the evidentiary record developed in the Commonwealth Court.¹⁰ *Id.* at 290. No such plan was ever adopted by the Legislature.

In our subsequent opinion in support of our *per curiam* order, the Court explained that the “Free and Equal Elections Clause was specifically intended to equalize the power of voters in our Commonwealth’s election process, and it explicitly confers this guarantee[.]” *LWV II*, 178 A.3d at 812. In determining how to assess a claim alleging congressional vote dilution under the Free and Equal Elections Clause of the state charter, the Court turned to the neutral criteria that traditionally governed the formation of the Commonwealth’s state legislative districts, as set forth in Article 2, Section 16 of the Pennsylvania Constitution. *Id.* at 815-16. These criteria require an examination of whether the congressional districts created under the redistricting plan: (1) are composed

¹⁰ This author filed a concurring and dissenting statement, and then-Chief Justice Saylor and Justice Mundy filed dissenting statements.

of compact territory; (2) are comprised of contiguous territory; (3) are as nearly equal in population as practicable; and (4) do not divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population (collectively, “traditional core criteria”). *Id.* at 816-17. We explained that these criteria emphasize greatly the creation of representational districts that “maintain the geographical and social cohesion of the communities in which people live and conduct the majority of their day-to-day affairs,” and “accord equal weight to the votes of residents in each of the various districts.” *Id.* at 814.

Finding these traditional core criteria to be “deeply rooted in the organic law of our Commonwealth,” and the “foundational requirements which state legislative districts must meet under the Pennsylvania Constitution,” the Court adopted them as a measure to assess whether a congressional districting plan dilutes the potency of a voter’s ability to select his or her preferred congressional representative in violation of the Free and Equal Elections Clause. *Id.* at 816. We explained that these traditional core criteria provide a “floor” of protection against the dilution of one’s vote and that the subordination of these criteria to extraneous considerations, such as partisan gerrymandering, is unconstitutional. *Id.* at 817. Additionally, we observed that congressional districting maps must also comply with federal law, specifically, the Voting Rights Act, 52 U.S.C. § 10301. *Id.* at 817 n.72.

The Court in *LWV II* further recognized additional factors that have historically played a role in the creation of legislative districts, such as “the preservation of prior district lines, the protection of incumbents, and the maintenance of the political balance which existed after the prior reapportionment.” *Id.* at 817. Additionally recognized as a subordinate historical factor was the preservation of communities of interest because “[w]hen an individual is grouped with other members of his or her community in a

congressional district for purposes of voting, the commonality of the interests shared with the other voters in the community increases the ability of the individual to elect a congressional representative for the district who reflects his or her personal preferences.” *Id.* at 816.

We clarified that these historical factors are wholly subordinate to the traditional core criteria requiring compact and contiguous districts, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts. *Id.* at 817. We will refer to these factors as “subordinate historical considerations.”

Relevant here, we recognized that “there exists the possibility that advances in map drawing technology and analytical software can potentially allow mapmakers, in the future, to engineer congressional districting maps, which, although minimally comporting with these [traditional core] criteria, nevertheless operate to unfairly dilute the power of a particular group’s votes for a congressional representative.” *Id.* (referencing trial testimony discussing the concept of an efficiency gap metric used to determine partisan fairness based upon the number of “wasted” votes for the minority political party under a particular redistricting plan). Because this Court was resolving *LWV II* based exclusively on the degree to which the traditional core criteria were subordinated to pursue partisan advantage, we did not discuss a means by which to differentiate among myriad redistricting plans that, on their face, satisfy the traditional core criteria. *Id.*

Applying this jurisprudence to the 2011 Plan, the Court in *LWV II* concluded that it clearly violated the traditional core criteria, thereby depriving the petitioners of their state constitutional right to free and equal elections. *Id.* at 818. The Court found that the 2011 Plan revealed “tortuously drawn districts that cause plainly unnecessary political-subdivision splits,” and “oddly shaped, sprawling districts which wander seemingly

arbitrarily across Pennsylvania, leaving 28 counties, 68 political subdivisions, and numerous wards, divided among as many as five congressional districts, in their wakes.” *Id.* at 819. We emphasized that the congressional districts “often rend municipalities from their surrounding metropolitan areas and quizzically divide small municipalities which could easily be incorporated into single districts without detriment to the traditional redistricting criteria.” *Id.* Accordingly, we concluded that the 2011 Plan did not comply with traditional core redistricting criteria and, thus, violated the Free and Equal Elections Clause. *Id.* at 820.

As to the appropriate remedy in *LWV II*, the Court acknowledged that while the primary responsibility for apportioning congressional districts rests with the General Assembly, it becomes the judiciary’s task to determine the appropriate redistricting plan when the Legislature is unable or chooses not to act. *Id.* at 821-22. Accordingly, based upon both state and federal case law, we found sufficient authority for this Court to formulate a valid redistricting plan.¹¹ *Id.* at 824.

The Court thereafter prepared a constitutionally sound plan, *i.e.*, the 2018 Plan, which was implemented for the May 2018 primary election. *LWV III, supra*. The 2018 Plan was based upon the record developed in the Commonwealth Court and relied significantly upon the submissions provided by the parties, intervenors, and *amici*. *LWV III*, 181 A.3d at 1087. In *LWV III*, this Court found that the 2018 Plan satisfied the traditional core criteria as it split only 13 counties, four of which are split into three districts and nine of which are split into two districts. *Id.* The Court opined that the 2018 Plan was “superior or comparable” to all plans submitted in compactness, by whichever calculation methodology was employed. *Id.* Finally, the Court observed that the 2018 Plan achieves the constitutional guarantee of one person, one vote. *Id.*

¹¹ This author filed a concurring and dissenting opinion, and then-Chief Justice Saylor and Justice Mundy filed dissenting opinions.

IV. Special Master Recommendation and Exceptions to Special Master's Report

Based upon the processes and guidelines set forth in *Mellow* and the *LWV* decisions, we turn to our review of the Special Master's Report and recommendation and the numerous exceptions and responses filed by the parties and *amici*. For the reasons set forth below, we respectfully declined to adopt the Special Master's recommendation to select H.B. 2146. Below, we focus upon the following three aspects of the Special Master's analysis: (1) the Special Master's conclusion that certain plans improperly yielded a partisan advantage to the Democratic Party contrary to Pennsylvania's political geography; (2) the Special Master's finding that certain plans failed to achieve a maximum population deviation of one person; and (3) the Special Master's preferential treatment of H.B. 2146. As discussed below, we respectfully disagree with the reasons provided for narrowing the plans on these bases. Thus, the exceptions filed by the parties and *amici* to the Special Master's Report are sustained in part, consistent with the following analysis.

1. Partisan Advantage

Several of the exceptions challenge the Special Master's discrediting of six of the thirteen maps for "yield[ing] a partisan advantage to the Democratic Party" based upon either their mean-median scores or their efficiency gap scores, which, as discussed *infra*, are generally accepted metrics for evaluating the partisan fairness of a redistricting plan.¹² Report at 197, ¶ 41-42. The Report viewed this asserted partisan advantage as contrary to the "natural and undisputed Republican tilt" in the Commonwealth resulting from the clustering of Democratic voters in the urban areas. *Id.* at ¶ 40 The Special Master deemed the drawing of district lines to negate this tilt to be "a subspecies of unfair

¹² Specifically, the Report gave "less weight" to the Gressman Plan, the House Democratic Caucus, the Carter Plan, the Governor's Plan, the Senate Democratic Caucus 2 Plan, the House Democratic Caucus Plan, and the Draw the Lines Plan because these plans provide a "partisan advantage to the Democratic Party." Report at 197, ¶ 41-42.

gerrymandering.” *Id.* She explained, “[A]ny map that prioritizes proportional election outcomes, for example, by negating the natural geographic disadvantage, to achieve proportionality at the expense of traditional redistricting criteria, violates” the Free and Equal Elections Clause. *Id.* at 198, 44. Nevertheless, while discounting these six maps due to the absence of a sufficient “Republican tilt,” the Special Master credited H.B. 2146 for the same attribute, observing that the Republican majority in the General Assembly “developed and proposed a plan, H.B. 2146, that favors Democrats, which ultimately underscores the partisan fairness of the plan.” Report at 211, ¶ 79; 216. ¶ 97.

Respectfully, we reject this contradictory logic, which uses partisan advantage to discredit some but not all plans. Moreover, the record does not support the conclusion that all of the enumerated maps in fact “prioritized proportional election outcomes” at the expense of the traditional core criteria, given the various maps’ exceptional performances on these criteria. Instead, it appears that the mapmakers were cognizant of this Court’s expressed concern that maps could be engineered in the future to meet the requisite traditional core criteria while operating to dilute votes. *LWV II*, 178 A.3d at 817. Indeed, we conclude that consideration of partisan fairness, when selecting a plan among several that meet the traditional core criteria, is necessary to ensure that a congressional plan is reflective of and responsive to the partisan preferences of the Commonwealth’s voters. Thus, for purposes of our review, we return these six plans to the same status as the other submitted plans.¹³

2. Population Deviation

The Special Master further discounted the two plans that failed to reach a maximum population deviation of one person, despite finding that all the proposed plans

¹³ We additionally credit Dr. Jonathan Rodden’s observation that “it is not the case that the human geography in Pennsylvania somehow requires that we draw unfair districts.” Transcript of Jan. 27, 2022 (“Tr.”) at 192-93.

satisfied the constitutional requirement that congressional districts be created “as nearly equal in population as practicable.”¹⁴ Report, at 138, CL 1; see PA. CONST. art. II, § 16; U.S. CONST. art. I, § 2. In other words, while the districts in most of the plans deviated by only one person, the two discounted plans deviated from the ideal district population of 764,865 by plus one person or minus one person.¹⁵

While we acknowledge that the Special Master is justified in flagging these plans due to their slightly greater population deviation, we respectfully disagree that a population deviation of an additional person serves as an indelible mark against these plans. Rather, under the relevant case law discussed *infra*, a failure to achieve the lowest population deviation requires further investigation into the justification for the population deviation. See *Karcher v. Daggett*, 462 U.S. 725, 740 (1983). The Special Master, however, did not engage in any such analysis. Accordingly, we conclude that it was improper to discredit these two plans without considering the reasons for the minor population deviation. Indeed, as set forth in detail *infra*, we ultimately conclude that the Carter Petitioners sufficiently justified the deviation present in their plan of plus or minus one person.

3. Preferential Treatment of H.B. 2146

After rejecting the majority of the plans based, *inter alia*, upon their alleged “Democratic partisan advantage” or the two-person population deviation, the Special Master was left with four plans to consider, Voters of the Commonwealth of Pennsylvania, Reschenthaler 1, Reschenthaler 2, and H.B. 2146. According to the Special Master, Republican Legislative Intervenors requested that some degree of deference be given to

¹⁴ The two plans discounted under this rationale were the Carter Plan and the House Democratic Plan.

¹⁵ The ideal district population is determined by dividing the Commonwealth’s population as determined by the 2020 Census, which is 13,002,700, by the seventeen allotted districts, which results in a population of 764,864.7. Report at 3, n.6.

H.B. 2146 because it had gone through the legislative process and was passed by the Legislature. The Special Master initially indicated that she would not afford H.B. 2146 any special deference and instead would assess the plan the same as the other parties and *amici* and their respective maps.

Nevertheless, the Special Master ultimately recommended the adoption of H.B. 2146, emphasizing that “the decisions and policy choices expressed by the legislative branch are presumptively reasonable and legitimate, absent a showing of an unconstitutional defect or deficiency.” *Report.* at 213, ¶ 90 (citing *Upham v. Seamon*, 456 U.S. 37, 41-42 (1982)). The Special Master reasoned that “H.B. 2146 represents [t]he policies and preference of the state, and constitutes a profound depiction of what the voters in the Commonwealth of Pennsylvania desire, through the representative model of our republic and democratic form of government, when compared to the Governor or any other of the parties or their *amici*.” *Id.* at 214, ¶ 93 (internal quotation marks and citations omitted).

To the extent that the Special Master’s recommendation was premised upon bestowing H.B. 2146 preferential treatment simply because it had made it partway through the legislative process, we reject her endorsement of this plan on this basis alone. *Upham*, relied upon by the Special Master in affording H.B. 2146 special consideration, is readily distinguishable from the present matter. There, the United States Supreme Court was tasked with reviewing a district court’s decision to reject a congressional reapportionment plan in favor of its own drafted plan. Importantly, the at-issue plan had already been duly enacted and was awaiting preclearance from the United States Attorney General when a suit was filed in the federal district court, challenging the constitutionality of the reapportionment plan and its validity under the Voting Rights Act. Thus, *Upham*, unlike this case, involved a fully-enacted plan that was not vetoed by the

Governor.¹⁶ Moreover, by relying upon *Upham*, the Special Master ignored a separate line of cases where courts have, in similar circumstances, declined to afford deference to vetoed plans.¹⁷

In our view, declining to afford preferential treatment to a plan passed by the Legislature but vetoed by the Governor is not only logical, see *Cartsen*, 543 F. Supp. at 79 (observing that if it were to accept the argument that a vetoed redistricting plan should receive priority during deliberations, “a partisan state legislature could simply pass any bill it wanted, wait for a gubernatorial veto, file suit on the issue and have the Court defer to their proposal”), but also comports with this Commonwealth’s constitutional precepts.¹⁸

¹⁶ A second case cited by the Special Master, *Perry v. Perez*, 565 U.S. 388 (2012), is likewise distinguishable, as that case also involved a challenge to new electoral plans that had already been duly enacted. See *Perry*, 565 U.S. at 391-92 (reviewing the implementation of interim maps that were allegedly inconsistent with the State of Texas’ enacted plans).

¹⁷ See, e.g., *Johnson v. Wisconsin Elections Commn.*, 967 N.W.2d 469, 490 n.8 (Wis. 2021) (“The legislature asks us to use the maps it passed during this redistricting cycle as a starting point, characterizing them as an expression of ‘the policies and preferences of the State[.]’ The legislature’s argument fails because the recent legislation did not survive the political process.”) (internal citations omitted); *Carstens v. Lamm*, 543 F.Supp. 68, 79 (D. Colo. 1982) (affording no deference to vetoed redistricting plan and instead, regarding “the plans submitted by both the Legislature and the Governor as ‘proffered current policy’ rather than clear expressions of state policy”) (footnote omitted); and *Hippert v. Ritchie*, 813 N.W.2d 374, 379, n. 6 (Minn. 2012) (acknowledging that in *Perry*, *supra*, the United States Supreme Court held that a federal district court, when creating an interim congressional redistricting plan, should defer to the duly enacted redistricting plan, but finding that in this case, the legislature’s redistricting plan was not entitled to such deference because it “was never enacted into law”).

¹⁸ As this Court explained in *Scarnati v. Wolf*, 173 A.3d 1110, 1120 (Pa. 2017), by “conferring upon the Governor the authority to nullify legislation that has passed both legislative houses, [Pa. Const. art. IV,] Section 15 entrusts him with the obligation both to examine the provisions of the legislation within the ten days allotted by Section 15 and to either approve it or return it, disapproved, for legislative reconsideration.”). Consequently, the Governor is “an integral part of the lawmaking power of the state.” *Id.* (internal quotation marks omitted). See also *id.* (observing that “[n]o bill may become law without first being submitted to the Governor for approval or disapproval”).

Finally, by disregarding the Governor's veto and affording H.B. 2146 preference because it purportedly represented "the will of the people," the Special Master improperly elevated the General Assembly's role in passing legislation over that of the Executive Branch, which is an inappropriate departure from basic constitutional principles of checks and balances, *see, e.g., Carstens*, 543 F. Supp. at 79 (finding that the legislature's vetoed plan, while certainly entitled to careful consideration, could not "represent current state policy any more than the Governor's proposal" because "[b]oth the Governor and the General Assembly are integral and indispensable parts of the legislative process"), and offensive to the separation-of-powers doctrine.

V. Standard for Choosing New Redistricting Plan

Having rejected the Special Master's process of winnowing the maps, we review these maps *de novo* under this Court's precedent in *Mellow* and *LWV II*. In selecting one of the various congressional districting plans submitted by the parties and *amici*, we find ourselves bound by the same commands that the Legislature must satisfy when performing such task. First and foremost, we begin, with the traditional core criteria of ensuring that the districts are compact, contiguous, are as nearly equal in population as practicable, and do not divide any county, city, incorporated town, borough, township, or ward, except where necessary. *LWV II*, at 178 A.3d at 816-17. As noted, these traditional core criteria provide a "'floor' of protection for an individual against the dilution of his or her vote in the creation of [congressional] districts." *Id.* at 817.

Second, we may also examine the subordinate historical considerations, including, *inter alia*, communities of interests, the preservation of prior district lines, and the protection of incumbents. *Id.* As noted, we must keep in mind that these factors are wholly subordinate to the traditional core criteria. *Id.*

Third, we ensure that the congressional districting plan does not violate Pennsylvania's Free and Equal Elections Clause by "diluting the potency of an individual's ability to select the congressional representative of his or her choice." *LWV II*, 178 A.3d at 816. While the traditional core criteria protect against the creation of obviously gerrymandered districts, such as those present in the 2011 Plan, they do not necessarily prevent all forms of vote dilution. As noted *supra*, this Court observed in *LWV II* that "advances in map drawing technology and analytical software can potentially allow mapmakers, in the future, to engineer congressional districting maps, which, although minimally comports with these [traditional core] criteria, nevertheless operate to unfairly dilute the power of a particular group's vote for a congressional representative." *Id.* Partisan fairness metrics provide tools for objective evaluation of proposed congressional districting plans to determine their political fairness and avoid vote dilution based on political affiliation.

Fourth, and finally, in adopting a congressional redistricting plan, we guarantee that the dictates of the Voting Rights Act, 52 U.S.C. § 10301, have been respected.

As mentioned throughout, many of the plans submitted by the parties and the *amici curiae* satisfy these rigorous standards set forth in *LWV II*. Moreover, as demonstrated in our respected colleagues' responsive opinions, reasonable minds may disagree as to which of these plans best balances the designated criteria and considerations. Nevertheless, having been thrust into the position of choosing a redistricting plan due to the political stalemate between the Legislature and the Governor, we applied the aforementioned designated criteria and considerations and selected the Carter Plan as the 2022 Congressional Redistricting Plan. Our reasons for doing so follow.

VI. Adoption of Carter Plan

We initially observe that the parties and their experts generally agree on the metrics to be used in judging a plan's performance on the traditional core criteria, the subordinate historical considerations, and the evaluations of partisan fairness. However, through no fault of the experts, the results of these metrics vary based on differences in their application of the metrics and divergences in the data sets. For example, the seemingly simple task of counting how many counties are split by a plan varies between experts based on their assessment of a naturally noncontiguous piece of Chester County.¹⁹ Additionally, some of the standards used to evaluate partisan fairness vary based upon how many past elections are included in the relevant dataset. Given these variations, we rely upon the analyses performed by Dr. Daryl DeFord, which evaluate all of the submitted plans using the same methods and data sets.²⁰ See, *inter alia*, Exh. 1 of Post-Trial Submission of Gressman Petitioners. We appreciate Dr. DeFord's efforts in this regard as it allows the Court to engage in an apples-to-apples comparison of the plans on each metric.

A. Description of the Carter Plan

The Carter Plan was created by Dr. Jonathan Rodden,²¹ who submitted an expert report and testified as to his decision-making process at the hearing in this case. Dr. Rodden explained that he used the 2018 Plan "as a guide" with the goal of "preserving

¹⁹ As described by one of the experts, a small portion of Chester County is rendered "technically non-contiguous" if the boundary between Chester County and Delaware County is used as a district boundary. In such case, that six-person portion of Chester County is "marooned in Delaware County due to a bend in the Brandywine Creek at the intersection with the [s]outhern state boundary." Expert Report of Jonathan Rodden ("Rodden Report") at 21. While some experts included this in the count of county splits, others did not.

²⁰ Dr. DeFord is an assistant professor of data analytics at Washington State University.

²¹ Dr. Rodden is a professor of political science at Stanford University and director of the Stanford Spatial Social Science Lab.

the cores and boundaries of districts where feasible given equal population requirements and meeting or surpassing [the 2018 Plan's] adherence to traditional districting criteria[.]” Rodden Report at 1.

He opined that the 2018 Plan was a “reasonable starting point” because it “performed very well according to traditional redistricting criteria,” observing that it “was a compact plan” that involved “relatively few county splits and other jurisdictional splits.” Rodden Report at 6; Tr. at 88. He additionally recognized that the 2018 Plan “was broadly recognized” as a fair plan by those who study redistricting, following its use in the 2018 and 2020 elections. *Id.* at 89. He observed that it “produce[d] relatively competitive elections” with “outcomes that are roughly in line with overall partisan preferences of Pennsylvania voters.”²² Rodden Report at 6.

Dr. Rodden provided a detailed district-by-district assessment of the adjustments needed to achieve population equality, given the different rates of population growth. Rodden Report at 8-9, 12-20. He additionally explained the rationale behind each decision to alter district boundaries, with due consideration paid to the give and take between traditional core criteria which require maximizing compactness and minimizing county splits. *Id.*

In adjusting the 2018 Plan to the population changes of the 2020 Census, Dr. Rodden observed that Pennsylvania’s urban areas, especially in Southeastern Pennsylvania, “have experienced population growth on par with the United States as a whole” in the years since the 2010 Census. Rodden Report at 1. As a result, only minimal adjustments in the 2018 Plan boundaries were needed for the urban districts in Southeastern and Southwestern Pennsylvania to achieve the population targets under

²² In those elections, the average Democratic vote share was 52.7 percent, and the Pennsylvania congressional delegation was split evenly between Republicans and Democrats, with several competitive districts. Rodden Report at 4.

the 2020 Census. However, the “precipitous decline in population” in the rural areas of Central Pennsylvania required more substantial changes in those districts to achieve the necessary equal population, resulting in the absorption of former-District 12 of the 2018 Plan into the surrounding districts, Districts 9, 15, and 13. *Id.* at 1, 20.

Dr. Rodden expressly stated that he “did not consider racial data [when] drawing districts or making adjustments for population changes in the map.” Rodden Report at 23. Likewise, he explained that he “did not consider partisan performance” when drawing the map. *Id.* However, after completing the map, he “was asked to evaluate the districts’ partisan performance,” which he deemed to be “consistent with and responsive to Pennsylvania voters’ partisan preferences.” *Id.* at 1. As incorporated into the discussion below, Dr. Rodden also addressed the plan’s performance on the requisite traditional core criteria as well as the subordinate historical considerations.

B. Special Master’s Rejection of the Carter Plan

The Special Master rejected the Carter Plan, reasoning that in using the 2018 Plan, the Carter Plan erroneously elevated the subordinate historical considerations of preservation of prior district lines above the traditional core criteria, in violation of this Court’s decision in *LWV II*, which held that the historical considerations are “wholly subordinate” to the traditional core criteria. Report at 183, CL 2 (quoting *LWV II*, 178 A.3d at 817); 187, FF10. Specifically, she faulted the Carter Plan for “opting to draw less compact districts instead of disrupting” the district boundaries of the 2018 Plan. *Id.* at 186, FF9. Additionally, while acknowledging that the so-called “least-change” approach may be appropriate when applied to a legislatively enacted plan, the Special Master concluded that “choosing a plan based upon its similarity to a previously court-drawn redistricting plan is not constitutionally sound.” *Id.* at CL 5. She theorized that use of the least-change approach for a court map could allow a court to adopt continuously “features

of its prior plan, effectively rendering impossible any future challenge to the plan.” *Id.* at 188, FF 11.

Respectfully, this Court does not view the Carter Plan’s utilization of the 2018 Plan as a starting point to be either a prerequisite or a disqualifying attribute. Instead, we deem it to be one of several reasonable starting points. Such method is particularly useful here, considering that the 2018 Plan was adopted only four years ago and in strict conformity with the traditional core criteria explicated in *LWV II*. *LWV III*, 181 A.3d at 1086-87. Thus, the 2018 Plan provided a reasonable starting point of contiguous and compact districts that minimized divisions of political subdivisions, even if it no longer provided districts of equal population.

Our decision to adopt the Carter Plan, however, is not based upon its starting point but rather its end point. Stated another way, we do not select the Carter Plan because it utilized the least change approach but because the least change approach worked in this case to produce a map that satisfies the requisite traditional core criteria while balancing the subordinate historical considerations and resulted in a plan that is reflective of and responsive to the partisan preferences of the Commonwealth’s voters, as set forth below.

C. Traditional Core Criteria

1. Contiguity

Starting with the simplest and least contentious of the traditional core criteria, the seventeen districts in the Carter Plan, like every map submitted, are all contiguous.

2. Compactness

Turning to compactness, we find that all of the submitted plans are on a higher plane of compactness than the unconstitutional 2011 Plan with its “oddly shaped, sprawling districts which wander seemingly arbitrarily across Pennsylvania.” *LWV II*, 178 A.3d at 819. Moreover, utilizing the various accepted metrics, the submitted maps are all

within a relatively narrow range comparable to the 2018 Plan, which this Court deemed constitutionally sufficient.²³

While well within the range of the submitted plans, we acknowledge that the Carter Plan is slightly less compact than some of the other maps. We discount, however, the Special Master's suggestion that any reduction in compactness resulted from adherence to the 2018 Plan lines. Instead, minor reductions resulted from a trade-off acknowledged by numerous experts between two of the traditional core criteria: compactness and minimization of political subdivision splits. It is easily comprehended that adherence to county and city lines will decrease compactness because many of the boundaries follow geographic features such as rivers, which meander across our Commonwealth. A mapmaker must, therefore, balance more compact districts with respect for the integrity of political subdivisions.

In our view, Dr. Rodden's Report sufficiently justifies the slightly less-compact aspect of the Carter Plan by explaining various decision points where he sacrificed compactness in favor of unifying counties or other political subdivisions. Rodden Report at 8-9, 12-20, 22-23, Tr. at 105-06. Additionally, we recognize that the Carter Plan is less compact in part due to the decision to keep Pittsburgh within a single district. Rather than utilizing a relatively smooth dividing line, the Carter Plan traces Pittsburgh's jagged city

²³ Several metrics are used to evaluate compactness, each testing a slightly different aspect of that concept. We need not delve into the details of the computations of these accepted metrics, which are not contested, but rather look broadly to the results across the metrics. Specifically, using the Mean Polsby-Popper metric in which larger scores indicate greater compactness, the submitted maps range from 0.27 to 0.38, with the Carter Plan scoring 0.31 and the 2018 Plan scoring 0.32. On the Mean Reock score, under which higher scores again indicate greater compactness, the submitted maps range from 0.38 to 0.44, with the Carter Plan at 0.41 and the 2018 Plan at 0.43. The Carter Plan again is within the midrange of the Mean Convex Hull metric where larger scores indicate more compact districts, with the maps ranging from 0.75 to 0.81, the Carter Plan at 0.78 and the 2018 Plan at 0.79. Finally, addressing the Cut Edges metric, for which a lower score demonstrates more compact districts, the Carter Plan at 5896 falls within the range of maps from 5,061 to 6821, where the 2018 Plan is at 5,789.

line. Given the thorough explanation for the choices made and the realities of existing but irregular county and municipality boundaries, we deem the Carter Plan to be sufficiently compact in comparison to the other submitted plans.

3. Equal Population

The Carter Plan included four districts with a population of 764,865, four districts with one additional person at 764,866, and nine districts with one less person at 764,864. Rodden Report at 21. As stated *supra*, the Special Master found that each proposed plan satisfied the constitutional requirement that congressional districts be as nearly equal in population as practicable. Report at 138, CL 1. Nevertheless, she gave less weight to the Carter Plan because districts in the plan had a maximum deviation of two persons, whereas some plans achieved a maximum deviation of only one person. As noted above, we respectfully rejected the Special Master's discounting based upon its maximum population deviation, without considering whether the slight difference between the one- and two-person population deviation was justified.²⁴

Although a challenge under the equal population requirement is not presently before this Court, the case law is nonetheless instructive in reviewing whether the Carter Plan sufficiently met the traditional core criterion of equal population. While the criterion of equal population is exacting and enforced strictly, the United States Supreme Court has conceded that "precise mathematical equality ... may be impossible to achieve in an imperfect world," and consequently, the United States Constitution's equal population standard requires only that districts be apportioned to achieve population equality "as nearly as is practicable." *Karcher v. Daggett*, 462 U.S. 725, 730 (1983).

²⁴ While the Special Master merely gave the Carter Plan less weight, some parties and *amici* argued that the Carter Plan failed to meet the equal population requirement because nine plans achieved a deviation of one person.

Under the relevant caselaw, a challenge to population equality requires the parties challenging the proposed plan to show that the population deviation “could have been reduced or eliminated altogether by a good-faith effort to draw districts of equal population.” *Id.* at 730. This burden may be satisfied by the presentation of a plan with a lower population deviation, particularly where the party being challenged presents an alternative plan that achieves a lower population deviation. See *Vieth v. Pennsylvania*, 195 F. Supp. 2d 672, 675–76 (M.D. Pa. 2002) (where defendants themselves presented a plan with a lower population deviation).

We will assume *arguendo* that this step is met as the Carter Petitioners appended to their exceptions filed in this Court a slightly revised plan containing only a one-person deviation. The reduced deviation was achieved at the expense of an additional split in a Vote Tabulation District.²⁵ Notably, however, the ability to achieve a lower maximum population deviation, by itself, does not establish the unconstitutionality of a plan with a larger deviation. *Karcher*, 462 U.S. at 740. Rather, the burden merely shifts to the proponent of the plan to prove “with some specificity” that the deviations in its proposed plan were necessary to achieve a legitimate state objective. *Id.* at 740-41.

The specificity required for demonstrating that the deviation was necessary is flexible and requires a case-by-case consideration of the following factors: the size of the deviation, the importance of the legitimate state interest necessitating the deviation, the consistency with which the plan reflects those interests, and whether alternatives might substantially vindicate those interests yet achieve a smaller deviation. *Id.* at 741.

²⁵ Dr. Rodden explained that a “vote tabulation district” is the term for the level at which ballots differ between local races. He attempted to minimize these splits because district divisions at this level create difficulties and potential errors for local election officials as they determine which ballot a voter should complete. Tr. at 95-96. He observed that these errors relating to vote tabulation districts can result in voters being provided incorrect ballots, which can have significant consequences in close elections. Tr. at 97.

Accordingly, “the greater the deviation, the more compelling the government’s justification must be.” *Vieth*, 195 F. Supp. 2d at 677.

While “there are no *de minimis* population variations,” *Karcher*, 462 U.S. at 734, the size of the deviation between a one-person and two-person deviation is as small a population deviation as is possible and thus results in a low burden of justification. The *Karcher* court provided a non-exhaustive list of legislative policies that might justify a slight population variance, including respecting municipal boundaries and preserving prior districts. *Id.* at 740. Since *Karcher*, federal courts have also recognized a legitimate state interest in avoiding splitting of election precincts and not unduly departing from “the useful familiarity of existing districts.” *Mellow*, 607 A.2d at 206 (Pa. 1992) (collecting cases).

In the brief filed in support of their exceptions in this Court, the Carter Petitioners explained that their attempts to reach zero deviation required not only the manipulation of several census blocks, but also the additional split of a Vote Tabulation District at the intersection of Districts 3 and 5 in South Philadelphia, which the original plan was able to keep intact. Carter Exceptions Brief at Exhibit A, 2–3. We addressed a similar justification in *Mellow*, where the proposed plan fell below others regarding population deviation precisely because the cost of maximum mathematical equality “require[d] manipulation of the smallest census unit, the census block.” *Mellow*, 607 A.2d at 218. In *Mellow*, we found that the election administration problems arising from requiring voters in a single precinct to look to two different sets of congressional candidates “is not a minor one.” *Id.* In doing so, we accepted the justification and ultimately adopted a proposed plan with a larger, but still slight, population deviation than other plans submitted.²⁶ *Id.*

²⁶ In *Mellow*, the Court adopted a plan with a 63-person maximum population deviation, despite the submission of a plan with only a one-person deviation. In the adopted plan, the smallest district included 565,754 persons, while the largest district had 565,817 persons. *Mellow*, 607 A.2d at 226 (Appendix A to Opinion of President Judge Craig).

In the present case, the Carter Petitioners have satisfied their burden by stating, with specificity, that the two-person deviation was required to prevent the additional split of a Vote Tabulation District. This is a recognized legitimate state interest, and there has been no evidence nor allegations of bad faith on the part of the Carter Petitioners. The Carter Plan represents a good-faith effort to draw districts of equal population, and the two-person deviation was the byproduct of legitimate efforts to limit the number of splits. Accordingly, the Carter Plan satisfies the equal population requirement and is comparable, given the very minimal deviation, to the other submitted plans.

4. Splits of Political Subdivisions

While the traditional core criterion of contiguity is very straight forward, it is less clear how to assess whether a plan has satisfied the requirement that it “not divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population.” *LWV III*, 181 A.3d at 1085. In practical terms, there are only a few political subdivisions which are necessary to split to comply with the maximum population of a district.

Following the 2022 Census, the ideal population for Pennsylvania’s congressional districts is 764,865. Thus, only Philadelphia, Allegheny, and Montgomery Counties exceed this population, and the only city with an excess population is Philadelphia. Beyond these required divisions, mapmakers must divide the Commonwealth by grouping together whole political subdivisions with parts of others to achieve the necessary equal population. Inevitably, there are tradeoffs inherent in this process. A plan that prioritizes minimizing the number of county splits may well incur more municipality and ward splits to achieve the critical equal population of the district as a whole. To complicate matters further, some boroughs span a county line, requiring a mapmaker to choose potentially between splitting the county or the borough. Additionally, reasonable minds can differ as

to whether it is preferable to split fewer total political subdivisions but to split some in multiple pieces. For example, Philadelphia's population requires it to be split in at least three pieces, but some proposed plans split it into four pieces.

Neither our constitution nor our caselaw provides guidance as to whether the unity of one type of political subdivision should be prioritized over that of another. Instead, we observe that these determinations are best left to the political branches, and thus, we do not rank the order of the importance of the splits. Instead, for the purpose of choosing a plan, we look wholistically across the plans for a minimization of the splits and for a justification for the splits to ensure that the decisions were based on valid redistricting criteria and not for vote dilution purposes.

Turning back to the submitted plans, we emphasize that all of the plans are a far cry from the unconstitutional 2011 Plan which splintered the Commonwealth, including the division of twenty-eight counties. *LWV II*, 178 A.3d at 819. In contrast, the Carter Plan splits half as many counties. Indeed, Dr. Rodden testified that he prioritized maintaining the counties as whole entities and, when counties are split, avoiding splitting them multiple times. While we do not opine as to which division is preferable, we merely observe that the Carter Plan is one of the best in terms of keeping counties whole and falls within all other ranges of the plans submitted.²⁷ Accordingly, we conclude that the Carter Plan is superior or comparable to all the other submitted plans on this criterion.

²⁷ As discussed *supra*, experts disagree as to how to count the separation of a non-contiguous portion of Chester County from the rest of the county when a plan uses the border between Chester and Delaware Counties as a district boundary. Dr. DeFord's comparison of the plans' splits indicates that this split was included in the Carter Plan's total of 14 divided counties, such that an argument could be made that the Carter Plan should actually be attributed with 13 splits, which would tie for the least split counties. In comparison, the other maps range from 13-17 counties, while the 2018 Plan divided 14.

In terms of city splits, the Carter Plan splits Philadelphia into three pieces as is required by its population but does not fragment it into 4 pieces as do some maps. While

D. Subordinate Historical Considerations

Having determined that the Carter Plan meets or exceeds the other submitted plans in terms of its adherence to the traditional core criteria, we next consider the subordinate historical considerations which this Court and other courts have recognized as relevant considerations in designing a congressional districting plan.

1. Communities of Interest

As discussed above, respect for communities of interest increases an individual's ability to elect a congressional representative who reflects his or her personal preferences based upon "the commonality of the interests shared with the other voters in the community." *Id.* at 816. We observe that the Special Master found that Dr. Rodden "did not explicitly examine or appear to have considered the specific considerations that need to be taken into account when establishing that splits maintain the surrounding communities of interest." Report at 156, FF12.

Respectfully, we do not read the record to support that finding, given that Dr. Rodden elucidated several choices that he faced relating to communities of interest. For example, in forming District 7, he drew the boundaries to "unify Carbon County with the rest of the Lehigh Valley" and to keep together the Allentown-Bethlehem-Easton area, which the United States Census Department recognizes as "a metropolitan statistical area." Rodden Report at 14, 17. Similarly, the Carter Plan centers District 10 around Harrisburg, keeping the greater Capital Region intact rather than dividing the area into

the Carter Plan retains Pittsburgh in a single district, it nevertheless splits Williamsport, which is in the range of the other maps which either split one or two cities. While the submitted maps split between 19 and 25 municipalities, the Carter Plan divides 23, and the 2018 Plan separates 29. In terms of wards, the Carter Plan divides 21, which is in the midrange of the submitted maps that divide from 14 to 41; the 2018 Plan split 29. In total, the Carter Plan divides 58 political subdivisions, whereas all the maps range from 49 to 79 total splits. The 2018 Plan had 72 total splits.

multiple district as do some of the plans. The Plan addresses complaints raised regarding the 2018 Plan, which separated State College from its surrounding area, by placing the entirety of Centre County in District 15. In addition, unlike several of the plans, the Carter Plan does not split the City of Pittsburgh, which many, including the Special Master, have argued results in the division of a community of interest.²⁸

Given the choices made to protect communities of interest, we conclude that the Carter Plan sufficiently considered this historical redistricting consideration.

2. Preservation of Prior Districts

As has been repeatedly observed by this Court and the United States Supreme Court, the preservation of prior districts is a legitimate redistricting objective, but one that is subordinate to the traditional redistricting criteria. *See Karcher v. Daggett*, 462 U.S. 725, 740 (1983). As discussed *supra*, the Carter Plan used the 2018 Plan as a starting point with the intent of preserving district cores and boundaries as much as possible, given the population changes. The Carter Petitioners argue that the preservation of districts is beneficial in part because it “create[s] continuity for the overwhelming majority of Pennsylvania residents.” Carter Plan Brief at 6. The data presented at the hearing demonstrates that the Carter Plan “laps the field” by ensuring that 86.6 percent of the population falls in the same district as under the 2018 Plan, while the next highest plan included only 82.4 percent. Tr. at 407-408 (Dr. Moon Duchin); Rodden Response Report at 22.

3. Incumbents

²⁸ While we do not view the splitting of Pittsburgh as a disqualifying feature as did the Special Master, we recognize that it is relevant to a plan’s consideration of communities of interest. Moreover, given the history of the recent congressional districting plans, we deem it preferable to retain it within a single district.

A plan's treatment of incumbents is a relevant consideration because it can reveal partisan bias where a map protects one party's incumbents but pairs the other party's incumbents against each other, absent other justification.

In this case, the Special Master observed that the Carter Plan pairs two incumbent Republican representatives, opining that it does so "without any explicit or apparent justification." Report at 204. Our review of the record does not support this conclusion. To the contrary, Dr. Rodden stated that he intentionally considered incumbent addresses when drawing the Plan to avoid "inadvertently double-bunking sitting congressional representatives in the same district." Rodden Report at 23. Moreover, he explained that the two incumbents paired in District 15 of the Carter Plan resulted from the absorption of the former-District 12 into District 15 and surrounding districts, which was necessitated by the significant population loss in Central Pennsylvania since the 2010 Census. We find this pairing to be justified by the loss of population in this area and not suggestive of partisan bias, and we further conclude that the Carter Plan pays due consideration to incumbents.

E. Partisan Fairness

We reiterate this Court's concern that advances in mapmaking have the potential to create a plan that will "dilute the power of a particular group's vote" despite meeting the traditional core criteria. *LWV II*, 178 A.3d at 817. Accordingly, we deem it appropriate to evaluate proposed plans through the use of partisan fairness metrics to ensure that all voters have "an equal opportunity to translate their votes into representation." *Id.* at 814.

In recent years, numerous metrics have been developed to allow for objective evaluation of proposed districting plans to determine their partisan fairness. For example, some of the metrics attempt to ascertain a map's responsiveness to voters, evaluating whether a party with a majority of votes is likely to win a majority of seats, or whether it is

likely to produce “anti-majoritarian” results, without focus on exact proportionality of representation. Others attempt to measure whether and to what extent a map favors one party. In utilizing these tools, we do not prioritize one metric over another, but rather look holistically to a plan’s performance across the assessments.

Turning to the Carter Plan specifically, we initially observe that Dr. Rodden expressly stated that he “did not consider partisan performance” when drawing the map but instead considered the relevant metrics after it was completed. Rodden Report at 23. In so doing, he provided detailed assessments of several of the districts. In sum, he views the Carter Plan as producing “8 districts where Democrats are expected to win, one of which (District 8) is potentially competitive; 8 districts where Republicans are quite likely to win, two of which are at least potentially competitive (1 and 10); and one district (District 7) that is a toss-up with a very slight Democratic lean.” *Id.* at 25.²⁹ Moreover, Dr. Rodden viewed the Carter Plan as “similar to that of the [2018 Plan], reflective of Pennsylvania’s statewide partisan preferences, and consistent with changes in population as they relate to partisanship.” *Id.* He additionally opined that based on the competitiveness of several of the districts, the Carter Plan would be responsive to changes in Pennsylvania voters’ partisan preferences. *Id.*

Dr. Rodden’s assessment is supported by the plan’s performance on the various metrics. In contrast to some of the submitted plans, the Carter Plan consistently scores better than average on the measures and equals or surpasses the standards set by the

²⁹ Some of the other parties and *amici* have oversimplified Dr. Rodden’s assessment as describing a split of ten Democratic seats and seven Republican seats; we reject that view based on Dr. Rodden’s description of the plan, which is further supported by the Carter Plan’s performance on the metric’s discussed below.

2018 Plan.³⁰ Thus, we conclude the Carter Plan is superior or comparable to the other maps in regard to partisan fairness.

F. Voting Rights Act

While formal Voting Rights Act assessments were not performed in relation to the submitted plans, the Carter Plan, like all the submitted plans but one, retains the two majority-minority districts present in the 2018 Plan according to Dr. DeFord's assessment.³¹ Indeed, unlike some of the plans, the Carter Plan's majority-minority districts hew closely to the same Philadelphia area districts included in the 2018 Plan, which to our knowledge has never been challenged as violative of the VRA. As explained by Dr. Rodden, the boundaries of the Philadelphia area district remained largely unchanged because the population of this area grew at a similar rate to the United States as a whole. Rodden Report at 12. Additionally, Dr. Rodden expressly indicated that he "did not consider racial data [when] drawing districts or making adjustments for population changes in the map." Rodden Report at 23. Moreover, no party or *amici* have raised any concerns regarding the Carter Plan's compliance with the VRA.

³⁰ We set forth a few of the partisan fairness metrics. The Carter Plan was one of the best performers on the Majority Responsiveness Metric, where a responsive map is confirmed by a low number of anti-majoritarian elections, which are balanced between the political parties. The Carter Map had only 3 anti-majoritarian elections, with one favoring Democrats and two favoring Republicans. In contrast, H.B. 2146 had one of the highest anti-majoritarian results, with all five favoring Republicans. The Carter Plan had the least biased score (-0.4%) on the average efficiency gap metric, on which negative numbers favor Republicans and positive numbers favor Democrats. The submitted plans ranged from -7.8% to +3.3%, including H.B. 2146 which had one of the highest efficiency gaps favoring Republicans at 6.3%. The 2018 Plan had an average efficiency gap of -2.6%. In regard to the mean-median metric, upon which numbers closer to zero demonstrate a more balanced plan, the Carter Plan scored -1.6%, which demonstrated a slight Republican tilt, where other plans ranged from -2.9% to -0.3%, with H.B. 2146 having the most significant skew in favor of Republicans at -2.9%. The 2018 Plan had an average mean-median score of -1.9%.

³¹ All other plans submitted also included two majority-minority districts, other than the Gressman Plan which was drawn in part to add an additional majority-minority district.

VII. Conclusion

We reiterate that this Court has been forced into an unusual but not unprecedented role of selecting a congressional redistricting plan for the impending May 17, 2022, Primary Election. There is no perfect plan, nor can there be, as many of the criteria work at cross-purposes to each other and require mapmakers to balance opposing criteria. Our task is to discern which plan, in our view, best abides by the traditional core criteria with attention paid to the subordinate historical considerations and awareness of partisan fairness. As noted, several of the maps submitted would be reasonable choices to be made by a legislature. After careful consideration and for the reasons set forth above, we adopt the Carter Plan for the Pennsylvania primary and general elections for seats in the United States House of Representatives commencing in 2022. We grant, in part, the exceptions to the extent they are consistent with this opinion and dismiss as moot the exceptions in all other respects.

Justices Donohue, Dougherty, and Wecht join the opinion.

Justices Donohue, Dougherty, and Wecht file concurring opinions.

Justices Todd, Mundy, and Brobson file dissenting opinions.

[J-20-2022] [MO: Baer, C.J.]
IN THE SUPREME COURT OF PENNSYLVANIA
MIDDLE DISTRICT

CAROL ANN CARTER, MONICA : No. 7 MM 2022
PARRILLA, REBECCA POYOUROW, :
WILLIAM TUNG, ROSEANNE MILAZZO, :
BURT SIEGEL, SUSAN CASSANELLI, LEE : ARGUED: February 18, 2022
CASSANELLI, LYNN WACHMAN, :
MICHAEL GUTTMAN, MAYA FONKEU, :
BRADY HILL, MARY ELLEN BALCHUNIS, :
TOM DEWALL, STEPHANIE MCNULTY :
AND JANET TEMIN, :

Petitioners

v.

LEIGH M. CHAPMAN, IN HER OFFICIAL :
CAPACITY AS THE ACTING SECRETARY :
OF THE COMMONWEALTH OF :
PENNSYLVANIA; JESSICA MATHIS, IN :
HER OFFICIAL CAPACITY AS DIRECTOR :
FOR THE PENNSYLVANIA BUREAU OF :
ELECTION SERVICES AND NOTARIES, :

Respondents

----- :
PHILIP T. GRESSMAN; RON Y. DONAGI; :
KRISTOPHER R. TAPP; PAMELA GORKIN; :
DAVID P. MARSH; JAMES L. :
ROSENBERGER; AMY MYERS; EUGENE :
BOMAN; GARY GORDON; LIZ MCMAHON; :
TIMOTHY G. FEEMAN; AND GARTH :
ISAAK, :

Petitioners

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FOR THE PENNSYLVANIA BUREAU OF :
ELECTION SERVICES AND NOTARIES, :

Respondents

CONCURRING OPINION

JUSTICE DONOHUE

**OPINION FILED: March 9, 2022
DECIDED: February 23, 2022**

I agree with the selection of the Carter Plan, and I join in the Majority’s analysis, including its invocation of partisan fairness as a factor in its selection. Because this case requires the Court to select one of thirteen maps, most of which satisfy the four “floor” criteria identified in *League of Women Voters v. Commonwealth*, 178 A.3d 737 (Pa. 2018) (“*LOWV*”), we must use a tiebreaker. In my view, in this circumstance, the logic of *LOWV* compels us to consider the degree of partisan fairness among the plans.

Contrary to Justice Brobson’s suggestion, none of us wish “to serve as the mirror on the wall and choose the fairest map of them all.” Dissenting Op. at 8 (Brobson, J.). And while Justice Brobson seems to be less opposed to our selection of the Carter Map than “the analysis that the majority uses to break a partisan impasse,” the fact remains that the political branches have unfortunately thrust the selection of a map on us. Justice Brobson fears that we have “invited, not discouraged this Court’s future involvement in the congressional redistricting process,” *id.*, but does not set forth an alternative selection that would avoid his pessimistic prediction. While which map should be chosen is subject to good faith disagreement, we must choose, and “I don’t know” is the one answer we cannot give.

In *LOWV*, we held that to meet constitutional muster under our Free and Equal Election Clause,¹ a map must satisfy four neutral “floor” criteria: “compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts.” *LOWV*, 178 A.3d at 817. The submitted maps admirably complied with that dictate.² The proponents of each map submitted the performance metrics corresponding to the neutral criteria.³ Pertinently, virtually all submissions contained an analysis of how each of their plans performed in terms of predicted partisan fairness.⁴ Undoubtedly, this was driven by the following passage from *LOWV*:

As we have repeatedly emphasized throughout our discussion of [Article I, Section 5] the overarching objective of this provision of our constitution is to prevent dilution of an individual’s vote by mandating that the power of his or her vote in the selection of representatives be equalized to the greatest degree possible with all other Pennsylvania citizens. We recognize, then, that there exists the possibility that advances in map drawing technology and analytical software can

¹ “Elections shall be free and equal; and no power, civil or military, shall at any time interfere to prevent the free exercise of the right of suffrage.” Pa. Const. art. 1, § 5.

² I acknowledge that the Carter Plan does not score the best on the floor criteria. See Majority Opinion at 27-33. I also agree with the Majority that there are trade-offs involved when giving one criterion more importance than others. See *id.* at 28. Moreover, unlike Justices Mundy and Todd, I do not view picking the best plan on these four criteria to be an objective exercise. The fact that both Justices wish to pick the plan that best complies with the floor criteria but end up favoring different plans illustrates the point.

Additionally, the parties have largely acknowledged that the 2018 map implemented by this Court produced fair outcomes, and, further, that the maps now presented are comparable or superior to the 2018 map. Thus, I do not find that the differences on the floor criteria are so great that any map can be ruled out on that basis alone. Hence, we must turn to a tiebreaker.

³ See Majority Opinion at 28 n.23 (describing metrics used to evaluate compactness).

⁴ The Khalif Plan was the only one that did not analyze partisan performance.

potentially allow mapmakers, in the future, to engineer congressional districting maps, which, **although minimally comports with these neutral “floor” criteria, nevertheless operate to unfairly dilute the power of a particular group’s vote for a congressional representative.** See N.T. Trial, 12/13/17, at 839–42 (Dr. Warshaw discussing the concept of an efficiency gap based on the number of “wasted” votes for the minority political party under a particular redistricting plan). However, as the case at bar may be resolved solely on the basis of consideration of the degree to which neutral criteria were subordinated to the pursuit of partisan political advantage, as discussed below, we need not address at this juncture the possibility of such future claims.

Id. (emphasis added).

Although the task of the Court in this matter is distinctly different than the constitutional challenge to the enacted redistricting plan at issue in *LOWV*, the parties in this matter obviously recognized that it was not enough to satisfy the neutral factors, because even though compliant with the drawing requirements, it was important that the plan did not “unfairly dilute the power of a particular group’s vote for a congressional representative.” *Id.*

The purpose of our Free and Equal Election Clause is not to ensure that congressional district maps contain clean lines with few divisions and a minimum of irregular borders encompassing an equal number of people. It is not a cartography lesson. The overreaching objective of this constitutional provision is to prevent dilution of a citizen’s vote. Consequently, just as the political branches have an obligation to consider partisan fairness when enacting a redistricting plan, so too must this Court when put in the position of having to select one from the many that were submitted to us. Partisan fairness is not merely a subordinate factor to be considered. When, as here, all of the plans are compliant with the floor criteria, consideration of the degree of partisan

fairness must, in my view, drive the ultimate selection of a plan in the circumstances in which this Court finds itself.⁵

The degree of partisan fairness is measurable. Measurement is imperfect because it cannot account for, among other variables, the quality of candidates. Also, where, as here, the submitted plans have no performance record, the partisan fairness metrics are predictive, not actual. But the tools are available and widely used. The record in this case is replete with expert analyses of the predicted partisan fairness of the plans. Admittedly, the data sets used to calculate the metric and, in some cases, the methodologies within the designated partisan fairness tests differed among the parties' experts.

Nevertheless, I do not find that the lack of one perfect test for measuring partisan fairness precludes us from considering that factor. It simply means that we should look for the most comprehensive review available. Based on the record before us we have one comprehensive, comparative analysis of each of the submitted plans' predicted performance on partisan fairness. The Gressman plaintiff's expert, Dr. Daryl DeFord, performed an "apples to apples" analysis comparing all plans to each other. In other words, he reconciled the data set and methodologies used by the various experts. From my perspective, it forms a reliable basis to rank the predicted partisan fairness of the submissions. Unlike some other experts, who used limited data sets, Dr. DeFord's

⁵ I do not suggest that any of the plans submitted for consideration reflect a degree of partisan unfairness that is disqualifying in a constitutional sense, nor do I suggest the level of partisan fairness that a duly enacted congressional district plan must attain. I do, however, believe that when this Court is forced to choose among plans, the plans that perform the best on partisan fairness metrics must rank above the others.

analysis examined “vote totals for [eighteen] statewide general elections[.]” Expert Report of Dr. DeFord at 5. He elaborated on this point:

For each of my partisan-fairness metrics, I have used election results from [eighteen] statewide general elections that took place in the Commonwealth between 2012 to 2020. This represents the general elections races for U.S. President, U.S. Senate, Governor, Attorney General, Auditor General, and State Treasurer. This dataset includes examples of elections where each of the major political parties’ candidates won the overall statewide vote. Many of these races were decided by small margins, particularly those in which a Republican candidate won the overall election. Thus, I also included the 2017 Supreme Court Justice election in my analysis, as that election had a larger margin of victory for the Republican candidate than the other elections had. Looking at this breadth of election results helps us better understand and model the political geography of a state and related realistic vote outcomes.

Id. at 22.

Dr. DeFord explained that using general elections was useful because “the percentages reported reflect the two-party vote share from the two most successful candidates, which in these elections were always the Democratic and Republican candidates.” *Id.* at 22-23. Each of the partisan fairness metrics he used “requires one first to determine, for each of the [eighteen] general elections, which candidate, the Democratic or Republican, carried each of the districts in each redistricting plan at issue.” *Id.* at 23. Then, that information was used “to plot a seats-votes curve, and they also become inputs for the partisan-symmetry computations described below.” *Id.* These

results were then used to generate a mean-median score⁶ and an efficiency gap score.⁷ Dr. DeFord then compared all plans to each other on these two metrics, plus four other measures generated by the PlanScore.org website. The following table, which is copied from the Gressman’s Brief in Support of Exceptions at page 59 with slight alterations to the headings, reflects the results of that comparison. (In his report, Dr. DeFord indicates that a negative score indicates a Republican lean.)

Partisan Fairness Metric <i>(closer to zero is better)</i>	[Tier one (least bias)]	[Tier two]	[Tier three (most bias)]
Dr. DeFord’s Average Mean-Median <i>(using all 18 elections from 2012 to 2020)</i>	Sen. Dems 2 (-0.3%) Gressman (-0.8%) House Dems (-0.9%) Governor (-1.0%) Draw the Lines (-1.2%)	Carter (-1.6%) Ali (-1.8%) Sen. Dems 1 (-1.9%) Citizen-Voters (-2.0%)	Reschenthaler 2 (-2.6%) Reschenthaler 1 (-2.7%) Voters of PA (-2.7%) HB2146 (-2.9%)

⁶ “The mean-median score is a metric related to partisan symmetry. In simple terms, a plan that exhibits partisan symmetry is one that is likely to treat the parties similarly in terms of seat outcomes given equal votes received by all candidates statewide. That is, if Party A is expected to turn a 55%-to-45% statewide vote advantage into a 10-to-7 seats advantage, then a symmetric result would require Party B to turn a similar 55%-to-45% statewide vote advantage into a 10-to-7 seats advantage.” Report of Dr. DeFord at 26 (footnote omitted).

⁷ We explained the concept in *LOWV*.

Dr. Warshaw suggested that the degree of partisan bias in a redistricting plan can be measured through the “efficiency gap,” which is a formula that measures the number of “wasted” votes for one party against the number of “wasted” votes for another party. *Id.* at 840–41. For a losing party, all of the party’s votes are deemed wasted votes. For a winning party, all votes over the 50% needed to win the election, plus one, are deemed wasted votes. The practices of cracking and packing can be used to create wasted votes.

LOWV, 178 A.3d at 777.

Dr. DeFord's Average Efficiency Gap (using the same 18 elections)	Carter (-0.4%) Governor (0.6%) Gressman (0.8%) Sen. Dems 2 (1.0%)	Draw the Lines (-1.6%) Sen. Dems 1 (-2.5%) Citizen-Voters (-2.6%) Ali (-2.7%) House Dems (3.3%)	Voters of PA (-4.8%) HB2146 (-6.3%) Reschenthaler 1 (-7.8%) Reschenthaler 2 (-7.8%)
PlanScore Efficiency Gap	House Dems (1.2% D) Gressman (1.4% R) Carter (1.8% R) Governor (1.9% R)	Ali (2.4% R) Sen. Dems 2 (2.4% R) Sen. Dems 1 (2.5% R) Draw the Lines (3.5% R) Citizen-Voters (4.6% R)	Reschenthaler 2 (6.3% R) Reschenthaler 1 (6.4% R) HB2146 (6.6% R) Voters of PA (6.8% R)
PlanScore Declination	Gressman (0.03 R) House Dems (0.04 D) Carter (0.05 R) Governor (0.05 R)	Ali (0.07 R) Sen. Dems 1 (0.07 R) Sen. Dems 2 (0.07 R) Draw the Lines (0.10 R) Citizen-Voters (0.13 R)	Reschenthaler 2 (0.18 R) HB2146 (0.19 R) Reschenthaler 1 (0.19 R) Voters of PA (0.20 R)
PlanScore Partisan Bias	Gressman (0.9% R) Governor (1.1% R) Carter (1.3% R) Sen. Dems 2 (1.5% R)	Sen. Dems 1 (1.8% R) Ali (1.9% R) House Dems (1.9% D) Draw the Lines (2.9% R)	Citizen-Voters (4.3% R) Reschenthaler 2 (5.9% R) Reschenthaler 1 (6.2% R) Voters of PA (6.5% R) HB2146 (6.3% R)
PlanScore Mean-Median Difference	Gressman (0.4% R) Carter (0.4% R) Governor (0.4% R) Sen. Dems 2 (0.5% R)	Sen. Dems 1 (0.6% R) House Dems (0.7% D) Ali (0.7% R) Draw the Lines (1.0% R)	Citizen-Voters (1.7% R) Voters of PA (2.2% R) HB2146 (2.3% R) Reschenthaler 1 (2.4% R) Reschenthaler 2 (2.4% R)

This comparison establishes that four maps submitted for our consideration separate them from the field: the Carter Plan, the Gressman Plan, the Governor's Plan, and the second Senate Democratic Caucus plan. The Gressman Plan performs the best, with the remaining three all scoring slightly lower. Although the Carter Plan is not the best performer, the other plans contain concerning anomalies in their physical configuration. Namely, as further explained, those plans make changes that depart radically from the historical treatment of certain established communities of interest. Because the Carter Plan does not contain these anomalies and its partisan fairness score is nearly identical to those other three maps, I agree that it is the best option.

The three maps which score better on partisan fairness draw districts that depart from historically recognized communities of interest that, in my view, are too drastic for this Court to adopt. The most salient of these are: the decisions to split the City of Pittsburgh (the Governor and Senate Democratic Caucus) and the decision to place Pittsburgh in a district with Washington County along with splitting Bucks County (Gressman Plan). Communities of interest are in the eyes of the beholder. A determination of what qualifies as a community of interest, and what those interests are, involves a mixture of local knowledge and political considerations uniquely determinable by the political branches within the confines of the floor constitutional criteria. If an adopted districting plan resulted in a map that split the City of Pittsburgh and otherwise met the *LOWV* criteria, then the split could be a valid choice. The same could be said for the Bucks County split that resulted in a Latino minority opportunity district and the combination of the City of Pittsburgh with Washington County based on the rationale that they are part of the same standard metropolitan statistical area. From where I sit, I have no legitimate way to decide whether the tradeoffs for more substantial compliance with the floor criteria involved with these significant changes in the historical treatment of these areas are acceptable.⁸ Therefore, I cannot endorse the selection of these maps when

⁸ For example, a bipartisan group of current and former Washington County elected public officials submitted an amicus brief urging this Court to select any plan but the Gressman Plan due to the fact it would create a new congressional district containing all of Washington County and the City of Pittsburgh. These individuals argued that Washington County and parts of Allegheny County, while “hav[ing] much in common,” actually “have little in common[.]” Amicus Brief at 5. Moreover, they predicted that the City of Pittsburgh would dominate Washington County. *Id.* at 6.

the Carter Map manages not to make those significant changes and still scores very highly on partisan fairness.

Because the outcome achieved in the Carter Plan⁹ satisfies the *LOWV* floor criteria and is among the best in preventing dilution of an individual’s vote, as demonstrated in its partisan fairness metrics, without disrupting long recognized communities of interest, I join in its selection as the 2022 Congressional District Plan.

⁹ As discussed in other opinions, the Carter Plan was designed using the “least change” approach. I agree with the Majority that our focus should not be on the method used in creating the map – it should be on the outcome. Majority Opinion at 27.

Regarding whether this Court can apply a clear standard in selecting a map, Justice Dougherty favorably cites the “least change” approach used by the Carter Plan mapmaker. See Concurring Op. at 3 (Dougherty, J.). Justice Wecht likewise cites that approach as a favorable criterion, albeit not as a sole tiebreaker. See Concurring Op. at 19-20 (Wecht, J.). Justices Mundy and Todd both desire to select the map which best follows the neutral floor criteria. See Dissenting Op. at 5 (Todd, J.); Dissenting Op. at 9 (Mundy, J.). However, this shared belief in the correct standard did not yield the same answer. I note that courts in analogous circumstances have asked parties to brief the question of whether a clear standard should be adopted. See *Johnson v. Wisconsin Elections Comm’n*, 967 N.W.2d 469, 476 (Wi. 2021) (“[W]e ordered the parties to address four issues. ... (3) The petitioners ask us to modify existing map using a ‘least change’ approach. Should we do so, and if not, what approach should we use?”). While the adoption of a fixed standard is desirable, without the benefit of advocacy I believe this Court is ill-equipped to clearly answer that question. For instance, Justice Mundy uses the “Borda system,” which was not used by any of the parties, and the weights Justice Mundy gives to the floor criteria were not subject to examination. In the absence of advocacy on the viability of a fixed standard, I believe that it is incumbent upon us to rely on the record.

LEIGH M. CHAPMAN, IN HER OFFICIAL :
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ELECTION SERVICES AND NOTARIES, :
: :
Respondents :

CONCURRING OPINION

OPINION FILED: March 9, 2022
DECIDED: February 23, 2022

JUSTICE DOUGHERTY

I join the majority opinion, but distance myself from certain aspects of part VI.B. Most significantly, I agree completely with the Court’s selection of the Carter Plan for the primary and general elections for seats in the United States House of Representatives commencing May 17, 2022. In my view, the Carter Plan is the correct choice because it effects the least change from the 2018 Plan, while also satisfying the various criteria we have established as the constitutional standard.

As the learned majority explains, the Carter Plan — together with several other plans submitted by the parties — meets the traditional core criteria established in *League of Women Voters of Pennsylvania v. Commonwealth*, 178 A.3d 737 (Pa. 2018) (“*LWV I*”), as the “floor” for a constitutionally valid redistricting plan. See Majority Opinion at 27-33; *LWV II*, 178 A.3d at 817. And, the Carter Plan — among others — satisfies additional metrics identified by the majority as “subordinate historical considerations.” See Majority Opinion at 34-36. But a test utilizing these factors alone, acknowledged by the majority as being satisfied by multiple maps presented in this case, does little to advance a predictable judicial standard for circumstances like these, *i.e.*, where the Court is forced into the map-selecting business by a decennial impasse, and where multiple possible plans satisfy the floor criteria. *Cf. Carter v. Chapman*, 7 MM 2022, 2022 WL 304580, at

*5 (Pa. Feb. 2, 2022) (Dougherty, J., concurring) (“[T]he people of this Commonwealth, as well as the other branches of government upon which the primary responsibility for drawing federal congressional districts rests, have a right to know what to anticipate should the judiciary be dragged into the process” including, *inter alia*, the “criteria that should guide a court’s analysis.”); see *id.* (imploing the Court to “shine as much light as possible on what many believe is an improperly political and unfairly partisan process”).

Although the majority lands on the right answer, it fails to satisfactorily explain how it reaches that result. The majority appears to employ “a totality-of-the-circumstances analysis, where all conceivable factors, none of which is dispositive, are weighed with an eye to ascertaining” which plan is most “fair.” *Vieth v. Jubelirer*, 541 U.S. 267, 291 (2004) (plurality); see Majority Opinion at 39 (“Our task is to discern which plan, in our view, best abides by the traditional core criteria with attention paid to the subordinate historical considerations and awareness of partisan fairness.”). Respectfully, while I fully support that goal, I also believe a more concrete standard is needed “to meaningfully constrain the discretion of the courts, and to win public acceptance for the court[’s] intrusion into a process that is the very foundation of democratic decisionmaking.” *Vieth*, 541 U.S. at 291; see also *id.* at 307 (Kennedy, J., concurring) (“With uncertain limits, intervening courts — even when proceeding with best intentions — would risk assuming political, not legal, responsibility for a process that often produces ill will and distrust.”).

In my view, the critical factor that sets the Carter Plan apart — the “tie-breaker,” so to speak — is that the Carter Plan yields the least change from the Court’s 2018 congressional redistricting plan. See Majority Opinion at 35 (acknowledging Carter Plan “laps the field” in terms of maintaining district lines). The least changed map is also the best choice where, as here, no one has demonstrated which subordinate historical considerations should outweigh the others, all maps are generally in the same acceptable

range, and we lack enough information about partisan fairness metrics to focus on those as the deciding factor.¹

The majority correctly observes the Carter Plan ensures 86.6 percent of the Commonwealth's population falls in the same district as under the 2018 Plan. See *id.* Maintaining continuity for the vast majority of Pennsylvania residents is particularly important where, as here, the Court was forced to participate belatedly in what should have been an exclusively political process.² In this context, a light, transparent judicial touch is particularly advisable. I am also sensitive to the fact that Pennsylvania's voters have already had their districts changed twice since 2011, with a third realignment now made necessary by the population changes measured in the 2020 census.

Moreover, as noted by the majority, expert testimony established the 2018 Plan was "broadly recognized as a fair plan by those who study redistricting, following its use

¹ I fully agree with the majority's recognition that partisan fairness should be considered in our analysis. See, e.g., Majority Opinion at 18 ("we conclude that consideration of partisan fairness, when selecting a plan among several that meet the traditional core criteria, is necessary to ensure that a congressional plan is reflective of and responsive to the partisan preferences of the Commonwealth's voters"); *id.* at 23 ("Partisan fairness metrics provide tools for objective evaluation of proposed congressional districting plans to determine their political fairness and avoid vote dilution based on political affiliation."); *id.* at 36, quoting *LWV II*, 178 A.3d at 814 ("we deem it appropriate to evaluate proposed plans through the use of partisan fairness metrics to ensure that all voters have 'an equal opportunity to translate their votes into representation.'"). However, I also recognize that the metrics for this criterion remain somewhat in flux when compared to the more standardized measures of the traditional core criteria. See, e.g., *Vieth*, 541 U.S. at 307 (Kennedy, J., concurring) ("No substantive definition of fairness in [re]districting seems to command general assent."). Still, "[t]hat no such [partisan fairness] standard has emerged in this case should not be taken to prove that none will emerge in the future." *Id.* at 311.

² Notably, as I observed when we agreed to exercise extraordinary jurisdiction over this matter, "all parties concede the judiciary's involvement is not only appropriate at this point, but imperative." *Carter*, 7 MM 2022, 2022 WL 304580, at *2 n.1 (Dougherty, J., concurring) (citations omitted). Any hypothetical claim this Court lacks the authority to select a map has been irretrievably waived.

in the 2018 and 2020 elections,” and the 2018 Plan “produce[d] relatively competitive elections with outcomes that are roughly in line with overall partisan preferences of Pennsylvania voters.” *Id.* at 25 (internal quotation marks omitted). To me, it is eminently reasonable that we select the plan that hews as closely as possible to a prior district map we already know is constitutional and that has been proven through multiple election cycles to produce fair outcomes.³

Finally, I must express my personal frustration with the widely held misperception — promulgated disingenuously in the media as well as far too many courtrooms — that this Court somehow relishes the opportunity to play politics here. We decide this case not because we want to but because we have to as a result of the intransigent inability of the two other co-equal branches of government to fulfill their constitutional obligations and reach a compromise agreement. It is an unfortunate reality that when our Commonwealth’s legislative and executive branches succeed only in creating a void, we have no choice but to step once again into the breach.

³ I am not persuaded by arguments that the least change approach is exclusively relegated to situations where the prior map was legislatively enacted. Indeed, courts have recognized the approach is just as valid — if not more so — when the prior plan was court-made. *See, e.g., Stenger v. Kellett*, 2012 WL 601017, at *3 (E.D. Mo. Feb. 23, 2012) (“A frequently used model in reapportioning districts is to begin with the current boundaries and change them as little as possible while making equal the population of the districts. . . . The ‘least change’ method is advantageous because it maintains the continuity in representation for each district and is by far the simplest way to reapportion[.]”); *Hippert v. Ritchie*, 813 N.W.2d 374, 380 (Minn. Special Redistricting Panel 2012) (explaining the panel utilizes a least-change strategy “where feasible” to avoid making political decisions that should be made by the legislature and governor); *Markham v. Fulton Cty. Bd. of Registrations & Elections*, 2002 WL 32587313, at *6 (N.D. Ga. May 29, 2002) (where prior districts were created by court order, court used that map as benchmark in drawing new map using a least-change methodology); *see also Johnson v. Wis. Elections Comm’n*, 967 N.W.2d 469, 496-97 (Wis. 2021) (Dallet, J., dissenting) (although “the least-change approach has no ‘general acceptance among reasonable jurists’ when the court’s starting point is a legislatively drawn map . . . [.] when a court is redrawing maps based on a prior court-drawn plan, it may make sense to make fewer changes since the existing maps should already reflect neutral redistricting principles”).

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 :
 Respondents :

CONCURRING OPINION

OPINION FILED: March 9, 2022

JUSTICE WECHT

DECIDED: February 23, 2022

I join the Court’s adoption of the Carter Plan as the Commonwealth’s 2022 Congressional Redistricting Plan, as well as its opinion in support thereof. I write separately to further explain why I found a number of exceptions to the Special Master’s Report and Recommendation to be meritorious, and also to offer a more detailed discussion regarding the “least-change” approach, the “subordinate historical consideration” that tipped the scales in favor of the Carter Plan.

Although “the primary responsibility and authority for drawing” the Commonwealth’s congressional districts “rests squarely” with the General Assembly,¹ the long-standing practice of the state and federal courts counsels judicial intervention when the political branches fail to timely enact a congressional districting plan and “when further delay” threatens to “disrupt the election process.”² As the recent flurry of activity involving

¹ *League of Women Voters v. Commonwealth*, 178 A.3d 737, 821 (Pa. 2018) (“*LWV II*”).

² *Branch v. Smith*, 538 U.S. 254, 279 (2003) (plurality); *cf. LWV II*, 178 A.3d at 822 (“When . . . the legislature is unable or chooses not to act, it becomes the judiciary’s role to determine the appropriate redistricting plan.”); *Scott v. Germano*, 381 U.S. 407, 409 (1965) (*per curiam*) (“The power of the judiciary of a State to require valid reapportionment or to formulate a valid redistricting plan has not only been recognized by this Court but (continued...)”).

requested modifications to the primary election calendar demonstrates, delaying our consideration of this case any longer likely would have impeded the orderly administration of this year's elections to the detriment of voters and candidates alike. Alas, though our task may be an "unwelcome" one,³ it is not unfamiliar to this Court.⁴

Preliminarily, I concur with the Court's evaluation of the pertinent systemic exceptions taken by a number of Parties and *Amicus* Participants to the Special Master's Report and Recommendation ("Report"). Chief among those exceptions, in my view, is the Special Master's treatment of House Bill 2146 as "functionally tantamount to the voice and will of the People,"⁵ which fundamentally misapprehends the Governor's role as "an integral part of the lawmaking power of the state."⁶

With respect to the redistricting process, it is well-settled that the authority vested in each State's Legislature to prescribe "[t]he Times, Places and Manner of holding

appropriate action by the States in such cases has been specifically encouraged."); *Grove v. Emison*, 507 U.S. 25, 33-34 (1993) (observing that, "[i]n the reapportionment context, the Court has required federal judges to defer consideration of disputes involving redistricting where the State, through its legislative or judicial branch, has begun to address that highly political task itself," and instructing federal courts to "neither affirmatively obstruct state reapportionment nor permit federal litigation to be used to impede it" "[a]bsent evidence that these state branches will fail timely to perform that duty") (emphasis in original); *Butcher v. Bloom*, 216 A.2d 457, 459 (Pa. 1966) (noting that the Court selected redistricting plans for the Pennsylvania House and Senate after "[t]he deadline set forth in our earlier opinion passed without [the] enactment of the required legislation").

³ *LWV II*, 178 A.3d at 823 (quoting *Connor v. Finch*, 431 U.S. 407, 415 (1977)).

⁴ See generally *LWV II*, *supra* note 1; *Mellow v. Mitchell*, 607 A.2d 204 (Pa. 1992) (assuming plenary jurisdiction of redistricting impasse litigation arising from the political branches' failure to cure malapportioned congressional map in the wake of the Commonwealth's loss of two congressional seats following the 1990 decennial census).

⁵ Report at 214-15.

⁶ *Commonwealth ex rel. Attorney General v. Barnett*, 48 A. 976, 976 (Pa. 1901).

Elections for . . . Representatives”—which remains subject to Congress’ plenary power to “make or alter such Regulations” “at any time by Law”⁷—“involves lawmaking in its essential features and most important aspect.”⁸ As such, the United States Supreme Court has admonished that “the exercise of th[at] authority must be in accordance with the method which the state has prescribed for legislative enactments.”⁹ In other words, the Legislature has no “power to enact laws in any manner other than that in which the Constitution of the state has provided that laws shall be enacted.”¹⁰

Unlike those jurisdictions that have enshrined certain aspects of the congressional redistricting process in their respective state constitutions,¹¹ Pennsylvania’s charter is silent on the subject. As in most States, redistricting in Pennsylvania typically is carried out through the traditional legislative process.¹² That is significant, because the

⁷ U.S. CONST. art. I, § 4 (hereinafter, “Elections Clause”).

⁸ *Smiley v. Holm*, 285 U.S. 355, 366 (1932).

⁹ *Id.* at 367; see also *Hawke v. Smith*, 253 U.S. 221, 230 (1920) (distinguishing the “power to ratify a proposed amendment to the” U.S. Constitution, which a State “derives” from the Fifth Article thereof, from “the power to legislate in the enactment of the laws of a state,” which “is derived from the people of the state”).

¹⁰ *Smiley*, 285 U.S. at 367-68.

¹¹ See, e.g., ARIZ. CONST. art. IV, pt. 2, § 1; CAL. CONST. art. XXI; COLO. CONST. art. V, §§ 44-48; HAW. CONST. art. IV, § 2; IDAHO CONST. art. III, § 2; MICH. CONST. art. IV, § 6; MONT. CONST. art. V, § 14; N.J. CONST. art. II, § II; N.Y. CONST. art. III, § 4; OHIO CONST. art. XIX; UTAH CONST. art. IX, § 1; VA. CONST. art. II, §§ 6, 6-A; WASH. CONST. art. II, § 43.

¹² The High Court considered the validity of non-traditional exercises of legislative power in the redistricting sphere in *Ohio ex rel. Davis v. Hildebrant*, 241 U.S. 565 (1916), which concerned a challenge to a 1912 amendment to the Constitution of Ohio that expressly reserved to the people of that State the concurrent right to exercise the legislative power “by way of referendum”—*i.e.*, “to approve or disapprove by popular vote any law enacted by the [G]eneral [A]ssembly.” *Id.* at 566. In May 1915, the Ohio General Assembly passed, and the Governor of Ohio signed into law, an act redistricting the State into twenty-two congressional districts. When voters subsequently disapproved of the act (continued...)

Governor's constitutionally designated role in the legislative process ought not to be treated as an afterthought. More specifically, the Presentment Clause and the

in a statewide referendum, challengers unsuccessfully sought a writ of *mandamus* from the Supreme Court of Ohio directing election officials to disregard the vote on the grounds that it violated the Elections Clause and thus was void. *See id.* at 567.

The U.S. Supreme Court affirmed the denial of relief for three interrelated reasons. First, the Court explained that “the referendum constituted a part of the state Constitution and laws,” and therefore “was contained within the legislative power” of the State. *Id.* at 568. Next, it observed that in 1911, Congress had, by statute,

expressly modified the phraseology of the previous acts relating to [redistricting] by inserting a clause [which directed that redistricting should be performed by a State ‘in the manner provided by the laws thereof’] plainly intended to provide that where, by the state Constitution and laws, the referendum was treated as part of the legislative power, the power as thus constituted should be held and treated to be the state legislative power for the purpose of creating congressional districts by law.

Id. Lastly, the Court reasoned that any contention that Congress exceeded its constitutional authority in sanctioning use of the referendum

for the purpose of apportionment . . . must rest upon the assumption that to include the referendum in the scope of the legislative power is to introduce a virus which destroys that power, which in effect annihilates representative government, and causes a state where such condition exists to be not republican in form, in violation of the guaranty of the Constitution . . . [which] presents no justiciable controversy.

Id. at 569 (citing U.S. CONST. art. 4, § 4 (“The United States shall guarantee to every State in this Union a Republican Form of Government”)); *cf. Ariz. State Legislature v. Ariz. Indep. Redistricting Comm’n*, 576 U.S. 787, 795 n.3 (2015) (“The people’s sovereign right to incorporate themselves into a State’s lawmaking apparatus, by reserving for themselves the power to adopt laws and to veto measures passed by elected representatives, is one this Court has ranked a nonjusticiable political matter.”). In short, neither Ohioans’ decision to overrule a duly enacted congressional redistricting plan by statewide vote, nor Congress’ recognition of their authority to do so in 1911, were “repugnant” to the Constitution. *Id.* As far as I am aware, Pennsylvania has not utilized referenda for redistricting purposes.

gubernatorial veto¹³ have been critical features of our Commonwealth's tripartite system of government for nearly two-and-a-half centuries.¹⁴

¹³ Compare PA. CONST. art. IV, § 15 ("Every bill which shall have passed both Houses shall be presented to the Governor; if he approves he shall sign it, but if he shall not approve he shall return it with his objections to the House in which it shall have originated"), with PA. CONST. (1790) art. I, § 22 ("Every bill which shall have passed both Houses, shall be presented to the Governor; if he approve, he shall sign it; but if he shall not approve it, he shall return it, with his objections, to the House in which it shall have originated"). As this Court has explained,

The veto power is a survival of the lawmaking authority vested in the king as a constituent if not a controlling third body of the parliament, in which he might and not infrequently did sit in person. With the growth of free ideas and institutions, and the aggressive spirit of the popular branch of the parliament in the affairs of government, it lost its vitality as a real power in England. . . . But in the colonies it not only existed, but was an active power, absolute in character, and so constantly exercised that . . . the Declaration of Independence set forth first among the grievances of the colonies, "He has refused his Assent to Laws, the most wholesome and necessary for the public good."

* * *

From the colonies the power passed, with various limitations, into nearly all the American constitutions, state and national. Originally intended mainly as a means of self-protection by the executive against the encroachments of the legislative branch, it has steadily grown in favor with the increasing multitude and complexity of modern laws, as a check upon hasty and inconsiderate as well as unconstitutional legislation.

Barnett, 48 A. at 976-77 (quotation from Declaration of Independence modified).

¹⁴ While the classical view of the separation of powers might regard the veto power as an inherent feature of our system of checks and balances, this was not always the case. By the time the United States Constitution was ratified in 1789, "it appears that only two states had provided for a veto upon the passage of legislative bills; Massachusetts, through the Governor, and New York, through a council of revision." *Smiley*, 285 U.S. at 368. In fact, not only did Pennsylvania's "radically democratic" founding era constitution, which governed from 1776 to 1790, fail to provide a mechanism for contemporaneous disapproval of laws passed by the unicameral legislature, it vested the "supreme executive power" in a council of twelve people. *LWV II*, 178 A.3d at 802 (quoting Ken Gormley, *Overview of Pennsylvania Constitutional Law*, as appearing in Ken Gormley, ed., *THE PENNSYLVANIA CONSTITUTION: A TREATISE ON RIGHTS AND LIBERTIES*, 3 (2004)); PA. CONST. (1776) ch. II, § 4 ("The supreme executive power shall be vested in a president and council").

Reflecting on the redistricting process early in the twentieth century, in *Smiley*, the Supreme Court observed that “the uniform practice” among the States in such matters “has been to provide for congressional districts by the enactment of statutes with the participation of the Governor wherever the state Constitution provided for such participation as part of the process of making laws.”¹⁵ To that end, the Court has observed:

[W]hether the Governor of the State, through the veto power, shall have a part in the making of state laws, is a matter of state polity. Article I, Section 4 of the Federal Constitution neither requires nor excludes such participation. And provision for it, as a check in the legislative process, cannot be regarded as repugnant to the grant of legislative authority. . . . That the state Legislature might be subject to such a limitation, either [at the time of the adoption of the Federal Constitution] or thereafter imposed as the several states might think wise, was no more incongruous with the grant of legislative authority to regulate congressional elections than the fact that the Congress in making its regulations under the same provision would be subject to the veto power of the President, as provided in Article I, Section 7. The latter consequence was not expressed, but there is no question that it was necessarily implied, as the Congress was to act by law; and there is no intimation, either in the debates in the Federal Convention or in contemporaneous exposition, of a purpose to exclude a similar restriction imposed by state Constitutions upon state Legislatures when exercising the lawmaking power.¹⁶

¹⁵ *Smiley*, 285 U.S. at 370.

¹⁶ *Id.* at 368-69 (cleaned up). Regarding the particular role of the Elections Clause in our federal system, the High Court offered the following:

The practical construction of Article I, Section 4 is impressive. General acquiescence cannot justify departure from the law, but long and continuous interpretation in the course of official action under the law may aid in removing doubts as to its meaning. This is especially true in the case of constitutional provisions governing the exercise of political rights, and hence subject to constant and careful scrutiny. Certainly, the terms of the constitutional provision furnish no such clear and definite support for a contrary construction as to justify disregard of the established practice in the States. That practice is eloquent of the conviction of the people of the States, and of their representatives in state Legislatures and executive (continued...)

The Supreme Court reaffirmed the validity of these and other state constitutional constraints on the congressional redistricting process most recently in *Arizona State Legislature v. Arizona Independent Redistricting Commission*. There, the Court relied upon the Elections Clause and 2 U.S.C. § 2a(c), the successor statute to the 1911 Act at issue in *Hildebrant*, in rejecting a challenge to a provision of the Arizona Constitution, adopted in 2000 via citizen initiative, that “remove[d] redistricting authority from the Arizona Legislature and vest[ed] that authority in an independent commission.”¹⁷ Tracing the history of the federal statutes, the Court explained:

From 1862 through 1901, the decennial congressional apportionment Acts provided that a State would be required to follow federally prescribed procedures for redistricting unless “the legislature” of the State drew district lines. In drafting the 1911 Act, Congress focused on the fact that several States had supplemented the representative legislature mode of lawmaking with a direct lawmaking role for the people, through the process of initiative (positive legislation by the electorate) and referendum (approval or disapproval of legislation by the electorate). To accommodate that development, the 1911 Act eliminated the statutory reference to redistricting by the state “legislature” and instead directed that, if a State’s apportionment of Representatives increased, the State should use the Act’s default procedures for redistricting “until such State shall be redistricted *in the manner provided by the laws thereof*.”¹⁸

office, that in providing for congressional elections and for the districts in which they were to be held, these Legislatures were exercising the lawmaking power and thus subject, where the state Constitution so provided, to the veto of the Governor as a part of the legislative process.

Id. (citations omitted).

¹⁷ 576 U.S. at 792.

¹⁸ *Id.* at 809 (cleaned up; emphasis in original). “The 1911 Act also required States to comply with certain federally prescribed districting rules—namely that Representatives be elected ‘by districts composed of a contiguous and compact territory, and containing as nearly as practicable an equal number of inhabitants.’” *Id.* at 809 n.19 (quoting Act of Aug. 8, 1911, ch. 5, § 3, 37 Stat. 14); see also *id.* (“The 1911 Act did not address (continued...)”).

Because the “lawmaking power in Arizona include[d] the initiative process,” the establishment of an independent commission for purposes of congressional redistricting offended neither the Elections Clause nor Section 2a(c).¹⁹

Taken together, the foregoing authority undercuts the Special Master’s suggestion that House Bill 2146 should be entitled to some special consideration, let alone “revere[nce],”²⁰ simply by virtue of its adoption by the General Assembly. As I see it, there is no better embodiment of the People’s will than the language of the Constitution itself, and that text is clear: without the Governor’s signature or a two-thirds vote of the House

redistricting in the event a State’s apportionment of Representatives decreased, likely because no State faced a decrease following the 1910 census.”).

Notably, requirements virtually identical to those enumerated in the 1911 Act had been added to Pennsylvania’s Constitution by statewide referendum in 1874 to govern the redistricting process for state legislative districts, which at that time was handled by the General Assembly directly. See PA. CONST. (1874) art. II, §§ 16, 17; *LWV II*, 178 A.3d at 815. In 1968, Pennsylvania’s voters overhauled the legislative redistricting process by amending the Constitution to commit the power to redraw those districts to the newly constituted Legislative Reapportionment Commission. By its terms, our Constitution presently requires the Commission to draw legislative districts “composed of compact and contiguous territory as nearly equal in population as practicable,” and instructs that “no county, city, incorporated town, borough, township or ward shall be divided in forming” such districts “[u]nless absolutely necessary.” See PA. CONST. art. II, § 16. In *LVW II*, we effectively incorporated a slightly modified version of those requirements into the Free and Equal Elections Clause, *id.* art. I, § 5, as “neutral criteria” to measure the constitutionality of congressional redistricting plans. *LWV II*, 178 A.3d at 816-17 (holding that “an essential part of such an inquiry is an examination of whether the congressional districts created under a redistricting plan are: ‘composed of compact and contiguous territory; as nearly equal in population as practicable; and which do not divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population’”). “These neutral criteria provide a ‘floor’ of protection for an individual against the dilution of his or her vote in the creation of such districts.” *Id.* at 817.

¹⁹ *Id.* at 793.

²⁰ Report at 215.

and Senate to override his veto, it is axiomatic that House Bill 2146 is “just a bill.”²¹ While the House Bill undoubtedly encompasses the current Legislature’s policy *goals*, it does not have the force of law and therefore does not constitute state policy.²² Were this Court to treat it as anything more than a proposal on an equal footing with the other submitted plans, we would subvert the executive power in favor of the legislative power, elevating one coordinate branch of our government over another without a historical basis. This we cannot do.

Apart from the deference question, I also find the piecemeal treatment of discrete features of any given map as disqualifying to be problematic. For instance, while the Special Master considered the division of Pittsburgh to be suspect, her Report says nothing about House Bill 2146’s treatment of Philadelphia. Given its size, Philadelphia is the only county in Pennsylvania that can support two ideally populated congressional districts by itself, with the remainder of its surplus population added to a third district anchored in a neighboring county. However, House Bill 2146 is the *only* submission among the thirteen before us that divides Philadelphia into *four* districts—again without any justification along the lines of what the Special Master demanded of maps that split Pittsburgh. Likewise, the Special Master deemed maps that “divide[d] Bucks County for the first time since the 1860s” to be “[in]appropriate choice[s].”²³ But similar concerns were absent with respect to Dauphin County, for instance, which historically had been

²¹ SCHOOLHOUSE ROCK!, I’M JUST A BILL (1975).

²² See *Sixty-Seventh Minn. State Senate v. Beens*, 406 U.S. 187, 197 (1972).

²³ Report at 195.

kept whole before recent redistricting cycles. Where the 2018 Remedial Map reunified the county, the House Bill would have distributed its populace among three districts.

Moreover, notwithstanding the Constitution's command that "no county, city, incorporated town, borough, township or ward shall be divided in forming" districts "[u]nless absolutely necessary," there are only three counties (one of which is coterminous with a city) in Pennsylvania that "absolutely" must be split to account for current population estimates.²⁴ Beyond that, the Constitution does not create a hierarchy of political subdivisions to consistently guide the evaluation of a plan's performance on this measure. Nor does it set forth intelligible standards by which courts can conclude that the integrity of some municipal boundaries are sacrosanct, while others are not. Consequently, we must choose among proposed maps without a constitutionally-prescribed basis by which to resolve citizens' pleas that certain municipalities or "communities of interest" should be kept together. Ultimately, those questions are inherently political.

While historical practices might be a helpful starting point for a court to employ when it comes to scrutinizing political subdivisions, by no means do they create what one *Amicus* Participant cleverly chided as "cartographic *stare decisis*."²⁵ In that vein, the Special Master erred in asserting that certain plans "propose to split the City of Pittsburgh into two districts, apparently for the first time in [Pennsylvania's] history."²⁶ To the contrary, Pittsburgh historically had been split between multiple congressional districts for

²⁴ Those counties are Allegheny, Montgomery, and Philadelphia.

²⁵ Br. of *Amici* Participants Khalif Ali, *et al.*, 2/14/2022, at 20.

²⁶ Report at 194.

the better part of the previous century and beyond, including four districts in 1931, five in 1943, four again in 1951, and three between 1962 and 1982, to summarize just a few maps that the Legislative Reapportionment Commission conveniently has made publicly available on its website.²⁷ In fact, Pittsburgh has only comprised a single congressional district since 1982. That said, while the Constitution does not require a justification for each and every split (or any, for that matter), absent compelling reasons not present in this record, whether and how to divide Pennsylvania's second-largest city for the first time in four decades are questions best left to the political branches, which possess the institutional competencies to survey the Commonwealth, conduct fact-finding, and weigh amorphous and constitutionally-undefined concepts like "communities of interest" in deciding where lines should be drawn.

To be clear, I do not believe that any of the maps before us should be disqualified based upon discrete line-drawing decisions. The creation of a districting plan requires balancing a number of factors, some quantitative, others qualitative. Necessarily, maximizing a plan's performance with respect to one factor (compactness, say) will complicate one's ability to minimize the results of another (e.g., raw political subdivision splits). In exercising our "equitable discretion" to choose one plan from an array of options,²⁸ this Court's first responsibility is to ensure that a given plan satisfies the constitutional requirements of equal population, contiguity, compactness, and preservation of political subdivisions. As others have noted, using the 2018 Remedial

²⁷ See <https://www.redistricting.state.pa.us/Maps/>.

²⁸ *Connor*, 431 U.S. at 415.

Plan as a baseline, each of the submitted maps arguably satisfies these neutral criteria.²⁹

This is a good problem to have, as it appears that the days of “Goofy kicking Donald Duck” are over.³⁰ Given that reality, our inquiry must turn to other considerations.

Some would have us look immediately to a variety of “partisan fairness” metrics, a number of which have been scrutinized at length by the parties and their experts. Respectfully, I see less value in that order of operations. Though I reaffirm the proposition

that there exists the possibility that advances in map drawing technology and analytical software can potentially allow mapmakers, in the future, to engineer congressional districting maps, which, although minimally comporting with these neutral ‘floor’ criteria, nevertheless operate to unfairly dilute the power of a particular group’s vote for a congressional representative,³¹

I also bear in mind that we are in a fundamentally different posture than when we recognized the justiciability of partisan gerrymandering claims in *LWV II*. Because that case began as a challenge to an existing map that had been drawn by the Legislature and signed into law by the Governor, the litigants had the benefit of six years’ worth of election data by which to analyze that plan’s actual performance. While we found those

²⁹ Majority Op. at 27-33; Concurring Op. (Dougherty, J.) at 2; see Report at 192 (“On their face, . . . all the maps in the proposed plans contain districts that are comprised within a contiguous territory and comply with the ‘contiguity’ requirement of the Pennsylvania Constitution.”); *id.* (“Each and every proposed plan satisfies the command in the Free and Equal Elections Clause that congressional districts be created ‘as nearly equal in in population as practicable.’”). Among the submissions, the Khalif Ali *Amici* Participants alone utilized the Legislative Reapportionment Commission’s alternative, prisoner-adjusted data set. While this choice is not disqualifying, it makes comparing *Amici*’s plan to the other submissions somewhat more difficult. Absent a claim that such adjustments constitutionally are required, which *Amici* do not advance here, whether to use the prisoner-adjusted data set is a policy decision reserved to the discretion of policymakers.

³⁰ See *LWV II*, 178 A.3d at 819 (relating the derisive moniker given to Congressional District 7 in the 2011 Plan).

³¹ *Id.* at 817.

computations to be instructive, we did not need to rely on them in striking down the 2011 Plan because its subordination of the neutral redistricting criteria was manifest, particularly with regard to the compactness criteria. Here, by contrast, we do not confront a challenge to an existing map. Consequently, the partisan fairness metrics used to evaluate the thirteen submitted maps are useful heuristics to approximate partisan outcomes under conditions that have never occurred—*i.e.*, elections held under proposed lines. For that reason, I caution against surrendering to the allure of those metrics at the front end of an analysis. The numbers are no doubt helpful to a comprehensive examination, but they must not be dispositive. They serve better as a gut-check at the culmination of the process, rather than as a gatekeeping function at the start.

Aside from partisan fairness, in *LWV II*, “[w]e recognize[d] that other factors have historically played a role in the drawing of legislative districts, such as the preservation of prior district lines, protection of incumbents, or the maintenance of the political balance which existed after the prior reapportionment.”³² We designated these factors as “wholly subordinate to the neutral criteria” identified above, but available for consideration nonetheless.³³ I find inquiries about incumbent “protection” and maintaining “political balance” to be less appropriate or amenable to objective analysis in the context of a court-

³² *Id.*; *cf. Holt v. 2011 Legislative Reapportionment Comm’n*, 67 A.3d 1211, 1235 (Pa. 2013) (“*Holt I*”) (explaining that, as a constitutional matter, “there is nothing at all to prevent a particular reapportionment commission from considering political factors, including the preservation of existing legislative districts, protection of incumbents, avoiding situations where incumbent legislators would be forced to compete for the same new seat, *etc.*, in drawing new maps to reflect population changes, . . . so long as they do not do violence to the constitutional constraints” expressed in the neutral criteria); *Karcher v. Daggett*, 462 U.S. 725, 740 (1983) (identifying “preserving the cores of prior districts” to be a “legitimate objective”).

³³ *Id.*

drawn or court-selected map. Preserving prior district lines, however, readily can be assessed using straightforward quantitative metrics. Accordingly, I agree with Justice Dougherty's sentiments that, compared to the other subordinate historical considerations, what courts have referred to in modern parlance as the "least-change" approach offers several virtues for a court engaged in the selection of a plan.³⁴

For one thing, the least-change approach constrains the Court's exercise of its "equitable discretion," limiting the amount of judicial tinkering with existing district lines to the degree necessary to bring a malapportioned plan into compliance with constitutional requirements. For another, prioritizing least-change promotes "continuity for the vast majority of Pennsylvania residents,"³⁵ curbing the tumult that might ensue with an indiscriminate overhaul of existing districts. Furthermore, least-change offers a few objective measurements by which to compare competing submissions head-to-head. The "preeminent" metric for a least-change analysis is "core retention," which can be derived by comparing the existing district boundaries to the proposed district boundaries and then calculating the share of the population that would be retained in the overlapping portions.³⁶ The larger the percentage, the better a plan performs on the core retention metric. Alternatively, one can calculate a "displacement score" by identifying the share

³⁴ See Concurring Op. (Dougherty, J.) at 3.

³⁵ *Id.* at 4.

³⁶ *Johnson v. Wis. Elections Comm'n*, ___ N.W.2d ___, 2022 WL 621082, *4, *7 (Wis. March 1, 2022) ("Core retention represents the percentage of people on average [who] remain in the same district they were in previously. It is thus a spot-on indicator of least change statewide, aggregating the many district-by-district choices a mapmaker has to make. Core retention . . . is central to a least change review.").

of the population in each proposed district that was not in the prior district, with smaller numbers indicating superior performance.³⁷

On the core-retention metric, the submitted plans perform as follows:³⁸

Table 1: Retained Population Share in 14 Submitted PA Congressional Plans

Plan	Retained Population Share
Carter	86.6
CCFD	76.1
Citizen Voters	82.4
HB2146	78.5
Draw the Lines PA	78.8
GMS	72.8
Governor Wolf	81.2
Ali	81.5
PA House Dem. Caucus	73.3
Resenthaler 1	76.5
Resenthaler 2	76.5
Senate Dem. Plan 1	72.5
Senate Dem. Plan 2	72.5
Voters of PA	80.6

With a Retained Population Share of 86.6%, the Carter Plan significantly exceeds most submitted plans on this metric, with only the Citizen-Voters Plan coming within 5%. When asked at argument what significance should be given to these percentages, counsel for

³⁷ In *Johnson*, the Wisconsin Supreme Court rejected the state legislature’s argument that the Court “should weigh as a measure of least change the total number of counties and municipalities split under each proposal.” *Id.* The Majority “fail[ed] to see why this [wa]s a relevant least-change metric,” in light of the fact that “[i]f a municipality was split under the maps adopted in 2011, reuniting that municipality now—laudable though it may be—would produce more change, not less.” *Id.* Although the Court suggested that “[p]articuliarized data about how many counties or municipalities remain unified or split may be a useful indicator of least change,” it did not evaluate the proposed plans on that basis because none of the parties “saw fit to provide that data.” *Id.* (emphasis in original). Similar data were not submitted in this case either.

³⁸ See Carter Petitioners’ Response Br. in Support of Proposed Congressional Redistricting Plan, 1/26/2022, Ex. 1 (Expert Report of Jonathan Rodden, 1/26/2022, at 2).

the Carter Petitioners explained that the difference between 86% and 76% on this measurement is roughly one million more people who would remain in their current districts. Broken down by district, eleven of the seventeen proposed districts in the Carter Plan have core retention scores exceeding 89%:³⁹

Table 3: Share of Population in Each Proposed District that Will be in the Same District as in the 2018 Plan

District	Share of population in previous version of district
1	93.26%
2	95.84%
3	94.17%
4	81.65%
5	89.74%
6	98.44%
7	90.56%
8	92.10%
9	65.54%
10	96.20%
11	96.91%
12(18)	85.50%
13	73.39%
14	75.65%
15	59.61%
16	89.95%
17	93.63%

As the Governor’s expert put it, the Carter Plan “just laps [the] field when it comes to least change.”⁴⁰

In criticizing the Carter Plan, the Special Master erroneously contended that this Court rejected the least-change approach in *Holt I*, and therefore the Carter Plan was

³⁹ Carter Petitioners’ Br. in Support of Proposed Congressional Redistricting Plan, 1/24/2022, Ex. 1 (Expert Report of Jonathan Rodden, 1/24/2022, at 3).

⁴⁰ Notes of Testimony, 1/27/2022, at 409 (testimony of Moon Duchin, Ph.D.).

“developed in contravention of controlling precedent.”⁴¹ But least-change was not at issue in that case. Read in context, the cited passage concerned this Court’s standard and scope of review of the Legislative Reapportionment Commission’s 2011 Final Plan. The Commission argued that the Court’s “*de novo* review is to be constrained by the specifics of prior reapportionment plans ‘approved’ by the Court.”⁴² That was so because the Commission mistakenly believed that this Court’s prior redistricting decisions essentially pre-approved certain raw numbers of split political subdivisions and population deviation levels.⁴³ In rejecting that approach, the Court clarified that those prior appeals only resolved challenges actually raised by the parties; they did not “insulate” the Commission’s Final Plan “from attack . . . unless a materially indistinguishable challenge was raised and rejected in those decisions.”⁴⁴

Here, the Carter Petitioners do not suggest that the bulk of the 2018 Remedial Plan must be blindly re-adopted because it previously was approved by this Court. Rather, they believe that it is a reasonable starting point for drawing a new plan that also complies with all other traditional criteria. I agree. Moreover, preferring the least-change approach would not inoculate future plans from challenges, as the Special Master evidently feared.⁴⁵ The political branches are not bound by a least-change approach

⁴¹ Report at 187 (citing *Holt I*, 38 A.3d at 735).

⁴² *Holt I*, 38 A.3d at 735.

⁴³ *Id.*

⁴⁴ *Id.* at 736; see also *id.* at 735 (explaining that “prior ‘approvals’ of plans do not establish that those plans survived not only the challenges actually made, but all possible challenges”).

⁴⁵ See Report at 188 (“This Court is deeply troubled by the prospect of any court, let alone a court of this Commonwealth, applying the ‘Least Change’ doctrine, where the (continued...)”).

when drawing districts through the typical legislative process. The United States and Pennsylvania Constitutions give the General Assembly ample latitude to draw new maps from scratch based upon its preferred policy considerations, limited only by constitutional constraints and federal statutes such as the Voting Rights Act. Thus, the Legislature may replace wholesale the Carter Plan with a plan of its own devising in a future redistricting cycle, and any challenges to that plan would have to be evaluated independently on their merits.

To be sure, the least-change approach has its own shortcomings. The utility of such an approach might be diminished significantly if our point of reference—*i.e.*, the thing to be changed the least—is a grossly gerrymandered map, as was the case with the 2011 Plan, whose deficiencies were pervasive. In that instance, it would not have been prudent to require mapmakers to measure their proposals against manifestly unconstitutional lines.⁴⁶

Although I would not declare that least-change should be *the* “tie-breaker” for all court-selected plans, my views on this subject align more closely with Justice Dougherty’s.⁴⁷ In exercising our constitutional and equitable powers, we must recognize

existing plan was drafted by that court itself, because that court could theoretically continuously adopt features of its prior plans, effectively rendering impossible any future challenge to the plan.”).

⁴⁶ That being said, utilizing a least-change approach where a prior map’s constitutional shortcomings are confined to a few districts is not beyond the realm of possibility. In that case, all other things being equal, least-change might still present the most restrained approach to judicial selection among several proposed maps.

⁴⁷ See Concurring Op. (Dougherty, J.) at 3 (“In my view, the critical factor that sets the Carter Plan apart—the ‘tie-breaker,’ so to speak—is that the Carter Plan yields the least change from the Court’s 2018 congressional redistricting plan.”).

that redistricting is more art than science. Every line reflects a value judgment to some community or individual. Nonetheless, we should endeavor to resolve redistricting disputes by elevating as many “objective” criteria above “subjective” considerations as possible. To that end, I consider a plan’s least-change score to be a weighty plus-factor that parties to future impasse litigation would be wise to keep in mind when submitting plans for selection by a court. Given that the other plans before us largely satisfy the threshold neutral criteria, the Carter Plan’s superior performance on the least-change metric weighs heavily in its favor. For that reason, I join the Court in adopting it as the Commonwealth’s 2022 Congressional Redistricting Plan.

[J-20-2022] [MO: Baer, C.J.]
IN THE SUPREME COURT OF PENNSYLVANIA
MIDDLE DISTRICT

CAROL ANN CARTER, MONICA : No. 7 MM 2022
PARRILLA, REBECCA POYOUROW, :
WILLIAM TUNG, ROSEANNE MILAZZO, :
BURT SIEGEL, SUSAN CASSANELLI, LEE : ARGUED: February 18, 2022
CASSANELLI, LYNN WACHMAN, :
MICHAEL GUTTMAN, MAYA FONKEU, :
BRADY HILL, MARY ELLEN BALCHUNIS, :
TOM DEWALL, STEPHANIE MCNULTY :
AND JANET TEMIN, :

Petitioners

v.

LEIGH M. CHAPMAN, IN HER OFFICIAL :
CAPACITY AS THE ACTING SECRETARY :
OF THE COMMONWEALTH OF :
PENNSYLVANIA; JESSICA MATHIS, IN :
HER OFFICIAL CAPACITY AS DIRECTOR :
FOR THE PENNSYLVANIA BUREAU OF :
ELECTION SERVICES AND NOTARIES, :

Respondents

----- :
PHILIP T. GRESSMAN; RON Y. DONAGI; :
KRISTOPHER R. TAPP; PAMELA GORKIN; :
DAVID P. MARSH; JAMES L. :
ROSENBERGER; AMY MYERS; EUGENE :
BOMAN; GARY GORDON; LIZ MCMAHON; :
TIMOTHY G. FEEMAN; AND GARTH :
ISAAK, :

Petitioners

v.

LEIGH M. CHAPMAN, IN HER OFFICIAL :
 CAPACITY AS THE ACTING SECRETARY :
 OF THE COMMONWEALTH OF :
 PENNSYLVANIA; JESSICA MATHIS, IN :
 HER OFFICIAL CAPACITY AS DIRECTOR :
 FOR THE PENNSYLVANIA BUREAU OF :
 ELECTION SERVICES AND NOTARIES, :
 :
 Respondents :

DISSENTING OPINION

OPINION FILED: March 9, 2022
DECIDED: February 23, 2022

JUSTICE BROBSON

I. One Person, One Vote

Article I, Section 2 of the United States Constitution,¹ as interpreted by the Supreme Court of the United States, commands that congressional districts be apportioned to achieve population equality—“one person, one vote.” See *Evenwel v. Abbott*, 578 U.S. 54 (2016); *Tennant v. Jefferson Cnty. Comm’n*, 567 U.S. 758 (2012) (per curiam); *Karcher v. Daggett*, 462 U.S. 725 (1983); *Wesberry v. Sanders*, 376 U.S. 1 (1964). There is no *de minimis* exception to this constitutional imperative. *Karcher*, 462 U.S. at 730-38; see also *Vieth v. Pennsylvania*, 188 F. Supp. 2d 532, 542 (M.D. Pa. 2002) (“[T]he [United States] Supreme Court has squarely rejected any *de minimis* exception to the requirement of absolute equality in population between districts.”). Rather, the equal representation standard of the United States Constitution requires that “as nearly as is practicable one man’s vote in a congressional election is to be worth as much as another’s.” *Wesberry*, 376 U.S. at 7-8.

The United States Supreme Court has established a two-prong test to evaluate the constitutionality of a congressional reapportionment plan under the one-person, one-vote

¹ “The House of Representatives shall be composed of Members *chosen . . . by the People of the several States . . .*” U.S. Const. art. I, § 2 (emphasis added).

standard. The first question asks whether the population differences could practicably have been avoided through good-faith effort. *Karcher*, 462 U.S. at 730. If so, the second question asks whether the differences were nonetheless necessary to achieve a legitimate state objective. *Tennant*, 567 U.S. at 760 (citing *Karcher*, 462 U.S. at 740-41). Although we are not here being asked to evaluate the constitutionality of a reapportionment plan enacted through the legislative process outlined in our Pennsylvania Constitution, the one-person, one-vote standard and the *Karcher* test apply with equal force to a judicially created plan.

The Carter Plan, as it is called, fails the *Karcher* test. It proposes 17 congressional districts—four with the ideal population of 764,865, four with a population of 764,866 (plus one), and nine with a population of 764,864 (minus one). The Carter Plan, therefore, provides for a two-person population deviation between the largest and smallest congressional districts. While I acknowledge that it is mathematically impossible to create 17 districts of precisely equal population, it is possible, with good faith, to craft a plan with less than a two-person deviation. Indeed, of the 13 proposed reapportionment plans provided to this Court for its consideration, only two proposed a deviation of more than one person. The Carter Plan is one of those two. Moreover, the Carter Petitioners, in their Brief in Support of Exceptions to the Special Master’s Report (Carter Brief), acknowledge that it was possible to create a plan with a one-person deviation. (Carter Br. at 11 n.5.) The Carter Plan, therefore, fails the first part of the *Karcher* test.

The majority, nonetheless, has chosen the Carter Plan over the 11 other plans with only a one-person deviation. Applying the second prong of the *Karcher* test, then, it is the burden of the Carter Petitioners, and the majority by extension, to show that the two-person deviation in the Carter Plan is “necessary to achieve a legitimate state objective.” *Tennant*, 567 U.S. at 760. Again, the presence of other plans before the Court

that satisfy all state and federal redistricting criteria with only a one-person deviation proves the contrary. The majority concludes, however, that the Carter Petitioners “have satisfied their burden by stating, with specificity, that the two-person deviation was required to prevent [an] additional split of a Vote Tabulation District [(VTD)],” which it contends is a recognized legitimate state interest. (Maj. Op. at 31.) In support, the majority relies on this Court’s decision in *Mellow v. Mitchell*, 607 A.2d 204 (Pa. 1992).

In *Mellow*, this Court adopted the master’s recommendation to approve a proposed reapportionment plan with a total maximum population deviation of 0.0111% over a proposed redistricting plan with a total maximum population deviation of 0.0000017%, the latter of which represented a difference of just one person. *Mellow*, 607 A.2d at 208, 215, 218. In making his recommendation, however, the master acknowledged that the proposed reapportionment plan with the lowest population deviation “[fell] below other[] [proposed reapportionment plans] precisely because the cost of achieving maximum mathematical equality lies in having the congressional district boundaries split 22 election precincts as well as 27 local governments.” *Id.* at 218. The proposed reapportionment plan that was ultimately adopted by this Court, on the other hand, split only three precincts. *Id.*

I have no qualms about accepting a small increase in the population deviation between districts to avoid splitting 19 additional election precincts. However, here, unlike the *Mellow* Court, the majority has made no attempt to evaluate whether the Carter Plan performs superiorly with respect to splits of VTDs when compared to the 11 other plans that achieved only a one-person deviation. Rather, the majority simply claims that avoiding the split of just one additional VTD (not 19 election precincts, as was the case in *Mellow*) constitutes a legitimate state interest that justifies the two-person population deviation of the Carter Plan; satisfies the one-person, one-vote standard; and elevates

the Carter Plan above all other plans that achieved population equality closer to zero. *Mellow* simply cannot bear the weight of the majority's reliance.

Moreover, while the majority appears willing to look past the 11 other proposed plans that achieve closer-to-zero population equality in order to save one VTD in the Carter Plan, it seems unphased by the fact that, while saving this one VTD, the Carter Plan is the only proposed plan that splits the City of Williamsport (Lycoming County). Indeed, Dr. Daryl DeFord, on whom the majority relies to support its selection of the Carter Plan (Maj. Op. at 24), criticizes the Carter Plan for this particular split: “[O]ne plan (Carter) splits the city of Williamsport, whose population of 27,754 is nowhere near to necessitating a split.”² Rebuttal Report of D. DeFord (for Gressman Math/Science Petitioners) at 6 (Jan. 26, 2022) (emphasis added). By selecting the Carter Plan, the majority improperly saves a VTD that purportedly had to be split to ensure as close to equal population as practicable among the districts at the expense of an entirely unnecessary split of the City of Williamsport. No legitimate state interest can be found in this tradeoff.

For the above reasons, I respectfully disagree with the majority's reading of *Mellow* and its conclusion that the Carter Plan satisfies the one-person, one-vote standard. Article I, Section 2 of the United States Constitution protects the sanctity of one person, one vote, not one VTD. Accordingly, because I believe that the Carter Plan violates

² In *League of Women Voters v. Commonwealth*, 175 A.3d 282 (Pa. 2018) (*LWV I*) (mem.) (per curiam), this Court specifically noted that any congressional reapportionment plan submitted to the Pennsylvania Governor by the Pennsylvania General Assembly for consideration “shall consist of: congressional districts composed of compact and contiguous territory; as nearly equal in population as practicable; and which do not divide any county, city, incorporated town, borough, township, or ward, *except where necessary to ensure equality of population.*” *LWV I*, 175 A.3d at 290 (emphasis added).

Article I, Section 2 of the United States Constitution, I must dissent from the majority's selection of that plan.

II. Neutral Standards/Methods Over Partisan Metrics

Separately, it has been 60 years since the United States Supreme Court first waded into the “political thicket” to review and remedy malapportionment challenges. See *Baker v. Carr*, 369 U.S. 186 (1962).³ Since then, the United States Supreme Court has also waded into the thicket, rightly so, to address and remedy race-based or ethnic redistricting decisions that violate the Equal Protection Clause of the United States Constitution⁴ and/or the Voting Rights Act of 1965.⁵ See, e.g., *Abbott v. Perez*, 138 S. Ct. 2305 (2018); *Cooper v. Harris*, 137 S. Ct. 1455 (2017). Yet, the United States Supreme Court has refused to do so to address and remedy claims of excessive partisanship in the redistricting process, finding such claims nonjusticiable in the federal courts. *Rucho v. Common Cause*, 139 S. Ct. 2484 (2019).

Much ink has been spilt in this case about this Court's decision in *League of Women Voters v. Commonwealth*, 178 A.3d 737 (Pa. 2018) (*LWV II*). In *LWV II*, this Court held that challenges to congressional redistricting plans for excessive partisanship—i.e., partisan gerrymanders—are justiciable under the Free and Equal

³ Two decades before *Baker*, Justice Frankfurter, writing for a plurality, affirmed the dismissal of a malapportionment challenge to congressional districts as involving a nonjusticiable political question. *Colegrove v. Green*, 328 U.S. 549 (1946) (plurality opinion), *abrogated by Baker*, 369 U.S. 186. “To sustain this action,” Justice Frankfurter wrote, “would cut very deep into the very being of Congress. Courts ought not to enter this political thicket.” *Colegrove*, 328 U.S. at 556.

⁴ “No State shall . . . deny to any person within its jurisdiction the equal protection of the laws.” U.S. Const. amend. XIV, § 1.

⁵ 52 U.S.C. § 10101 *et seq.*

Elections Clause of the Pennsylvania Constitution.⁶ *LWV II*, 178 A.3d at 801-14. In reaching this conclusion, the Court examined challenges to the Congressional Redistricting Act of 2011 (2011 Plan), Act of December 22, 2011, P.L. 598, 25 P.S. §§ 3596.101-.1501,⁷ and determined that the 2011 Plan constituted an excessive partisan gerrymander in violation of the Free and Equal Elections Clause. *Id.* at 818-21.

In *LWV II*, then, this Court waded into the political thicket to review and remedy excessive partisan gerrymanders under the Pennsylvania Constitution. *Id.* at 821-24. In so doing, the Court interpreted the Free and Equal Election Clause as protecting voters from congressional districts that create an “unfair,” or unconstitutional, partisan advantage. *Id.* at 817. The Court concluded that a particular redistricting plan crosses the line from fair to unfair and, thus, is unconstitutional, when such plan subordinates neutral criteria—*i.e.*, “compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts”—“to extraneous considerations such as gerrymandering for *unfair* partisan political advantage.” *Id.* (emphasis added). By extension, any redistricting plan that does not cross that line is both fair and constitutional.

In short, *LWV II* is a partisan gerrymandering case. The current matter before this Court, however, is not a partisan gerrymandering case. Indeed, no one in this litigation has challenged any of the proposed plans as an unconstitutional partisan gerrymander under *LWV II*. *LWV II* recognizes that the Free and Equal Elections Clause protects Pennsylvanians from *excessive, unconstitutional, and thus unfair* partisanship in the drawing of legislative districts. It does not, however, create any right in the people of

⁶ “Elections shall be free and equal; and no power, civil or military, shall at any time interfere to prevent the free exercise of the right of suffrage.” Pa. Const. art. 1, § 5.

⁷ The 2011 Plan was held unconstitutional by *LWV I*.

Pennsylvania to the fairest among fair and lawful maps. The “fairest of the fair” inquiry is not a thicket; it is a quagmire. It is an entirely subjective, partisan, and quintessentially political inquiry that belongs in the political branches of our government, not in the courts.

Respectfully, the majority,⁸ in my view, grossly misreads the very narrow decision in *LWV II*, emboldening this Court to serve as the mirror on the wall and choose the fairest map of them all. (Maj. Op. at 18 (“[W]e conclude that consideration of partisan fairness, when selecting a plan among several that meet the traditional core criteria, is necessary to ensure that a congressional plan is reflective of and responsive to the partisan preferences of the Commonwealth’s voters.”), 27 (noting Carter Plan “is reflective of and responsive to the partisan preferences of the Commonwealth’s voters”), 36-37 (addressing partisan fairness and partisan metrics in its support of Carter Plan).) The majority has essentially emerged from the political thicket and jumped into the partisan quagmire. The long-term harm to the congressional redistricting process is not the majority’s adoption of the Carter Plan, but the analysis that the majority uses to break a partisan impasse and choose among the 13 proposed reapportionment plans, all but a few of which satisfy the neutral redistricting criteria.

⁸ Although Justices Dougherty and Wecht join the majority opinion, they also file concurring opinions that, while accepting the use of partisan metrics when analyzing the proposed redistricting plans in this matter, do not embrace the use of those metrics with the fulsome enthusiasm expressed in the majority opinion. Rather, Justice Dougherty recognizes “that the metrics for this criterion remain somewhat in flux when compared to the more standardized measures of the traditional core criteria.” (Concurring Op. at 4 n.1 (Dougherty, J., concurring).) He further recognizes that no partisan fairness standard has emerged in this case. As for Justice Wecht, he recognizes in his concurring opinion that “the partisan fairness metrics used to evaluate the [13] submitted maps are useful heuristics to approximate partisan outcomes under conditions that have never occurred,” but he “caution[s] against surrendering to the allure of those metrics at the front end of an analysis.” (Concurring Op. at 14 (Wecht, J., concurring).) He observes that while the numbers may be “helpful to a comprehensive examination, . . . they must not be dispositive.” (*Id.*) Instead, he would relegate them to “a gut-check at the culmination of the process, rather than as a gatekeeping function at the start.” (*Id.*)

By considering numerical partisan metrics and ultimately adopting a reapportionment plan because it provides for “proportionality,” avoids “anti-majoritarian” results, and attempts to offset a “structural tilt” in the political geography of Pennsylvania that favors Republican candidates,⁹ the majority has invited, not discouraged, this Court’s future involvement in the congressional redistricting process, whether in impasse litigation, such as this one; a partisan gerrymander challenge, such as the *LWV* litigation; or a “fairness” challenge to a legislatively enacted reapportionment plan signed into law by the governor. While the “least-change” approach—a neutral tool that in its purest form only makes minor revisions to existing legislative districts to account for population changes—purportedly used to create the Carter Plan may be imperfect,¹⁰ it would have

⁹ See, e.g., Report of M. Duchin (for Governor Wolf) at 2, 6 (Jan. 24, 2022); Report of J. Rodden (for Carter Petitioners) at 25 (Jan. 24, 2022) (noting that Carter Plan is “reflective of Pennsylvania’s statewide partisan preferences”); Report of J. Rodden (for Carter Petitioners) at 11 (Jan. 26, 2022) (criticizing plans that “would likely lead to counter-majoritarian outcomes”).

¹⁰ In a recent decision, the Wisconsin Supreme Court adopted the least-change approach as a neutral method to remedy the failure of Wisconsin’s legislative and executive branches to enact a congressional redistricting plan. See *Johnson v. Wis. Elections Comm’n*, 967 N.W.2d 469, 488-92 (Wis. 2021). In so doing, the court recognized that “[t]he existing maps were adopted by the legislature, signed by the governor, and survived judicial review by the federal courts” and that “[t]reading further than necessary to remedy their current legal deficiencies . . . would intrude upon the constitutional prerogatives of the political branches and unsettle the constitutional allocation of power.” *Id.* at 488. Thus, the court believed that the application of the least-change approach was a method by which it could remedy the malapportionment of Wisconsin’s districts, following the 2020 Census, without “endors[ing] the policy choices of the political branches” of Wisconsin’s government. *Id.* at 492. The circumstances presented in this matter, however, are different. Here, the Carter Plan applies the least-change approach to an 18-district congressional plan created by this Court (2018 Plan), not a plan enacted through the legislative process set forth in the Pennsylvania Constitution. Moreover, as a result of the 2020 Census, a congressional district must be eliminated. Thus, in order to apply the least-change approach to the 2018 Plan to arrive at the Carter Plan, the Carter Petitioners’ expert, Dr. Jonathan Rodden, did more than simply redraw certain district boundaries to achieve population equality; he eliminated completely, and necessarily, one congressional district. As a result, for many Pennsylvanians, particularly

been preferable, in my view, for the majority to have full-throatedly adopted it instead of using unquestionably partisan constructs to justify its selection of the Carter Plan. In my judgment, where the judiciary is forced to adopt a legislative reapportionment plan, the court should hew closely to nonpartisan standards (*e.g.*, compactness, contiguity, minimizing splits, etc.) or nonpartisan methods (*e.g.*, the “least-change” approach), eschewing partisan considerations or partisan approaches.

those along the Route 15 and Interstate 80 corridors, the least-change approach yields a big change in terms of who will represent them in Washington, D.C.

LEIGH M. CHAPMAN, IN HER OFFICIAL :
CAPACITY AS THE ACTING SECRETARY :
OF THE COMMONWEALTH OF :
PENNSYLVANIA; JESSICA MATHIS, IN :
HER OFFICIAL CAPACITY AS DIRECTOR :
FOR THE PENNSYLVANIA BUREAU OF :
ELECTION SERVICES AND NOTARIES, :
: :
Respondents :

DISSENTING OPINION

OPINION FILED: March 9, 2022
DECIDED: February 23, 2022

JUSTICE MUNDY

When the political branches approve a redistricting plan, the map will ordinarily have gone through a public-comment stage, been sent to committee for amendment, garnered majority support from both Houses of the General Assembly, and been approved by the Governor. It will subsume a myriad of political choices and tradeoffs which have been weighed, debated, and voted on by the public’s elected representatives. These considerations may include how closely the districts should match those of the previous plan, which non-retiring incumbents should be paired against each other in the upcoming election cycle, which counties and other political subdivisions should or should not be divided, which adjacent counties and townships should be grouped together, and which communities of interest should be kept intact within a single district.

Items such as these are generally viewed as valid districting factors so long as they do not subordinate the traditional, neutral criteria appearing in the state and federal charters. See *League of Women Voters v. Commonwealth*, 178 A.3d 737, 817 (Pa. 2018) (“LWV-II”) (citing *Holt v. 2011 Legis. Reapportionment Comm’n*, 67 A.3d 1211, 1235 (Pa. 2012)). As long as the plan that results from the political process does not “clearly, plainly, and palpably” violate the constitution, *League of Women Voters v. Commonwealth*, 175 A.3d 282, 289 (Pa. 2018) (*per curiam*) (“LWV-I”), it will survive a court challenge.

The present controversy is different. This is an impasse case in which the political branches have failed to agree on a plan, and we have little choice but to wade into the “political thicket” of redistricting. *Evenwell v. Abbott*, 578 U.S. 54, 58 (2016) (internal quotation marks and citation omitted). Not only that, we are placed in an unfamiliar role: we must make a selection rather than issue an adjudication. Stated differently, we are not merely required to judge the legality of a plan, we are put to the task of choosing the best among a number of competing plans that have been submitted for our consideration by a variety of parties and amici. To the extent an adjudication is reached in this matter, it is minimal and undisputed: the current map cannot be used because of population shifts in the last ten years and, most notably, because Pennsylvania now has only 17 representatives in Congress.

In undertaking our selection task, it is vital that this Court act in a politically neutral manner – and maintain the appearance of neutrality – to the greatest extent possible in order that the public may have confidence our decision is reached via compliance with neutral legal principles alone. In this respect, the Supreme Court has characterized the need for objectively demonstrable standards in judging redistricting plans as being

necessary to enable the state legislatures to discern the limits of their districting discretion, to meaningfully constrain the discretion of the courts, and to win public acceptance for the courts’ intrusion into a process that is the very foundation of democratic decisionmaking.

Rucho v. Common Cause, ___ U.S. ___, ___, 139 S. Ct. 2484, 2499-2500 (2019) (quoting *Vieth v. Jubelirer*, 541 U.S. 267, 291 (2004) (plurality)). It is my position, then, that our mission should be carried out solely in reference to the politically neutral criteria appearing in the text of the state charter, namely: contiguity, compactness, population equality, and respect for political boundaries. See PA. CONST. art. II, §16 (requiring districts which are “composed of compact and contiguous territory as nearly equal in population as

practicable,” and specifying further that, “[u]nless absolutely necessary no county, city, incorporated town, borough, township or ward shall be divided in forming” such districts).¹

Limiting our consideration to these express constitutional criteria has multiple benefits. In addition to maintaining the appearance of neutrality, it helps avoid any subtle, unconscious influence that political considerations might otherwise bring to bear upon our decision-making. Relatedly, the map we select will be known by all involved to be that which is most compliant with the Constitution’s commands as judged by an objective, neutral standard open to public view.² Such an approach also appears likely to reduce any incentive the political branches might otherwise have to view an impasse as desirable in its own right – in the sense that they would rather “take their chances” with this Court than seek political compromise – and thereby, to reduce the incentive for those branches to act strategically. And while I do not discount the theoretical possibility that gerrymandering might occur within the confines of an effort to comply scrupulously with

¹ Article II, Section 16 only facially applies to state legislative districts. In the *LWV-II*, however, a majority of this Court held that it applies, as well, to Pennsylvania’s congressional districts through Article I, Section 5, the Free and Equal Elections Clause. See *LWV-II*, 178 A.3d at 816.

² In this regard, I agree with many of the sentiments expressed by Justice Brobson to the effect that it is the Article II, Section 16 criteria, and not some concept of partisan fairness, that should control any redistricting exercise; whereas, the experts’ fairness metrics may be used in proving that a challenged map embodies illegal gerrymandering. See Dissenting Op. at 8-9 (Brobson, J.). In my view, the neutral criteria appearing in the Constitution’s text are insufficiently ambiguous to support the consideration of policy goals that are claimed to have motivated their adoption. As Judge McCullough suggested, moreover, the use of such policy goals as quality metrics in a map-selection endeavor can lead to reverse gerrymandering aimed at altering the partisan performance which arises naturally from the political geography of this state, which in turn stems from the decisions of many individual voters concerning where they wish to live. See Special Master Report at 197. Most importantly, the partisan-fairness metrics are not well suited to an objective scoring methodology because political judgments must be made about how to rank the maps in relation to such metrics.

the state charter's neutral directives, it seems evident that the closer a map adheres to those directives, the less likely it will be that district boundaries have been manipulated to give any political or partisan group an artificial advantage. As this Court recently explained in *LWV-II*:

Because the character of these [constitutional] factors is fundamentally impartial in nature, their utilization reduces the likelihood of the creation of congressional districts which confer on any voter an unequal advantage by giving his or her vote greater weight in the selection of a congressional representative as prohibited by Article I, Section 5. Thus, use of these objective factors substantially reduces the risk that a voter in a particular congressional district will unfairly suffer the dilution of the power of his or her vote.

LWV-II, 178 A.3d at 816; see also *id.* (noting these standards also comport with the United States Constitution's requirements for congressional districts).

All of this leads to the question of how to determine which of the proffered maps best complies with the Constitution's neutral factors after eliminating any maps that fail to meet the constitutional floor. See generally *LWV-II*, 178 A.3d at 817 ("These neutral criteria provide a 'floor' of protection for an individual against the dilution of his or her vote in the creation of such districts.").³ To answer this question, two observations may be made. First, the maps can be analogized to candidates in an election where each criterion by which they are judged is the equivalent of an individual voter taking part in a ranked-choice voting exercise:

³ A map might fail to meet the floor by, for example, containing districts which are not contiguous, or by having an unjustified population variance between districts. Such maps should be eliminated from consideration.

A given map must also comply with federal statutory law such as the Voting Rights Act or it, too, will not be considered. Here, however, there has been no suggestion that any of the proposed maps violates federal statutory law.

When a court or agency purports to select one of many possible outcomes by ranking the outcomes under a set of criteria, the situation parallels the democratic process. In place of the preferences of individual citizens, rankings under criteria determine judicial or administrative choices.

Matthew L. Spitzer, *Multicriteria Choice Processes: An Application of Public Choice Theory to Bakke, the FCC, and the Courts*, 88 YALE L.J. 717, 717-18 (1979). This type of decisional process – having multiple voters rank the contenders in an effort to select the best one – has been applied in such diverse contexts as selecting the most valuable player in sports, see Saul Levmore, *More than Mere Majorities*, 2000 UTAH L. REV. 759, 763, choosing an Academy Award winning film, see National Conference of State Legislatures, *Ranked-Choice Voting*, Vol. 25, No. 24 (2017), available at <https://www.ncsl.org/research/elections-and-campaigns/ranked-choice-voting.aspx> (last viewed Feb. 23, 2022), nominating political candidates, see *Maine Senate v. Sec’y of State*, 183 A.3d 749, 751-52 (Me. 2018), and electing political leaders, see *id.*

The second observation is that ranked-choice voting can be accomplished through pairwise comparisons of the candidates, in this case, the candidate maps. As long as this Court has adequate data concerning how well the maps score for a given quality metric at the most granular level (for example, the Polsby-Popper compactness metric), any two maps can be compared to see which one is better, or if they are tied. These pairwise comparisons can then be used to rank and score the maps for each quality metric using the “Borda count” system.⁴ Under this system, for each quality metric, each map receives one point for every other map it is superior to, plus one-half point for every other

⁴ The Borda count method is named after Jean-Charles de Borda, an eighteenth-century French mathematician. See Edward B. Foley, *Tournament Elections with Round-Robin Primaries: A Sports Analogy for Electoral Reform*, 2021 WIS. L. REV. 1187, 1200 n.39 (indicating Borda count is viewed as the best method to rank three or more candidates).

map it ties with.⁵ In this way, the pairwise comparisons yield a “raw” Borda count score for each map, for each quality metric at the most detailed level.

The method is simple and transparent. It is also flexible enough to accommodate virtually any type of quality metric, including continuous metrics such as a map’s score on a particular measure of compactness; integer-based metrics such as the number of county splits or county pieces reflected in a given map; binary metrics such as whether a map splits Pittsburgh (if this were indeed to be considered a valid quality metric); or criteria with a few discrete points, such as how many non-retiring incumbents are paired and whether they are from the same or opposite parties.⁶ These examples are given by way

⁵ See Bernard Grofman, *Public Choice, Civil Republicanism, and American Politics: Perspectives of a “Reasonable Choice” Modeler*, 71 TEX. L. REV. 1541, 1565 n.110 (1993); Jean-Pierre Benoit & Lewis A. Kornhauser, *Assembly-Based Preferences, Candidate-Based Procedures, and the Voting Rights Act*, 68 S. CAL. L. REV. 1503, 1522 & n.44 (1995).

With human voters, Borda count can be subject to distortion based on insincere (strategic) voting, see Cheryl D. Block, *Truth and Probability – Ironies in the Evolution of Social Choice Theory*, 76 WASH. U.L.Q. 975, 987-88 (1998) (providing an example of insincere ranked-choice voting and its underlying motivation), and it has been shown to sometimes miss a majority winner, see Saul Levmore, *Voting Paradoxes and Interest Groups*, 28 J. LEGAL STUD. 259, 266 n.9 (1999). These problems are absent here, as objective pairwise comparisons cannot be insincere, and our goal is not to pick the map that comes in first in most of the quality metrics, but to pick the best map overall.

⁶ For example, the maps before the Court reflect the following non-retiring incumbent pairings: one (R-D), one (R-R), two (R-D and R-D), two (R-R and R-D), two (D-D and R-D), and none.

These can be ranked in order from best to worst as follows. Best: none; second-best: one (R-D); third-best: two (R-D and R-D); fourth-best: one (R-R); worst: two (R-R and R-D) or two (D-D and R-D).

Returning to the handling of Pittsburgh: the method can accommodate a three-point quality measure where keeping Pittsburgh whole is best, keeping it whole via a “claw”

of illustration, but, as explained, I will only be using the neutral constitutional criteria for the present discussion – albeit in the Appendix, I also fold in the maps’ handling of Pittsburgh which, for reasons delineated below, is *sui generis*.

I use the term “raw scores” because the Borda count methodology must be modified slightly to be of use here. A map’s overall raw score is not ultimately what matters, but its overall weighted score, as explained *infra*.⁷ As for terminology, I will refer to high-level measures such as compactness and respect for political subdivision boundaries as the neutral constitutional *criteria*, and the different ways of measuring those criteria as *individual quality metrics*. This distinction is needed because there are multiple ways to measure compliance with each criterion. For example, there are several individual quality metrics associated with compactness, each capturing a different aspect of mathematical compactness, and some accounting for such features as jagged state borders or peninsulas which necessarily make districts less compact. See N.T., Jan. 27, 2022, at 214 (reflecting expert testimony stressing the importance of considering multiple compactness metrics); *Holt*, 67 A.3d at 1242 (recognizing “an apparent variety” of compactness models). Likewise, there are various different quality metrics relating to subdivision splits, such as county splits, ward splits, county pieces, and so on.

shape which grabs it, as in the House Democratic Caucus’s proposed map, is second-best, and splitting it is worst. The attached Appendix illustrates this scenario.

⁷ The weighting of criteria has been used in a variety of multi-criteria decision making (“MCDM”) tasks involving selection. See *Thiel v. W. Mifflin Borough*, 2007 WL 1087773, at *3 (W.D. Pa. Apr. 9, 2007) (hiring and promotion); *Transactive Corp. v. N.Y. State Dep’t of Soc. Servs.*, 665 N.Y.S.2d 701, 704 (N.Y. App. Div. 1997) (public procurement); *Pickus v. U.S. Bd. of Parole*, 507 F.2d 1107 (D.C. Cir. 1974) (parole selection); *Doe v. Alternative Med. Md., LLC*, 168 A.3d 21 (Md. 2017) (licensure selection); *Lohn v. Morgan Stanley DW, Inc.*, 652 F. Supp. 2d 812 (S. D. Tex. 2009) (assignment of client accounts to financial advisors); *Universal Grading Svc. v. eBay, Inc.*, 2009 WL 2029796 (E.D.N.Y. June 10, 2009) (assessment of rare-coin grading services).

Thus, for example, if compactness and respect for political boundaries are considered equally important and each is given a total weight of 10, there may be X ways to measure the former and Y ways to measure the latter. It follows that each compactness-related individual quality metric should have a weight of $10/X$, and each boundary-related individual quality metric should have a weight of $10/Y$. A map's score for a given individual quality metric, then, is its Borda count raw score multiplied by the weight of that quality metric.⁸

Consistent with my remarks at the beginning of this opinion, I would hold that this Court should rank and score all proposed maps according to each of the individual quality metrics and select the map with the highest total weighted score. The process entails five steps: (1) eliminate any map which fails to meet the constitutional "floor" or which violates federal law; then as to each of the remaining maps: (2) compute raw scores for each map for each individual quality metric using pairwise comparisons and Borda count; (3) compute weighted scores for each map for each individual quality metric by multiplying the raw scores by the weight for that individual quality metric; (4) compute the total weighted score for each map by summing all weighted scores for that map; and (5) select the map with the highest overall weighted score.

⁸ This type of weighting might also be useful in situations where secondary factors such as preserving communities of interest are included in the analysis. This is because not all such metrics are equally important, nor are they as important as the constitutional criteria. See Majority Op. at 15 (noting such factors are "wholly subordinate to the traditional core criteria"). Assigning different weights can reflect those realities. Similarly, weighting can be useful if this Court ultimately reads the "unless absolutely necessary" language in Article II, Section 16 as signifying that the Constitution places a higher value on avoiding subdivision splits than on compactness. See *generally Holt*, 67 A.3d at 1242 (indicating that achieving population equality and avoiding subdivision splits may "necessitate[] a certain degree of unavoidable non-compactness in any reapportionment scheme." (internal quotation marks and citation omitted)). For example, a total weight of 10 could be assigned to compactness, 7 or 8 to avoiding subdivision splits, and 3, 4, or 5 to the subordinate historical considerations.

The maps presented to us, and the data contained in the expert reports concerning those maps, reveal that all meet the contiguity and population-equality criteria, which are essentially binary in nature.⁹ As noted, moreover, none are alleged to violate federal law. See *supra* note 3. This leaves only the compactness and adherence-to-political-boundaries criteria on which to form a judgment concerning which is the best of the maps under review.

Twelve maps have been submitted for this Court's consideration: the Carter Petitioners' map ("CARTER"), the Gressman Petitioners' map ("GRESSMAN"), Governor Wolf's map ("GOV"), the map approved by the General Assembly ("HB-2146"), the first map by the Senate Democratic Caucus ("SEN-DEM-1"), the second map by the Senate Democratic Caucus ("SEN-DEM-2"), the House Democratic Caucus's map ("HOUSE-DEM"), the first map by the Reschenthaler group ("RESCH-1"), the second map by the Reschenthaler group ("RESCH-2"), the map submitted by the "Voters of the Commonwealth of Pennsylvania" group ("VOTERS-PA"), the map submitted by the "Draw

⁹ Pursuant to the 2020 census, Pennsylvania's population was 13,002,700, resulting in 17 districts with an average population of 764,864.7 per district. See Special Master Report at 3 n.6. Because the population is not a multiple of 17, there must be a population deviation, that is, the population of the most-populous district minus the population of the least-populous district must be at least one person.

I am aware that some of the maps have a population deviation of two persons. However, I do not consider the difference between a one-person and a two-person deviation to be legally significant, particularly as the census numbers are only approximate due to imperfections in data gathering combined with subsequent births, deaths, and relocations. Put differently, discounting two-person-deviation maps as compared to one-person-deviation maps would, in my view, be an exercise in false precision. Whether or not the Constitution allows for a *de minimis* population deviation, I would find a deviation of two persons to be *sub-de minimis*. For purposes of this case, then, I consider all maps with a one- or two-person deviation as satisfying the constitutional equal-population criterion.

the Lines” citizens’ group (“DRAW-LINES”), and the map submitted by the “Citizen Voters” group (“CITIZEN-VOTERS”).¹⁰

These twelve maps have been given a compactness score for each of six different mathematical compactness measurements: Polsby-Popper, Schwartzberg, Reock, Convex Hull, Population-Polygon, and Cut Edges.¹¹ Each map, in fact, has 17 scores for these metrics because each has 17 districts for which a compactness measure can be calculated. Helpfully, for each map the record contains average scores for each of these quality metrics – that is, an average score which comprises the mean value for the 17 districts contained on a particular map. It is these averages that are used in the pairwise comparisons between maps. Per the above discussion, each of the compactness metrics is assigned a weight of 1.67 (10 divided by 6, rounded to the nearest hundredth).

The averages for the twelve maps on four of the six compactness metrics were given by Dr. Daryl DeFord, see Majority Op. at 24, the expert who testified on behalf of the Gressman Petitioners. The only two compactness metrics missing from Dr. DeFord’s data are the Schwartzberg and Population-Polygon measures. Fortunately, however, those are reflected in a table supplied by Dr. Moon Duchin, Governor Wolf’s expert, which

¹⁰ A thirteenth map was submitted by the Khalif Ali amici. It has been excluded because, unlike all of the other maps, its boundaries were drawn based on data which attempted to assign prisoners to their last known home address without first establishing a legal basis for doing so. When assessed according to the data used by all the other maps, its population deviation was too high to meet the constitutional requirement of equi-populous districts. In any event, the record suggests it would not be the highest-scoring map in terms of compactness and subdivision splits even if accepted on its own terms.

¹¹ As explained, each such metric captures a different aspect of geometrical compactness, and each has its strengths and weaknesses. Further elucidation of this topic from a mathematical point of view is beyond the scope of this dissenting opinion. I only note at this juncture that, for each metric except “Cut Edges,” a number closer to 1.0 is better. With the Cut Edges metric, a lower number is better.

was endorsed by the Special Master. See Special Master Report at 141-43.¹² All six of these compactness measures are shown below in the row containing the map name. From these averages, raw Borda count scores are obtained using pairwise comparisons; as previously noted, a map's raw score includes one point for each pairwise win, plus a half-point for each pairwise tie, and so a higher raw score indicates better performance on that metric. The raw scores are then multiplied by the weight for that metric to arrive at the weighted score for each map for each metric:

MAP	Polsby-Popper	Schwartzberg	Reock	Convex Hull	Population Polygon	Cut Edges
<i>Weight</i>	1.67	1.67	1.67	1.67	1.67	1.67
CARTER	.31	1.8103	.41	.78	.7416	5896
Borda raw score	2.5	3	6.5	2.5	1	2
Weighted score	4.175	5.01	10.855	4.175	1.67	3.34
GRESSMAN	.33	1.7351	.40	.80	.7582	5546
Borda raw score	5	5	4.5	8.5	5	4
Weighted score	8.35	8.35	7.515	14.195	8.35	6.68
GOV	.37	1.6534	.40	.81	.7834	5154
Borda raw score	9.5	10	4.5	10.5	11	8
Weighted score	15.865	16.7	7.515	17.535	18.37	13.36
HB-2146	.31	1.8197	.38	.78	.7524	5882
Borda raw score	2.5	1	1.5	2.5	3	3
Weighted score	4.175	1.67	2.505	4.175	5.01	5.01
SEN-DEM-1	.30	1.8144	.37	.77	.7519	6016
Borda raw score	1	2	0	1	2	1
Weighted score	1.67	3.34	0	1.67	3.34	1.67
SEN-DEM-2	.32	1.7478	.38	.79	.7601	5476
Borda raw score	4	4	1.5	5.5	6	5
Weighted score	6.68	6.68	2.505	9.185	10.02	8.35
HOUSE-DEM	.27	1.9693	.39	.75	.7205	6821
Borda raw score	0	0	3	0	0	0
Weighted score	0	0	5.01	0	0	0
RESCH-1	.35	1.6859	.43	.81	.7737	5061

¹² In Dr. Duchin's report and table of map statistics, see Special Master Report at 141, the DRAW-LINES map is referred to as the "CitizensPlan." See N.T., Jan. 27, 2022. This should not be confused with the CITIZEN-VOTERS map.

Borda raw score	8	8	9	10.5	10	11
Weighted score	13.36	13.36	15.03	17.535	16.7	18.37
RESCH-2	.34	1.7127	.41	.80	.7658	5208
Borda raw score	6.5	7	6.5	8.5	7	6
Weighted score	10.855	11.69	10.855	14.195	11.69	10.02
VOTERS-PA	.38	1.6069	.44	.79	.7681	5120
Borda raw score	11	11	10.5	5.5	8	10
Weighted score	18.37	18.37	17.535	9.185	13.36	16.7
DRAW-LINES	.37	1.6625	.44	.79	.7725	5202
Borda raw score	9.5	9	10.5	5.5	9	7
Weighted score	15.865	15.03	17.535	9.185	15.03	11.69
CITIZEN-VOTERS	.34	1.7133	.42	.79	.7575	5144
Borda raw score	6.5	6	8	5.5	4	9
Weighted score	10.855	10.02	13.36	9.185	6.68	15.03

In addition to the compactness metrics, there are five quality metrics relating to how well a map keeps political subdivisions intact: counties split, county pieces, municipalities split, municipality pieces, and wards split. Including a score for “ward pieces” would amount to double-counting, as Dr. DeFord’s data reflect that no ward is split more than once. The combined weight of these individual metrics will be set to approximately 10, in accordance with the decision mentioned above to give equal weight to compactness and respect for subdivision boundaries. Still, it is something of a judgment call whether to consider these five quality metrics equally important and assign each a weight of 2.0. In my view, doing so would diminish the importance of ward splits without constitutional warrant, as all types of subdivisions are listed in Article II, Section 16 on equal terms. See PA. CONST. art. II, § 16 (“Unless absolutely necessary no county, city, incorporated town, borough, township or ward shall be divided[.]”).

Separately, giving county splits and county pieces each a weight of 2.0 would involve double-counting as the number of county pieces will depend, to a large extent, on the number of split counties (and similarly for split municipalities and municipality pieces). To ameliorate these concerns, I am assigning a weight of 2.00 for county splits, 1.34 for

county pieces, 2.00 for municipality splits, 1.34 for municipality pieces, and 3.34 for ward splits.¹³ The total weight is 10.02, the same as the total weight for the compactness measures (6 x 1.67).¹⁴ The scores are set forth below in a manner similar to that for compactness:

MAP	Counties split	County pieces	Municipalities split	Municipality pieces	Wards split
<i>Weight</i>	<i>2.00</i>	<i>1.34</i>	<i>2.00</i>	<i>1.34</i>	<i>3.34</i>
CARTER	14	31	23	44	21
Borda raw score	8	7	2.5	1	5
Weighted score	16	9.38	5	1.34	16.7
GRESSMAN	15	32	19	36	15
Borda raw score	5	5	10.5	10.5	10
Weighted score	10	6.7	21	14.07	33.4
GOV	16	35	22	41	25
Borda raw score	2	1	4.5	4	1.5
Weighted score	4	1.34	9	5.36	5.01
HB-2146	15	33	21	39	18

¹³ The county and municipal pieces metrics include all pieces, not merely “extra” pieces. I note this because the data supplied by Dr. DeFord only includes the number for extra pieces. For example, if a map splits, say, 20 municipalities into two pieces each, Dr. DeFord’s data shows 20 split counties and 20 split pieces rather than 20 split counties and 40 split pieces. The Borda counts will not change, however, as the ranking of maps according to the “pieces” metrics is the same regardless of whether all pieces, or only “extra” pieces, are counted.

As a separate matter, for consistency with the majority opinion, per Dr. DeFord’s data the splits and pieces shown in the table include boroughs split by county lines. See Majority Op. at 32.

¹⁴ A reasonable argument could be made that these items should be weighted differently. One possibility would be to consider each type of municipality – cities, incorporated towns, boroughs, and townships – on equal terms. But this could be distortive as there are different numbers of the different types of municipalities. For example, Pennsylvania has only one incorporated town (Bloomsburg). In the end, since counties are the basic sub-units of governance, and because splitting wards can be especially problematic, I am assigning a weight of 3.34 to counties, 3.34 to wards, and 3.34 to all other municipalities combined.

Borda raw score	5	4	6.5	5.5	7
Weighted score	10	5.36	13	7.37	23.28
SEN-DEM-1	17	36	25	45	17
Borda raw score	0	0	0	0	8
Weighted score	0	0	0	0	26.72
SEN-DEM-2	16	34	21	38	14
Borda raw score	2	2.5	6.5	7	11
Weighted score	4	3.35	13	9.38	36.74
HOUSE-DEM	16	34	24	43	21
Borda raw score	2	2.5	1	2	5
Weighted score	4	3.35	2	2.68	16.7
RESCH-1	13	29	20	37	25
Borda raw score	10.5	10.5	8.5	8.5	1.5
Weighted score	21	11.39	17	11.39	5.01
RESCH-2	13	29	20	37	24
Borda raw score	10.5	10.5	8.5	8.5	3
Weighted score	21	11.39	17	11.39	10.02
VOTERS-PA	15	31	23	42	41
Borda raw score	5	7	2.5	3	0
Weighted score	10	9.38	5	4.02	0
DRAW-LINES	14	30	22	39	16
Borda raw score	8	9	4.5	5.5	9
Weighted score	16	10.72	9	7.37	30.06
CITIZEN-VOTERS	14	31	19	36	21
Borda raw score	8	7	10.5	10.5	5
Weighted score	16	9.38	21	14.07	16.7

The final two steps are to compute the total weighted score for each map and select the one with the highest total. Doing so yields the following scores, from highest to lowest.¹⁵ As can be seen, RESCH-1 is the top-scoring map, followed by DRAW-LINES:

¹⁵ For the scoring in this opinion and the Appendix attached hereto, I have used a spreadsheet to facilitate the calculations. The weights, raw data, and raw Borda scores were entered manually. All other computations were performed by the spreadsheet program. All total weighted scores are rounded to two decimal places.

MAP	Place	Total weighted score
RESCH-1	1	162.83
DRAW-LINES	2	158.83
RESCH-2	3	142.79
CITIZEN-VOTERS	4	142.28
GRESSMAN	5	138.61
VOTERS-PA	6	121.92
GOV	7	114.06
SEN-DEM-2	8	109.89
HB-2146	9	81.66
CARTER	10	77.65
SEN-DEM-1	11	38.41
HOUSE-DEM	12	33.74

I note that I used Dr. DeFord's data to align my scoring with the data used by the majority (supplemented where necessary). To guard against possible distortion from the use of only one data set, I also scored the maps based on Dr. Duchin's table on page 141 of the Special Master's Report. While there were slight variations in placement as among all twelve maps, the top two scoring maps remained the same:

MAP	Place	Total weighted score
DRAW-LINES	1	166.51
RESCH-1	2	155.98
RESCH-2	3	138.45
CITIZEN-VOTERS	4	134.60
VOTERS-PA	5	131.27
GRESSMAN	6	129.26
SEN-DEM-2	7	116.57
GOV	8	113.89
HB-2146	9	83.15
CARTER	10	68.80
HOUSE-DEM	11	42.42
SEN-DEM-1	12	41.75

Thus, with Dr. Duchin's data the DRAW-LINES map was the top scorer, with RESCH-1 as the runner-up. As between those two maps, however, only RESCH-1 keeps Pittsburgh whole, whereas DRAW-LINES splits it in two.¹⁶ If this factor were to be given weight as recommended by the Special Master, see Special Master Report at 150-51 (discussing evidence suggesting Pittsburgh should be kept within a single district); see also *id.* at 149 (finding that splitting Pittsburgh allows a map to achieve a higher compactness score), I would conclude that the RESCH-1 map should be chosen regardless of which data set is used.

In all events, the CARTER map does not come close to rising to the top of the pack. It seems notable, moreover, that, when compared with the other maps, the majority does not purport to find that the CARTER map scores particularly well on the neutral constitutional criteria on which the maps primarily compete, namely, compactness and respect for county and municipal boundaries. See Majority Op. at 28 n.23 (reflecting that the CARTER map is only a mid-level scorer in terms the compactness quality metrics listed); *id.* at 33 n.26 (same with regard to the split-municipalities quality metrics).

Whichever data set was used, the CARTER map placed tenth out of twelve – thus, in the bottom quartile. As the majority chooses that map for Pennsylvania, I respectfully dissent.

¹⁶ With a population of approximately 302,000, Pittsburgh is the second-largest city in Pennsylvania, and it is the largest city that does not need to be split to maintain population equality among congressional districts. The third-largest city, Allentown, has a far-lower population – around 125,000 as of the 2020 census. See <https://www.census.gov/quickfacts/allentowncitypennsylvania> (last viewed Mar. 4, 2022). Therefore, and because of the distinctly local emphasis of Pittsburgh's political culture as described by the Special Master, there appears to be particular importance attached to the precept that Pittsburgh should not be split. The Appendix to this opinion reflects the weighted quality scores of the maps if the handling of Pittsburgh were to be subsumed as a quality metric. In that scoring, the RESCH-1 map scores highest.

APPENDIX

As suggested in the attached dissenting opinion, the Borda-count scoring system is versatile enough to subsume virtually any quality metric. All that is needed is the ability to perform pairwise comparisons in reference to that metric. The handling of Pittsburgh can be used to illustrate this concept. Per the Special Master's report, it can be deemed best to keep Pittsburgh within a single district. At the same time, keeping that city whole via a normal-looking district can be viewed as superior to keeping it whole by grabbing it with what the Special Master termed a "Freddy Krueger-like claw," which gives the appearance of gerrymandering. Special Master Report at 152, 203. Thus, one can construct three quality levels in the following descending order of desirability: "whole," "claw," and "split." In that event, the seven maps that keep Pittsburgh whole would receive a raw score of 8 because each is superior to five other maps and tied with six ($5 + (0.5 \times 6) = 8$); the "claw" map would receive a raw score of 4 by being superior to the four maps that split Pittsburgh; and those last four maps (the ones that split Pittsburgh) would receive a raw score of 1.5 because each is tied with three other maps. Giving the handling of Pittsburgh quality metric a weight of 4 (less than half as weighty as either of the neutral constitutional criteria which each received a weight of 10.02), the maps' handling of Pittsburgh can be folded into the scoring system with the following raw and weighted scores:

MAP	Handling of Pittsburgh
<i>Weight</i>	<i>4.00</i>
CARTER	Whole
Borda raw score	8
Weighted score	32
GRESSMAN	Whole
Borda raw score	8
Weighted score	32
GOV	Split
Borda raw score	1.5
Weighted score	6
HB-2146	Whole
Borda raw score	8
Weighted score	32
SEN-DEM-1	Split
Borda raw score	1.5
Weighted score	6
SEN-DEM-2	Split
Borda raw score	1.5
Weighted score	6
HOUSE-DEM	Claw
Borda raw score	4
Weighted score	16
RESCH-1	Whole
Borda raw score	8
Weighted score	32
RESCH-2	Whole
Borda raw score	8
Weighted score	32
VOTERS-PA	Whole
Borda raw score	8
Weighted score	32
DRAW-LINES	Split
Borda raw score	1.5
Weighted score	6
CITIZEN-VOTERS	Whole
Borda raw score	8
Weighted score	32

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When these weighted scores are added to the previous totals, the following ranking emerges:

MAP	Place	Total weighted score
RESCH-1	1	194.83
RESCH-2	2	174.79
CITIZEN-VOTERS	3	174.28
GRESSMAN	4	170.61
DRAW-LINES	5	164.83
VOTERS-PA	6	153.92
GOV	7	120.06
SEN-DEM-2	8	115.89
HB-2146	9	113.66
CARTER	10	109.65
HOUSE-DEM	11	49.74
SEN-DEM-1	12	44.41

A similar ranking is generated when only the Dr. Duchin data are used:

MAP	Place	Total weighted score
RESCH-1	1	187.98
DRAW-LINES	2	172.51
RESCH-2	3	170.45
CITIZEN-VOTERS	4	166.60
VOTERS-PA	5	163.27
GRESSMAN	6	161.26
SEN-DEM-2	7	122.57
GOV	8	119.89
HB-2146	9	115.15
CARTER	10	100.80
HOUSE-DEM	11	58.42
SEN-DEM-1	12	47.75

The above tables show that, when the handling of Pittsburgh is taken into account, the RESCH-1 map scores highest, followed by either the RESCH-2 map (using the Dr. DeFord data supplemented by the Dr. Duchin data) or the DRAW-LINES map (using only the Dr. Duchin data). Moreover, the CARTER map is consistently in the bottom three even though it keeps Pittsburgh whole.

LEIGH M. CHAPMAN, IN HER OFFICIAL :
 CAPACITY AS THE ACTING SECRETARY :
 OF THE COMMONWEALTH OF :
 PENNSYLVANIA; JESSICA MATHIS, IN :
 HER OFFICIAL CAPACITY AS DIRECTOR :
 FOR THE PENNSYLVANIA BUREAU OF :
 ELECTION SERVICES AND NOTARIES, :
 :
 Respondents :

DISSENTING OPINION

OPINION FILED: March 9, 2022
DECIDED: February 23, 2022

JUSTICE TODD

I dissent to the majority’s selection of the Carter Plan as the congressional redistricting plan.

Initially, I observe that our Court was compelled to act in this matter because the General Assembly and the Governor failed to agree on a congressional redistricting plan in the aftermath of the 2020 Census, and a swift and final resolution of the legal and factual disputes surrounding the plan adopted by the Special Master was necessitated by the election timetable for the looming May 17, 2022 Primary Election. As emphasized by the majority, this is not a task our Court sought, and, as a general matter, is one which our Court views as “unwelcome.” See Majority Opinion at 2 (quoting *League of Women Voters v. Commonwealth*, 178 A.3d 737, 823 (Pa. 2018) (“*LWV II*”). Nevertheless, whenever the legislative and executive branches are at an impasse and unable to enact a redistricting plan into law, it falls to the judiciary as a coequal branch of our tripartite system of constitutional governance to determine an appropriate redistricting plan, and, when called upon, we will faithfully fulfill that solemn duty. *LWV II*, 178 A.3d at 822.

In exercising that duty, I respectfully reject the majority’s selection of the Carter Plan. Rather, based on my analysis of the neutral constitutional criteria we set forth in

LWV II, I would select the plan developed by the “Gressman Math/Science” Petitioners – the “Gressman Plan” – as I consider it to most closely adhere to those neutral standards.¹

I begin with some notable areas in which my views align with the majority. Like the majority, I disapprove of the rationale the Special Master used to justify adopting her chosen plan – H.B. 2146 – and I recognize that an examination of how well a congressional redistricting plan comports with the four neutral criteria our Court articulated in *LWV II*² is of paramount importance in any assessment of whether that plan provides each voter what is guaranteed them by the Free and Equal Clause of the Pennsylvania Constitution³ – namely, that their vote is given full effect and not impermissibly diluted. *LWV II*, 178 A.3d at 816.

I likewise agree that the Special Master improperly accorded H.B. 2146 undue deference as “presumptively reasonable and legitimate” because, even though it was only a bill that never acquired the force of law (as it was vetoed by the Governor), in her view, it best represented the will of the voters among the competing plans. Report of the Special Master, 2/7/22, at 213-215. Respectfully, I find the Special Master’s assertion unfounded, given that, under our Commonwealth’s Constitution, and the duly enacted statutory framework governing the redistricting process promulgated thereto, the responsibility for approving a congressional redistricting plan is shared equally by the Governor and the General Assembly. See *LWV II*, 178 A.3d at 742 (“Pennsylvania’s

¹ As the majority recognizes, and as I discuss below, any plan we pick must also satisfy the requirements of the federal Voting Rights Act, 52 U.S.C. § 10301. *LWV II*, 178 A.3d at 817 n.72.

² Congressional districts created under a redistricting plan must: (1) be compact; (2) be contiguous; (3) be as nearly equal in population as practicable; and (4) not divide any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population. *LWV II*, 178 A.3d at 816-17.

³ Pa. Const. art. I, § 5 (guaranteeing that all “[e]lections shall be free and equal.”).

congressional districts are drawn by the state legislature as a regular statute, subject to veto by the Governor.”). Because the Governor is elected by the voters of the entire Commonwealth, there is, therefore, no basis to regard his veto of the proposed plan in this matter as somehow less representative of the will of the people than the legislature’s own enactment of that plan. H.B. 2146 therefore stands on equal footing with all other plans submitted to this Court – including the Governor’s alternative proposed plan — namely, that it is a plan worthy of thoughtful consideration. It is not entitled to special weight merely because it was passed by the General Assembly, but never became law. See *Sixty-Seventh Minnesota State Senate v. Beems*, 406 U.S. 187, 197 (1972) (recognizing that, when a reapportionment plan is offered by the legislature but vetoed by the Governor, and the Governor offers his own plan which is not adopted by the legislature, both plans stand on an equal footing and are equally worthy of “thoughtful consideration.”).

Further, the majority properly rejected the Special Master’s automatic disqualification of plans which do not meet the mathematical minimum of a one-person deviation from the ideal district population. As the majority notes, a slightly greater deviation from the ideal population of plus or minus one person, resulting in a total deviation of two persons, is not, in and of itself, disqualifying. A marginally greater population deviation can be justified on the basis of “consistently applied legislative policies” that are nondiscriminatory, such as compactness, respect for municipal boundaries, preserving cores of prior districts, and avoiding contests between incumbent members of Congress. *Karcher v. Daggett*, 462 U.S. 725, 740 (1983).

However, my agreement with the majority largely ends there. Most critically, in selecting the optimal redistricting plan from those before us, I disagree that, in this instance, we need to look beyond the constitutionally-specified neutral criteria, and

examine subordinate considerations. As the majority properly acknowledges, we recognized in *LWV II* that the four neutral criteria – contiguity, compactness, equal population, and splitting of political subdivisions – are the irreducible minimum requirements of Article I, Section 5 every redistricting plan must meet. See *LWV II*, 178 A.3d at 816. Indeed, as the majority aptly terms them, they are “core” requirements, and the other considerations our Court enumerated in *LWV II* such as preservation of communities of interest, preservation of prior districts, protection of incumbents, and partisan fairness are “*subordinate* historical considerations.” Majority Opinion at 34 (emphasis added); see also *LWV II*, 178 A.3d at 817 (“We recognize that other factors have historically played a role in the drawing of legislative districts, such as the preservation of prior district lines, protection of incumbents, or the maintenance of the political balance which existed after the prior reapportionment. However, we view these factors to be wholly subordinate to the neutral criteria of compactness, contiguity, minimization of the division of political subdivisions, and maintenance of population equality among congressional districts.” (citation omitted)). In my view, assessment of subordinate or secondary considerations such as partisan fairness, or whether a plan represents the least change from a prior congressional districting plan, is necessary *only* when a court must choose among various plans that are equal with respect to their compliance with the core criteria. Where, however, one plan is superior to all others, as measured by the closeness of its adherence to these criteria, I find it unnecessary for a court to consider the subordinate considerations. While I recognize that none of the submitted plans are perfect in this regard, I consider the Gressman Plan to best conform to the core criteria of all the plans submitted.

The Gressman Plan was crafted by a group of 12 professors of mathematics, statistics, computer science, geography, and data science who teach at Pennsylvania's institutions of higher learning, and who also live and vote in the Commonwealth. See Petition for Review *filed in Gressman v. Chapman*, 465 M.D. 2021 (Pa. Cmwlth.). As the Gressman Petitioners have described in their brief to our Court, they utilized a process known as computational redistricting, which, as a general matter, relies on raw population data and mathematical and statistical algorithms to generate maps based solely on neutral redistricting criteria. See Gressman Brief in Support of Exceptions to Special Master's Report at 8 (citing, *inter alia*, Bruce E. Cain *et al.*, *A Reasonable Bias Approach to Gerrymandering: Using Automated Plan Generation to Evaluate Redistricting Proposals*, 59 Wm. & Mary L. Rev. 1521, 1536 (2018) (opining that constructing computational algorithms that create maps based on the neutral principles of "preservation of extant communities, compactness, contiguity, and adherence to one-person, one-vote guidelines" minimizes the influence of human bias in the map drawing process)). In my view, the Gressman Plan, which was the product of this process, more closely adheres to *all* of the core criteria, collectively, than any of the plans currently before our Court, as measured by objective metrics.⁴

First, the Gressman Plan, like all the plans submitted to our Court, satisfies the requirement that its designated districts be contiguous.

⁴ In making this assessment, as does the majority, I rely on the comprehensive comparison of Dr. Daryl DeFord of all of the plans which have been submitted to our Court. See Majority Opinion at 24 (discussing DeFord analysis).

Second, the Gressman plan has the least minimum population deviation in congressional districts as is mathematically possible – one person – achieving ideal population equality of each district at 764,864 or 764,865 persons per district.

Third, with respect to compactness, which is a measure of the geographic or geometric regularity of the congressional districts created, the Gressman Plan is as good as or better than the other plans, and in particular the Carter Plan, according to four widely accepted statistical measures: Polsby–Popper, Reock, Convex Hull, and Cut Edges. See *generally* Report of the Special Master, 2/7/22, at 25, 69, 77 (discussing measures); Stephen Ansolabehere *et al.*, *A Two Hundred-Year Statistical History of the Gerrymander*, 77 Ohio St. L.J. 741, 746 (2016) (discussing Polsby–Popper, Reock, and Convex Hull measures); Expert Report of Moon Duchin, 1/24/22, at 6 (Exhibit A to Exceptions of Governor Wolf) (discussing Cut Edges measure). While I observe that some of the other submitted plans yield slightly more compact valuations on individual measures, there is, as the majority notes, tension between assuring compactness and minimizing political subdivisions splits. See Majority Opinion at 28 (“It is easily comprehended that adherence to county and city lines will decrease compactness because many of the boundaries follow geographic features such as rivers, which meander across our Commonwealth.”).

In that regard, and finally, the splitting of political subdivisions, as a general proposition, has a particularly pernicious effect in diluting the vote of the residents of those subdivisions, and is to be scrupulously avoided unless absolutely necessary to maintain

equality of population.⁵ *LWV II*, 178 A.3d at 815. The Gressman Plan is superlative in that regard. Dr. DeFord's analysis shows that, overall, the Gressman plan divides only 49 political subdivisions, which is 2 fewer than the next best plan in this category, the Senate Democratic Caucus Plan (which, unlike the Gressman Plan, splits the City of Pittsburgh). As compared to H.B. 2146, the Gressman Plan divides 5 fewer political subdivisions, and it divides 9 fewer political subdivisions than the Carter Plan, which also divides one more city — Harrisburg — than does the Gressman Plan.

Consequently, the Gressman Plan, uniquely, has the twin salutary benefits of maintaining perfect population equality among congressional districts, while preserving the most number of intact political subdivisions within those districts. This establishes, in my view, the plan's superiority over all the others which our Court has considered.⁶

For these reasons, I would have selected the Gressman Plan. Accordingly, I respectfully dissent.

⁵ In this regard, I agree with the majority that our Constitution does not set forth a hierarchical preference of the various types of enumerated political subdivisions which should be protected against splitting. See Majority Opinion at 33. As the majority notes, plans must be scrutinized to ensure that, as a whole, the number of political subdivision splits are minimized in accordance with consideration of all relevant objective criteria. *Id.*

⁶ There is no suggestion by any of the parties that the Gressman Plan, which yields at least two majority-minority districts, is violative of the Voting Rights Act, *see supra* note 1, and I discern no such violation on the basis of this record.