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 McMahon; 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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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 spirt 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. INTRODUCTION[2]

This case involves the redistricting[3] 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. Constitution[4] 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*, apportioning[5] 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

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[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 indefeasible 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,

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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 fillings 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

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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." *LWV 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

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> 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" principle[30] 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 Court[34] 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.

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[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." *LWV 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, Contiguousness[37] & 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 Score[38] and the Polsby-Popper Compactness[39] 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

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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 gap[40] 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 gap[41] 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 Pensnylvania 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-adjoining 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. <u>Deference to Legislature</u>

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.

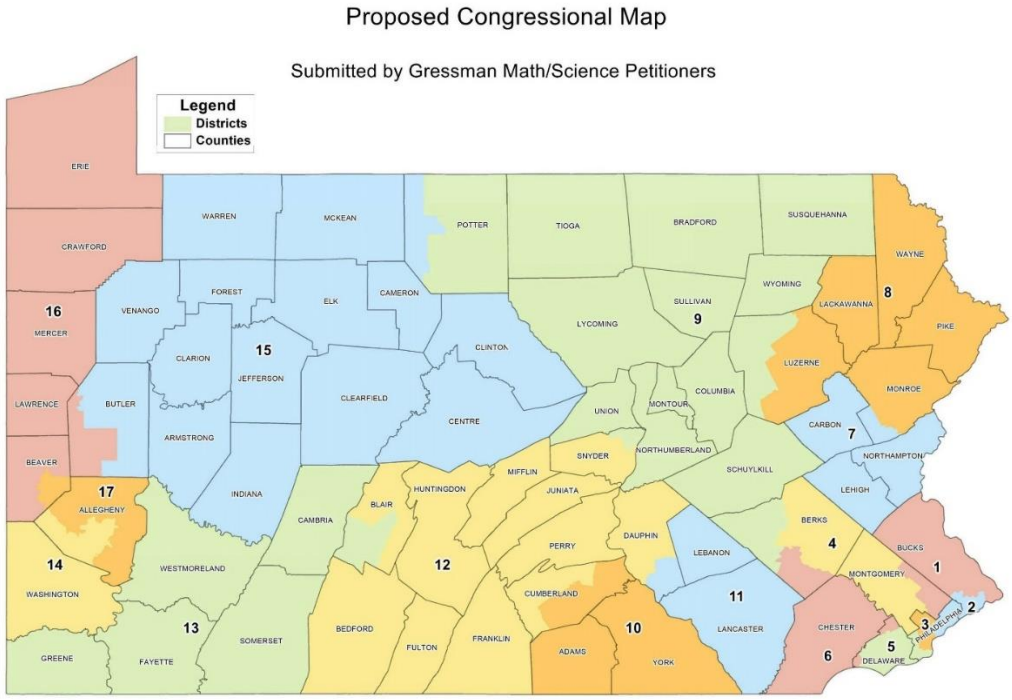
At this juncture, the Court will review HB 2146 along with the other plans submitted to the Court to assess its compliance with the constitutional traditional criterial factors adopted in *LWV II*, as well as other non-constitutional factors.

IV. COMMONWEALTH COURT PROCEEDINGS AND RECOMMENDED FINDINGS OF FACTS AND CONCLUSIONS OF LAW

A. The Plans Presented by the Parties and A*micus* Participants

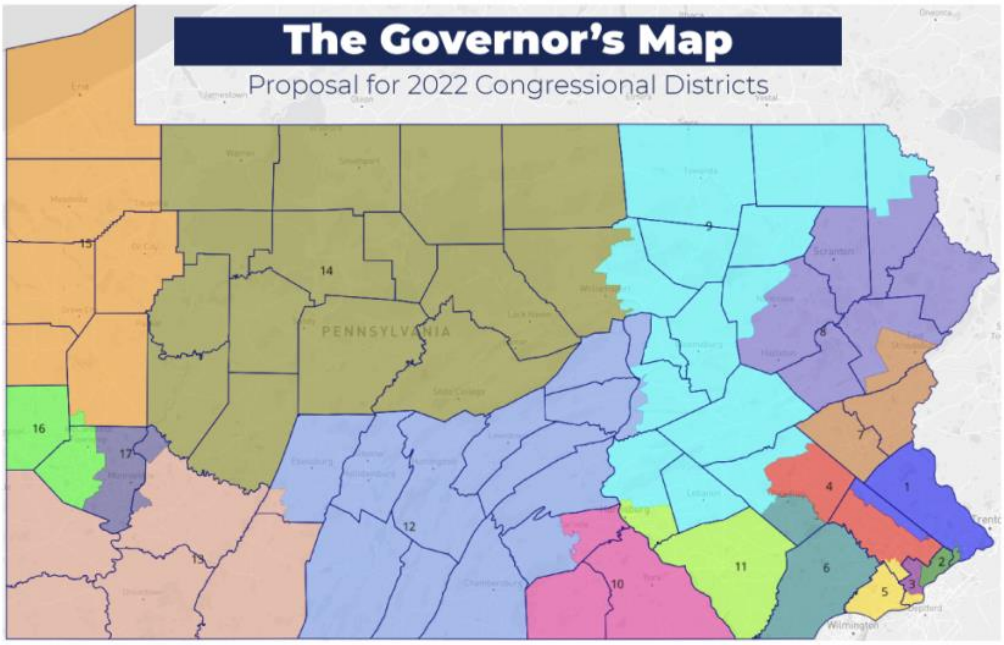
FF1. The following plan was submitted by the Carter Petitioners. *See* Carter Petitioners' Brief (Br.) in Support of Proposed Congressional Redistricting Plan, Exhibit (Ex.) 2.

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.

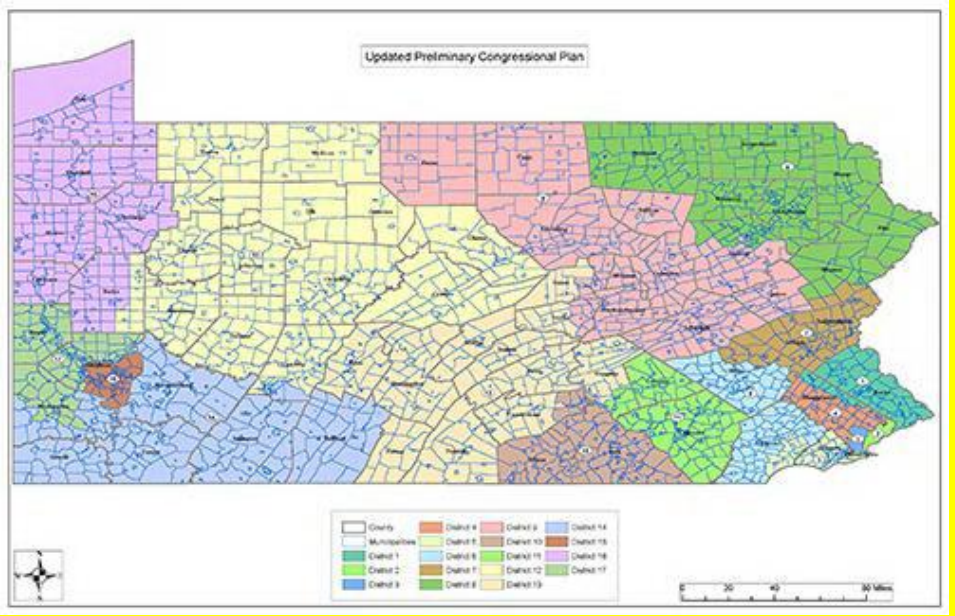


Carter v. Chapman, No. 464 M.D. 2021, and Gressman v. Chapman, No. 465 M.D. 2021.

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?syear=2021&sind=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 brough 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.

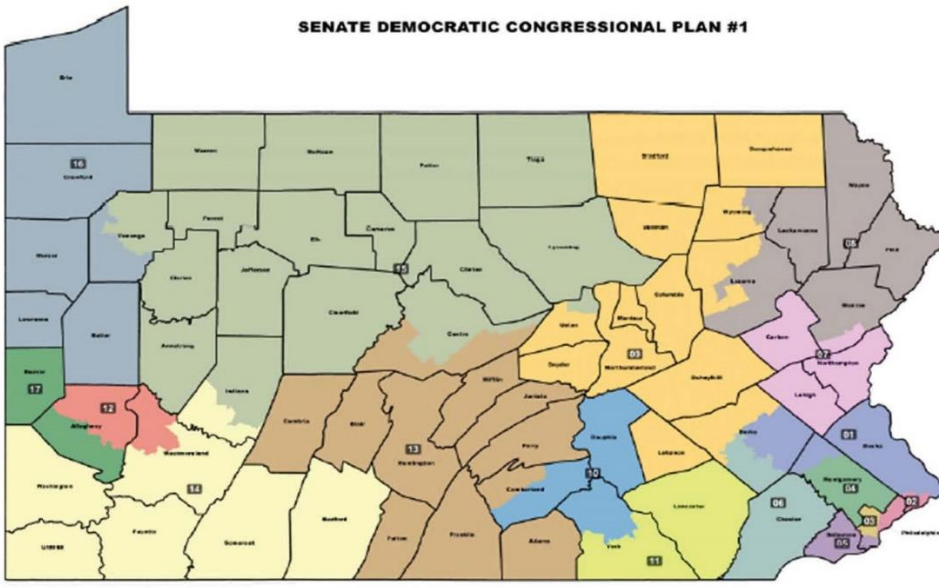
FF12. HB 2146 was brought up for second consideration by the full Senate on January 19, 2022. *Id.*

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.*

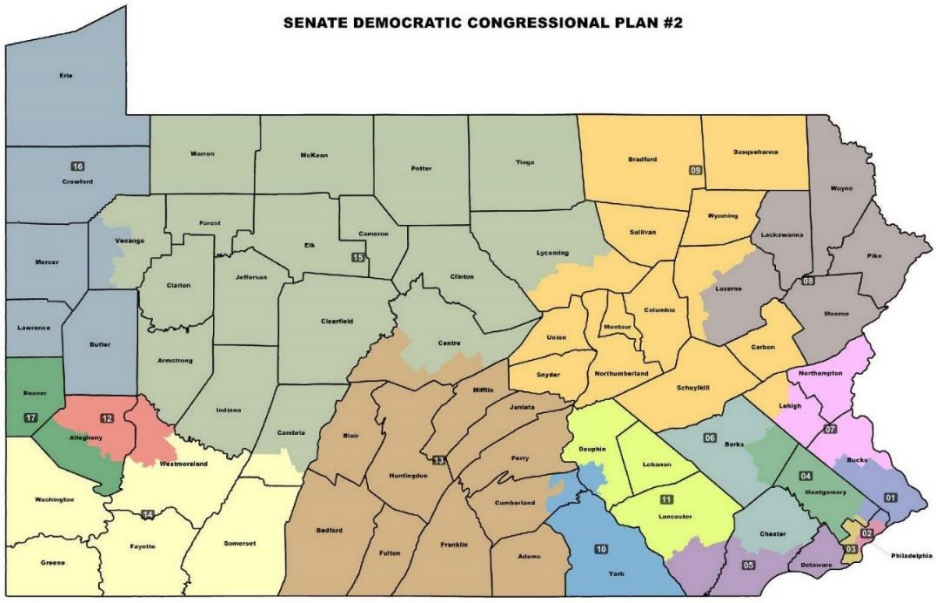
FF14. Also on January 24, 2022, HB 2146 was presented to Governor Wolf, who subsequently vetoed the bill on January 26, 2022. *See* Bill History.

FF15. Two following plans were submitted by the Senate Democratic Caucus Intervenors. *See* Senate Democratic Caucus' Br. in Support of Senate Democrats' Caucus' Proposed Redistricting Plan, Ex. A (Map 1) and (Map 2).

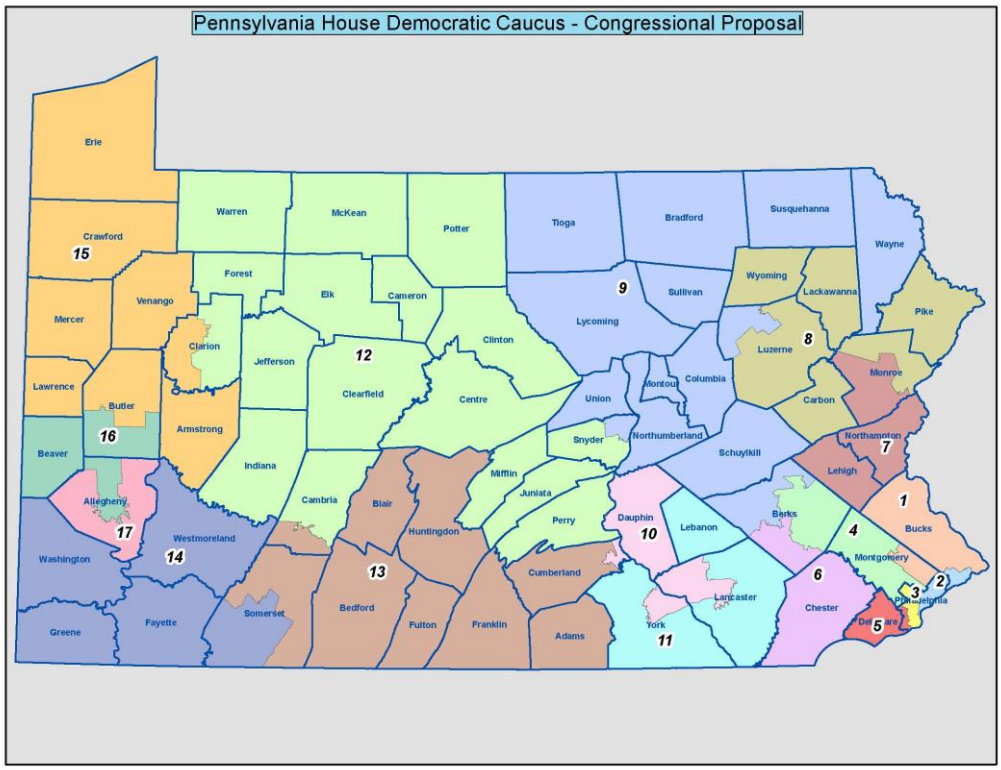
(a) Senate Map 1



(b) Senate Map 2

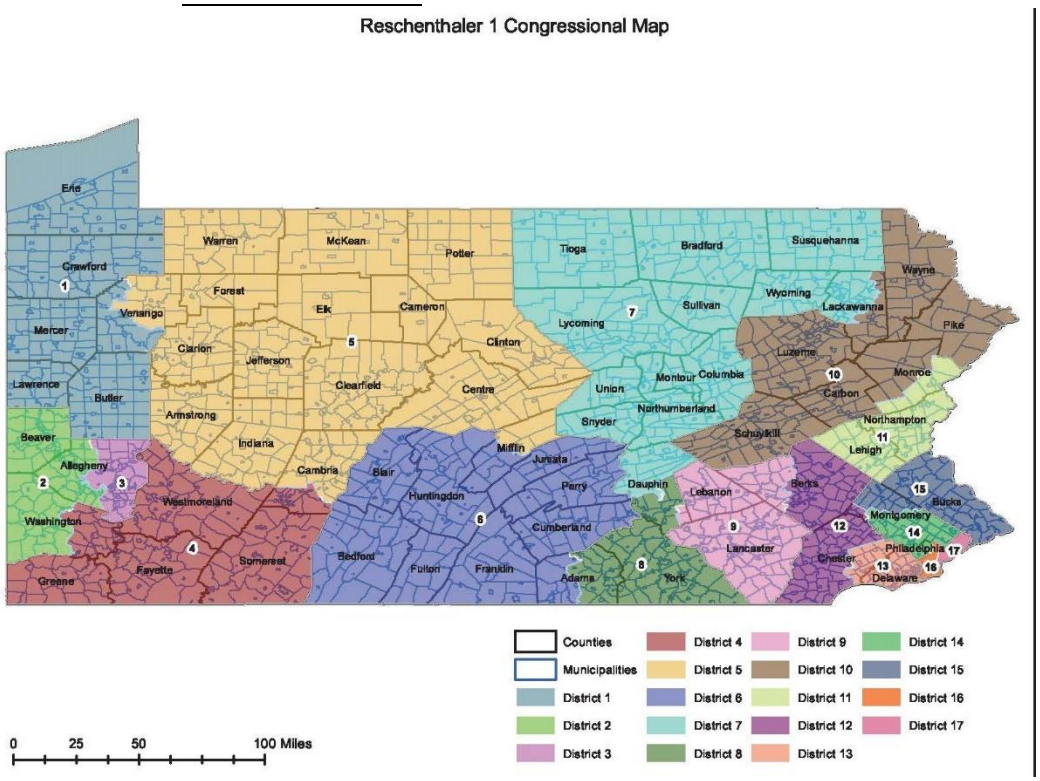


FF16. The following Plan was submitted by House Democratic Caucus Intervenor McClinton. *See* Br. of House Democratic Caucus Intervenor McClinton in Support of Proposed Congressional Redistricting Plan, uploaded to SharePoint as Ex. (unnumbered).

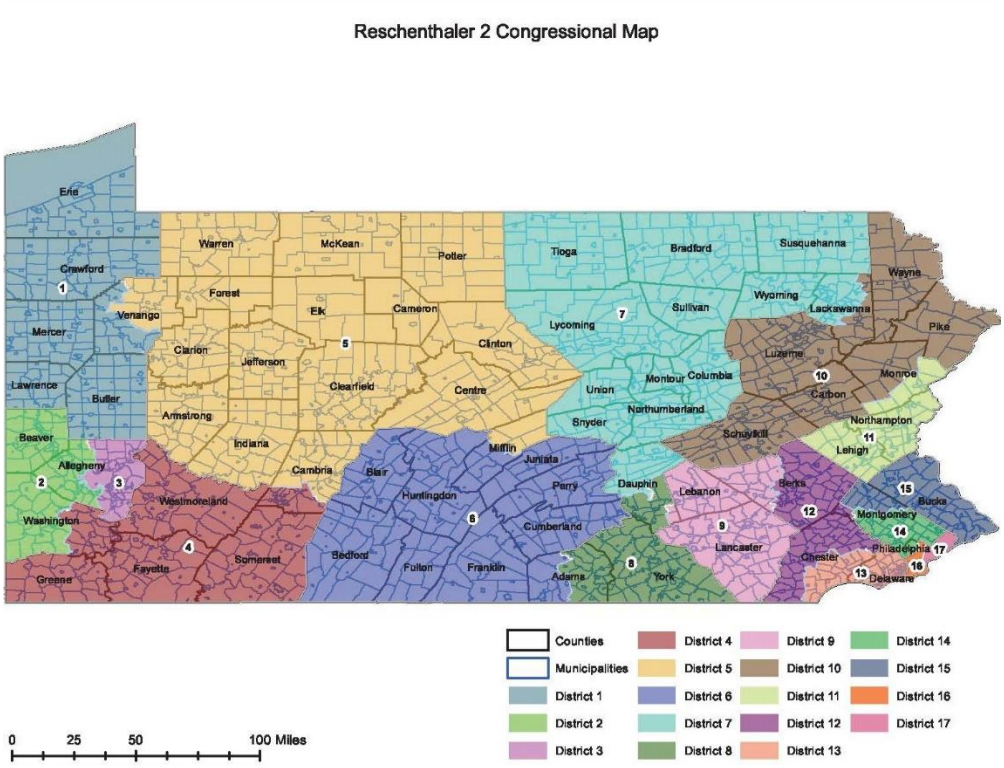


FF17. The following two Plans were submitted by the Congressional Intervenors. *See* Br. of Congressional Intervenors, Ex. A (Map 1) and Ex. B (Map 2).

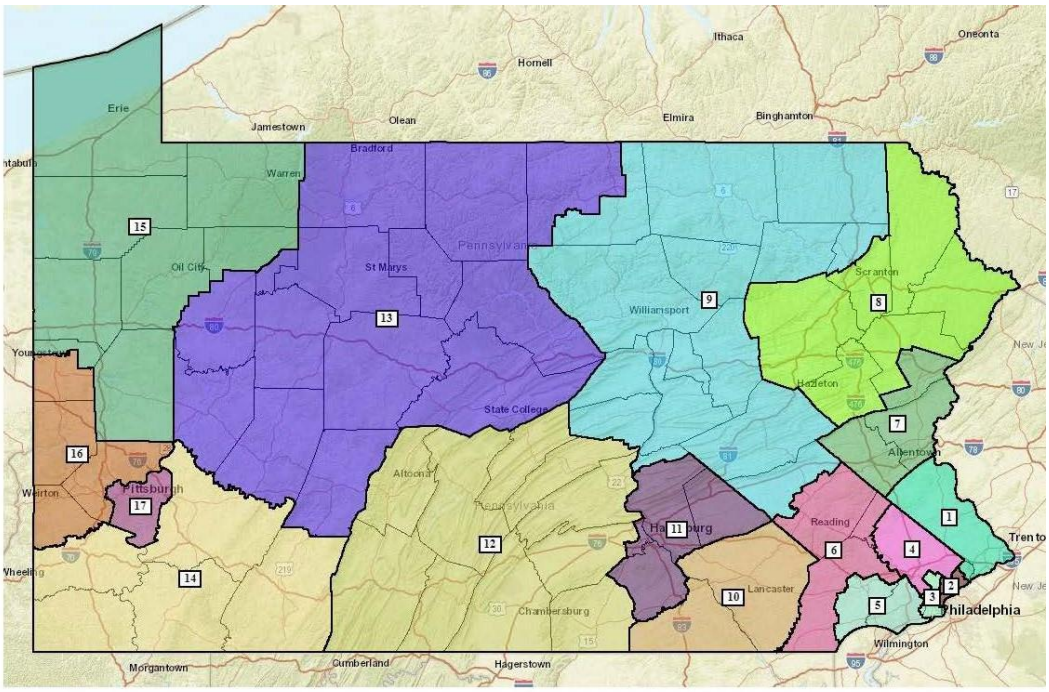
1. Reschenthaler 1



2. Reschenthaler 2

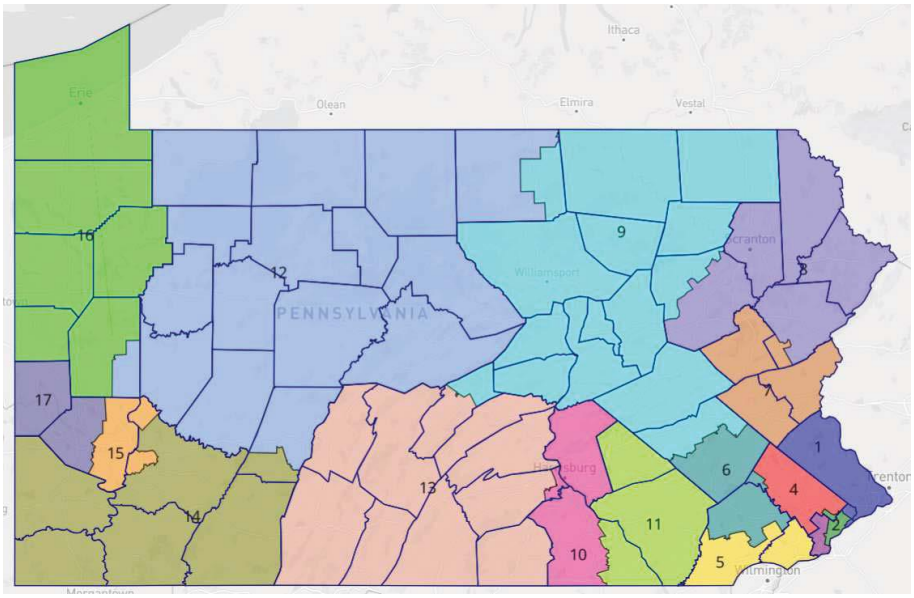


FF18. The following plan was submitted by *Amici* Voters of the Commonwealth (Voters of PA). *See* Br. of *Amici Curiae* Voters of the Commonwealth in Support of Their Proposed Plan, Ex. A, Sean Trende Expert Report (Trende Report), App. 2.



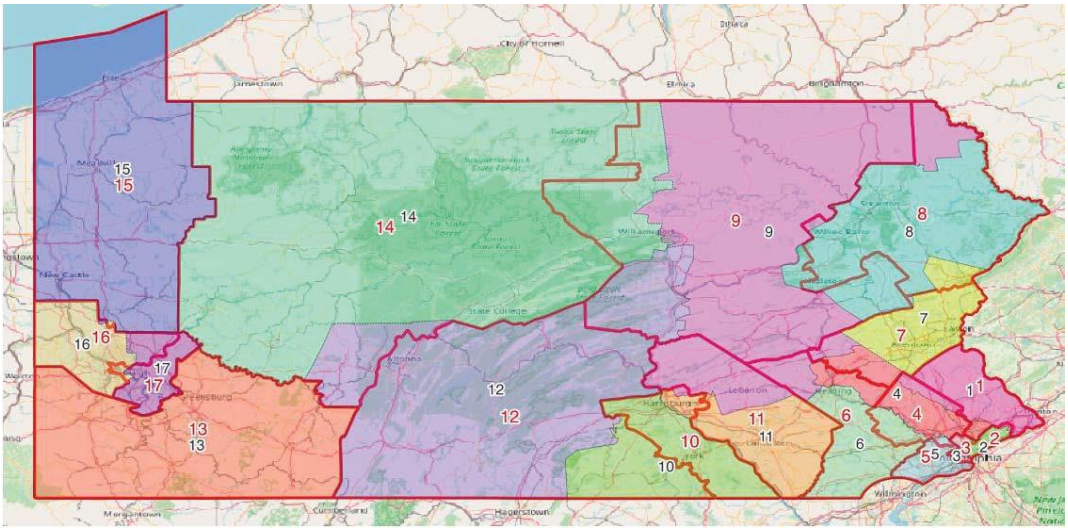
FF19. The Voters of PA are a group of Pennsylvania voters who specify that they intend to advocate and vote for Republican candidates in upcoming elections and view themselves as a "mirror image" of the Carter Petitioners. *See* Voters of PA Br. at 1.

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.

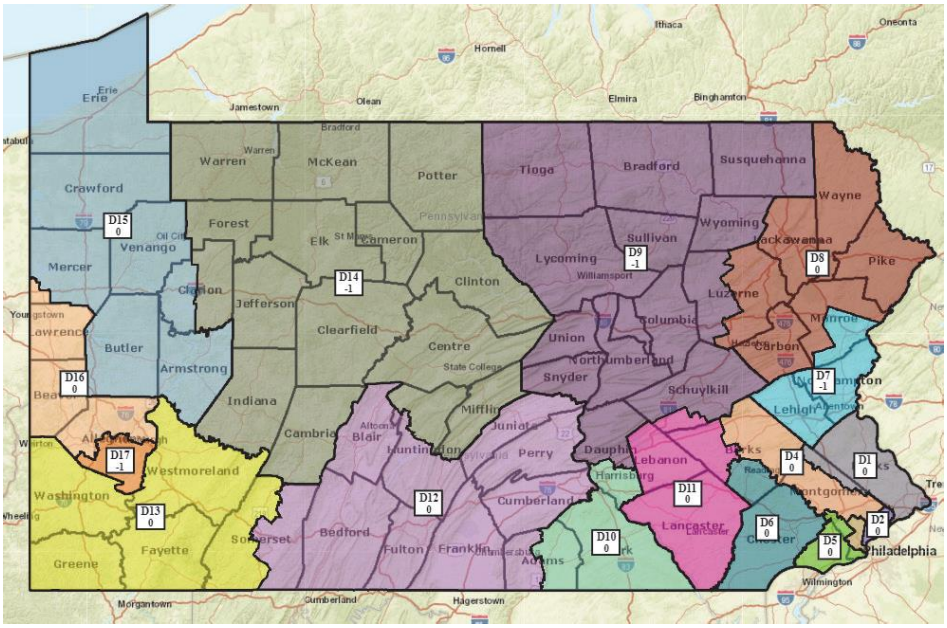


FF23. *Amicus* Participants Khalif Ali *et al*. (Ali *Amici*), used Governor Wolf's plan as a starting point. (Ali Br. at 1 n.1.)

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. <u>Professor Daryl DeFord (Gressman Petitioners)</u>

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 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. <u>Dr. Keith Naughton (Congressional Intervenors)</u>

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. <u>Thomas L. Brunell (Congressional Intervenors)</u>

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. <u>Sarah Andre (Khalif Ali et al.)</u>

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 Analysist.

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 A*micus* 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. <u>Gressman Petitioners</u>

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. <u>Republican Legislative Intervenors (Senate and House Leaders)</u>

a. <u>Senate Republican Intervenors (Corman & Ward)</u>

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. <u>House Republican Intervenors (Cutler & Benninghoff)</u>

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. <u>Congressional Intervenors</u>

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 *LWV 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. <u>Senate Democratic Caucus Intervenors (Costa et al.)</u>

The Senate Democratic Caucus Intervenors, like other Parties and *Amicus* Participants, acknowledge that the traditional redistricting criteria of *LWV 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. <u>Khalif Ali et al.</u>

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 Code[44] 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. <u>Voters of the Commonwealth</u>

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 Schwartzeberg 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 *LWV 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 LAW[45]

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
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

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. Reschenthaler 1 Plan

FF21. The Reschenthaler 1 Plan divides 13 counties, 16 municipalities, and 25 wards. (Brunell Report at 4-6.)

i. Reschenthaler 2 Plan

FF22. The Reschenthaler 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. <u>Compactness</u>

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. <u>Splitting of Pittsburgh Into Two Congressional Districts</u>

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 *LWV 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, *LWV 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[.]" *LWV 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, Yurij 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 LWV 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 -0.0.016 (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. Reschenthaler 1 Plan

FF18. For the Reschenthaler 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. Reschenthaler 2 Plan

FF19. For the Reschenthaler 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 Reschenthaler 2 Plan, rather than the Reschenthaler 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 *LWV 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. Reschenthaler 1 Plan

FF11. For the Reschenthaler 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. Reschenthaler 2 Plan

FF12. For the Reschenthaler 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 Reschenthaler 2 Plan, rather than the Reschenthaler 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. <u>Protection of Incumbents</u>

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 LWV 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. <u>VRA Considerations</u>

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
Voters of PA	80.6

(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

<u>House Democratic Caucus Plan</u>

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.

<u>The Citizen Voters Plan</u>

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 LWV 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 "<u>policies and preferences of the State, as expressed in statutory and constitutional provisions or in the reapportionment plans proposed by the state legislature</u>."** *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); ttps://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. <u>Current 2022 General Primary Election Schedule</u>

- 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. <u>Proposed REVISED 2022 General Primary Election Schedule</u>

- 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.