IN THE COMMONWEALTH COURT OF PENNSYLVANIA

Nos. 464 & 465 MD 2021 (CASES CONSOLIDATED)

CAROL ANN CARTER, ET AL.,

Petitioners,

v.

LEIGH M. CHAPMAN, ET AL.,

Respondents.

***

PHILIP T. GRESSMAN,

Petitioners,

v.

LEIGH M. CHAPMAN, ET AL.,

Respondents.

***

PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW OF GUY RESCHENTHALER, JEFFREY VARNER, TOM MARINO, RYAN COSTELLO, AND BUD SHUSTER

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I.   EXECUTIVE SUMMARY

In the end, this case comes down to "absolutely necessary." To explain, according to *League of Women Voters v. Commonwealth*, when applying the Pennsylvania Constitution to a congressional plan, a court must effectuate the Free and Equal Elections Clause by applying the criteria of Article II, Section 16. *See* 178 A.3d 737, 816 (Pa. 2018). That section requires a map be compact, continuous, contain equal population, and—critically—"[u]nless **absolutely necessary**," split no county, city, incorporated town, borough, township, or ward. Pa. Const. art. II, § 16 (emphasis added).

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 Congressional Intervenors have done. Notes of Testimony (N.T.) 1/27/22 at 43:19-25; 170:15-20 (Dr. Rodden); N.T. 1/27/22 at 287:11-20 (Dr.

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DeFord)[1]; 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

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[1] While acknowledging the county split advantage for the Reschenthaler maps, Dr. DeFord also testified he believed the Reschenthaler maps had one more municipal split than the Gressman map. N.T. 1/27/22 at 285:23-286:23. However, his conclusion on the issue of a municipal split superiority for the Gressman plan versus the Reschenthaler plans was contrary to that of two other experts: Dr. Rodden and Dr. Duchin. *See* Rodden Jan. 26, 2022 Report at 5 (Table 3, showing Gressman plan with 16 "County Subdivision" splits and Reschenthaler plans with just 15); Dr. Duchin Jan. 26, 2022 Report at 2 (Table 1) (showing Gressman plan with 16 split municipalities and Reschenthaler plans also with 16 split municipalities).

have fared in these metrics had they followed the Constitution.

N.T. 1/27/22 at 465:16-25 (Dr. Duchin testifying).[2] 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. Moon 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

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[2] 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.

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 (emphasis added). 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 Jan. 24, 2022 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.[3]

    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-

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[3] 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).

10-16 (Dr. Duchin testifying).[4] And the *reason* for that typical outcome

is not anything nefarious but, in fact, something readily acknowledged

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. N.T. 1/27/22 at

174:3-181:24 (Dr. Rodden testifying);); *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.")[5] Thus, in drawing population-equal districts, yet still

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[4] 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).
   [5] 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.

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. N.T. 1/27/22 at 181:9-20 (Dr. Rodden testifying).

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, e.g.*, Duchin Jan. 26, 2022 Report at 4 (Table 2) (as shown in the footnote below, projecting 8 D and 9 R seats under Reschenthaler 1 or 2)[6]; Rodden Jan. 26, 2022 Report at 9 (Table 5) (showing 6 D, 8 R, and 3 toss-up seats under Reschenthaler 1; showing 7 D, 8 R, and 2 toss-up seats under Reschenthaler 2); N.T. 1/27/22 at 171:1-25 (Dr. Rodden testifying); Brunell Report 8 (Table 9) (showing 5 D, 8 R, and 4 toss-up seats under Reschenthaler 1; showing 5 D, 8 R, and 4 toss-up seats under Reschenthaler 2; versus 2018 map, with 18 seats, which projects 6 D, 7 R, and 5 toss-up seats).

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[6] 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*).

In the end, for these reasons, and for the reasons stated below in these proposed findings of fact and conclusions of law, 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 (see below), 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 urge the Court to adopt one of their proposed plans.

In further support of this request, they state as follows:

II.   PROPOSED FINDINGS OF FACT

A.   Parties

1. Petitioner Carol Ann Carter is a registered voter who resides in Bucks County and in Congressional District 1. Carter PFR ¶ 9.

2. Petitioner Monica Parrilla is a registered voter who resides in Philadelphia County and in Congressional District 2. Carter PFR ¶ 9.

3. Petitioner Rebecca Pouyourow is a registered voter who resides in Philadelphia County and in Congressional District 3. Carter PFR ¶ 9.

4. Petitioner William Tung is a registered voter in Philadelphia County and in Congressional 3. Carter PFR ¶ 9.

5. Petitioner Roeseanne Miliazzo is a registered voter who resides in Montgomery County and in Congressional District 4. Carter PFR ¶ 9.

6. Petitioner Burt Siegel is a registered voter who resides in Montgomery County and in Congressional District 4. Carter PFR ¶ 9.

7. Petitioner Susan Cassanelli is a registered voter who resides in Delaware County and in Congressional District 5. Carter PFR ¶ 9.

8. Petitioner Lee Cassanelli is a registered voter who resides in Delaware County and in Congressional District 5. Carter PFR ¶ 9.

9. Petitioner Lynn Wachman is a registered voter who resides in Chester County and in Congressional District 6. Carter PFR ¶ 9.

10. Petitioner Michael Guttman is a registered voter who resides in Chester County and in Congressional District 6. Carter PFR ¶ 9.

11.   Petitioner Maya Fonkeu is a registered voter who resides in Northampton County and in Congressional District 7. Carter PFR ¶ 9.

12.   Petitioner Brady Hill is a registered voter who resides in Northampton County and in Congressional District 7. Carter PFR ¶ 9.

13.   Petitioner Mary Ellen Balchunis is a registered voter who resides in Dauphin County and in Congressional District 10. Carter PFR ¶ 9.

14.   Petitioner Tom DeWall is a registered voter who resides in Cumberland County and in Congressional District 10. Carter PFR ¶ 9.

15.   Petitioner Stephanie McNulty is a registered voter who resides in Lancaster County and in Congressional District 11. Carter PFR ¶ 9.

16.   Petitioner Janet Temin is a registered voter who resides in Lancaster County and in Congressional District 11. Carter PFR ¶ 9.

17.   Carol Ann Carter, Monica Parrilla, Rebecca Poyourow, William Tung, Roeseanne Milazzo, Burt Siegel, Susan Cassanelli, Lee Cassanelli, Lynn Wachman, Michael Guttman, Maya Fonkeu, Brady Hill, Mary Ellen Balchunis, Tom DeWall, Stephanie McNulty and Janet Teminare collectively the "Carter Petitioners."

18.   Petitioner Philip T. Gressman is a registered voter who resides in Delaware County and in Congressional District 5. Gressman PFR ¶ 11.

19.   Petitioner Ron Y. Donagi is a registered voter who resides in Montgomery County and in Congressional District 5. Gressman PFR ¶ 12.

20.   Petitioner Kristopher R. Tapp is a registered voter who resides in Delaware County and in Congressional District 5. Gressman PFR ¶ 13.

21.   Petitioner Pamela Gorkin is a registered voter who resides in Union County and in Congressional District 12. Gressman PFR ¶ 14.

22.   Petitioner David P. Marsh is a registered voter who resides in Union County and in Congressional District 12. Gressman PFR ¶ 15.

23.   Petitioner James L. Rosenberger is a registered voter who resides in Centre County and in Congressional District 12. Gressman PFR ¶ 16.

24.   Petitioner Amy Myers is a registered voter who resides in Philadelphia County and in Congressional District 3. Gressman PFR ¶ 17.

25.   Petitioner Eugene Boman is a registered voter who resides in Dauphin County and in Congressional District 10. Gressman PFR ¶ 18.

26.   Petitioner Gary Gordon is a registered voter who resides in Northampton County and in Congressional District 7. Gressman PFR ¶ 19.

27.   Petitioner Liz McMahon is a registered voter who resides in Northampton County and in Congressional District 7. Gressman PFR ¶ 20.

28.   Petitioner Timothy G. Freeman is a registered voter who resides in Montgomery County and in Congressional District 5. Gressman PFR ¶ 21.

29.   Petitioner Garth Isaak is a registered voter who resides in Montgomery County and in Congressional District 5. Gressman PFR ¶ 22.

30.   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. Freeman, and Garth Isaak are collectively the "Gressman Petitioners."

31.   Respondent Leigh Chapman is the Acting Secretary of the Commonwealth.

32.   Respondent Jessica Matthis is the Director for the Bureau of Election Services and Notaries.

33.   Intervenor United States Representative Guy Reschenthaler is the representative in Pennsylvania's malapportioned 14th Congressional District. Congressional Intervenors' Petition to Intervene ¶ 11.

34.   Intervenor Jeffrey Varner is a registered voter and resident of Swatara Township, Dauphin County, located in the malapportioned 10th Congressional District. Congressional Intervenors' Petition to Intervene ¶ 15.

35.   Intervenor Tom Marino is a former United States Representative who represented Pennsylvania's 10th Congressional district from 2011-2019, and Pennsylvania's 12th Congressional district in 2019. Congressional Intervenors' Petition to Intervene ¶ 22.

36.   Intervenor Ryan Costello is a former United States Representative who represented Pennsylvania's 6th Congressional

district from 2015-2019. Congressional Intervenors' Petition to Intervene ¶ 23.

37.   Intervenor Bud Shuster is a former United States Representative who represented Pennsylvania's 9th Congressional district from 1973-2001. Congressional Intervenors' Petition to Intervene ¶ 24.

38.   Representative Guy Reschenthaler, Jeffrey Varner, Tom Marino, Ryan Costello, and Bud Shuster are collectively the Congressional Intervenors.

39.   Intervenor Representative Bryan Cutler is Speaker of the Pennsylvania House of Representatives. State Republicans' Petition to Intervene at 3.

40.   Intervenor Representative Kerry Benninghoff is Majority Leader of the Pennsylvania House of Representatives. State Republicans' Petition to Intervene at 3.

41.   Representatives Cutler and Benninghoff are, together, the "House Republicans."

42.   Intervenor Senator Jake Corman is President Pro Tempore of the Pennsylvania Senate. State Republicans' Petition to Intervene at 3.

43.   Intervenor Senator Kim Ward is Majority Leader of the Pennsylvania Senate. State Republicans' Petition to Intervene at 3.

44.   Senators Jake Corman and Kim Ward are, together, the "Senate Republicans."

45.   Together, the House Republicans and Senate Republicans are the State Republicans.

46.   Intervenor Representative Joanna E. McClinton is a duly elected member of the Pennsylvania House of Representatives representing the 191st Legislative District. Representative McClinton is the Minority Leader of the Pennsylvania House of Representatives. House Democrats' Application to Intervene ¶¶ 1, 2.

47.   Intervenor Senator Jay Costa is a member of the Senate of Pennsylvania, representing the 43rd Senatorial District. Senate Democrats' Petition to Intervene at 3.

48.   Intervenor Senator Vincent J. Hughes is a member of the Senate of Pennsylvania representing the 7th Senatorial District. Senate Democrats' Petition to Intervene at 3.

49.   Intervenor Senator Wayne D. Fontana is a member of the Senate of Pennsylvania representing the 42nd Senatorial District. Senator Fontana is the Caucus Chair of the Senate Democratic Caucus. Senate Democrats' Petition to Intervene at 4.

50.   Senators Costa, Hughes, and Fontana are collectively the "Senate Democrats."

51.   Intervenor Tom Wolf is the Governor of the Commonwealth of Pennsylvania. Wolf Application to Intervene at 2.

B.   Background

52.   The 2020 Census' apportionment counts show that Pennsylvania is entitled to 17 seats in the United States House of Representatives. Joint Stip. Of Fact ¶ 1.

53.   Pennsylvania's current congressional map was last drawn in 2018 by the Pennsylvania Supreme Court. Joint Stip. Of Fact ¶ 2.

54. Pennsylvania's current congressional map contains 18 districts, based on the 2010 Census' apportionment count. Joint Stip. Of Fact ¶ 3.

55. According to the 2020 Census, Pennsylvania's population is 13,002,700. Joint Stip. Of Fact ¶ 4.

56. The 2010 Census reported that Pennsylvania's population was 12,702,379. Joint Stip. Of Fact¶ 5.

57. The ideal district population for Pennsylvania's 17 congressional districts is 764,864 or 764,865 persons. Joint Stip. Of Fact¶ 6.

58. Three of Pennsylvania's counties—Philadelphia, Allegheny, and Montgomery—have total populations that exceed the ideal district population of 764,864 or 764,865 persons. Joint Stip. Of Fact¶ 7.

59. The map attached as Exhibit 2 to the Carter Petitioners' brief is a true and correct copy of their proposed congressional map ("Carter Map"), and the map uploaded to SharePoint on January 24, 2022, by the Carter Petitioners, is a true and correct copy of that same map. Joint Stip. Of Fact ¶ 8.

60.	The map attached as Exhibit 2 to the Gressman Petitioners' brief is a true and correct copy of their proposed congressional map ("Gressman Map"), and the map uploaded to SharePoint on January 24, 2022, by the Gressman Petitioners, is a true and correct copy of that same map. Joint Stip. Of Fact. ¶ 9.

61.	The map published here - https://www.governor.pa.gov/congressional-districts-map-proposals/ - is a true and correct copy of Governor Wolf's proposed congressional map ("Governor's Map"), and the map uploaded to SharePoint on January 24, 2022, by Governor Wolf, is a true and correct copy of that same map. Joint Stip. Of Facts ¶ 10.

62.	The map attached as Exhibit I-1 to the Republican House Leaders' brief is a true and correct copy of their and the Republican Senate Leaders' proposed congressional map ("Republican Senate Leaders' Map"), and the map uploaded to SharePoint on January 24, 2022, by the Republican House Leaders, is a true and correct copy of that same map. Joint Stip. Of Facts ¶ 11.

63.	The maps attached as Exhibits A and B to the Congressional Intervenors' brief are true and correct copies of their proposed

congressional maps ("Reschenthaler 1" and "Reschenthaler 2"), and the maps uploaded to SharePoint on January 24, 2022, by the Congressional Intervenors, are true and correct copies of those same maps. Joint Stip. Of Facts ¶ 12.

64. The maps attached as Exhibits A and B to the Senate Democratic Caucus's brief are true and correct copies of their proposed congressional maps ("Senate Democrats' 1" and "Senate Democrats 2"), and the maps uploaded to SharePoint on January 24, 2022, by the Senate Democratic Caucus, are true and correct copies of those same maps. Joint Stip. Of Fact ¶ 13.

65. The plan attached as Appendices A and B to the House Democratic Caucus's brief in support of their proposed congressional redistricting plan are true and correct copies of their proposed congressional plan ("House Democrats' Plan"), and the map uploaded to SharePoint on January 24, 2022, by the House Democratic Caucus, is a true and correct copy of their proposed congressional map. Joint Stip. Of Fact ¶ 14.

C.   Factors

1.   Equal Population

66.   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 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.

67.   Only the House Democratic Caucus map and the Carter map deviate by ***more*** than one person—both have a two person deviation. *See* N.T. 204:4-20 (Dr. Rodden).

2.   Compactness

68.   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. Dr. Rodden's Report at 3; N.T. 1/27/22 at 166:10-17. Dr. Rodden is "confident" in the numbers in his report. N.T. 1/27/22 at 163:20-164:7.

69.   Further, based upon Dr. DeFord's review, Reschenthaler 1 and Reschenthaler 2 have equal or better compactness scores on every measure as compared to the Gressman Map. N.T. 1/27/22 at 285:13-22; Dr. DeFord Reply Report at 9.

70.   Dr, Duchin agrees that Reschenthaler 1 and Reschenthaler 2 have compact districts. N.T. 1/27/22 at 458:15-22.

71.   Dr. Duchin is "very confident in her numbers." N.T. 1/27/22 at 457:16-458:1.

72.   Reschenthaler 1 has an average Reock score of .435. Expert Report of Dr. Brunell at 3; N.T. 1/27/22 at 168:3-11 (Dr. Rodden testifying, stating Reschenthaler 1 has a Reock score of .43).

73.   Reschenthaler 1 has an average Polsby-Popper score of .363. Expert Report of Dr. Brunell at 3.

74.   Reschenthaler 2 has an average Reock score of .424. Expert Report of Dr. Brunell at 3; N.T. 1/27/22 at 168:3-11.

75.   Reschenthaler 2 has an average Polsby-Popper score of .352. Expert Report of Dr. Brunell at 3.

76.   Reschenthaler 2 and Reschenthaler 2 are reasonably compact. Expert Report of Dr. Brunell at 2-3.

3.   Contiguity

77.   Based upon Dr. Rodden's review, Reschenthaler 1 and Reschenthaler 2 meet the contiguity standard. N.T. 1/27/22 at 165:3-9.

78. Based upon Dr. DeFord's review, all the maps submitted are contiguous. N.T. 1/27/22 at 285:9-12.

79. Based upon Dr. Duchin's review, Reschenthaler 1 and Reschenthaler 2 are contiguous. N.T. 1/27/22 at 458:4-8.

80. Based upon Dr. Brunell's review, Reschenthaler 1 has 17 contiguous districts. Expert Report of Dr. Brunell at 2.

81. Based upon Dr. Brunell's review, Reschenthaler 2 has 17 contiguous districts. Expert Report of Dr. Brunell at 2.

4. Splits

82. Reschenthaler 1 and 2 split 13 counties. *See* N.T. 1/27/22 at 166: 3-9 (Dr. Rodden); *id.* at 458:23-459:4 (Dr. Duchin); Brunell Report at 4.

83. The following table details the expert reports of Drs. Rodden, DeFord, Duchin, and Brunell with respect to county, municipal, and ward splits contained in Reschenthaler 1 and 2:

Snapshot of Resch. Maps	Resch. 1	Resch. 2	Source
County Splits	13	13	DeFord Jan. 26, 2022 Report at 5, ¶ 14; Duchin Jan. 26, 2022 Report at 2 (Table 1); Rodden Jan. 26, 2022 Report at 4 (Table 2); Barber Jan. 26, 2022 Report at 8 (Table 1); Brunell Report at 4 (Table 3)
County Segments	29	29	Duchin Jan. 26, 2022 Report at 2 (Table 1); Brunell Report at 4 (Table 3)
Municipal Splits	**a.** 15 **b.** 16 **c.** 15	**a.** 15 **b.** 16 **c.** 15	**a.** Rodden Jan. 26, 2022 Report at 5 (Table 3) **b.** Duchin Jan. 26, 2022 Report at 2 (Table 1); Barber Jan. 26, 2022 Report at 8; Brunell Report at 5 (Table 5) **c.** DeFord Jan. 26, 2022 Report at 6, ¶ 16 (Table 3)[7]
Municipal Segments	33	33	Duchin Jan. 26, 2022 Report at 2 (Table 1); Brunell Report at 5 (Table 5)
Ward Splits	25	24	DeFord Jan. 26, 2022 Report at 7, ¶ 20 (Table 5); Brunell Report at 6 (Table 7)
Ward Segments	50	48	Brunell Report at 6 (Table 7)

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[7] Dr. DeFord uses slightly different nomenclature in this regard. Specifically, what other experts refer to "municipal splits" or "split municipalities" is denominated in Dr. DeFord's report as "total 'non-intact' municipalities." The "municipal splits" calculation in his report includes certain splits that are somewhat misleading, such as split municipalities that straddle two counties, and are not separately reported by others.

84. Drs. Rodden, Deford, and Duchin all concluded that Reschenthaler 1 and 2 split the *least* number of counties of any other map submitted. *See* N.T. 1/27/2022 at 166: 3-9 (Dr. Rodden);

85. Reschenthaler 1 and 2 are tied for the least number of municipal splits. *See* N.T. 1/27/22 at 286:24-287:9.

5. Communities of Interest

86. Dr. Keith Naughton explained that in order to achieve a good score under the Polsby-Popper and Schwartzberg models, certain communities may be included where they would not otherwise fit in the terms of a communities of interest. N.T. 1/28/22 at 709:12-710:12.

87. Dr. Naughton found that the Polsby-Popper score may not be satisfied when communities are grouped together based upon their interests. N.T. 1/28/22 at 712:1-16.

88. Dr. Naughton testified that keeping people with common interests together allows for better representation of those interests. *See* N.T. 697:5-698:3.

89. Reschenthaler 1 and 2 keep Pittsburgh within one district.

90. Dr. Naughton testified that Pittsburgh's communities of interests are best represented by keeping the city within the same district. *See* N.T. 1/28/22 at 712:21 - 715:13

91. Reschenthaler 1 and 2 keep Bucks County within one District.

92. 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* N.T. 1/28/22 at 715:14-716:13.

93. Reschenthaler 1 and 2 connect Philadelphia with Delaware County in District 16.

94. 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* N.T. 1/28/22 at 786: 19-24; 840: 21-841:2.

95. Reschenthaler 1 and 2 place Scranton and Wilkes-Barre in different districts.

96.   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* N.T. 1/28/22 at 734:2-736:12.

6.   Partisan Fairness and Pennsylvania Geography

(a)   Mean-Median Scores

97.   Dr. Rodden calculated the mean-median difference for the submitted maps as follows:

Table 6: Mean-Median Difference for 14 Submitted Congressional Plans.

Plan	Mean Median Difference
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
Reschenthaler 1	0.01
Reschenthaler 2	0.01
Sen Dems 1	0.007
Sen Dems 2	0.007
Voters of PA	0.026

Dr. Rodden Reply Report at 11.

98.   The mean-median difference for Reschenthaler 1 and

Reschenthaler 2 is 1% based upon Dr. Rodden's calculations. Dr.

Rodden Reply Report at 11; N.T. 1/27/22 at 172:1-8.

99.   Dr. DeFord calculated mean-median scores of all maps and

produced the following table demonstrating the same:

Table 12: Mean-Median Scores in the Proposed Plans and in the 2018 Plan

	GMS	House Repubs.	Gov'r	Carter	Sen. Dems. 1	Sen. Dems. 2	House Dems.	Repub. Congress 1	Repub. Congress 2	2018
Number of Elections Favoring Republicans	8	15	6	9	12	6	6	16	16	10
Number of Elections Favoring Democrats	10	3	12	9	6	12	12	2	2	8
Min. Score	-0.120	-0.177	-0.116	-0.128	-0.108	-0.100	-0.118	-0.176	-0.177	-0.192
Max. Score	0.074	0.133	0.073	0.073	0.073	0.073	0.130	0.128	0.128	0.047
Mean Score	0.008	-0.063	0.006	-0.004	-0.025	0.010	0.033	-0.078	-0.078	-0.026
Range	0.194	0.310	0.189	0.201	0.181	0.173	0.248	0.304	0.305	0.239

Dr. DeFord Reply Report at 15.

100. Based upon this table, Dr. DeFord agrees that the

Governor's Map has the largest polarity in terms of mean-median score.

N.T. 1/27/22 at 299:13-300:11.

101. 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*

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. Duchin Jan. 24, 2022 Report at 2 (discussing criteria

used to create simulations), at 18 (discussing number of simulations).

According to her second 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 yielded 2.39%. Duchin Jan. 26, 2022 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 455:14-4--56:12 (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. Duchin Jan. 26, 2022 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).

102. Furthermore, analyzing a different set of elections than those used by Dr. Duchin, Dr. Brunell found the Reschenthaler 1 and 2 maps had mean-median averages of 1.86% and 1.89%, respectively. Brunell Report at 9 (Table 10).

(b)   Other Methods of Evaluating Partisan Fairness

103. To evaluate competitive fairness in the proposed maps, Dr. Rodden charted the following to demonstrate how many seats were competitive in each map:

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
Reschenthaler 1	9	6	3	0	8	8
Reschenthaler 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

Dr. Rodden Reply Report at 9.

104. The difference between the Carter Map and Reschenthaler 1 and Reschenthaler 2 on the far left column, showing number of seats with statewide Democrat vote share >.5, is one out of seventeen. N.T. 1/27/22 at 171:1-16.

105. The difference between the Carter Map and Reschenthaler 1 and 2 on the far right column, showing number of seats with statewide Republican vote share >.5, is a difference of just one. N.T. 1/27/22 at 171:17-25.

106. The lack of partisan advantage in Reschenthaler 1 and 2 is further demonstrated by Dr. Brunell's analysis using the results of the 2016 and 2020 presidential elections to determine if the district indicates a Democratic advantage or a Republican advantage. Expert Report of Dr. Brunell at 7. Dr. Brunell did this same analysis to compare Reschenthaler 1 and Reschenthaler 2 to the current map. Expert Report of Dr. Brunell at 8. Based upon his, Reschenthaler 1 and Reschenthaler 2 break eight Republican, five Democrat, and four toss-up districts. Expert Report of Dr. Brunell at 8.

(c) Political Geography

107. Pennsylvania's unique political geography affects the analysis of partisan advantage in any proposed map. 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. 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." N.T. 1/27/22 at 181:6-14. Dr. Rodden believes these statements to be true today about Pennsylvania. N.T. 1/27/22 at 181:18-20.

108. 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. Dr. DeFord Expert Report ¶ 104; N.T. 1/27/22 at 291:13-23.

109. 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." Dr. DeFord Expert Report ¶ 104; N.T. 1/27/22 at 291:24-292:16.

110. Dr. Duchin's report most compellingly demonstrates the partisan political geography of the Commonwealth. 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." Expert Report of Dr. Duchin at 18.

111. 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." Expert Report of Dr. Duchin at 19.

112. Because of varying factors, it is difficult to predict and understand partisan advantage. Dr. Barber agrees that measures such as mean-median and the efficiency gap do not account for political factors such as voter choice and electoral outcomes. N.T. 1/27/22 at 612:15-25.

113. Dr. Barber acknowledges that factors such as campaign finances can affect state and congressional elections but are not

accounted for in the mean-median and efficiency gap analyses. N.T. 1/27/22 at 614:13-615:5.

114. While Dr. Caughey reviewed only Reschenthaler 1 for partisan fairness on PlanScore, he acknowledges that PlanScore does not account for changes in voting procedures, such as straight ticket voting. N.T. 1/28/22 at 1004:1-13, 1007:18-1008:5. Dr. Caughey also acknowledges that PlanScore is not a perfect predictor and "has not been used as long as most of the other metrics have." N.T. at 1008:13-16, 1010:15-1011:2.

115. 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. N.T. 1/28/22 at 696:13-17.

116. 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. 1/28/252 at 700-15:24; 701:6-703:8, 704:10-16.

117. 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. 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. N.T. 1/28/22 at 713:20-715:24.

118. 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. 1/28/22 at 766:6-22.

D.   Voting Rights Act

119. 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. Expert Report of Tom Brunell at 10.

120. 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. Expert Report of Dr. Brunell at 10.

121. Looking to ecological regression, Dr. Brunell again found that racially polarized voting is not present. Expert Report of Dr. Brunell at 11.

122. The Gressman map has three majority-minority districts. Expert Report of Dr. DeFord at ¶ 117.

123. The Governor's map has three majority-minority districts. Expert Report of Dr. Duchin at 11.

E.   The "Best Map"

124. 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, N.T. 1/27/22 at 162:13-20;
>
> Dr. DeFord (Gressman's expert): Gressman map, N.T. 1/27/22 at 284:15-19; and

Dr. Duchin (Governor's expert): Governor's map, N.T. 1/27/22 at 457:2-8.[8]

The testimony was so inconsistent, and accordingly not credible, 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." N.T. 1/27/22 at 457:9-14.

125. 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.

126. 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.

F.   Snapshot of the Reschenthaler Maps

127. The characteristics of Reschenthaler 1 and Reschenthaler 2 can be summarized as follows:

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[8] Nonetheless, Dr. Duchin produced a table in her reply report comparing the compactness and splitting metrics for all maps submitted and acknowledges that Reschenthaler 1 and 2 are superior to the Governor's Map on seven out of ten of these metrics. Dr. Duchin Reply Report at 2; N.T. 1/27/22 at 462:12-23.

Snapshot of Resch. Maps	Resch. 1	Resch. 2	Source
County Splits	13	13	DeFord Jan. 26, 2022 Report at 5, ¶ 14; Duchin Jan. 26, 2022 Report at 2 (Table 1); Rodden Jan. 26, 2022 Report at 4 (Table 2); Barber Jan. 26, 2022 Report at 8 (Table 1); Brunell Report at 4 (Table 3)
County Segments	29	29	Duchin Jan. 26, 2022 Report at 2 (Table 1); Brunell Report at 4 (Table 3)
Municipal Splits	**a.** 15 **b.** 16 **c.** 15	**a.** 15 **b.** 16 **c.** 15	**a.** Rodden Jan. 26, 2022 Report at 5 (Table 3) **b.** Duchin Jan. 26, 2022 Report at 2 (Table 1); Barber Jan. 26, 2022 Report at 8; Brunell Report at 5 (Table 5) **c.** DeFord Jan. 26, 2022 Report at 6, ¶ 16 (Table 3) (see footnote *supra*)
Municipal Segments	33	33	Duchin Jan. 26, 2022 Report at 2 (Table 1); Brunell Report at 5 (Table 5)
Ward Splits	25	24	DeFord Jan. 26, 2022 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	DeFord Jan. 26, 2022 Report at 4, ¶ 13; Duchin Jan. 26, 2022 Report at 2; Rodden Jan. 26, 2022 Report at 3; Brunell Report at 1
Contiguous (Y/N)	Y	Y	DeFord Jan. 26, 2022 Report at 9, ¶ 27; Duchin Jan. 26, 2022 Report at 2; Rodden Jan. 26, 2022 Report at 3; Brunell Report at 2

Snapshot of Resch. Maps	Resch. 1	Resch. 2	Source
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.** Duchin Jan. 26, 2022 Report at 2 (Table 1) **c.** DeFord Jan. 26, 2022 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 Jan. 26, 2022 Report at 8 (Table 1) **b.** Brunell Report at 3 (Table 2) **c.** Duchin Jan. 26, 2022 Report at 2 (Table 1) **d.** DeFord Jan. 26, 2022 Report at 9, ¶ 25 (Table 8)
Schwartz	1.6859	1.7127	Duchin Jan. 26, 2022 Report at 2 (Table 1)
ConvHull	**a.** 0.8238 **b.** 0.81	**a.** 0.8161 **b.** 0.80	**a.** Duchin Jan. 26, 2022 Report at 2 (Table 1) **b.** DeFord Jan. 26, 2022 Report at 9, ¶ 25 (Table 8)
PopPoly	0.7737	0.7658	Duchin Jan. 26, 2022 Report at 2 (Table 1)
Cut Edges	**a.** 5090 **b.** 5061	**a.** 5237 **b.** 5208	**a.** Duchin Jan. 26, 2022 Report at 2 (Table 1) **b.** DeFord Jan. 26, 2022 Report at 9, ¶ 25 (Table 8)
Retained Population of Prior Map	76.5%	76.5%	Rodden Jan. 26, 2022 Report at 2
Number of Districts w/ Incumbents Paired	2	1	DeFord Jan. 26, 2022 Report at 21, ¶ 45 (Table 15)

III. CONCLUSIONS OF LAW

A. Standards

Although "the primary responsibility for drawing congressional districts rest[s] squarely with the legislature," *League of Women Voters of Pennsylvania v. Commonwealth*, 181 A.3d 1083, 1085 (Pa. 2018), where a timely redistricting scheme has not been enacted, it may "become[] the unwelcome obligation" to select an appropriate plan. *See League of United Latin Am. Citizens v. Perry*, 548 U.S. 399, 415 (2006) (internal quotation marks and citations omitted). The Court's task in this respect is guided by the same constitutional requirements that constrain the General Assembly.

Pursuant to the standard set forth in *League of Women Voters*, congressional redistricting plans must be: (1) compact; (2) contiguous; and (3) avoid dividing any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population.

B. Equal Population

"[T]he 'preeminent if not the sole,' criterion for appraising the validity of redistricting plans," *Mellow v. Mitchell*, 607 A.2d 204, 214 (Pa. 1992) (quoting *Chapman v. Meier*, 420 U.S. 1, 23 (1964) (quoting

Chapman v. Meier, 420 U.S. 1, 23 (1964), is whether it satisfies the United States Constitution's requirement that "one man's vote in a congressional election is to be worth as much as another's." *Id.*

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). Because mathematical precision is not always achievable, districts must "be apportioned to achieve population equality 'as nearly as is practicable.'" *Id.* (quoting *Wesberry*, 376 U.S. at 7-8). The Supreme Court has interpreted the "as nearly as practicable" standard to require "'the State make a good-faith effort to achieve precise mathematical equality. 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.* (quoting *Kirkpatrick v. Preisler*, 394 U.S. 526, 530-31 (1969) (internal citations omitted and emphasis added)).

A challenge to a plan's equal population involves two inquiries. *First*, the party challenging the redistricting plan bears the initial

burden of proof to show that the state did not act in good faith when it failed to submit a plan with equal population, and if the party fails "to show that the differences [in population] could have been avoided the apportionment scheme must be upheld." *Id.* at 730-31. *Second*, if the party establishes "that the population differences were not the result of a good-faith effort to achieve equality, the [s]tate must bear the burden of proving that each significant variance between districts was necessary to achieve some legitimate goal." *Id.* at 731. 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.

In *League of Women Voters*, the Court deemed a one person deviation to be in accord with this constitutional requirement. And so have other courts. *See, e.g., Colleton Cty. Council v. McConnell*, 201 F.Supp.2d 618, 664 (D. S.C. 2002); *In re Colorado Independent Congressional Redistricting Commission*, 497 P.3d 493, 506 (Colo. 2021) ("the [redistricting] Commission complied with its obligation to achieve precise mathematical equality" where the districts deviate by one person at most).

Each of the proposed maps in this case satisfy the Constitution's one person, one vote requirement except for the Carter map and the House Democrats' map. The Carter map has a two-person deviation from their largest to their smallest districts. *See* N.T. 204:4-20 (Dr. Rodden). The House Democrats' map has a two-person deviation from their largest to their smallest districts. *See* N.T. 204:4-20 (Dr. Rodden). As such, neither map has equal population "as nearly as practicable." *Karcher*, 462 U.S. at 730.

A two person deviation may seem trivial. But according to federal law, a map that deviates by more than one person does not comport with Article 1, Section 2's strictures. Here, neither the Carter Petitioners nor the House Democrats produced a record showing they acted in "good faith" when they submitted a map that deviates by more than one person. *See Karcher*, 462 U.S. at 731. The lack of good faith is readily apparent from the fact that the other maps submitted in this case comply with the equal population standard.

Moreover, even beyond the maps submitted, the experts in this case have stated that through computer algorithms, they have been able to create thousands of maps that comply with this standard. In

order to overcome this lack of good faith, the Carter Petitioners and the House Democrats must prove "that each significant variance between districts was necessary to achieve some legitimate goal." *Id.* at 731. But the Carter and House parties have not identified any "legitimate goal." *See id.* For example, these maps are not (and do not purport to be) the most compact, the most contiguous, the most respectful of political subdivisions and municipalities. It is manifest, therefore, that no other compelling interest required the unconstitutional deviation. In this light, a one person deviation is "as nearly as practicable" to equal population, and such a deviation does not otherwise diminish either the Carter Petitioners' or the House Democrats' ability to comply with the other constitutionally required redistricting criteria.

C.   Compact

In declaring the 2011 plan unconstitutional, the *League of Women Voters* panel principally relied on the Reock Compactness Score and the Polsby-Popper Compactness Score, which seek to quantify compactness by assigning a score of 0 (least compact) to 1 (most compact). Specifically, the Court noted that the overall Reock and Polsby-Popper Compactness Score of the 2011 plan were .278 and .164. By contrast,

the Court explained that based on a computer simulation that applied *only* the traditional redistricting criteria, the appropriate range of scores was between .31 and .46 under the Reock measurement, and between .29 and .35 under the Polsby-Popper test. Dr. Rodden, Dr. DeFord, and Dr. Duchin all agree that Reschenthaler 1 and Reschenthaler 2 are reasonably compact.

Further, as found by Dr. Brunell, Reschenthaler 1 has a Reock Compactness Score of .435, which is only .024 units (*i.e.* 5.4%) lower than the existing plan's score of .459 and a Polsby-Popper Score of .363, which *exceeds* the current plan's score of .335 by .028 units (*i.e.*, 8.4%). Reschenthaler 2 yields a similar compactness score, with only a *de minimis* decrease. Specifically, it has a Reock Compactness Score of .424, which is only 7.6% lower than that of the current plan, and Polsby-Popper Compactness Score of .352, which—like Reschenthaler 2—exceeds that of the existing plan by 5.1%.

Therefore, Reschenthaler 1 and Reschenthaler 2 amply satisfy the compactness requirements articulated by *League of Women Voters*.

D. Contiguous

Although not extensively analyzed in the decision, in the context state legislative reapportionment under Article I, Section 16 of the State Constitution—which *League of Women Voters* expressly incorporated into the Free and Equal Elections Clause analysis—a "contiguous district" is defined as "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 Comm'n*, 67 A.3d 1211, 1242 (Pa. 2013).

Dr. Rodden, Dr. DeFord, and Dr. Duchin all agree with Dr. Brunell that Reschenthaler 2 and 2 are contiguous. Accordingly, both Reschenthaler 1 and 2 satisfy the contiguity requirements.

E. Splits

The final neutral criteria identified by the Court in *League of Women Voters* is the "minimization of the division of political subdivisions[,]" or—stated more precisely—a prohibition against "divid[ing] any county, city, incorporated town, borough, township, or ward, except where necessary to ensure equality of population." 178

A.3d at 817. Importantly, when *League of Women Voters* adopted these neutral criteria, it did so by adopting and applying the criteria from Article 2, Section 16 of the Pennsylvania Constitution—the requirements for legislative redistricting—to congressional redistricting. *Id.* at 816. Article 2, Section 16 explicitly provides: "representative districts ... shall be composed of compact and continuous 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 representative district[.]" Pa. Const. art. II, § 16 (emphasis added). Thus, for congressional redistricting, Article II, Section 16 must be followed.

Assessed within this framework, the municipal splits contained in both Reschenthaler 1 and Reschenthaler 2 reveal that are the ***only*** maps comporting with the Constitution's requirement on this factor. Reschenthaler 1 and 2 prove that a map with only 13 county splits can be drawn, and can also satisfy the other neutral redistricting criteria. *See* N.T. 1/27/22 at 167:19-25 (Dr. Rodden); N.T. 1/27/22 at 287:11-20 (Dr. DeFord); N.T. 1/27/22 at 461:5-12 (Dr. Duchin). The other maps

unnecessarily split more counties, thus disrupting more communities of interest, doing so seemingly for partisan advantage.

Reschenthaler 1 and 2 also excel with regard to municipal splits, tying for the least number of municipalities split at 16 (one expert has the splits at just 15). *See* Rodden Jan. 26, 2022 Report at 5 (Table 3: showing 15 municipal splits); Duchin Jan. 26, 2022 Report at 2 (Table 1: showing 16 municipal splits); Barber Jan. 26, 2022 Report at 8 (showing 16 municipal splits); Brunell Report at 5 (Table 5) (showing 16 municipal splits). In terms of segments, these 16 municipal splits produce 33 municipal segments; again tying for the lowest segments among the maps before the Court. *See* Duchin Jan. 26, 2022 Report at 2 (Table 1); *see also* Brunell Report at 5 (Table 5). Expert testimony adduced at trial revealed that it was absolutely possible to draw a 17-district congressional map with only 16 municipal splits, while also satisfying the other neutral redistricting criteria. *See* N.T. 1/27/22 at 170:15-20 (Dr. Rodden); N.T. 1/27/22 at 461:16-21 (Dr. Duchin). In light of this, the other maps that needlessly split up municipalities in greater

numbers run afoul of the Constitution, leaving Reschenthaler 1 and Reschenthaler 2 as the only viable legal options before the Court.

F. Community Interests

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. Indeed, in adopting these "neutral criteria," the Court reasoned that "[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[.]" *League of Women Voters*, 178 A.3d at 814.[9] Accordingly, although compactness, contiguity, and

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[9] Indeed, *League of Women Voters* panel repeatedly references the significance of communities in its analysis. *See id.* 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").

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.

The communities of interest analysis also ensures effective representation. 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 Bd.*, 793 F.Supp. 859, 863 (W.D. Wis. 1992); *see 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.").

On this measure Reschenthaler 1 and 2 are superior. For example, the Court heard extensive testimony from Dr. Naughton that Pittsburgh, and its various communities, are best served by keeping the city within one congressional district. *See* N.T. 1/28/22 at 712:21-715:13. Reschenthaler 1 and 2 respect Pittsburgh's interest in this way.

Dr. Naughton further testified about the interests of Philadelphia and Bucks Counties. Specifically, he testified that Bucks County should be entirely within one district. *See* N.T. 1/28/22 at 715:14-716:13. He 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. *See id.* And, with respect to Philadelphia County, Dr. Naughton explained that it should extend into Delaware County to obtain additional population because the communities along the Philadelphia and Delaware County borders have similar needs. Reschenthaler 1 and 2 achieve each of these results. *See* N.T. 1/28/22 at 786:19-24; 840:21-841:2.

Furthermore, there are at least two reasons Reschenthaler 1 and 2 satisfy the communities of interest consideration more so than the

other plans. First, Reschenthaler 1 and 2 split the least number of counties. By respecting more county boundaries than any other map, Reschenthaler 1 and 2 make certain that a greater number of citizens will not be annexed from their county. This is important because, as Dr. Naughton testified, a great deal of federal funding flows through county government. *See* N.T. 1/28/22 783:17-784:18. Second, when counties were split in Reschenthaler 1 and 2, those splits were conducted with the utmost attention to the communities that would be affected. As demonstrated by the splits in Allegheny and Philadelphia Counties, Reschenthaler 1 and 2 sought to unite those communities that have similar needs such that they would receive the best representation in Congress.

As in *Mellow, Holt*, and *League of Women Voters*, this Court should select a redistricting plan that respects the interests of the communities in the Commonwealth. Either Reschenthaler 1 or 2 achieve this result.

G. Partisanship

All experts evaluated the submitted maps for partisan fairness. Across the Board, Reschenthaler 1 and Reschenthaler 2 do not exhibit

partisanship in comparison to the other maps, particularly as compared to the other maps and in light of the political geography of Pennsylvania. Dr. Rodden, the Carter Petitioners' expert, acknowledged that his analysis of the partisan nature of the maps showed that the estimated seats for Democrats and Republicans between the Carter Map and Reschenthaler 1 and 2 differed by just one seat (out of 17). Dr. Rodden Reply Report at 9; N.T. N.T. 1/27/22 at 171:1-25. Dr. Rodden also found the mean-median difference for Reschenthaler 1 and 2 is 1%. Dr. Brunell also evaluated Reschenthaler 1 and 2 for partisan fairness by using the 2016 and 2020 presidential elections and conducting a mean-median analysis and did not find a substantial partisanship in them.

Regardless of the mathematical statistics to evaluate the partisan fairness of a map, as Dr. Rodden has concluded, there is a "strong relationship between the geographic concentration of Democratic voters and electoral bias favoring Republicans," and proving intent in court is difficult "where equally egregious electoral bias can emerge purely from human geography." N.T. 1/27/22 at 179:23-180:9. Dr. Duchin's findings confirmed that the political geography of Pennsylvania is partisan by

nature. In generating **100,000** random plans with a computer 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." Dr. Duchin Jan. 24, 2022 Report at 18 (emphasis added). Indeed, still analyzing the 100,000 plans drawn by a non-partisan, non-biased computer, she once again concluded that "random plans favor Republicans[.]" Dr. Duchin Jan. 24, 2022 Report at 19. Indeed, Dr. Duchin acknowledges that these random plans produce "pronounced advantage to Republicans." N.T. 1/27/22 at 449:1-12. Accordingly, if Reschenthaler 1 and Reschenthaler 2 exhibit a Republican partisanship under any measure of partisan fairness, it is a reflection of the political geography of Pennsylvania. Moreover, Dr. Duchin's demonstration that the political geography of Pennsylvania naturally produces a **pronounced** Republican advantage indicates that any plan purposefully seeking to correct the natural political geography to create more Democratic advantage is a plan motived by partisan gerrymandering.

H.   Voting Rights Act

In the context of redistricting, the United States Supreme Court has recognized that drawing district lines can have the effect of diluting voting strength of certain minority groups by either fragmenting voters among various districts, or packing them into a smaller district in violation of the Equal Protection clause. *Johnson v. De Grandy*, 512 U.S. 997, 1007 (1994); *see also Bethune-Hill v. Virginia State Bd. of Elections*, 137 S. Ct. 788, 797 (2017) ("The Equal Protection clause prohibits a State, without sufficient justification, from separating its citizens into different voting districts on the basis of race." (cleaned up)). Three factors—commonly known as the *Gingles* factors—are "threshold conditions" for demonstrating dilution under Section 2 of the Voting Rights Act. *Cooper*, 137 S. Ct. at 1470. Under the *Gingles* Factors, the Court evaluates whether (1) the minority group is "sufficiently large and geographically compact to constitute a majority," (2) the minority group is "politically cohesive," and (3) the district's white majority votes "sufficiently as a bloc" such that it "defeat[s] the minority's preferred candidate." *Thornburg v. Gingles*, 478 U.S. 30, 50-51 (1986). If the *Gingles* factors are met, there is good reason to believe

that Section 2 of the VRA mandates the creation of a minority-majority district, but, as succinctly put by the Supreme Court, "if not, then not." *Cooper*, 137 S. Ct. 1455, 1470 (2017). 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").

Dr. Brunell's analysis demonstrates that there is no racially polarized voting that warrants the creation of a minority-majority district in Pennsylvania. Reschenthaler 1 and Reschenthaler 2 comply with the Voting Rights Act. Despite the absence of racially polarized voting in Pennsylvania, the Gressman Map and Governor's Map both have three purposefully created minority-majority districts. Because the Gressman Petitioners and the Governor drew minority-majority districts where the third *Gingles* factor was not met, these plans are unconstitutional racial gerrymanders.

IV. 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,

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