

TABLE OF CONTENTS

I. INTRODUCTION	1
II. RECOMMENDED FINDINGS OF FACT	11
A. Parties	11
1. Petitioners	11
2. Respondents	16
3. Intervenors	18
B. Background.....	24
C. Enactment of the 2011 Plan.....	28
D. The 2011 Plan Congressional Districts.....	35
E. Pennsylvania Election Results.....	44
F. Pennsylvania Voting Patterns.....	51
G. Petitioners’ Beliefs Regarding How the 2011 Plan Has Affected Their Ability to Influence the Political Process	53
H. Expert Testimony	56
1. Jowei Chen, Ph.D.	56
2. John J. Kennedy, Ph.D.....	71
3. Wesley Pegden, Ph.D.	78
4. Christopher Warshaw, Ph.D.	84
5. Wendy K. Tam Cho, Ph.D.....	90
6. Nolan McCarty, Ph.D.	92
7. Summary of Expert Findings	95
I. 2018 Pennsylvania Elections Schedule	98
J. Ongoing Activities for the 2018 Elections.....	105

III. RECOMMENDED CONCLUSIONS OF LAW 107

- A. Congressional Reapportionment Generally 107
- B. Partisan Gerrymandering Generally 109
- C. Burden of Proof – Constitutionality of Enacted Legislation..... 112
- D. Free Expression and Association (Count I) 112
- E. Equal Protection Guarantee and Free and Equal Elections Clause
(Count II)..... 119
- F. Summary of Key Findings and Conclusions 126

I. INTRODUCTION

On June 15, 2017, Petitioners League of Women Voters of Pennsylvania (LWVP),¹ Carmen Febo San Miguel, James Solomon, John Greiner, John Capowski, Gretchen Brandt, Thomas Rentschler, Mary Elizabeth Lawn, Lisa Isaacs, Don Lancaster, Jordi Comas, Robert Smith, William Marx, Richard Mantell, Priscilla McNulty, Thomas Ulrich, Robert McKinstry,² Mark Lichty, and Lorraine Petrosky (collectively, Petitioners) commenced this action by filing a Petition for Review (Petition) addressed to this Court's original jurisdiction, challenging the constitutionality of the congressional redistricting plan set forth in Senate Bill 1249 of 2011, enacted into law on December 22, 2011, as Act 131 of 2011, and commonly known as the Congressional Redistricting Act of 2011 (2011 Plan).³ Petitioners filed their Petition against the Commonwealth of Pennsylvania (Commonwealth);⁴ the Pennsylvania General Assembly (General Assembly); Thomas W. Wolf (Governor Wolf), in his capacity as Governor of Pennsylvania; Pedro A. Cortes (Secretary Cortes),⁵ in his capacity as Secretary of Pennsylvania; Jonathan M. Marks (Commissioner Marks), in his capacity as Commissioner of the Bureau of Commissions, Elections, and Legislation for the

¹ By Order dated November 13, 2017, this Court sustained preliminary objections challenging LWVP's standing in this matter and dismissed LWVP as a party petitioner.

² Although not identified in the caption as such, throughout the pleadings Robert McKinstry is referred to as "Robert McKinstry, Jr."

³ Act of December 22, 2011, P.L. 599, 25 P.S. §§ 3596.101-.1510.

⁴ This Court dismissed the Commonwealth from this matter by Order dated October 4, 2017.

⁵ On November 16, 2017, Acting Secretary of the Commonwealth Robert Torres (Acting Secretary Torres) was substituted as a party for Secretary Cortes pursuant to Pennsylvania Rule of Appellate Procedure 502(c).

Pennsylvania Department of State; Michael J. Stack, III (Lt. Governor Stack), in his capacity as Lieutenant Governor of Pennsylvania and President of the Pennsylvania Senate; Michael C. Turzai (Speaker Turzai), in his capacity as Speaker of the Pennsylvania House of Representatives; and Joseph B. Scarnati, III (President Pro Tempore Scarnati), in his capacity as the Pennsylvania Senate President Pro Tempore (Speaker Turzai and President Pro Tempore Scarnati are hereinafter collectively referred to as “Legislative Respondents”).⁶

The 2011 Plan divided Pennsylvania into 18 congressional districts based on the results of the 2010 U.S. Census. In Count I of their Petition, Petitioners allege that the 2011 Plan violates their rights to free expression and association under Article I, Sections 7 and 20 of the Pennsylvania Constitution. More specifically, Petitioners allege that the General Assembly created the 2011 Plan by “expressly and deliberately consider[ing] the political views, voting histories, and party affiliations of Petitioners and other Democratic voters” with the intent to burden and disfavor Petitioners’ and other Democratic voters’ rights to free expression and association. (Pet. at ¶¶ 105-06.) Petitioners further allege that the 2011 Plan had the effect of burdening and disfavoring Petitioners’ and other Democratic voters’ rights to free expression and association, because the 2011 Plan “has prevented Democratic voters from electing the representatives of their choice and from influencing the legislative process” and has suppressed “the political views and expression of Democratic voters.” (Pet. at ¶ 107.) In Count II of their Petition, Petitioners allege that the 2011 Plan violates the equal

⁶ By Order dated November 13, 2017, this Court permitted certain registered Republican voters and active members of the Republican Party to intervene in this matter (Intervenors).

protection provisions of Article I, Sections 1 and 26 of the Pennsylvania Constitution and the Free and Equal Elections Clause of Article I, Section 5 of the Pennsylvania Constitution. More specifically, Petitioners allege that the 2011 Plan intentionally discriminated against Petitioners and other Democratic voters by using “redistricting to maximize Republican seats in Congress and entrench [those] Republican members in power.” (Pet. at ¶ 116.) Petitioners further allege that the 2011 Plan has an actual discriminatory effect, because it “disadvantages Petitioners and other Democratic voters at the polls and severely burdens their representational rights.” (Pet. at ¶ 117.)

On August 9, 2017, the General Assembly and Legislative Respondents filed with this Court an application to stay all proceedings (Application to Stay), requesting that the entire matter be stayed pending the United States Supreme Court’s forthcoming decision in *Gill v. Whitford* (U.S. Supreme Court, No. 16-1161, jurisdictional statement filed March 24, 2017, and argued October 3, 2017) (*Gill*).⁷ The Honorable Dan Pellegrini (Senior Judge Pellegrini) heard oral argument on the Application to Stay on October 4, 2017. At the conclusion thereof, Senior Judge Pellegrini advised the parties that the case would be stayed. Thereafter, on October 16, 2017, Senior Judge Pellegrini issued an Order granting the Application to Stay, thereby staying all aspects of the case, except for briefing on the claims of legislative privilege, pending the United States Supreme Court’s decision in *Gill*.

⁷ *Gill* was originally captioned *Whitford v. Gill* at the district court level, but the caption was changed to *Gill v. Whitford* at the time of its appeal to the United States Supreme Court.

On October 11, 2017, Petitioners filed with the Pennsylvania Supreme Court an application for extraordinary relief under 42 Pa. C.S. § 726 and Pa. R.A.P. 3309 (Application for Extraordinary Relief), requesting that the Pennsylvania Supreme Court exercise its plenary jurisdiction and expedite resolution of this matter before the 2018 midterm elections. By Order dated November 9, 2017, the Pennsylvania Supreme Court granted Petitioners' Application for Extraordinary Relief. In so doing, the Pennsylvania Supreme Court directed, in pertinent part:

Under the continuing supervision of [the Pennsylvania Supreme Court], the case is hereby remanded to the Commonwealth Court and directed to President Judge Mary Hannah Leavitt for assignment to a commissioned judge of the Commonwealth Court with instructions to conduct all necessary and appropriate discovery, pre-trial and trial proceedings so as to create an evidentiary record on which Petitioners' claims may be decided. The Commonwealth Court shall file with the Prothonotary of [the Pennsylvania Supreme Court] its findings of fact and conclusions of law no later than December 31, 2017.

(Pa. Supreme Ct. Order dated Nov. 9, 2017 at Docket No. 159 MM 2017 (Remand Order).) The President Judge of the Commonwealth Court assigned the matter to the undersigned to conduct all proceedings necessary to comply with the Remand Order.

Thereafter, this Court resolved pending preliminary objections and established a schedule to close the pleadings, conclude discovery, and proceed to trial. Up until the date of trial, the parties filed the following discovery and evidentiary-related motions, applications, and objections that required consideration by this Court:

1. On August 9, 2017, Legislative Respondents filed objections to Petitioners' notice of intent to serve subpoenas, asserting, *inter alia*,

that production of the information sought was protected by the Speech and Debate Clause of Article II, Section 15 of the Pennsylvania Constitution (Speech and Debate Clause).⁸ By Memorandum and Order dated November 22, 2017, this Court: (1) quashed certain legislative subpoenas directed to current and/or former employees, legislative aides, consultants, experts, and agents of the General Assembly, noting that this Court lacked authority under the Speech and Debate Clause to compel production of the documents sought therein; and (2) struck paragraphs 1(g) and 1(e) of certain third-party subpoenas directed to the Republican National Committee, the National Republican Congressional Committee, the Republican State Leadership Committee (RSLC), the State Government Leadership Foundation, and 2 individuals based upon the Speech and Debate Clause. This Court noted further that it was not clear from the wording of the remaining categories of the third-party subpoenas whether any responsive documents would fall within the scope of the privilege protected by the Speech and Debate Clause, and, therefore, the remaining categories of the third-party subpoenas shall be interpreted as excluding those documents that reflect the intentions, motivations, and activities of state legislators and their staff with respect to the consideration and passage of the 2011 Plan.⁹

2. On August 28, 2017, Legislative Respondents filed objections to Petitioners' notice of intent to serve subpoena on Governor Thomas W. Corbett (Governor Corbett), asserting, *inter alia*, that production of the information sought was protected by the Speech and Debate Clause. By Memorandum and Order dated November 22, 2017, this Court concluded that while it was not clear from the wording of the

⁸ Article II, Section 15 of the Pennsylvania Constitution provides:

The members of the General Assembly shall in all cases, except treason, felony, violation of their oath of office, and breach or surety of the peace, be privileged from arrest during their attendance at the sessions of their respective Houses and in going to and returning from the same; and for any speech or debate in either House they shall not be questioned in any other place.

⁹ In its November 22, 2017 Memorandum and Order, this Court also concluded that it lacked the authority to compel Legislative Respondents to produce documents or information in response to Petitioners' first set of requests for production and first set of interrogatories, because all of the topics set forth therein related to legitimate legislative activity protected by the Speech and Debate Clause.

Governor Corbett subpoena whether any responsive documents would fall within the scope of the privilege protected by the Speech and Debate Clause, the Governor Corbett subpoena shall be interpreted as excluding those documents that reflect the intentions, motivations, and activities of state legislators and their staff with respect to the consideration and passage of the 2011 Plan.¹⁰

3. On September 12, 2017, Petitioners filed a motion to strike Legislative Respondents' objections to Petitioners' notices of intent to serve subpoenas. While not expressly stated therein, this Court addressed Petitioners' motion to strike in its November 22, 2017 Memorandum and Order, addressing the legislative subpoenas, the third-party subpoenas, and the Governor Corbett subpoena.

4. On September 22, 2017, the General Assembly filed a motion to quash Petitioners' notice of deposition for a designee of the General Assembly and an application for a protective order regarding such notice of deposition. By Order dated November 21, 2017, this Court granted the motion to quash and denied as moot the application for a protective order.

5. On November 16, 2017, Petitioners filed an emergency application to compel responses to pending discovery requests based on the General Assembly's and Legislative Respondents' waiver of all privileges. By Order dated November 17, 2017, this Court denied Petitioners' emergency application.

6. On November 27, 2017, Petitioners filed an application to compel production of non-privileged documents from Legislative Respondents. By Order dated November 28, 2017, this Court granted Petitioners' application to compel with certain qualifications.

7. On December 3, 2017, Legislative Respondents filed an application to preclude introduction of privileged evidence otherwise obtained in the United States District Court for the Eastern District of

¹⁰ On November 27, 2017, non-party Governor Corbett filed a motion to quash a subpoena directed to him by Petitioners. By Memorandum and Order dated November 30, 2017, this Court granted Governor Corbett's motion and quashed the subpoena on the basis that Governor Corbett is clothed in the chief executive privilege set forth in *Appeal of Hartranft*, 85 Pa. 433 (1877).

Pennsylvania case of *Agre v. Wolf*, No. 2:17-cv-4392 (*Agre* case).¹¹ By Order dated December 5, 2017, this Court denied Legislative Respondents' application, noting that this Court was not making a determination as to whether specific testimony or documents would be admissible at trial.

8. On December 6, 2017, Petitioners filed an application to exclude portions of the expert report of Dr. James Gimpel and to compel production of the underlying information set forth therein, which Legislative Respondents had previously withheld on the basis of privilege. By Order dated December 7, 2017, this Court denied Petitioners' application without prejudice to raise appropriate objections to Dr. Gimpel's testimony at trial or to cross-examine Dr. Gimpel on the bases for his opinions.

This Court conducted a non-jury trial on December 11-15, 2017.

Prior to the start of testimony, this Court heard oral argument on the parties' motions *in limine*, 8 in all. Following oral argument, this Court: (1) granted Petitioners' motion *in limine* to exclude Intervenors' witness testimony, thereby (a) precluding the testimony of an existing congressional candidate, (b) limiting the number of witnesses who will testify as Republican Party chairs to 1, and (c) limiting the number of witnesses who will testify as "Republicans-at-large" to 1; (2) granted Petitioners' motion *in limine* to preclude Legislative Respondents from offering evidence or argument about their intentions, motivations, and activities in enacting the 2011 Plan to the extent that it sought to bar Legislative

¹¹ In *Agre v. Wolf*, the plaintiffs challenged the 2011 Plan as unconstitutional under the Privileges and Immunities Clause of the Fourteenth Amendment to the United States Constitution and the First Amendment to the United States Constitution. As part of the discovery process in the *Agre* case, the Legislative Respondents filed motions for protective orders, seeking to invoke legislative privilege as a means to exclude any testimony or evidence relative to their deliberative process/subjective intent in the creation and passage of the 2011 Plan. The *Agre* court overruled such motions, concluding that under federal common law, the legislative and deliberative process privileges are qualified (not absolute) and there was no reason to protect any of the information from discovery.

Respondents from offering evidence that Petitioners could not obtain in discovery due to this Court's November 22, 2017 Order addressing the Speech and Debate Clause; (3) denied Petitioners' motion *in limine* to exclude testimony from Dr. Wendy K. Tam Cho regarding Petitioners' expert Dr. Jowei Chen; (4) denied Petitioners' motion *in limine* to exclude testimony from Dr. Gimpel regarding the intended or actual effect of the 2011 Plan on Pennsylvania's communities of interest, but accepted Legislative Respondents' proffer to withdraw pages 17 through 29 of Dr. Gimpel's report; and (5) denied Legislative Respondents' motion *in limine* to exclude documents and/or testimony regarding the Redistricting Majority Project (REDMAP). With respect to Legislative Respondents' motion *in limine* to exclude Petitioners' Exhibits 27-31, 33, and 135-161, Legislative Respondents' motion *in limine* to exclude certain testimony of Dr. Chen, and Petitioners' motion *in limine* to admit evidence produced by Speaker Turzai in the *Agre* case and properly obtained by Petitioners, this Court held that it would only allow the parties to use any documents filed of record in the *Agre* case, any documents admitted into evidence at trial in the *Agre* case, and any documents relied upon by experts in the *Agre* case to the same extent the experts used them in the *Agre* case.

During trial, Petitioners called the following witnesses: (1) Petitioner William Marx; (2) Petitioner Mary Elizabeth Lawn; (3) Jowei Chen, Ph.D.; (4) John J. Kennedy, Ph.D.; (5) Petitioner Thomas Rentschler; (6) Wesley Pegden, Ph.D.; and (7) Christopher Warshaw, Ph.D. Petitioners also designated portions of the depositions or prior trial testimony of the following witnesses and introduced them into the record as exhibits upon stipulation of the parties: (1) Petitioner Carmen Febo San Miguel; (2) Petitioner Don Lancaster; (3) Petitioner Gretchen

Brandt; (4) Petitioner John Capowski; (5) Petitioner Jordi Comas; (6) Petitioner John Greiner; (7) Petitioner James Solomon; (8) Petitioner Lisa Isaacs; (9) Petitioner Lorraine Petrosky; (10) Petitioner Mark Lichty; (11) Petitioner Priscilla McNulty; (12) Petitioner Richard Mantell; (13) Petitioner Robert McKinstry, Jr.; (14) Petitioner Robert Smith; (15) Petitioner Thomas Ulrich; (16) State Senator Andrew E. Dinniman; and (17) State Representative Gregory Vitali. Legislative Respondents called the following witnesses: (1) Wendy K. Tam Cho, Ph.D.; and (2) Nolan McCarty, Ph.D. In addition, Governor Wolf, Acting Secretary Torres, and Commissioner Marks produced an affidavit from Commissioner Marks, which the Court admitted into the record as an exhibit by stipulation of the parties. Lt. Governor Stack also produced an affidavit, which the Court admitted into the record as an exhibit by stipulation of the parties. Finally, Intervenor produced affidavits from the following individuals, which the Court admitted into the record as exhibits by stipulation of the parties: (1) Intervenor Thomas Whitehead; and (2) Intervenor Carol Lynne Ryan.

This Court admitted a number of exhibits into evidence at trial without objection or upon stipulation of the parties, all of which are identified on Exhibit “A” hereto. The parties entered certain joint exhibits into evidence based upon stipulation, all of which are identified on Exhibit “B” hereto.

This Court also admitted certain exhibits into evidence over objection: (1) Petitioners’ Exhibit 1, Expert Report of Jowei Chen, Ph.D.; (2) Petitioners’ Exhibit 21, Figure - Base 1 (2008-2010): Simulation Set 1: 234 Simulated Plans Following Only Traditional Districting Criteria (No Incumbent Protection) and Containing One District with Black Voting Age Population (VAP) over 50%; (3) Petitioners’ Exhibit 23, Figure - Base 2

(2008-2010): Simulation Set 2: 300 Simulated Plans Following Traditional Districting Criteria and Protecting 17 Incumbents Containing One District with Black VAP over 50% (Figure 11, Base 1 of Chen Report); (4) Legislative Respondents' Exhibit 39, "Evaluating partisan gains from Congressional gerrymandering: Using computer simulations to estimate the effect of gerrymandering in the U.S. House" (Figure 11, Base 2 of Chen Report); and (5) Lt. Governor Stack's Exhibit 9, Chen Figure 1 Map (detailed) with Residences of Incumbent Congressmen Marked, for illustrative purposes only.

This Court also sustained objections to the admissibility of a number of exhibits but entered them into the record under seal for the limited purpose of allowing the Pennsylvania Supreme Court to review the Court's evidentiary ruling on the admissibility of such exhibits: (1) Petitioners' Exhibit 124, Declaration of Stacie Goede, Republican State Leadership Conference; (2) Petitioners' Exhibit 126, "Redistricting 2010 Preparing for Success;" (3) Petitioners' Exhibit 127, "RSLC Announces Redistricting Majority Project (REDMAP);" (4) Petitioners' Exhibit 128, "REDistricting Majority Project;" (5) Petitioners' Exhibit 129, "REDMAP Political Report: July 2010;" (6) Petitioners' Exhibit 131, 2012 REDMAP Summary Report; (7) Petitioners' Exhibit 132, REDMAP Political Report: Final Report; (8) Petitioners' Exhibit 133, 2012: RSLC Year In Review; (9) Petitioners' Exhibit 134, REDMAP Pennsylvania fundraising letter; and (10) Petitioners' Exhibit 140, Map - "CD18 Maximized." (N.T., 1061, 1070-71.) This Court did not consider these exhibits in preparing its recommended findings of fact and conclusions of law.

Although the Pennsylvania Supreme Court has tasked this Court with preparing recommended findings of fact and conclusions of law based upon the

evidentiary record created by the parties, this Court's paramount responsibility in this matter is to create an evidentiary record upon which the Pennsylvania Supreme Court can render its decision. As such, this Court has exercised discretion in favor of admitting testimony and evidence over objection whenever possible. Moreover, Petitioners and Legislative Respondents, in their post-trial filings, advocated, in some form or another, for a change in existing Pennsylvania precedent. This Court has not considered those requests, adhering instead to what the Court understands is the current state of Pennsylvania law.

II. RECOMMENDED FINDINGS OF FACT¹²

A. Parties

1. Petitioners

1. Petitioner Carmen Febo San Miguel (Febo San Miguel) is registered to vote at her residence in Philadelphia, Pennsylvania, in the 1st Congressional District. Febo San Miguel is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13;¹³ Petitioners' Ex. 163 (P-163) at 2-3, 5-6.)

¹² The Court acknowledges that some of the paragraphs in this portion of the recommended findings of fact and conclusions of law can reasonably be characterized not as findings of facts, but as conclusions of law. They are, nonetheless, included in this section as a matter of order and clarity.

¹³ The parties filed a Joint Stipulation of Facts with this Court on December 8, 2017. The factual stipulations set forth therein are incorporated into these Recommended Findings of Fact and Conclusions of Law in their entirety. The stipulations have been reordered, reworded, combined, and/or separated when appropriate.

2. Petitioner James Solomon (Solomon) is registered to vote at his residence in Philadelphia, Pennsylvania, in the 2nd Congressional District. Solomon is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; Petitioners' Ex. 169 (P-169) at 2, 4.)

3. Petitioner John Greiner (Greiner) is registered to vote at his residence in Erie, Pennsylvania, in the 3rd Congressional District. Greiner is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; Petitioners' Ex. 168 (P-168) at 2-3, 5.)

4. Petitioner John Capowski (Capowski) is registered to vote at his residence in Camp Hill, Pennsylvania, in the 4th Congressional District. Capowski is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; Petitioners' Ex. 166 (P-166) at 2-3, 6.)

5. Petitioner Gretchen Brandt (Brandt) is registered to vote at her residence in State College, Pennsylvania, in the 5th Congressional District. Brandt is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; Petitioners' Ex. 165 (P-165) at 2-4, 6.)

6. Petitioner Thomas Rentschler (Rentschler) is registered to vote at his residence in Exeter Township, Pennsylvania, in the 6th Congressional District. Rentschler is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; N.T. 668-73.)

7. Petitioner Mary Elizabeth Lawn (Lawn) is registered to vote at her residence in Chester, Pennsylvania, in the 7th Congressional District. Prior to the 2011 Plan, Lawn resided in the 1st Congressional District. Lawn is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; N.T. at 134, 136-39.)

8. Petitioner Lisa Isaacs (Isaacs) is registered to vote at her residence in Morrisville, Pennsylvania, in the 8th Congressional District. Isaacs is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; Petitioners' Ex. 170 (P-170) at 2-5, 10.)

9. Petitioner Don Lancaster (Lancaster) is registered to vote at his residence in Indiana, Pennsylvania, in the 9th Congressional District. Lancaster is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; Petitioners' Ex. 164 (P-164) at 2-3.)

10. Petitioner Jordi Comas (Comas) is registered to vote at his residence in Lewisburg, Pennsylvania, in the 10th Congressional District. Comas is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; Petitioners' Ex. 167 (P-167) at 2, 6-7.)

11. Petitioner Robert Smith (R. Smith) is registered to vote at his residence in Bear Creek, Pennsylvania, in the 11th Congressional District. R. Smith is a registered Democrat, who has consistently voted for Democratic

candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; Petitioners' Ex. 176 (P-176) at 2-3.)

12. Petitioner William Marx (Marx) is registered to vote at his residence in Delmont, Pennsylvania, in the 12th Congressional District. Marx is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; N.T. at 102-03, 105, 108, 111.)

13. Petitioner Richard Mantell (Mantell) is registered to vote at his residence in Jenkintown, Pennsylvania, in the 13th Congressional District. Mantell is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; Petitioners' Ex. 174 (P-174) at 2-3.)

14. Petitioner Priscilla McNulty (McNulty) is registered to vote at her residence in Pittsburgh, Pennsylvania, in the 14th Congressional District. McNulty is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; Petitioners' Ex. 173 (P-173) at 4, 6, 8, 32.)

15. Petitioner Thomas Ulrich (Ulrich) is registered to vote at his residence in Bethlehem, Pennsylvania, in the 15th Congressional District. Ulrich is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; Petitioners' Ex. 177 (P-177) at 2-3.)

16. Petitioner Robert McKinstry, Jr. (McKinstry) is registered to vote at his residence in Kennett Square, Pennsylvania, in the 16th Congressional District. McKinstry is a registered Democrat, who has consistently voted for

Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; Petitioners' Ex. 175 (P-175) at 2-3, 8.)

17. Petitioner Mark Lichty (Lichty) is registered to vote at his residence in East Stroudsburg, Pennsylvania, in the 17th Congressional District. Lichty is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; Petitioners' Ex. 172 (P-172) at 2, 5.)

18. Petitioner Lorraine Petrosky (Petrosky) is registered to vote at her residence in Latrobe, Pennsylvania, in the 18th Congressional District. Petrosky is a registered Democrat, who has consistently voted for Democratic candidates for the United States House of Representatives. (Joint Stip. of Facts at ¶¶ 12-13; Petitioners' Ex. 171 (P-171) at 4, 6, 8-9, 39.)

19. Three congressional general elections occurred under the 2011 Plan before Petitioners filed their Petition. (Joint Stip. of Facts at ¶ 14.)

20. Petitioners were residents of Pennsylvania when the 2011 Plan became law. (Joint Stip. of Facts at ¶ 15.)

21. Petitioners did not file any type of challenge pertaining to the 2011 Plan prior to the filing of their Petition. (Joint Stip. of Facts at ¶ 16.)

22. No Petitioner has been prevented from registering to vote in Pennsylvania since the 2011 Plan became law. (Joint Stip. of Facts at ¶ 17.)

23. Since the 2011 Plan was enacted, Petitioners have voted in every congressional general election where there was a Democratic candidate on the ballot. (Joint Stip. of Facts at ¶ 18.)

24. Petitioners have each voted for the Democratic congressional candidate in each of the last 3 congressional general elections to the extent that one was running for the seat. (Joint Stip. of Facts at ¶ 19.)

25. No Petitioners have been prohibited from speaking in opposition to the views and/or actions of their Congressperson since the 2011 Plan became law. (Joint Stip. of Facts at ¶ 20.)

26. No Petitioners have been told by any congressional office that constituent services are provided or denied on the basis of partisan affiliations since the 2011 Plan became law. (Joint Stip. of Facts at ¶ 21.)

2. Respondents

27. The General Assembly is the state legislature for Pennsylvania and is composed of the Pennsylvania Senate (PA Senate) and the Pennsylvania House of Representatives (PA House). The General Assembly convenes in the Pennsylvania State Capitol Building located in Harrisburg, Pennsylvania. (Joint Stip. of Facts at ¶ 22.)

28. Governor Wolf is the Governor of Pennsylvania and is sued in his official capacity. (Joint Stip. of Facts at ¶ 23.)

29. One of the Governor's official duties is signing or vetoing bills passed by the General Assembly. All Pennsylvania Governors, including Governor Wolf, are charged with, among other things, faithfully executing valid laws enacted by the General Assembly. (Joint Stip. of Facts at ¶ 24.)

30. Governor Wolf was elected Governor of Pennsylvania in November 2014 and assumed office on January 20, 2015. (Joint Stip. of Facts at ¶ 25.)

31. Governor Wolf did not hold public office at the time that Senate Bill 1249 (SB 1249) was drafted and the 2011 Plan was enacted. (Joint Stip. of Facts at ¶ 26.)

32. Acting Secretary Torres is the Acting Secretary of Pennsylvania and is sued in his official capacity. (Joint Stip. of Facts at ¶ 27.)

33. Commissioner Marks is the Commissioner of the Bureau of Commissions, Elections, and Legislation (Bureau) for the Pennsylvania Department of State (DOS) and is sued in his official capacity. Commissioner Marks was appointed to the position of Commissioner in October 2011. Commissioner Marks is responsible for overseeing the day-to-day operations of the Bureau, which includes election administration. (Joint Stip. of Facts at ¶ 28; Governor Wolf, Acting Secretary Torres, and Commissioner Marks' Ex. 2 (EBD-2) at ¶¶ 1-2, 6.)

34. Commissioner Marks has been with the Bureau since the Fall of 2002. From 2004 through 2008, Commissioner Marks served as the Chief of the Division of Elections. From 2008 through 2011, Commissioner Marks served as the Chief of the Division of the Statewide Uniform Registry of Electors. (EBD-2 at ¶¶ 3-5.)

35. Commissioner Marks has supervised the administration of DOS's duties in more than 20 regularly scheduled elections and a number of special elections. (EBD-2 at ¶ 7.)

36. Lt. Governor Stack is the Lieutenant Governor of Pennsylvania and serves as President of the PA Senate. Lt. Governor Stack is sued in his official capacity. (Joint Stip. of Facts at ¶ 30.)

37. Lt. Governor Stack served in the PA Senate as the Senator for the 5th Senatorial district from 2001 until 2015, when he was sworn in as the Lieutenant Governor of Pennsylvania. (Joint Stip. of Facts at ¶ 157.)

38. Speaker Turzai is the Speaker of the PA House and is sued in his official capacity. (Joint Stip. of Facts at ¶ 31.)

39. Speaker Turzai is a Republican. (Joint Stip. of Facts at ¶ 32.)

40. Speaker Turzai has represented Pennsylvania's 28th legislative district since 2001. (Joint Stip. of Facts at ¶ 33.)

41. Speaker Turzai was elected Speaker of the PA House on January 6, 2015, and previously served as Majority Leader for the PA House Republican Caucus from 2011 to 2014. (Joint Stip. of Facts at ¶ 34.)

42. President Pro Tempore Scarnati is the PA Senate President Pro Tempore and is sued in his official capacity. (Joint Stip. of Facts at ¶ 35.)

43. President Pro Tempore Scarnati is a Republican. (Joint Stip. of Facts at ¶ 36.)

44. President Pro Tempore Scarnati was elected President Pro Tempore of the PA Senate in 2006. (Joint Stip. of Facts at ¶ 37.)

3. *Intervenors*

45. Intervenors are registered Republican voters in each of Pennsylvania's 18 congressional districts. Intervenors include announced or potential candidates for United States Congress, county party committee chairpersons, and active Republicans. (Joint Stip. of Facts at ¶¶ 159, 196-98.)

46. Intervenor Brian McCann (McCann) is a registered Republican voter, who resides in Philadelphia County in the 1st Congressional District.

McCann is a Committee member for Philadelphia's 65th Ward and the Ward Leader for Philadelphia's 57th Ward. (Joint Stip. of Facts at ¶ 160.)

47. Intervenor Daphne Goggins (Goggins) is a registered Republican voter, who resides in Philadelphia County in the 2nd Congressional District. Goggins is a Committee member for the Philadelphia City Committee, who currently serves as the Republican Ward Leader for Philadelphia's 16th Ward. (Joint Stip. of Facts at ¶ 161.)

48. Intervenor Carl Edward Pfeifer, Jr. (Pfeifer) is a registered Republican voter, who resides in Montgomery County in the 2nd Congressional District. Pfeifer is an active member of the Republican Party. (Joint Stip. of Facts at ¶ 162.)

49. Intervenor Michael Baker (Baker) is a registered Republican voter, who resides in Armstrong County in the 3rd Congressional District. Baker is the Chairman of the Armstrong County Republican Committee. (Joint Stip. of Facts at ¶ 163.)

50. Intervenor Cynthia Ann Robbins (Robbins) is a registered Republican voter, who resides in Mercer County in the 3rd Congressional District. Robbins is an active member of the Republican Party. (Joint Stip. of Facts at ¶ 164.)

51. Intervenor Ginny Steese Richardson (Richardson) is a registered Republican voter, who resides in Mercer County in the 3rd Congressional District. Richardson is the Chairwoman for the Mercer County Republican Party and a former candidate for public office. (Joint Stip. of Facts at ¶ 165.)

52. Intervenor Carol Lynne Ryan (Ryan) is a registered Republican voter, who resides in Lawrence County in the 3rd Congressional District. Ryan is a

member of the Lawrence County Republican Party Committee. (Joint Stip. of Facts at ¶ 166; Intervenor's Ex. 17 (I-17) at ¶ 1.)

53. Intervenor Joel Sears (Sears) is a registered Republican voter, who resides in York County in the 4th Congressional District. Sears is a member of the York County Republican Party Committee. (Joint Stip. of Facts at ¶ 167.)

54. Intervenor Kurtis D. Smith (K. Smith) is a registered Republican voter, who resides in Clinton County in the 5th Congressional District. K. Smith is the Chairman of the Clinton County Republican Party. (Joint Stip. of Facts at ¶ 168.)

55. Intervenor C. Arnold McClure (McClure) is a registered Republican voter, who resides in Huntingdon County in the 5th Congressional District. McClure is the Chairman of the Huntingdon County Republican Party. (Joint Stip. of Facts at ¶ 169.)

56. Intervenor Karen C. Cahilly (Cahilly) is a registered Republican voter, who resides in Potter County in the 5th Congressional District. Cahilly is the Chairwoman of the Potter County Republican Party. (Joint Stip. of Facts at ¶ 170.)

57. Intervenor Vicki Lightcap (Lightcap) is a registered Republican voter, who resides in Montgomery County in the 6th Congressional District. Lightcap is a member of the Montgomery County Republican Party Committee and has been a candidate for public office. (Joint Stip. of Facts at ¶ 171.)

58. Intervenor Wayne Buckwalter (Buckwalter) is a registered Republican voter, who resides in Chester County in the 6th Congressional District. Buckwalter is an active member of the Republican Party. (Joint Stip. of Facts at ¶ 172.)

59. Intervenor Ann Marshall Pilgreen (Pilgreen) is a registered Republican voter, who resides in Montgomery County in the 7th Congressional District. Pilgreen is a member of the Montgomery County Republican Party Committee. (Joint Stip. of Facts at ¶ 173.)

60. Intervenor Ralph E. Wike (Wike) is a registered Republican voter, who resides in Delaware County in the 7th Congressional District. Wike is an active member of the Republican Party. (Joint Stip. of Facts at ¶ 174.)

61. Intervenor Martin C.D. Morgis (Morgis) is a registered Republican voter, who resides in Bucks County in the 8th Congressional District. Morgis is an active member of the Republican Party. (Joint Stip. of Facts at ¶ 175.)

62. Intervenor Richard J. Tems (Tems) is a registered Republican voter, who resides in Bucks County in the 8th Congressional District. Tems is a member of the Bucks County Republican Party Committee and previously served on the Doylestown Borough Republican Committee. (Joint Stip. of Facts at ¶ 176.)

63. Intervenor James Taylor (Taylor) is a registered Republican voter, who resides in Franklin County in the 9th Congressional District. Taylor is a member of the Franklin County Republican Party and previously served as Chairman for the Franklin County Republican Party. (Joint Stip. of Facts at ¶ 177.)

64. Intervenor Lisa V. Nancollas (Nancollas) is a registered Republican voter, who resides in Mifflin County in the 10th Congressional District. Nancollas has been a candidate for public office. (Joint Stip. of Facts at ¶ 178.)

65. Intervenor Hugh H. Sides (Sides) is a registered Republican voter, who resides in Lycoming County in the 10th Congressional District. Sides is an active member of the Republican Party. (Joint Stip. of Facts at ¶ 179.)

66. Intervenor Mark J. Harris (Harris) is a registered Republican voter, who resides in Snyder County in the 10th Congressional District. Harris is a former Chairman of the Snyder County Republican Party, who continues to remain active in Republican campaign activities. (Joint Stip. of Facts at ¶ 180.)

67. Intervenor William P. Eggleston (Eggleston) is a registered Republican voter, who resides in Wyoming County in the 11th Congressional District. Eggleston is the Vice Chair of the Wyoming County Republican Party and a former candidate for public office, who continues to remain active in Republican campaign activities. (Joint Stip. of Facts at ¶ 181.)

68. Intervenor Jacqueline D. Kulback (Kulback) is a registered Republican voter, who resides in Cambria County in the 12th Congressional District. Kulback currently serves as the County Chairwoman of the Cambria County Republican Party. (Joint Stip. of Facts at ¶ 182.)

69. Intervenor Timothy D. Cifelli (Cifelli) is a registered Republican voter, who resides in Philadelphia County in the 13th Congressional District. Cifelli is an appointed member of the Philadelphia County Republican Party Committee. (Joint Stip. of Facts at ¶ 183.)

70. Intervenor Ann M. Dugan (Dugan) is a registered Republican voter, who resides in Allegheny County in the 14th Congressional District. Dugan is an active member of the Republican Party. (Joint Stip. of Facts at ¶ 184.)

71. Intervenor Patricia J. Felix (Felix) is a registered Republican voter, who resides in Northampton County in the 15th Congressional District. Felix has been a registered Republican since 1980 after initially registering as a Democrat. Felix is a member of the Northampton County Republican Party Committee. (Joint Stip. of Facts at ¶ 185.)

72. Intervenor Scott C. Uehlinger (Uehlinger) is a registered Republican voter, who resides in Berks County in the 15th Congressional District. Uehlinger is a candidate for the 15th Congressional District. (Joint Stip. of Facts at ¶ 186.)

73. Intervenor Brandon Robert Smith (B. Smith) is a registered Republican voter, who resides in Lancaster County in the 16th Congressional District. B. Smith is an active member of the Republican Party. (Joint Stip. of Facts at ¶ 187.)

74. Intervenor Glen Beiler (Beiler) is a registered Republican voter, who resides in Lancaster County in the 16th Congressional District. Beiler is an active member of the Republican Party. (Joint Stip. of Facts at ¶ 188.)

75. Intervenor Tegwyn Hughes (Hughes) is a registered Republican voter, who resides in Northampton County in the 17th Congressional District. Hughes is a Committee member from Washington Township for the Northampton County Republican Party. (Joint Stip. of Facts at ¶ 189.)

76. Intervenor Thomas Whitehead (Whitehead) is a registered Republican voter, who resides in Monroe County in the 17th Congressional District. Whitehead is the Chairman for the Monroe County Republican Committee and an active member of the Republican Party. (Joint Stip. of Facts at ¶ 190; Intervenor Ex. 16 (I-16) at ¶¶ 1-2.)

77. Intervenor David Moylan (Moylan) is a registered Republican voter, who resides in Schuylkill County in the 17th Congressional District. Moylan was a former congressional candidate for the 17th Congressional District and a potential congressional candidate in future elections. (Joint Stip. of Facts at ¶ 191.)

78. Intervenor James R. Means, Jr. (Means) is a registered Republican voter, who resides in Allegheny County in the 18th Congressional District. Means is an active member of the Republican Party. (Joint Stip. of Facts at ¶ 192.)

79. Intervenor Barry O. Christenson (Christenson) is a registered Republican voter, who resides in Allegheny County in the 18th Congressional District. Christenson has been a candidate for public office. (Joint Stip. of Facts at ¶ 193.)

80. Intervenor Kathleen Bowman (Bowman) is a registered Republican voter, who resides in the 4th Congressional District. Bowman is an active member of the Republican Party. (Joint Stip. of Facts at ¶ 194.)

81. Intervenor Bryan Leib (Leib) is a registered Republican voter, who resides in the 1st Congressional District. Leib is an active member of the Republican Party and a potential candidate for the 1st Congressional District. (Joint Stip. of Facts at ¶ 195.)

B. Background

82. Article I, Section 2 of the United States Constitution leaves the states' legislatures primarily responsible for the apportionment of their federal congressional districts. *See Grove v. Emison*, 507 U.S. 25, 34 (1993).

83. Following the national census that is mandated every 10 years, each state is responsible for drawing its congressional districts based upon how many districts the United States Department of Commerce assigns the state relative to such state's population. (Joint Stip. of Facts at ¶ 1.)

84. The decision to award a particular state a certain number of seats is known as apportionment. (Joint Stip. of Facts at ¶ 2.)

85. Congressional seats were reapportioned after the 2010 U.S. Census. (Joint Stip. of Facts at ¶ 3.)

86. As a result of reapportionment in 2010, Pennsylvania lost 1 congressional seat, dropping from 19 to 18 seats. (Joint Stip. of Facts at ¶ 4.)

87. In creating the 2011 Plan, it was mathematically impossible to avoid pairing 2 incumbents unless 1 or more incumbent Congressmen/women declined to seek re-election. (Joint Stip. of Facts at ¶ 5.)

88. In Pennsylvania, the boundaries for congressional districts are redrawn by legislative action in the form of a bill that proceeds through both chambers of the General Assembly and is signed into law by the Governor. (Joint Stip. of Facts at ¶ 6.)

89. In the year prior to the November 2010 elections, a majority of the Representatives of the PA House were Democrats. (Joint Stip. of Facts at ¶ 153.)

90. In 2011, the year after the November 2010 elections, a majority of the Representatives of the PA House were Republicans. (Joint Stip. of Facts at ¶¶ 8, 154.)

91. In 2011, a majority of the Senators in the PA Senate were Republicans. (Joint Stip. of Facts at ¶ 7.)

92. Governor Corbett, a Republican, was Pennsylvania's Governor in 2011. (Joint Stip. of Facts at ¶ 9.)

93. The Pennsylvania Manual¹⁴ contains a description of each of Pennsylvania's congressional districts for the congressional district maps adopted between 1960 and 2011. Pennsylvania's congressional district maps for 1943, 1951, 1962, 1972, 1982, 1992, 2002, and 2011, which are from the Pennsylvania Manual, are set out in Joint Exhibit 26. (Joint Stip. of Facts at ¶¶ 88-89.)

94. True and accurate lists of the members of the United States House of Representatives for each congressional district from 2005 to the present are set forth in Joint Exhibit 25. (Joint Stip. of Facts at ¶ 67.)

95. The following table accurately depicts the partisan distribution of seats in Pennsylvania's congressional delegation from 1966 to 2010, though some members may have been elected on some party label other than Democrat or Republican:

Year	Districts	Democratic Seats	Republican Seats
1966	27	14	13
1968	27	14	13
1970	27	14	13
1972	25	13	12
1974	25	14	11
1976	25	17	8
1978	25	15	10
1980	25	12 ¹⁵	12
1982	23	13	10

¹⁴ The Pennsylvania Manual is a regularly published book issued by the Pennsylvania Department of General Services, a public authority. (Joint Stip. of Facts at ¶ 88.)

¹⁵ One elected representative, Thomas M. Foglietta, was not elected as either a Democrat or Republican in 1980. (Joint Stip. of Facts at ¶ 70 n.1.)

1984	23	13	10
1986	23	12	11
1988	23	12	11
1990	23	11	12
1992	21	11	10
1994	21	11	10
1996	21	11	10
1998	21	11	10
2000	21	10	11
2002	19	7	12
2004	19	7	12
2006	19	11	8
2008	19	12	7
2010	19	7	12

(Joint Stip. of Facts at ¶ 70.)

96. The following chart contains the home addresses for each of the 17 current Pennsylvania members of the United States House of Representatives:

1	Bob Brady	7028 Brentwood Rd Philadelphia, PA 19151
2	Dwight Evans	1600 Cardeza St Philadelphia, PA 19150
3	Mike Kelly	239 W Pearl St Butler, PA 16001
4	Scott Perry	155 Warrington Rd Dillsburg, PA 17019
5	Glenn Thompson	8351 Pondview Dr McKean, PA 16426
6	Ryan Costello	107 Yorktown Rd Collegeville, PA 19426
7	Pat Meehan	102 Harvey Ln Chadds Ford, PA 19317
8	Brian Fitzpatrick	19 Spinythorn Rd Levittown, PA 19056

9	Bill Shuster	455 Overlook Dr Hollidaysburg, PA 16648
10	Tom Marino	358 Kinley Dr Cogan Station, PA 17728
11	Lou Barletta	1529 Terrace Blvd Hazleton, PA 18201
12	Keith Rothfus	227 Walnut St Sewickley, PA 15143
13	Brandon Boyle	13109 Bustleton Ave Philadelphia, PA 19116
14	Mike Doyle	205 Hawthorne Ct Pittsburgh, PA 15221
15	Charlie Dent	3626 Evening Star Terrace Allentown, PA 18104
16	Lloyd Smucker	230 Deerfield Dr Lancaster, PA 17602
17	Matthew Cartwright	8 Steinbeck Dr Moosic, PA 18507
18	Vacant Due to Resignation	

(Joint Stip. of Facts at ¶ 155.)

C. Enactment of the 2011 Plan

97. The PA House and PA Senate State Government Committees held hearings on May 11, June 9, and June 14, 2011, to receive testimony and public comment on redistricting. No congressional district map or draft of a congressional district map was presented at the hearings. (Joint Stip. of Facts at ¶ 38.)

98. On September 14, 2011, SB 1249 was introduced in the PA Senate in the form of Joint Exhibit 1. (Joint Stip. of Facts at ¶ 39.)

99. SB 1249's primary sponsors were Majority Floor Leader Dominic F. Pileggi (Majority Floor Leader Pileggi), President Pro Tempore Scarnati, and Senator Charles T. McIlhenney Jr. (Senator McIlhenney). Majority

Floor Leader Pileggi and Senator McIlhenney are Republicans. (Joint Stip. of Facts at ¶ 40.)

100. The PA Senate's first consideration of SB 1249 took place on December 7, 2011. (Joint Stip. of Facts at ¶ 41.)

101. The original version of SB 1249, Printer's Number (PN) 1520, did not provide any information about the boundaries of the congressional districts. Rather, for each of the 18 congressional districts, SB 1249, PN 1520 stated: "The [Number] District is composed of a portion of this Commonwealth." (Joint Stip. of Facts at ¶ 42.)

102. The PA Senate's second consideration of SB 1249 took place on December 12, 2011. (Joint Stip. of Facts at ¶ 43.)

103. During the second consideration, SB 1249 contained no map showing the proposed congressional districts. Rather, each of the 18 congressional districts were described as follows: "The [Number] District is composed of a portion of this Commonwealth." (Joint Stip. of Facts at ¶ 44.)

104. On December 14, 2011, SB 1249 was amended in the PA Senate State Government Committee and reported out as PN 1862 in the form of Joint Exhibit 2. (Joint Stip. of Facts at ¶ 45.)

105. On December 14, 2011, SB 1249 was referred to the PA Senate Appropriations Committee, where it was rewritten and reported out as PN 1869 in the form of Joint Exhibit 3. (Joint Stip. of Facts at ¶ 46.)

106. PN 1862 and PN 1869 were the only versions of SB 1249 that contained details of the boundaries of each congressional district. (Joint Stip. of Facts at ¶ 47.)

107. Upon stipulation and agreement of the parties, this Court takes judicial notice of the legislative history of SB 1249/Act 2011-131, including the Legislative Journals available at http://www.legis.state.pa.us/cfdocs/billinfo/bill_history.cfm?year=2011&sind=0&body=S&type=B&bn=1249. (Joint Stip. of Facts at ¶ 48.)

108. Democratic Senator Jay Costa introduced an amendment to SB 1249 that he stated would create 8 congressional districts favorable to Republicans, 4 congressional districts favorable to Democrats, and 6 swing congressional districts. The amendment did not pass. (Joint Stip. of Facts at ¶ 49.)

109. On December 14, 2011, SB 1249 passed in the PA Senate by a vote of 26-24. (Joint Stip. of Facts at ¶ 50.)

110. No Democratic Senator voted for SB 1249. (Joint Stip. of Facts at ¶ 51.)

111. As a Democratic Senator, Lt. Governor Stack voted against SB 1249. Based upon his experience as Lieutenant Governor of Pennsylvania and as chair of the Local Government Advisory Committee, Lt. Governor Stack believes that it is beneficial, when possible, to keep individual counties and municipalities in a single congressional district. (Joint Stip. of Facts at ¶ 158; Lt. Governor Stack Ex. 11.)

112. On December 14, 2011, SB 1249 was referred to the PA House State Government Committee. (Joint Stip. of Facts at ¶ 52.)

113. The PA House's first consideration of SB 1249 took place on December 15, 2011. (Joint Stip. of Facts at ¶ 53.)

114. The PA House's second consideration of SB 1249 took place on December 19, 2011. (Joint Stip. of Facts at ¶ 54.)

115. On December 19, 2011, the PA House referred SB 1249 to the PA House Appropriations Committee. (Joint Stip. of Facts at ¶ 55.)

116. On December 20, 2011, the PA House Appropriations Committee reported out SB 1249 in the form of Joint Exhibit 4. (Joint Stip. of Facts at ¶ 56.)

117. On December 20, 2011, SB 1249 passed in the PA House by a vote of 136-61. (Joint Stip. of Facts at ¶ 57.)

118. Thirty-six PA House Democrats voted for SB 1249. (Joint Stip. of Facts at ¶ 58.)

119. At least 33 of the 36 (approximately 92%) PA House Democrats who voted for SB 1249 represented state legislative districts that were part of at least 1 of the following congressional districts under the 2011 Plan: the 1st, 2nd, 13th, 14th, or 17th. (Joint Stip. of Facts at ¶ 59.)

120. Eighteen PA House Democrats from the Philadelphia area voted in favor of SB 1249. (Joint Stip. of Facts at ¶ 129.)

121. On December 22, 2011, the PA Senate signed SB 1249, after it was passed in the PA House, and then-Governor Corbett signed SB 1249 into law. (Joint Stip. of Facts at ¶ 60.)

122. When SB 1249 was enacted into law, it became Act 2011-131, also known as the 2011 Plan. (Joint Stip. of Facts at ¶ 61.)

123. The 2011 Plan remains in effect today. (Joint Stip. of Facts at ¶ 62.)

124. Neither Acting Secretary Torres nor Commissioner Marks had any role in the drafting or enactment of SB 1249. (Joint Stip. of Facts at ¶ 29.)

125. State Senator Andrew Dinniman (Senator Dinniman) is a Democratic member of the PA Senate. Senator Dinniman represents Chester County and is a member of the PA Senate State Government Committee. (Petitioners' Ex. 178 (P-178) at 17-19.)

126. Senator Dinniman testified¹⁶ consistently with the facts set forth above in this Section II.C., regarding the PA Senate's involvement in the enactment of the 2011 Plan. Senator Dinniman also testified as follows:

a. Senator Dinniman does not ever recall a situation where a "shell bill" was presented to a committee for a vote, prior to the introduction of SB 1249. (P-178 at 19-20, 56-57.)

b. The minority members of the PA Senate State Government Committee, including Senator Dinniman, did not see SB 1249 as amended to include the descriptions of the congressional districts until the morning of December 14, 2011. (P-178 at 20-21, 48.)

c. On December 14, 2011, the PA Senate rule that requires a minimum of 6 hours between the time that a bill comes out of appropriations and is considered on the floor of the PA Senate was suspended for SB 1249. (P-178 at 23.)

d. On December 14, 2011, the PA Senate rule that requires sessions to end at 11:00 p.m. was suspended for SB 1249. (P-178 at 25, 76.)

e. It is unusual for a bill involving suffrage to proceed through the PA Senate in such a rapid manner—*i.e.*, introduced with a

¹⁶ Excerpts of Senator Dinniman's testimony from the *Agre* case were admitted into evidence as Petitioners' Exhibit 178.

description of the congressional districts in the morning and adopted by the PA Senate after 11:00 p.m. that same day. Senator Dinniman believes that any bill dealing with suffrage should be considered in a deliberative manner, and that it was unfair for him to have to vote on a bill involving suffrage within such a short period of time. (P-178 at 27-28, 44-45.)

f. Because SB 1249 did not contain descriptions of the congressional districts until the morning of December 14, 2011, there was no opportunity for advocacy groups to respond to SB 1249. (P-178 at 30.)

g. Because SB 1249 did not contain descriptions of the congressional districts until the morning of December 14, 2011, Senator Dinniman was denied the opportunity to determine how his constituents felt about SB 1249. (P-178 at 30.)

h. In late November or early December 2011, Senator Dinniman expressed concern about the status of SB 1249 to the Chairman of the PA Senate State Government Committee. (P-178 at 31-32, 34-35.)

i. The PA Senate State Government Committee has the capacity to use voting data in a very different and more sophisticated manner than the past. (P-178 at 40, 75-76.)

j. Senator Dinniman believes that incumbency protection factored into SB 1249. (P-178 at 73-74.)

127. State Representative Gregory Vitale (Representative Vitale) is a Democratic member of the PA House, who represents the 166th legislative district. From 1993 through 2003, Representative Vitale served on the PA House State Government Committee. (Petitioners' Ex. 179 (P-179) at 2-3.)

128. Representative Vitale testified¹⁷ consistently with the facts set forth above in Section II.C., regarding the PA House's involvement in the enactment of the 2011 Plan. Representative Vitale also testified as follows:

a. The discussions regarding SB 1249 and the creation of the congressional districts were held "behind closed doors." (P-179 at 9-10, 16, 25.)

b. Representative Vitale believed that the 2011 Plan was the result of an agreement between the PA House Republicans, the PA Senate Republicans, and the then-Governor. (P-179 at 9-10.)

c. There were no public opportunities to participate in the drafting of SB 1249. (P-179 at 11.)

d. Representative Vitale believes that it is clear that the 2011 Plan was drawn to maximize the number of Republican congressional seats. (P-179 at 16-17.)

e. It was unique that SB 1249 was introduced as a "shell," with no content. Representative Vitale explained that, even with controversial bills, the initial version of the bill has some content and then the "behind-the-scenes" deal is inserted into the bill at the last second. Representative Vitale explained that with SB 1249, it was the same bill without any content, rather than a different bill where something was added at the last second. (P-179 at 18, 31-32.)

¹⁷ The Court admitted into evidence as Petitioners' Exhibit 179 excerpts of Representative Vitale's deposition taken on December 4, 2017.

f. As a citizen and voter of the 7th Congressional District, Representative Vitale believes that the 7th Congressional District is an embarrassment. (P-179 at 21-22.)

g. Representative Vitale believes that the 7th Congressional District was created by computer-generated lines with the intent to find all Republican precincts to make the congressional seat competitive. (P-179 at 35.)

D. The 2011 Plan Congressional Districts

129. The 2011 Plan, which is depicted in Joint Exhibit 5, officially establishes the boundaries of Pennsylvania's congressional districts. (Joint Stip. of Facts at ¶¶ 63-64.)

130. The 1st Congressional District, which is depicted in Joint Exhibit 6, is composed of parts of Delaware and Philadelphia Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(1) of the 2011 Plan.

131. The 2nd Congressional District, which is depicted in Joint Exhibit 7, is composed of parts of Montgomery and Philadelphia Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(2) of the 2011 Plan.

132. The 3rd Congressional District, which is depicted in Joint Exhibit 8, is composed of all of Armstrong, Butler, and Mercer Counties and parts of Clarion, Crawford, Erie, and Lawrence Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(3) of the 2011 Plan.

133. The 4th Congressional District, which is depicted in Joint Exhibit 9, is composed of all of Adams and York Counties and parts of Cumberland and Dauphin Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(4) of the 2011 Plan.

134. The 5th Congressional District, which is depicted in Joint Exhibit 10, is composed of all of Cameron, Centre, Clearfield, Clinton, Elk, Forest, Jefferson, McKean, Potter, Venango, and Warren Counties and parts of Clarion, Crawford, Erie, Huntingdon, and Tioga Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(5) of the 2011 Plan.

135. The 6th Congressional District, which is depicted in Joint Exhibit 11, is composed of parts of Berks, Chester, Lebanon, and Montgomery Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(6) of the 2011 Plan.

136. The 7th Congressional District, which is depicted in Joint Exhibit 12, is composed of parts of Berks, Chester, Delaware, Lancaster, and Montgomery Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(7) of the 2011 Plan.

137. The evolution of the shapes of the 7th Congressional District from 1953 to 2013 is depicted in Joint Exhibit 24. (Joint Stip. of Facts at ¶ 66; N.T. at 614-15.)

138. The 8th Congressional District, which is depicted in Joint Exhibit 13, is composed of all of Bucks County and part of Montgomery County. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(8) of the 2011 Plan.

139. The 9th Congressional District, which is depicted in Joint Exhibit 14, is composed of all of Bedford, Blair, Fayette, Franklin, Fulton, and Indiana Counties and parts of Cambria, Greene, Huntingdon, Somerset, Washington, and Westmoreland Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(9) of the 2011 Plan.

140. The 10th Congressional District, which is depicted in Joint Exhibit 15, is composed of all of Bradford, Juniata, Lycoming, Mifflin, Pike,

Snyder, Sullivan, Susquehanna, Union, and Wayne Counties and parts of Lackawanna, Monroe, Northumberland, Perry, and Tioga Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(10) of the 2011 Plan.

141. The 11th Congressional District, which is depicted in Joint Exhibit 16, is composed of all of Columbia, Montour, and Wyoming Counties and parts of Carbon, Cumberland, Dauphin, Luzerne, Northumberland, and Perry Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(11) of the 2011 Plan.

142. The 12th Congressional District, which is depicted in Joint Exhibit 17, is composed of all of Beaver County and parts of Allegheny, Cambria, Lawrence, Somerset, and Westmoreland Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(12) of the 2011 Plan.

143. The 13th Congressional District, which is depicted in Joint Exhibit 18, is composed of parts of Montgomery and Philadelphia Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(13) of the 2011 Plan.

144. The 14th Congressional District, which is depicted in Joint Exhibit 19, is composed of parts of Allegheny and Westmoreland Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(14) of the 2011 Plan.

145. The 15th Congressional District, which is depicted in Joint Exhibit 20, is composed of all of Lehigh County and parts of Berks, Dauphin, Lebanon, and Northampton Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(15) of the 2011 Plan.

146. The 16th Congressional District, which is depicted in Joint Exhibit 21, is composed of parts of Berks, Chester, and Lancaster Counties. (Joint Stip. of Facts at ¶ 65.) *See* Section 301(16) of the 2011 Plan.

147. The 17th Congressional District, which is depicted in Joint Exhibit 22, is composed of all of Schuylkill County and parts of Carbon, Lackawanna, Luzerne, Monroe, and Northampton Counties, including Scranton, Wilkes-Barre, and Easton. (Joint Stip. of Facts at ¶ 65.) See Section 301(17) of the 2011 Plan.

148. The 18th Congressional District, which is depicted in Joint Exhibit 23, is composed of parts of Allegheny, Greene, Washington, and Westmoreland Counties. (Joint Stip. of Facts at ¶ 65.) See Section 301(18) of the 2011 Plan.

149. The 2011 Plan splits 28 counties between at least 2 different congressional districts. The following table accurately depicts those 28 split counties:

Count	Split Counties	Number of Districts Falling Within
1	Allegheny	3
2	Berks	4
3	Cambria	2
4	Carbon	2
5	Chester	3
6	Clarion	2
7	Crawford	2
8	Cumberland	2
9	Dauphin	3
10	Delaware	2
11	Erie	2
12	Greene	2
13	Huntingdon	2
14	Lackawanna	2
15	Lancaster	2
16	Lawrence	2
17	Lebanon	2
18	Luzerne	2

19	Monroe	2
20	Montgomery	5
21	Northampton	2
22	Northumberland	2
23	Perry	2
24	Philadelphia	3
25	Somerset	2
26	Tioga	2
27	Washington	2
28	Westmoreland	4

(Joint Stip. of Facts at ¶ 90.)

150. Until 1992, there were no municipalities split into separate congressional districts at the census block level. In the 1992 Pennsylvania congressional district map, there were 3 municipalities split into separate congressional districts at the census block level. (Joint Stip. of Facts at ¶ 103.)

151. The 2011 Plan splits 68 out of Pennsylvania's 2,561 municipalities (2.66%) between at least 2 different congressional districts. The following table accurately depicts the 68 split municipalities:

Count	Split Municipalities
1	Archbald
2	Barr
3	Bethlehem
4	Caln
5	Carbondale
6	Chester
7	Cumru
8	Darby
9	East Bradford
10	East Carroll
11	East Norriton
12	Fallowfield
13	Glenolden
14	Harrisburg
15	Harrison

16	Hatfield
17	Hereford
18	Horsham
19	Kennett
20	Laureldale
21	Lebanon
22	Lower Alsace
23	Lower Gwynedd
24	Lower Merion
25	Mechanicsburg
26	Millcreek
27	Monroeville
28	Morgan
29	Muhlenberg
30	North Lebanon
31	Northern Cambria
32	Olyphant
33	Penn
34	Pennsbury
35	Perkiomen
36	Philadelphia
37	Piney
38	Plainfield
39	Plymouth Township
40	Ridley
41	Riverside
42	Robinson
43	Sadsbury
44	Seven Springs
45	Shippen
46	Shippensburg
47	Shirley
48	Spring
49	Springfield
50	Stroud
51	Susquehanna
52	Throop
53	Tinicum
54	Trafford

55	Upper Allen
56	Upper Darby
57	Upper Dublin
58	Upper Gwynedd
59	Upper Hanover
60	Upper Merion
61	Upper Nazareth
62	West Bradford
63	West Hanover
64	West Norriton
65	Whitehall
66	Whitemarsh
67	Whitpain
68	Wyomissing

The municipalities of Seven Springs, Shippensburg, and Trafford are naturally split across counties. (Joint Stip. of Facts at ¶¶ 91, 121.)

152. Under the 2011 Plan, 11 of Pennsylvania’s 18 congressional districts contain more than 3 counties that are divided into separate districts. (Joint Stip. of Facts at ¶ 92.)

153. The 2011 Plan splits Montgomery County (population 799,814) into 5 congressional districts. (Joint Stip. of Facts at ¶ 93.)

154. The 2011 Plan splits Westmoreland County (population 365,169) into 4 congressional districts. (Joint Stip. of Facts at ¶ 95.)

155. The 2011 Plan splits the city of Monroeville into 3 different congressional districts: the 12th, 14th, and 18th. (Joint Stip. of Facts at ¶ 96.)

156. The 2011 Plan splits the municipality of Caln Township into 3 different congressional districts: the 6th, 7th, and 16th. (Joint Stip. of Facts at ¶ 97.)

157. The 2011 Plan splits the municipality of Cumru Township into 3 different congressional districts: the 6th, 7th, and 16th. Cumru Township is a naturally non-contiguous municipality. (Joint Stip. of Facts at ¶ 98.)

158. The 2011 Plan splits the municipality of Spring Township into 3 different congressional districts: the 6th, 7th, and 16th. (Joint Stip. of Facts at ¶ 99.)

159. From at least 1962 until the 2002 congressional district map, all of Berks County lied within a single district. (Joint Stip. of Facts at ¶ 104.)

160. Under the 2011 Plan, Berks County (population 411,442) is split into 4 congressional districts: the 6th, 7th, 15th, and 16th. (Joint Stip. of Facts at ¶¶ 94, 105.)

161. Under the 2011 Plan, the City of Reading is located in the 16th Congressional District, separate from other parts of Berks County. (Joint Stip. of Facts at ¶ 106.)

162. Under the 2011 Plan, Dauphin County is split into 3 congressional districts: the 4th, 11th, and 15th. (Joint Stip. of Facts at ¶ 107.)

163. Under the 2011 Plan, the City of Harrisburg is divided between the 4th and 11th Congressional Districts. (Joint Stip. of Facts at ¶ 108.)

164. Two divisions of Harrisburg's 1st Ward are located in the 11th Congressional District, while the rest of Harrisburg is located in the 4th Congressional District. (Joint Stip. of Facts at ¶ 118.)

165. The 2011 Plan splits Northampton County. (Joint Stip. of Facts at ¶ 109.)

166. Under the 2011 Plan, Easton is located in the 17th Congressional District and split from the rest of Northampton County, which is located in the 15th Congressional District. (Joint Stip. of Facts at ¶ 115.)

167. Under the 2011 Plan, parts of the City of Chester, all of Swarthmore, and parts of Philadelphia are all located in the 1st Congressional District. (Joint Stip. of Facts at ¶ 110.)

168. In the 2011 Plan, the City of Chester is divided between the 1st Congressional District and the 7th Congressional District. (Joint Stip. of Facts at ¶ 116.)

169. Under the 2011 Plan, Coatesville is located in the 16th Congressional District and split from other parts of Chester County. (Joint Stip. of Facts at ¶ 111.)

170. Under the 2011 Plan, Wilkes-Barre is located in the 17th Congressional District and split from other parts of Luzerne County. (Joint Stip. of Facts at ¶ 112.)

171. From at least 1966 until the 2002 congressional district map, the 11th Congressional District incorporated both Scranton and Wilkes-Barre. (Joint Stip. of Facts at ¶ 119.)

172. From at least 1931 until the 2011 Plan, Erie County was not split between congressional districts. (Joint Stip. of Facts at ¶ 113.)

173. Under the 2011 Plan, Erie County is split between 2 congressional districts. (Joint Stip. of Facts at ¶ 113.)

174. Under the 2011 Plan, the City of Bethlehem is divided between the 15th Congressional District and the 17th Congressional District. (Joint Stip. of Facts at ¶ 114.)

175. Four census blocks in a single ward of the City of Bethlehem are contained in a different congressional district in the 2011 Plan. (Joint Stip. of Facts at ¶ 120.)

176. The 2011 Plan keeps Armstrong, Butler, Mercer, Venango, and Warren Counties whole. Such counties were split in Pennsylvania's 2002 congressional district map. (Joint Stip. of Facts at ¶ 117.)

177. The 2011 Plan paired 2 incumbents in a single district, Democratic Congressman Mark Critz (Critz) and Jason Altmire (Altmire). No other incumbents were paired. (Joint Stip. of Facts at ¶ 122.)

178. Under the prior congressional districting plan, Critz had been in the 12th Congressional District and Altmire had been in the 4th Congressional District. (Joint Stip. of Facts at ¶ 123.)

179. In the 2012 election cycle, Critz defeated Altmire in the Democratic primary. (Joint Stip. of Facts at ¶ 124.)

180. In the 2012 election cycle, Critz lost to Republican Keith Rothfus (Rothfus) in the general election. (Joint Stip. of Facts at ¶ 125.)

181. Rothfus has won re-election in the 12th Congressional District in every election since 2012. (Joint Stip. of Facts at ¶ 126.)

E. Pennsylvania Election Results¹⁸

182. The following chart represents the 17 largest counties in Pennsylvania by population and which of those counties voted Democratic in the 2008, 2012, and 2016 Presidential elections:

¹⁸ The election returns that Acting Secretary Torres and Commissioner Marks produced in response to Petitioners' first set of requests for production are true and correct. (Joint Stip. of Facts at ¶ 69.)

County by Population	County	2008	2012	2016
1.	Philadelphia	X	X	X
2.	Allegheny	X	X	X
3.	Montgomery	X	X	X
4.	Bucks	X	X	X
5.	Delaware	X	X	X
6.	Lancaster			
7.	Chester	X		X
8.	York			
9.	Berks	X		
10.	Westmoreland			
11.	Lehigh	X	X	X
12.	Luzerne	X	X	
13.	Northampton	X	X	
14.	Erie	X	X	
15.	Dauphin	X	X	X
16.	Cumberland			
17.	Lackawanna	X	X	X

(Joint Stip. of Facts at ¶ 68.)

183. In the 2012 congressional elections, Democrats won 50.8% of the two-party statewide congressional vote. (Joint Stip. of Facts at ¶ 71.)

184. In the 2012 congressional elections, Republicans won 13 of the 18 congressional seats. Democrats won 5 congressional seats. (Joint Stip. of Facts at ¶ 72.)

185. In the 2012 congressional elections, each party's share of the two-party vote in the congressional districts the party won were as follows:

District	Democratic Vote	Republican Vote
1	84.9%	
2	90.5%	
13	69.1%	
14	76.9%	
17	60.3%	
3		57.2%
4		63.4%
5		62.9%
6		57.1%
7		59.4%
8		56.6%
9		61.7%
10		65.6%
11		58.5%
12		51.7%
15		56.8%
16		58.4%
18		64.0%
Average of Districts Won by Party	76.4%	59.5%
Statewide Vote Share	50.8%	49.2%

(Joint Stip. of Facts at ¶ 73.)

186. The following table shows the Democratic two-party vote share for each of Pennsylvania's congressional districts in 2012:

District	Democratic Vote Share
10	34.4%
18	36.0%
4	36.6%
5	37.1%
9	38.3%
7	40.6%
11	41.5%
16	41.6%
3	42.8%
6	42.9%
15	43.2%
8	43.4%
12	48.3%
17	60.3%
13	69.1%
14	76.9%
1	84.9%
2	90.5%
Mean	50.5%
Median	42.8%

(Joint Stip. of Facts at ¶ 86.)

187. In the 2012 congressional election, the mean Democratic two-party vote share across all districts was 50.46%. The median Democratic two-party vote share was 42.81% (the average of the 6th and 3rd Congressional Districts, which were Democrats' 9th and 10th best districts). (Joint Stip. of Facts at ¶ 87.)

188. In the 2014 congressional elections, Republicans won 55.5% of the two-party statewide congressional vote. (Joint Stip. of Facts at ¶ 74.)

189. In the 2014 congressional elections, Republicans won 13 of the 18 congressional seats. Democrats won 5 congressional seats. (Joint Stip. of Facts at ¶ 75.)

190. In the 2014 congressional elections, the elections in the 14th, 15th, and 18th Congressional Districts were uncontested. (Joint Stip. of Facts at ¶ 76.)

191. In the 2014 congressional elections, there was no Democratic challenger in the 15th and 18th Congressional Districts. (Joint Stip. of Facts at ¶ 77.)

192. In the 2014 contested congressional elections, each party's share of the two-party vote in the districts the party won were as follows:

District	Democratic Vote	Republican Vote
1	82.8%	
2	87.7%	
13	67.1%	
14	100%	
17	56.8%	
3		60.6%
4		74.5%
5		63.6%
6		56.3%
7		62.0%
8		61.9%
9		63.5%
10		71.6%
11		66.3%
12		59.3%
15		100%
16		57.7%
18		100%
Average of Contested Districts Won by Party	73.6%	63.4%
Statewide Vote Share	44.5%	55.5%

(Joint Stip. of Facts at ¶ 78.)

193. In 2014, the average two-party vote share for successful Democratic congressional candidates was 73.6%, as compared to 63.4% for successful Republican congressional candidates (excluding uncontested elections).

(Joint Stip. of Facts at ¶ 79.)

194. In the 2016 congressional elections, Republicans won 54.1% of the two-party statewide congressional vote. (Joint Stip. of Facts at ¶ 80.)

195. In the 2016 congressional elections, Republicans won 13 of the 18 congressional seats. Democrats won 5 congressional seats. (Joint Stip. of Facts at ¶ 81.)

196. In the 2016 congressional elections, the elections in the 3rd, 13th, and 18th Congressional Districts were uncontested. (Joint Stip. of Facts at ¶ 83.)

197. In the 2016 congressional elections, there was no Democratic challenger in the 3rd and 18th Congressional Districts. (Joint Stip. of Facts at ¶ 84.)

198. In the 2016 congressional elections, each party's share of the two-party vote in the districts the party won were as follows:

District	Democratic Vote	Republican Vote
1	82.2%	
2	90.2%	
13	100.0%	
14	74.4%	
17	53.8%	
3		100.0%
4		66.1%
5		67.2%
6		57.2%
7		59.5%
8		54.4%
9		63.3%

District	Democratic Vote	Republican Vote
10		70.2%
11		63.7%
12		61.8%
15		60.6%
16		55.6%
18		100.0%
Average of Contested Districts Won by Party	75.2%	61.8%
Statewide Vote Share	45.9%	54.1%

(Joint Stip. of Facts at ¶ 82.)

199. In 2016, the average two-party vote share for successful Democratic congressional candidates was 75.2%, as compared to 61.8% for successful Republican congressional candidates (excluding uncontested elections).

(Joint Stip. of Facts at ¶ 85.)

200. In the 3 election cycles that have taken place since the last redistricting in Pennsylvania, Democrats have won 5 of the 18 congressional seats.

(Joint Stip. of Facts at ¶ 100.)

201. In each of the 3 congressional elections that have taken place under the 2011 Plan, Republican candidates have won the same 13 districts. (Joint Stip. of Facts at ¶ 101.)

202. The following table depicts the partisan distribution of congressional seats in Pennsylvania's congressional delegation from 2012-2016:

Year	Districts	Democratic Seats	Republican Seats	Democratic Vote Percentage	Republican Vote Percentage
2012	18	5	13	50.8%	49.2%
2014	18	5	13	44.5%	55.5%
2016	18	5	13	45.9%	54.1%

The vote percentages are based on the two-party share of the votes cast. (Joint Stip. of Facts at ¶ 102.)

203. In the 2016 elections, the 6th and 7th Congressional Districts re-elected Republican Congressmen while voting for Democratic nominee Hillary Clinton, former Secretary of State (Secretary Clinton) for President. (Joint Stip. of Facts at ¶¶ 127, 206.)

204. In the 2016 elections, the 17th Congressional District re-elected a Democratic Congressman while voting for Donald Trump for President. (Joint Stip. of Facts at ¶ 128.)

F. Pennsylvania Voting Patterns

205. By the November 2016 election, 24 Pennsylvania counties had more registered Democrats than registered Republicans, while 43 Pennsylvania counties had more registered Republicans than registered Democrats. (Joint Stip. of Facts at ¶ 203.)

206. Overall, from November 2012 to November 2016, percentages of registered Republicans increased in 59 Pennsylvania counties, while percentages of registered Republicans decreased in 8 Pennsylvania counties. (Joint Stip. of Facts at ¶ 204.)

207. From November 2012 to November 2016, percentages of registered Democrats increased in 5 Pennsylvania counties, while percentages of

registered Democrats decreased in 62 Pennsylvania counties. (Joint Stip. of Facts at ¶ 205.)

208. Twenty-four Pennsylvania counties had more registered Democrats than registered Republicans at the time of the 2016 Presidential Election. Secretary Clinton won 11 Pennsylvania counties in the 2016 Presidential Election. (Joint Stip. of Facts at ¶ 206.)

209. Three Pennsylvania counties that President Obama won in 2012 voted for President Trump in 2016: Erie County, Northampton County, and Luzerne County. (Joint Stip. of Facts at ¶ 207.)

210. President Trump won Erie County by 48.57% to Secretary Clinton's 46.99%. Registered Democrats outnumbered registered Republicans by 51.31% to 35.48% in Erie County in November 2016. (Joint Stip. of Facts at ¶ 208.)

211. President Trump won Northampton County by 49.98% to Secretary Clinton's 46.18%. Registered Democrats outnumbered registered Republicans by 46.87% to 34.76% in Northampton County in November 2016. (Joint Stip. of Facts at ¶ 209.)

212. President Trump won Luzerne County by 58.29% to Secretary Clinton's 38.86%. Registered Democrats outnumbered registered Republicans by 52.62% to 36.10% in Luzerne County in November 2016. (Joint Stip. of Facts at ¶ 210.)

213. President Trump's performance in Luzerne County improved by 11.42 percentage points over the 2012 Republican nominee, Mitt Romney, who won 46.87% of the vote in Luzerne County. (Joint Stip. of Facts at ¶ 211.)

214. In November 2016, Fayette County had 57.96% registered Democrats. President Trump won 64.33% of the vote in Fayette County. (Joint Stip. of Facts at ¶ 212.)

215. In November 2016, Greene County had 55.22% registered Democrats. President Trump won 68.82% of the vote in Greene County. (Joint Stip. of Facts at ¶ 213.)

216. In November 2016, Cambria County had 52.25% registered Democrats. President Trump won 67% of the vote in Cambria County. (Joint Stip. of Facts at ¶ 214.)

217. In November 2016, Beaver County had 52.15% registered Democrats. President Trump won 57.64% of the vote in Beaver County. (Joint Stip. of Facts at ¶ 215.)

218. In 2016, President Trump won Pennsylvania, Republican Pat Toomey was re-elected to the United States Senate, and Democratic candidates won statewide races for Attorney General, Treasurer, and Auditor General. (Joint Stip. of Facts at ¶ 216.)

219. In 2016, not all registered Democrats in Pennsylvania voted straight Democratic. (Joint Stip. of Facts at ¶ 217.)

220. In 2016, at least some voters voted Republican for President and United States Senate while voting Democratic for other statewide officers. (Joint Stip. of Facts at ¶ 218.)

G. Petitioners' Beliefs Regarding How the 2011 Plan Has Affected Their Ability to Influence the Political Process

221. Some Petitioners believe that the 2011 Plan has taken away their ability to vote for a candidate that has a chance of winning the election for their congressional districts. (N.T. at 113, 140, 674; P-166 at 8; P-177 at 12.)

222. Some Petitioners believe that the 2011 Plan lessens the power, strength, impact, and/or weight of their vote. (P-163 at 2, 4, 7-10, 13, 15; P-170 at 7, 15-16, 18; P-174 at 7-8.)

223. At least one of Petitioners believes that his vote does not count under the 2011 Plan. (P-164 at 11.)

224. At least one of Petitioners believes that the 2011 Plan prevents him from having a meaningful effect on who is elected in his congressional district. (P-167 at 19.)

225. Some Petitioners believe that the 2011 Plan has taken away their ability to express themselves and/or to have their voices effectively heard about issues that are important to them. (N.T. at 113-14, 125, 680-81; P-164 at 5-6; P-167 at 20; P-169 at 4-6, 8-9; P-173 at 66; P-175 at 16-17; P-177 at 6.)

226. Some Petitioners believe that under the 2011 Plan, they do not have a Congressman that fairly/adequately represents them and their points of view/interests. (N.T. at 117-18, 141-43, 675-77; P-165 at 8-9; P-166 at 6-7, 12; P-168 at 10-11; P-170 at 14-15; P-177 at 10-11.)

227. Some Petitioners believe that under the 2011 Plan, they do not have access to their Congressman and/or are unable to communicate with their Congressman because their Congressman makes himself unavailable—*e.g.*, they are unable to reach their Congressman at his offices, their Congressman does not hold town halls, and their Congressman is nonresponsive to inquiries. (N.T. at 116-17, 130, 143-46, 148; P-164 at 7; P-165 at 9-10; P-167 at 7, 10-12; P-176 at 4-5, 8.)

228. Some Petitioners believe that under the 2011 Plan, their current Congressman has no reason to listen to their concerns about issues that are

important to them because their Congressman does not need their votes to be re-elected. (N.T. at 118, 126, 146; P-164 at 5, 8; P-165 at 9; P-176 at 7, 10-11; P-177 at 15.)

229. Some Petitioners believe that the congressional districts created by the 2011 Plan are unfair. (N.T. at 125, 681; P-163 at 10-11; P-164 at 8-9; P-165 at 6-7, 12, 13; P-166 at 7-8; P-168 at 6-7, 11-12; P-170 at 12; P-171 at 43-44, 68-69; P-173 at 37-38; P-177 at 8-9, 12-13.)

230. Some Petitioners believe that under the 2011 Plan their communities of interest are not located within their congressional districts and that Petitioners' communities do not have anything in common with the other communities that are located within their congressional districts. (N.T. at 677-79, 681-82; P-164 at 4-5, 9-10; P-167 at 12, 14-15.)

231. At least one of Petitioners believes that the 2011 Plan harms his community of interest by splitting it between congressional districts, and, as a result, his community of interest does not have a single Congressman representing its interests. (P-168 at 9-10.)

232. At least one of Petitioners believes that the 2011 Plan makes his Congressman more beholden to the party politics and donors than to the voters. (P-167 at 9-10, 13.)

233. Some Petitioners believe that the 2011 Plan has deterred potential Democratic candidates from running against the Republican incumbents in their congressional districts, and, therefore, they do not have a candidate to vote for or a choice regarding who their Congressperson will be. (P-171 at 41-43, 50, 84; P-177 at 15-16.)

234. At least one of Petitioners believes that the 2011 Plan has created a lack of trust in democracy. (P-172 at 12-13, 17.)

H. Expert Testimony

I. Jowei Chen, Ph.D.

235. The Court accepted Jowei Chen, Ph.D., as an expert in the areas of redistricting and political geography without objection from counsel. (N.T. at 164.)

236. Dr. Chen is an associate professor in the Department of Political Science at the University of Michigan, Ann Arbor; a faculty associate at the Center for Political Studies of the Institute for Social Research at the University of Michigan; and a research associate at the Spatial Social Science Laboratory at Stanford University. (Petitioners' Ex. 1 (P-1) at 1; N.T. at 153-54.) Dr. Chen received an M.S. in statistics from Stanford University in 2007 and a Ph.D. in political science from Stanford University in 2009. (P-1 at 1; N.T. at 153.) Dr. Chen has published academic papers on political geography and districting in political science journals and has expertise in the use of computer algorithms and geographic information systems to study questions related to political and economic geography and redistricting. (P-1 at 1; N.T. at 154-64.)

237. Dr. Chen analyzed the 2011 Plan for the purposes of determining: (1) whether partisan intent was the predominant factor in the drawing of the 2011 Plan; (2) the effect of the 2011 Plan on the number of congressional Democrats and Republicans elected from Pennsylvania; and (3) the effect of the 2011 Plan on the ability of the individual Petitioners to elect a Democrat or Republican congressional candidate from their respective districts. (P-1 at 1-2; N.T. at 165.)

238. Dr. Chen developed various computer simulation programming techniques that allow him to produce a large number of nonpartisan districting plans that adhere to traditional districting criteria using U.S. Census geographies as building blocks. (P-1 at 2; N.T. at 166-69, 205-06.)

239. Dr. Chen's computer simulation process ignored all partisan and racial considerations when drawing districts. (P-1 at 2; N.T. at 370-71.)

240. Dr. Chen's computer simulation process generally utilized traditional districting criteria, which Dr. Chen identified as equalizing population, contiguity, maximizing geographic compactness, and preserving county and municipal boundaries. (P-1 at 2; N.T. at 167.)

241. Dr. Chen analyzed the 2011 Plan against simulated districting plans developed following traditional districting criteria (and some that also provided for incumbency protection) in order to determine whether the distribution of partisan outcomes created by the 2011 Plan plausibly could have emerged from a nonpartisan districting process and, thus, be explained by nonpartisan factors. (P-1 at 5; N.T. at 165-66.)

242. Dr. Chen opined that by holding constant the application of those nonpartisan traditional districting criteria through the simulations, he was able to determine whether the 2011 Plan could have been the product of something other than the intentional pursuit of partisan advantage. (P-1 at 2; N.T. at 166.)

243. Dr. Chen, using a computer algorithm designed to follow closely and optimize the nonpartisan traditional districting criteria he identified, generated 500 simulated districting plans that each would create 18 Pennsylvania congressional voting districts (Set 1). (P-1 at 2; N.T. at 167-68.)

244. Dr. Chen, using the computer algorithm used for Set 1 with the additional criterion of preserving the seats of 17 of the 19 incumbent Pennsylvania Congresspersons who held seats at the time of the creation of the 2011 Plan (the 2012 Incumbents), generated another 500 simulated districting plans that each would create 18 Pennsylvania congressional voting districts (Set 2). (P-1 at 2, 4; N.T. at 172-73, 205-06.)

245. The algorithms prioritized the traditional voting criteria identified by Dr. Chen in the following order: (1) equal population; (2) contiguity of districts; (3) minimization of counties split between districts; (4) minimization of municipality splits; and (5) compactness. (N.T. at 383.)

246. The algorithm for the Set 2 simulated districting plans intentionally guaranteed that 17 of 19 2012 Incumbents resided in separate districts, thus avoiding any pairing of any of the 2012 Incumbents in those 17 districts. Beyond this intentional incumbent protection, the Set 2 algorithm otherwise prioritized the same 5 nonpartisan traditional districting criteria followed in the algorithm for Set 1. Importantly, the computer algorithms ignored the partisanship and the identities of the 2012 Incumbents. (P-1 at 24; N.T. at 206-08.)

247. Dr. Chen's districting simulation process used precisely the same U.S. Census geographies and population data that the General Assembly used in creating congressional voting districts, and, therefore, the simulated districting plans created by Dr. Chen account for the same population patterns and political boundaries across Pennsylvania that the General Assembly encountered when drawing the congressional voting districts under the 2011 Plan. (P-1 at 6; N.T. at 189-90.)

248. Pennsylvania's 2010 U.S. Census population was 12,702,379, so congressional voting districts in the 18-district plan have an ideal population of 705,687.7. Dr. Chen's algorithm was designed to populate 5 simulated districts with 705,687 and 13 simulated districts with 705,688. (P-1 at 8; N.T. at 167.)

249. Dr. Chen's algorithm required districts to be geographically contiguous, with point contiguity prohibited, meaning the districts had to be connected by more than a mere point. (P-1 at 8; N.T. at 167, 456-57, 464.)

250. Dr. Chen's algorithm attempted to avoid splitting any of Pennsylvania's 67 counties, except when doing so was necessary to avoid creating an unequally populated district. (P-1 at 8; N.T. at 167.)

251. Dr. Chen's algorithm also attempted to avoid splitting Pennsylvania's 2,562 municipalities, except where doing so was necessary to avoid creating unequally populated districts or to avoid additional county splits. (P-1 at 8; N.T. at 368-69.)

252. With regard to compactness, Dr. Chen's algorithm prioritized the drawing of geographically compact districts whenever doing so did not violate the aforementioned criteria. (P-1 at 9; N.T. at 174-77.)

253. Dr. Chen calculated the geographic compactness of the simulated districting plans by using common measures of compactness—*i.e.*, by using the "Reock" and "Popper Polsby" measures of compactness. (P-1 at 9; N.T. at 166.)

254. After completing the simulations, Dr. Chen measured aspects of the simulated districting plans (Set 1 and Set 2) and the same aspects of the 2011 Plan to determine the extent to which the 2011 Plan deviated from

the 1,000 simulated districting plans (Set 1 and Set 2), beginning with Set 1. (P-1 at 2; N.T. at 166.)

255. Dr. Chen observed that the simulated districting plans in Set 1 all divided less counties than the 2011 Plan, and the 2011 Plan divided far more counties than was reasonably necessary. (P-1 at 2; N.T. at 179-80.) The Set 1 simulated plans split 11 to 16 counties, whereas the 2011 Plan split 28 counties. (P-1 at 8; N.T. 416-17.)

256. Dr. Chen opined that the Set 1 simulation results demonstrated that the 2011 Plan divided more municipalities than the simulated districting plans. The simulated districting plans split 40-58 municipalities, whereas the 2011 Plan split 68 municipalities. (P-1 at 8-9; N.T. at 180-81.)

257. Dr. Chen opined that, based on the Set 1 simulation results, the 2011 Plan's splitting of 28 counties and 68 municipalities was an outcome that could not plausibly have emerged from a districting process that prioritizes traditional districting criteria. (P-1 at 17; N.T. at 181.)

258. Dr. Chen, using the common measures of compactness identified above, observed that the 2011 Plan is significantly less compact than every single one of the Set 1 simulated districting plans and that the 2011 Plan is significantly more geographically non-compact than necessary. (P-1 at 3, 9; N.T. at 180-83.)

259. Dr. Chen also considered the partisan performance of each precinct and opined that the most reliable method of comparing the partisan performance of different legislative districts within a state is to consider whether the districts—and more specifically the precincts that comprise each district—have tended to favor Republican or Democratic candidates in recent competitive

statewide elections. (P-1 at 12; N.T. at 190, 291-92.) He also opined that voter registration data is less reliable for predicting partisanship than recent statewide elections. (P-1 at 12; N.T. at 184, 193-94.)

260. Dr. Chen based his partisan performance calculations for the precincts on the actual votes cast for Republican and Democratic candidates in the following Pennsylvania statewide elections: 2008 Presidential, 2008 Attorney General, 2010 U.S. Senatorial, and 2010 Gubernatorial. He did not base his calculations on voter registration records. (P-1 at 13; N.T. at 186-89.)

261. Dr. Chen chose those election results because they were the most recent results prior to the enactment of the 2011 Plan, they were reasonably closely-contested elections, and the precinct-level vote counts from those elections were available to the General Assembly during its enactment of the 2011 Plan. (P-1 at 13-14; N.T. at 189-90.)

262. Dr. Chen took the election results at the precinct level for the statewide elections identified above and overlaid those precinct level results onto the simulated districting plans and 2011 Plan. Dr. Chen then calculated the number of districts that would have been won by Democrats and Republicans under each districting plan in order to measure the partisan performance of the districting plan. (P-1 at 6-7; N.T. at 185-86, 195-97.)

263. Dr. Chen determined that the 2011 Plan resulted in 13 of the 18 congressional voting districts having partisan performance calculations favoring Republican candidates. Those 13 congressional voting districts correspond with the same 13 districts that have consistently elected Republican congressional representatives during the 2012, 2014, and 2016 general elections. (P-1 at 3, 14; N.T. at 166, 198, 201-04.)

264. Dr. Chen determined that the Set 1 simulated districting plans resulted in the creation of 7 to 10 congressional voting districts having partisan performance calculations favoring Republican candidates and did not result in any simulated districting plan having 13 congressional voting districts with partisan performance calculations favoring Republicans. (P-1 at 3; N.T. at 233.)

265. Dr. Chen opined that the 2011 Plan represents an extreme statistical outlier, creating a level of partisan bias not observed in a single one of the simulated districting plans designed using traditional districting criteria. (P-1 at 3; N.T. at 233.)

266. Dr. Chen assessed the predictive strength of his measure of partisan performance—using precinct-level results from the 2008 and 2010 statewide elections—to predict the congressional elections under the 2011 Plan. Using his measure of partisan performance, Dr. Chen was able to accurately predict the results for 54 out of 54 congressional elections in 2012, 2014, and 2016. (N.T. at 201-04, 410-12.)

267. Based on his analysis of partisan performance calculations, Dr. Chen concluded that the 2011 Plan creates several more congressional voting districts with partisan performance calculations favoring Republicans, which resulted in several more Republican seats than what is generally achievable under a map drawing process respecting nonpartisan, traditional districting criteria. (P-1 at 3; N.T. at 205.)

268. Dr. Chen further concluded, based on the Set 1 simulations, that partisan consideration predominated over other nonpartisan criteria, particularly minimizing county splits and maximizing compactness, in the drawing of the

congressional voting districts in the 2011 Plan. (P-1 at 3, 20; N.T. at 166, 204, 220.)

269. Dr. Chen also compared the Set 1 simulated districting plans to the 2011 Plan by calculating the mean-median gap of the plans. (P-1 at 20; N.T. at 261-63.)

270. Dr. Chen explained that the mean-median gap is another accepted method that redistricting scholars commonly use to compare the relative partisan bias of different districting plans. (P-1 at 20; N.T. at 257.)

271. Dr. Chen explained that the mean of a districting plan is calculated as the average of the Republican vote share across all 18 congressional voting districts, and the median is the Republican vote share in the congressional voting district where Republicans performed the middle-best. (P-1 at 20; N.T. at 257-58.)

272. Dr. Chen, using the aggregated results of the 2008-2010 statewide elections, calculated that the congressional voting districts created by the 2011 Plan have a mean Republican vote share of 47.5%, while the median district has a Republican vote share of 53.4%. Thus, the 2011 Plan has a mean-median gap of 5.9%, indicating that the median district is skewed significantly more Republican than the 2011 Plan's average district. In other words, the 2011 Plan distributes voters across congressional voting districts in such a way that most districts are significantly more Republican-leaning than the average Pennsylvania district, while Democratic voters are more heavily concentrated in a minority of the congressional voting districts. (P-1 at 20; N.T. at 260-64.)

273. Dr. Chen opined that the skew of the mean-median gap in the 2011 Plan created a significant advantage for Republicans by giving them stronger control over the median district. (P-1 at 20; N.T. at 262.)

274. Dr. Chen considered whether the significant mean-median gap arose naturally from applying traditional districting criteria to Pennsylvania, given the state's unique voter geography, or whether the skew in the 2011 Plan's mean-median gap is explainable only as the product of an intentional partisan effort to favor one party over another in the drawing of the congressional voting districts by deviating from traditional districting criteria. (P-1 at 20; N.T. at 260, 264.)

275. To determine the cause of the significant mean-median gap, Dr. Chen examined the range of mean-median gaps that would have arisen under the Set 1 simulated districting plans. The Set 1 simulated districting plans produced mean-median gaps ranging from 0.1% to 4.5%, with the vast majority of the plans producing a mean-median ranging from 0.1% to 3%. (P-1 at 21-22, Fig. 5; N.T. at 262-64.)

276. Dr. Chen concluded with extremely strong statistical certainty that the 2011 Plan's mean-median gap of 5.9% is not the result of Pennsylvania's natural political geography combined with the application of traditional districting criteria. (P-1 at 21; N.T. at 264.)

277. The fact that the Set 1 simulated districting plans all produced a mean-median gap, albeit smaller than the 2011 Plan's mean-median gap, indicates that voter geography is modestly skewed in a manner that slightly benefits Republicans in districting. Dr. Chen opined that this modest skew in the

Set 1 simulated districting plans resulted naturally because Democratic voters tend to cluster in large, urban areas of Pennsylvania. (P-1 at 21; N.T. at 263.)

278. Dr. Chen opined that the range of this natural skew in the Set 1 simulated voting plans, however, is always much smaller than the 5.9% mean-median gap observed in the 2011 Plan. (P-1 at 21; N.T. at 263.)

279. Dr. Chen concluded, based on his analysis of the mean-median gap of the Set 1 simulated districting plans and the 2011 Plan, that the 2011 Plan created an extreme partisan outcome that cannot be explained by Pennsylvania's voter geography or by any of the traditional districting criteria. Instead, the extremity of the 2011 Plan's mean-median gap can be explained only by a districting process that pursued a partisan goal by subordinating traditional districting criteria in the drawing of congressional voting districts. (P-1 at 21; N.T. at 264.)

280. Dr. Chen considered whether an attempt to protect the maximum number of 2012 Incumbents might explain the 2011 Plan's partisan bias. (P-1 at 3, 23; N.T. at 265.)

281. By examining the home residential addresses of the 2012 Incumbents, who were 12 Republicans and 7 Democrats, Dr. Chen observed that the 2011 Plan protected 17 of the 19 2012 Incumbents by avoiding the pairing of 2 or more of the 2012 Incumbents into the same congressional voting district. (P-1 at 3-4, 23; N.T. at 266.)

282. The 2011 Plan paired only Altmire and Critz, the incumbents from the then 4th and 12th Congressional Districts, in a single congressional voting district. (P-1 at 23; N.T. at 225.)

283. Dr. Chen concluded that it was statistically implausible that the 2011 Plan's outcome of 17 protected 2012 Incumbents could have arisen by chance as a result of traditional districting criteria without an intentional effort to protect the 2012 Incumbents. (P-1 at 23; N.T. at 236-37.)

284. Dr. Chen opined that the protection of incumbents is not a traditional districting principle used in the drawing of congressional voting districts. (P-1 at 24; N.T. at 206.) *But see Vieth v. Jubelirer*, 541 U.S. 267, 298 (2004) (plurality opinion) (recognizing incumbency protection as traditional districting principle); *Bush v. Vera*, 517 U.S. 952, 1047-48 (1996) (*Vera*) (Souter, J., dissenting) (acknowledging incumbency protection to be traditional and constitutionally acceptable districting principle).

285. Dr. Chen then analyzed the Set 2 simulated districting plans, which Dr. Chen created by applying nonpartisan traditional districting criteria plus the criterion of protecting 17 of the 19 2012 Incumbents. (P-1 at 23-24; N.T. at 205-07.)

286. The Set 2 simulated districting plans accomplished the goal of protecting 17 of the 19 2012 Incumbents, as did the 2011 Plan, but the Set 2 simulated districting plans achieved this protection at the cost of only a small increase in split counties and a modest decrease in district compactness. (P-1 at 23-24; N.T. at 230-32.) The Set 2 simulated districting plans split between 12 to 19 counties, with the vast majority splitting 15, 16, or 17 counties, whereas the 2011 Plan split 28 counties. (P-1 at 23-24; N.T. at 216-17.)

287. Dr. Chen opined that the 2011 Plan's splitting of 28 counties is still very significantly outside of the entire range of Set 2 simulated districting plans. (P-1 at 24; N.T. at 216-17.)

288. Dr. Chen opined that the 2011 Plan had significantly lower compactness scores than the Set 2 simulated districting plans, and the 2011 Plan's compactness scores were outside the entire range of the compactness scores for the Set 2 simulated districting plans. (P-1 at 24; N.T. at 214.)

289. Dr. Chen concluded, based on his analysis of the Set 2 simulated districting plans, that the 2011 Plan's deviations from the traditional districting criteria of compactness and avoiding county splits are not explained by the goal of protecting 17 of the 2012 Incumbents. (P-1 at 24; N.T. at 217.)

290. Dr. Chen also compared the partisan performance of the Set 2 simulated districting plans to the partisan performance of the 2011 Plan and observed that the vast majority (98%) of the Set 2 simulated districting plans produced 8 to 11 congressional voting districts with partisan performance favoring Republicans. Not one of the Set 2 simulated districting plans contained 13 voting districts with partisan performance favoring Republicans. (P-1 at 27; N.T. at 222.)

291. Dr. Chen concluded with an overwhelmingly high degree of statistical certainty that even an extensive effort by the General Assembly to protect as many of the 2012 Incumbents as possible, while otherwise adhering to nonpartisan traditional districting criteria, would not explain or somehow necessitate the creation of a congressional map with a 13-5 Republican advantage. Instead, it is clear that the 2011 Plan was drawn through a process in which a particular partisan goal—the creation of 13 Republican districts—predominated over adherence to traditional districting criteria of drawing compact districts and avoiding county splits. (P-1 at 27; N.T. at 223.)

292. Dr. Chen opined that the Set 2 simulated districting plans reject any notion that an effort to avoid pairing the 2012 Incumbents in the same

congressional voting district can explain the Republican bias in the 2011 Plan. (P-1 at 4, 27; N.T. at 220.)

293. To determine the cause of the significant mean-median gap favoring Republicans, Dr. Chen examined the range of mean-median gaps that would have arisen under the Set 2 simulated districting plans. (P-1 at 29; N.T. at 262.)

294. Dr. Chen concluded with extremely strong statistical certainty that the 2011 Plan's mean-median gap of 5.9% was not the result of Pennsylvania's natural political geography combined with the application of traditional districting criteria. (P-1 at 29; N.T. at 265-66.)

295. Dr. Chen concluded with extreme statistical certainty that the Republican skew in the 2011 Plan's mean-median gap reflects the intentional pursuit of a partisan outcome that subordinated the traditional districting criteria of avoiding county splits and drawing compact congressional voting districts. (P-1 at 29; N.T. at 266.)

296. With regard to the pairing of Democrats Altmire and Critz in the 2011 Plan, Dr. Chen opined that not one of the Set 2 simulated districting plans paired those 2 2012 Incumbents together in the same congressional voting district. (P-1 at 31; N.T. at 226.)

297. Dr. Chen concluded with strong statistical certainty that the 2011 Plan's pairing of Democrats Altmire and Critz was not the product of a nonpartisan attempt to protect the 2012 Incumbents. (P-1 at 31-32; N.T. at 226-27.)

298. Dr. Chen also considered whether racial goals may explain the statistically extreme partisan composition of the 2011 Plan. (P-1 at 33; N.T. at 238.)

299. Dr. Chen observed that the 2nd Congressional District of the 2011 Plan (which includes areas of Philadelphia) has an African-American VAP of 56.8%, and it is the only district that contains an African-American majority. (P-1 at 4, 33; N.T. at 239.)

300. Dr. Chen analyzed the 259 simulated districting plans generated by Set 1 and Set 2 that included a congressional voting district with an African American VAP of at least 56.8% to determine whether a hypothetical goal of creating a congressional voting district with at least a 56.8% African-American VAP might have caused the extreme 13-5 Republican advantage in the 2011 Plan. (P-1 at 4, 33; N.T. at 245.)

301. Dr. Chen observed that among the 259 simulated districting plans that created at least a 56.8% African-American VAP congressional voting district, not a single simulated districting plan remotely came close to creating 13 congressional voting districts with partisan performance calculations favoring Republicans. Instead, the majority of the relevant Set 1 simulated districting plans contained either 8 or 9 congressional voting districts with partisan performance calculations favoring Republicans, and the vast majority of the relevant Set 2 simulated districting plans contained 8 to 11 congressional voting districts with partisan performance calculations favoring Republicans. (P-1 at 4, 33-35; N.T. at 244-45.)

302. Dr. Chen opined that even if a congressional districting process required a 56.8% African-American VAP congressional voting district, in addition

to allowing for the protection of 17 of the 2012 Incumbents while following traditional districting criteria, such a districting process would generally produce plans with 9, 10, or 11 Republican-leaning seats. (P-1 at 35; N.T. at 249-50.)

303. Based on his analysis of the Set 1 and 2 simulated districting plans that include a congressional voting district with an African-American VAP of at least 56.8%, Dr. Chen rejected any notion that an intentional effort to create such a district might explain the extreme partisan bias observed in the 2011 Plan. (P-1 at 4, 33, 35; N.T. at 245.)

304. Dr. Chen also evaluated the sort of congressional voting district each Petitioner would have been placed into under the Set 1 and Set 2 simulated districting plans and the district into which each Petitioner was placed under the 2011 Plan. He testified with a strong statistical certainty that the 2011 Plan had the effect of treating 4 of the Petitioners differently—meaning they were placed into a different partisan district compared to the sort of districting plans that would have emerged under a districting process respecting traditional districting criteria and possibly even protecting 17 of the 2012 Incumbents in a nonpartisan manner. (P-1 at 35; N.T. at 271-81.)

305. Ultimately, Dr. Chen opined that the 2011 Plan could not have been the product of something other than the intentional pursuit of partisan advantage. (P-1 at 2; N.T. at 166.)

306. Ultimately, Dr. Chen also concluded that partisan considerations predominated over other nonpartisan criteria, particularly minimizing county splits and maximizing compactness, in the drawing of the 2011 Plan. (P-1 at 3; N.T. at 166, 181, 204, 220.)

307. Dr. Chen testified regarding data files purportedly produced by Speaker Turzai in the *Agre* case, but the Court makes no findings regarding that aspect of Dr. Chen's expert report or testimony. (P-1 at 38-41; N.T. at 294-310.)

308. The Court finds Dr. Chen's testimony to be credible.

309. The Court notes that Dr. Chen's testimony established that the General Assembly included factors other than nonpartisan traditional districting criteria in creating the 2011 Plan in order to increase the number of Republican-leaning congressional voting districts.

310. Dr. Chen's testimony, while credible, failed to take into account the communities of interest when creating districting plans. (*See* Dr. Kennedy's testimony, N.T. at 390-91.)

311. Dr. Chen's testimony, while credible, failed to account for the fact that courts have held that a legislature may engage in some level of partisan intent when creating redistricting plans.

312. Dr. Chen's testimony, while credible, failed to provide this Court with any guidance as to the test for when a legislature's use of partisan considerations results in unconstitutional gerrymandering.

2. *John J. Kennedy, Ph.D.*

313. The Court accepted John J. Kennedy, Ph.D., as an expert in the area of political science, including political geography and political history of Pennsylvania, without objection from counsel. (N.T. at 578-79.)

314. Dr. Kennedy is a professor in the Department of Political Science at West Chester University. Dr. Kennedy received a B.S. in public administration from Kutztown University in 1984, a Master's degree in public administration from Kutztown University in 1988, and a Ph.D. in political science

from Temple University in 1996. Dr. Kennedy has published three books on Pennsylvania politics and has expertise in Pennsylvania government and politics. (Petitioners' Ex. 54; Petitioners' Ex. 53 (P-53) at 1; N.T. at 570-72.)

315. Overall, Dr. Kennedy concluded that the 2011 Plan: (1) negatively affects Pennsylvania's communities of interest at an unprecedented level; (2) contains more anomalies than ever before; (3) places partisan considerations above those of communities of interest; and (4) favors Republican voters over Democratic voters. (N.T. at 579-80, 583, 585, 644.)

316. When asked to describe what he meant by "communities of interest," Dr. Kennedy explained that communities are important to the identity of Pennsylvanians. (N.T. at 583-85.)

317. Even though not defined succinctly, it appears from the sum of Dr. Kennedy's testimony that he considers a community of interest to consist of a group of individual communities that share similar interests and are located in the same geographic region. (N.T. at 590-91, 619, 624-26, 628, 631-32.)

318. Dr. Kennedy described gerrymandering as the political manipulation of district lines to achieve some sort of political result. A gerrymander takes place through the methods of "cracking," "packing," and what he refers to as "hijacking." Cracking occurs when you separate or divide the voters of a particular party across several districts. Packing occurs when you take voters of a particular party who reside in different communities and pack them together in one district based upon their partisan performance. Together, cracking and packing create anomalies—*i.e.*, strangely designed districts, tentacles (a narrow tract of land that connects communities), isthmuses (connecting 2 communities that would not ordinarily have anything in common), and appendages (an arm going

from one area to another). Hijacking occurs when 2 congressional districts (containing 2 separate and distinct communities of interest) controlled by the political party opposite to that in control of the redistricting process are combined, forcing the incumbents to run against one another in the primary election, thereby automatically eliminating one of them. Further, this may result in a district that leaves the incumbent surviving the primary election in a more difficult position in the general election. (P-53 at 2-3; N.T. at 580, 585-87, 634.)

319. Dr. Kennedy stated that the 3rd Congressional District provides an example of cracking. (P-53 at 23; N.T. at 589-90.)

320. Dr. Kennedy opined that there is no apparent nonpartisan explanation for why the 2011 Plan split Erie County, a community of interest, between the 3rd Congressional District and the 5th Congressional District. Dr. Kennedy explained that, historically, Erie County has been Democratic. The 2011 Plan was the first time in the modern era of redistricting that Erie County was cracked. Dr. Kennedy explained further that the 2011 Plan diluted the vote of Democratic voters located in Erie County by pushing the eastern parts of Erie County into the 5th Congressional District, a district that contains a very rural and overwhelmingly Republican county. (P-53 at 23-24; Petitioners' Ex. 73; N.T. at 589-91, 597-98.)

321. Dr. Kennedy stated that the 1st Congressional District provides an example of packing. (P-53 at 20; N.T. at 605-06.)

322. Dr. Kennedy explained that the 1st Congressional District takes in some appendages from Delaware County, where parts of the City of Chester, the town of Swarthmore (which is connected by an isthmus), and some other

Democratic communities are packed into the 1st Congressional District. (P-53 at 20-21; Petitioners' Ex. 70; N.T. at 605-08.)

323. Dr. Kennedy explained that the 7th Congressional District, which is commonly referred to as the "Goofy Kicking Donald Duck" district, has become famous as one of the most gerrymandered districts in the country. Dr. Kennedy described the 7th Congressional District as essentially 2 districts (an eastern district and a western district) that are held together at 2 locations: (1) a tract of land that is roughly the length of 2 football fields and contains a medical facility; and (2) a Creed's Seafood & Steaks in King of Prussia. Dr. Kennedy also indicated that the 7th Congressional District contains 26 split municipalities. (P-53 at 30-33; Petitioners' Exs. 81-83; N.T. at 598-602, 613-14.)

324. Dr. Kennedy explained that the 6th Congressional District, which is likened by some as resembling the State of Florida with a more jagged and elongated panhandle, includes communities in southern Chester County, western Montgomery County, Berks County, and Lebanon County. When asked whether there is anything that unites these communities other than all being located within the 6th Congressional District, Dr. Kennedy opined that they are all separate and distinct communities of interest that have been combined into the 6th Congressional District and not maintained as a whole. Dr. Kennedy also explained that the City of Reading, which is the county seat of Berks County, has been carved out of the 6th Congressional District. Dr. Kennedy opined that this changes the partisan makeup and performance of the 6th Congressional District considerably because the City of Reading is a very Democratic city. (P-53 at 28-29; Petitioners' Ex. 78; N.T. at 615-17, 621-22.)

325. Dr. Kennedy explained that the 16th Congressional District, which is based in Amish country and has always been one of the more Republican districts in Pennsylvania, has taken on some appendages. Dr. Kennedy explained further that Democratic municipalities, such as Coatesville, were removed from Chester County and the 6th Congressional District and appended onto the 16th Congressional District. Similarly, the City of Reading was taken out of the 6th Congressional District via a very narrow isthmus and appended onto the 16th Congressional District. Dr. Kennedy opined that appending these communities onto the 16th Congressional District has the net political effect of diluting Democratic precincts and Democratic performance in Reading and Coatesville. In terms of communities of interest, Dr. Kennedy explained that Coatesville has commonalities with the 6th Congressional District, not Amish country. (P-53 at 50-53; Petitioners' Exs. 97, 99; N.T. at 618-20.)

326. Dr. Kennedy explained that the 15th Congressional District contains 2 diverse communities of interest: the Lehigh Valley and parts of Berks, Dauphin, and Lebanon Counties. Dr. Kennedy explained further that, historically, the 15th Congressional District has been primarily a Lehigh Valley district, but under the 2011 Plan, the Lehigh Valley district no longer exists because a segment of Northampton County, including Easton, and a quarter of the City of Bethlehem are cracked out of the district and the district is extended down to Hershey, Pennsylvania. (P-53 at 47-49; Petitioners' Ex. 95; N.T. at 623-26.)

327. Dr. Kennedy stated that the 17th Congressional District is a textbook example of packing. (N.T. at 627-28.)

328. Dr. Kennedy explained that the 17th Congressional District is composed of 2 separate and distinct communities of interest:

Scranton/Wilkes-Barre and Easton/Bethlehem. Dr. Kennedy opined that Easton and Bethlehem belong with Allentown, not Wilkes-Barre and Scranton. (P-53 at 54-55; Petitioners' Ex. 102; N.T. at 626-29.)

329. Dr. Kennedy explained that the 11th Congressional District is almost a straight vertical district from the northern end of Wyoming County down to Cumberland County, approximately 200 miles long. Dr. Kennedy explained further that Scranton and Wilkes-Barre have been removed from the 11th Congressional District and packed into the 17th Congressional District and that the City of Harrisburg has been carved out of the 11th Congressional District. (P-53 at 40-41; N.T. at 629-31.)

330. Dr. Kennedy explained that the 4th Congressional District is historically a very Republican district. Dr. Kennedy explained further that the City of Harrisburg, which had previously been located with communities of interest in Central Pennsylvania and the Harrisburg metro area, is now the northernmost tip of the 4th Congressional District. Dr. Kennedy opined that the overall impact of moving the City of Harrisburg, a predominantly Democratic city, into the 4th Congressional District is to dilute the Democratic vote in Harrisburg. (P-53 at 25-26; Petitioners' Ex. 75; N.T. at 631-32.)

331. Dr. Kennedy explained that the 2011 Plan is the first time that Dauphin County has been splintered among congressional districts. (N.T. at 632.)

332. Dr. Kennedy stated that the 12th Congressional District is an example of hijacking. (N.T. at 634-65.)

333. Dr. Kennedy explained that the 12th Congressional District is approximately 120 miles long and runs along 4 other congressional districts to connect what was the old 4th Congressional District and the old 12th Congressional

District. Dr. Kennedy explained further that the net effect of combining these districts was to force 2 Democrat incumbents, Altmire and Critz, to run off against one another in the 2012 Democratic primary election, automatically eliminating one of them, which Dr. Kennedy described as an example of “hijacking.” Nevertheless, Dr. Kennedy conceded that under the 2011 Plan, 2 incumbents had to be paired together into 1 congressional district, unless one of them decided not to run for reelection. Republican-performing areas, particularly in Westmoreland County, were also added to the 12th Congressional District, which Dr. Kennedy opined was to make the district overall more Republican. (P-53 at 42; N.T. at 634-35, 662-63.)

334. Dr. Kennedy opined that the 14th Congressional District contains a tentacle that rises up through the Allegheny River to pack certain Democratic precincts into the 14th Congressional District, which is already very Democratic, thereby diluting the Democratic vote in the 12th Congressional District. (P-53 at 45-46; Petitioners’ Ex. 93; N.T. at 635-36.)

335. Dr. Kennedy opined that while the number of split counties and municipalities is indicative of a gerrymander, they do not tell the whole story. Dr. Kennedy explained that county and municipality splits are not necessarily indicative of splitting a community of interest. For example, Dr. Kennedy explained that he does not view the removal of 1 district in Upper Macungie Township as splitting the community of interest known as the Leigh Valley, because it is not the same as removing Easton, the county seat, one-fourth of the City of Bethlehem, and a number of other Democratic municipalities from the 15th Congressional District. (Petitioners’ Ex. 56; N.T. at 637-41.)

336. Dr. Kennedy explained that the 2011 Plan contains 19 census block splits (splitting neighborhoods between congressional districts), which is considerably more than prior Pennsylvania congressional district maps. (P-53 at 5; Petitioners' Ex. 57; N.T. at 641-43.)

337. Dr. Kennedy explained that the 2011 Plan splits certain counties considerably more than others: (1) Montgomery County, which is the third largest county in Pennsylvania, is split into 5 congressional districts; and (2) Westmoreland and Berks Counties, which have relatively lower populations, are split into 4 congressional districts. (N.T. at 643-44.)

338. Ultimately, Dr. Kennedy opined that the 2011 Plan is a gerrymandered congressional map. (N.T. at 644.)

339. The Court finds Dr. Kennedy's testimony to be credible.

340. Dr. Kennedy's testimony, while credible, did not address the intent behind the 2011 Plan. (N.T. at 645-46.)

341. Moreover, to the extent that Dr. Kennedy offered an opinion on an ultimate question of law—*i.e.*, whether the 2011 Plan is an unconstitutional political gerrymander, the opinion is disregarded.

3. Wesley Pegden, Ph.D.

342. The Court accepted the testimony of Wesley Pegden, Ph.D., as an expert in the area of mathematical probability without objection from counsel. (N.T. at 715-16.)

343. Dr. Pegden is an associate professor in the Department of Mathematical Sciences at Carnegie Mellon University. Dr. Pegden received a Ph.D. in Mathematics from Rutgers University. Dr. Pegden has published academic papers, including an academic paper co-authored with 2 others that was

published in the Proceedings of the National Academy of Sciences in early 2017 (Pegden Article), which set forth a new statistical test to demonstrate that a configuration is an outlier in a rigorous statistical sense. (Petitioners' Ex. 117 (P-117) at 1; N.T. at 707, 710-13.)

344. Petitioners asked Dr. Pegden to analyze whether the Republican advantage in the 2011 Plan could be a consequence of nonpartisan factors such as the political geography of the state. In so doing, Dr. Pegden analyzed whether the 2011 Plan is a typical member of the set of possible districting plans of Pennsylvania with respect to its partisan bias or whether it is an outlier with respect to partisan bias. (P-117 at 1-2; N.T. at 716-17.)

345. In order to answer those questions, Dr. Pegden analyzed whether the partisan bias in the 2011 Plan is fragile, such that it evaporates when many random small changes are made to the districting plan, by developing a computer algorithm that starts with the 2011 Plan and makes many random small changes to the 2011 Plan in succession. (P-117 at 1; N.T. at 722-23.)

346. Dr. Pegden explained that the number of possible districting plans can be astronomical, so one cannot look at all of them to perform a one-by-one comparison. (P-117 at 4 n.5; N.T. at 720.)

347. Dr. Pegden developed a computer algorithm that began with the 2011 Plan and randomly selected a precinct on the boundary of 2 congressional voting districts (Step 1). If the precinct could be swapped with a precinct in the other district without violating the constraints placed on the districts, then the computer algorithm made the swap (Step 2). Using voter preference data, the computer algorithm used the mean-median test to evaluate the partisan bias of the new districting plan and recorded whether it was more or less biased than the

2011 Plan (Step 3). The computer algorithm then repeated Step 2 and Step 3 as many times as instructed. (P-117 at 4, 4 n.6, 8; N.T. at 721-31.)

348. To assess the partisan bias of a given districting plan, Dr. Pegden estimated voter preference in each precinct that comprised the districts by using election results for the 2010 PA Senate race between Pat Toomey and Joe Sestak, because it was a statewide race, there was no incumbent in the race, and it was among the most recent data available to mapmakers when drawing the 2011 Plan. (P-117 at 9; N.T. at 737-38, 783.)

349. Dr. Pegden's computer algorithm employed a variation of a Markov Chain developed by Dr. Pegden. In this context, a Markov Chain is a way of generating a random sample through a series of small changes. (P-117 at 4 n.4; N.T. at 790-94.)

350. Dr. Pegden ran his computer algorithm such that it made approximately 1,000,000,000,000 (1 trillion) random small changes to the 2011 Plan in succession. (P-117 at 1; N.T. at 731.) The computer algorithm could only make changes that would result in simulated congressional districting plans per the parameters or constraints set by Dr. Pegden, which included districting plans consisting of 18 contiguous districts, equipopulous districts (with an allowable 2% difference between districts), and reasonably shaped—*i.e.*, compact—districts. (P-117 at 2-3; N.T. at 726-28.) By specifying such parameters and constraints, the computer algorithm created what Dr. Pegden referred to as a “bag of districting [plans],” which are “candidate” or simulated possible alternative districting plans for Pennsylvania. (P-117 at 3; N.T. at 720-21.)

351. Dr. Pegden also altered the parameters or constraints used in the computer algorithm, such as changing the allowable difference in population

between simulated districts from 2% to 1%, not dividing any counties not divided by the 2011 Plan, and keeping intact the current 2nd Congressional District (which is a majority-minority district) in order to create additional bags of districting plans. (P-117 at 3; N.T. at 739-42, 744-45.)

352. Dr. Pegden chose his parameters or constraints so that the 2011 Plan met all of the corresponding requirements under consideration, because his goal was not to compare the 2011 Plan to other “better” simulated possible alternative districting plans which satisfy stricter requirements. Instead, Dr. Pegden assumed that the geometric properties of the 2011 Plan are reasonable, and he compared the 2011 Plan to the other possible alternative districting plans of Pennsylvania with the same properties. (P-117 at 3; N.T. at 733-34.)

353. Dr. Pegden acknowledged that his use of a parameter or constraint of an allowable 2% population difference between districts is not as an exacting standard as using an allowable difference of 1% or 0%, but he opined that the small population variations between districts cannot account for the extreme outlier status of the 2011 Plan. (P-117 at 4; N.T. at 779-80.) He was confident in that representation because he generated a smaller bag of districting plans using the 1% allowable difference in population parameter or constraint, and it did not affect the outcome. (P-117 at 4; N.T. at 780.)

354. Dr. Pegden’s analysis was based on what he characterized in his expert report as a conservative definition of what is a “gerrymandered” districting plan, which would require that the districting plan be considered “gerrymandered” only if it passed the following 3-prong test (Test):

- a. The districting plan has partisan bias for one party;

b. Small random changes to the districting plan rapidly decrease the partisan bias of the districting plan, demonstrating that the districting plan was carefully crafted; and

c. The overwhelming majority of the alternative districts of the state exhibit less partisan bias than the districting plan in question.

(P-117 at 2.)

355. Based on the results generated from the computer algorithm, Dr. Pegden concluded that the 2011 Plan is a gross outlier with regard to partisan bias among the set of all possible congressional districting plans for Pennsylvania.

(P-117 at 1; N.T. at 717.)

356. Based on the results generated from the computer algorithm, Dr. Pegden concluded that the 2011 Plan exhibits more partisan bias than roughly 99.999999% of the simulated possible alternative districting plans created by his computer algorithm, which he contended establishes that the General Assembly carefully crafted the 2011 Plan to ensure a Republican advantage.

(P-117 at 1; N.T. at 749-52.)

357. Dr. Pegden concluded that the Republican advantage created by the 2011 Plan was not caused by Pennsylvania's political geography. This is because, while political geography might conceivably join forces with traditional districting criteria to create a situation where typical districting plans of a state are biased in favor of one party, the political geography of a state does not interact with the traditional districting criteria to create a situation where typical districting plans of a state quickly exhibit decreased partisan bias when undergoing random swaps. (P-117 at 1; N.T. at 748-51, 755-56.)

358. Dr. Pegden concluded that not only does the 2011 Plan exhibit a strong partisan bias as required by the first prong of the Test, but it also satisfies the second prong of the Test to an extreme degree, which requires that small random changes to the 2011 Plan rapidly decrease the partisan bias of the 2011 Plan, thereby demonstrating that the General Assembly carefully crafted the 2011 Plan. (P-117 at 2, 4; N.T. at 751-53.) Dr. Pegden opined that when a districting plan strongly satisfies the second prong of the Test, then it must also satisfy the third prong of the Test, regardless of political geography. (N.T. at 733-34, 748-49.)

359. Ultimately, Dr. Pegden concluded that Pennsylvania's congressional voting districts are dramatically gerrymandered, and the 2011 Plan is an extreme outlier among the set of possible alternative districting plans in a way that is insensitive to how precisely the set of alternatives are defined. (P-117 at 8; N.T. at 753.)

360. The Court finds Dr. Pegden's testimony to be credible.

361. Dr. Pegden's testimony, like Dr. Chen's, however, failed to take into account other districting considerations, such as not splitting municipalities, communities of interest, and some permissible level of incumbent protection and partisan intent.

362. Dr. Pegden's computer algorithm did not account for the permissible districting considerations discussed above.

363. Moreover, to the extent that Dr. Pegden offered an opinion on an ultimate question of law—*i.e.*, whether the 2011 Plan is an unconstitutional political gerrymander, the opinion is disregarded.

4. *Christopher Warshaw, Ph.D.*

364. The Court accepted Christopher Warshaw, Ph.D., as an expert in American politics in the areas of political representation, public opinion, elections, and polarization. (N.T. at 834-35.)

365. Dr. Warshaw is an assistant professor of political science at George Washington University. He received a J.D. from Stanford Law School and a Ph.D. in political science from Stanford University. Dr. Warshaw has published various academic articles. (Petitioners' Ex. 35 (P-35) at 1-3; N.T. at 825-34.)

366. Dr. Warshaw analyzed relevant data for the purposes of: (1) evaluating the degree of partisan bias in the 2011 Plan, including providing a historical perspective of partisan bias in Pennsylvania; (2) evaluating polarization with regard to members of Congress and whether the polarization magnifies the effects of gerrymandering; (3) examining the consequences of the 2011 Plan on the representation that Pennsylvania residents receive in Congress in the context of growing polarization in Congress; and (4) examining the consequences of the 2011 Plan in Pennsylvania on citizens' trust in government. (P-35 at 1; N.T. at 836-38.)

367. Dr. Warshaw explained that the goal of partisan gerrymandering is to create legislative districts that are as efficient as possible in translating a party's vote share into seat share. This entails drawing districts in which the supporters of the advantaged party constitute either a slim majority or a small minority. This involves practices referred to as "cracking" and "packing." (P-35 at 4; N.T. at 839.)

368. Dr. Warshaw explained that, in a "cracked" district, the disadvantaged party narrowly loses, wasting a large number of votes without

winning a seat. In a “packed” district, the disadvantaged party wins overwhelmingly, wasting a large number of votes. (P-35 at 4; N.T. at 839.)

369. The “efficiency gap” is a metric used to capture the ratio of wasted votes by each party. (P-35 at 3; N.T. at 840-41.) The efficiency gap is defined as the difference between the parties’ respective “wasted votes,” divided by the total number of votes cast in the election. In calculating the efficiency gap, all of the losing party’s votes are wasted if it loses the election. As to the winning party, the wasted votes are those above the 50% plus 1 vote required to win. (P-35 at 5; N.T. at 844-48.)

370. Dr. Warshaw opined that the efficiency gap mathematically captures the cracking and packing practices that occur with partisan gerrymandering. (P-35 at 6; N.T. at 840-41.)

371. Dr. Warshaw opined that historically the vast majority of efficiency gaps in states with more than 6 congressional seats lie close to 0, roughly 75% of the efficiency gaps lie between -10% and 10%, and only about 4% have more than a 20% advantage to either party. (P-35 at 7-8; N.T. at 865.)

372. Dr. Warshaw opined that after the most-recent nationwide redistricting in 2012, Republican advantage grew significantly, with Republicans abruptly developing a very substantial net advantage in the translation of congressional votes to seats. (P-35 at 9; N.T. at 987.)

373. Dr. Warshaw opined that studies strongly suggest that political control of redistricting continues to have large and durable effects, and that partisan gerrymandering is unlikely to be remedied through the normal electoral process. (P-35 at 10; N.T. at 890-91.)

374. Dr. Warshaw calculated that the average efficiency gap nationwide went from approximately 0 in 2010 to an average Republican advantage of 8% in 2012 when new congressional districts came into existence. (P-35 at 9; N.T. at 988.) Dr. Warshaw opined that the sharpness of the change in the efficiency gap nationwide between 2010 and 2012 makes it unlikely to have been caused by geographic changes or nonpolitical factors. (P-35 at 9; N.T. at 879, 982-84.)

375. Dr. Warshaw explained that the efficiency gap can be non-zero and differ across state lines for reasons unrelated to the drawing of district lines, such as how different demographic groups are distributed across geographic space. (P-35 at 9; N.T. at 983, 990-91.) The efficiency gap can also be affected by the intentional drawing of district lines to accomplish goals other than maximizing partisan seat share, such as ensuring the representation of racial minorities. (P-35 at 9; N.T. at 991.)

376. Dr. Warshaw opined that in recent elections, Pennsylvania has had a pro-Republican efficiency gap that is extreme relative to both its own historical efficiency gaps and the efficiency gaps in other states. (P-35 at 3-4, 11-12; N.T. at 871-72, 874, 899.)

377. As to Pennsylvania, Dr. Warshaw opined that Pennsylvania had a modestly pro-Democratic efficiency gap in the 1970s, which evaporated by the 1980s. From about 1980 through 2010, neither party had a persistent advantage in the efficiency gap. The 2011 Plan, however, led to a large Republican advantage in Pennsylvania congressional elections unlike what the state experienced after previous redistricting periods. (P-35 at 12; N.T. at 870-72.)

378. Dr. Warshaw opined that, in 2012, the Democrats wasted 1.3 million more votes than Republicans. (P-35 at 12; N.T. at 952.) Republican candidates won only 49% of the statewide vote, but they won 13 of 18 (72%) of Pennsylvania's congressional seats, which translated into a pro-Republican efficiency gap of approximately -24%. (P-35 at 12-13; N.T. at 871, 896-97.)

379. Dr. Warshaw opined that Democratic candidates received 51% of the congressional votes in 2012 but only won 5 of Pennsylvania's congressional seats, generally by overwhelming margins. (P-35 at 13; N.T. at 896-97.)

380. The efficiency gaps in Pennsylvania during the past 3 elections were among the most Republican-leaning efficiency gaps the nation has ever seen. (P-35 at 4, 12; N.T. at 874, 899.) The 2012 efficiency gap in Pennsylvania was the most Republican-leaning efficiency gap in the 2010 cycle among states with more than 6 seats and the second largest one in history. Averaging the past 3 elections (2012, 2014, 2016), Pennsylvania had the second most Republican-leaning efficiency gap in the country (19%). (P-35 at 15; N.T. at 899-1000.)

381. Dr. Warshaw opined that the efficiency gap in Pennsylvania was 24% in 2012; 15% in 2014; and 19% in 2016. (P-35 at 11-13; N.T. at 871, 1000-01.)

382. Dr. Warshaw cited recent studies for the proposition that these efficiency gaps imply that Republicans in Pennsylvania have won 3 or 4 more seats in these elections than they would have won if Pennsylvania had no partisan bias in its efficiency gap. (P-35 at 13-14; N.T. at 873.)

383. Dr. Warshaw opined that the more extreme pro-Republican efficiency gap that developed following the 2011 Plan suggests that geographic factors are unlikely to be the cause of the large efficiency gap in Pennsylvania in recent elections. (P-35 at 14; N.T. at 879, 982-83.)

384. Dr. Warshaw concluded that the 2011 Plan disadvantages the Democratic Party when compared to the Republican Party in ways that are historically extreme. (P-35 at 3; N.T. at 872, 874, 885-86, 899, 984.) There were substantially more wasted Democratic votes in Pennsylvania congressional elections than Republican votes, which Dr. Warshaw opined has led to a substantial and durable pro-Republican bias in the translation of votes to seats in congressional elections in Pennsylvania. (P-35 at 3; N.T. at 836, 999-1000.)

385. Dr. Warshaw opined that the recent efficiency gaps in Pennsylvania are quite durable, which suggests that partisan gerrymandering is unlikely to be remedied through the normal electoral process. (P-35 at 4; N.T. at 887, 999-1000.)

386. Dr. Warshaw opined that the Republican-leaning efficiency gap created conditions where many Democratic voters in Pennsylvania are unable to elect representatives of their choice, and they are artificially deprived of the opportunity to elect someone who shares their values. (P-35 at 15; N.T. at 932-33.)

387. Dr. Warshaw concluded that the pro-Republican advantage in congressional elections in Pennsylvania has important representational consequences for voters. He based this conclusion on his opinion that, due to the growing polarization in Congress, there is a massive difference between the roll call voting behavior of Democrats and Republicans, such that Democratic voters

whose votes are wasted in Pennsylvania are unlikely to see their preferences represented by their Congressperson. (P-35 at 4, 15; N.T. at 902-03.)

388. Dr. Warshaw concluded that the pro-Republican bias in Pennsylvania elections contributes to a lack of trust in Congress. (P-35 at 4, 25-26; N.T. at 952-53.)

389. The Court finds Dr. Warshaw's testimony to be credible, particularly regarding the existence of an "efficiency gap" in Pennsylvania, as that measure has been employed in recent gerrymandering analyses. The full meaning and effect of the existing efficiency gap, however, requires some speculation and does not take into account some relevant considerations, such as quality of candidates, incumbency advantage, and voter turnout.

390. The Court's other lingering concern is how, in a gerrymandering analysis, the efficiency gap devalues competitive elections. Specifically, if a "fair" district is one in which the Republican and Democratic candidates have a roughly equal chance of prevailing in the election, a close contest will yield a substantial efficiency gap in favor of the prevailing party. In this regard, the efficiency gap treats a "fair" and competitive district as unfair and possibly unconstitutionally gerrymandered.

391. The Court also finds that Dr. Warshaw's comparison of Pennsylvania's efficiency gap with other states has limited value, as Dr. Warshaw failed to take account for differences between states in terms of how congressional districts are drawn (*e.g.*, by an elected partisan legislature or by a nonpartisan commission) and the extent to which each state has enacted laws or constitutional provisions that impose limitations on the drawing of congressional districts. In

other words, his state-by-state comparison is not reflective of an apples-to-apples analysis.

5. *Wendy K. Tam Cho, Ph.D.*

392. The Court accepted Wendy K. Tam Cho, Ph.D., as an expert in the area of political science, with a focus on political geography, redistricting, American elections, operations research, statistics, probability, and high-performance computing. (N.T. at 1132.)

393. Dr. Cho is a full professor at the University of Illinois, Urbana-Champaign, with appointments in the departments of Political Science, Statistics, and Asian American Studies, as well as the College of Law. (Legislative Respondents' Ex. 11 (LR-11) at 1; N.T. at 1114-15.) Dr. Cho received her Bachelor's degrees in Political Science and Math, her Master's degrees in Political Science and Statistics, and her Ph.D. in Political Science, all from the University of California at Berkeley. (Legislative Respondents' Ex. 10 at 1; N.T. at 1114.) Dr. Cho has published academic papers on redistricting as it pertains to operations research, high-performance computing, engineering, law, and political science and has expertise in the use of computer algorithms in redistricting. (LR-11 at 1-2; N.T. at 1120-21.)

394. Dr. Cho did not use or develop an algorithm of her own to analyze the 2011 Plan. Instead, Legislative Respondents retained Dr. Cho to provide comment on the expert reports of Dr. Pegden and Dr. Chen. (LR-11 at 2; N.T. at 1132.)

395. Dr. Cho opined that Dr. Chen's algorithm and code that produced Set 1 and Set 2 of simulated districting plans did not yield samples of random maps, because the code is deterministic, not random. (LR-11 at 19-21;

N.T. at 1137-38.) Dr. Cho testified, however, that she did not review Dr. Chen's algorithm or code written to execute the algorithm. (LR-11 at 10; N.T. at 1141.)

396. Dr. Chen testified on rebuttal that Dr. Cho's testimony on this point was inaccurate. Dr. Chen also testified regarding the specific source code written to result in random (not deterministic) swaps. (N.T. at 1650-75.)

397. Dr. Cho criticized Dr. Pegden's algorithm and opined that Dr. Pegden's "bag of alternative" maps cannot be compared to the 2011 Plan because he failed to incorporate traditional districting criteria like avoiding municipal splits and incumbency protection, which she believed were considerations that the General Assembly incorporated during the mapmaking process. (LR-11 at 10; N.T. at 1219.) Dr. Cho testified, however, that she did not review Dr. Pegden's algorithm or code written to execute the algorithm. (N.T. at 1293-95.) Dr. Pegden testified on rebuttal and addressed Dr. Cho's criticisms of his algorithm to the satisfaction of the Court. (N.T. at 1362-94.)

398. The Court finds Dr. Cho's testimony not credible with regard to her criticisms of the algorithms used by Dr. Chen and Dr. Pegden, but credible with regard to her observation that Dr. Pegden's algorithm failed to avoid municipal splits and did not account for permissible incumbency protection.

399. Dr. Cho's testimony does not lessen the weight given to Dr. Chen's testimony that adherence to (what he considers to be) traditional redistricting criteria does not explain the partisan bias of the 2011 Plan.

400. Dr. Cho's testimony does not lessen the weight given to Dr. Pegden's conclusion that the 2011 Plan is an outlier when compared to maps with nearly identical population equality, contiguity, compactness, and number of county splits.

401. Dr. Cho's testimony failed to provide this Court with any guidance as to the test for when a legislature's use of partisan considerations results in unconstitutional gerrymandering.

6. Nolan McCarty, Ph.D.

402. The Court accepted Nolan McCarty, Ph.D., as an expert in the areas of redistricting, quantitative election and political analysis, representation and legislative behavior, and voting behavior. (N.T. at 1417-18.)

403. Dr. McCarty has a Bachelor's degree in economics from the University of Chicago, and a M.S. and Ph.D. in economics from Carnegie Mellon University. Dr. McCarty is a professor of politics and public affairs at Princeton University, and he is Chair of Princeton's Department of Politics. He has written academic articles regarding redistricting. (Legislative Respondents' Ex. 16 at 1-3; N.T. at 1409-14.)

404. Legislative Respondents retained Dr. McCarty to provide comment on the expert reports of Dr. Chen and Dr. Warshaw. (Legislative Respondents' Ex. 17 (LR-17) at 1.)

405. Dr. McCarty explained that he analyzed whether congressional districts created under the 2011 Plan were Republican-leaning or Democratic-leaning by calculating the partisan voting index (PVI) of each congressional district. He explained that the PVI was based on presidential vote returns. A PVI is calculated by taking the presidential voting returns of the previous 2 elections in a congressional voting district, then subtracting the national performance of each of the parties from that measure, and then taking the average over those 2 elections. (N.T. at 1418-21.)

406. Based on his analysis using the PVI of each congressional voting district, Dr. McCarty opined that Democrats should have won 8 seats under the 2011 Plan and that their failure to do so was based upon other outcomes, such as candidate quality, incumbency, spending, national tides, and trends within the electorate. (N.T. at 1447-48.) After examining the PVI of congressional districts and the efficiency gaps in those districts, Dr. McCarty saw no evidence to demonstrate that the 2011 Plan gives the Republicans a partisan advantage from redistricting. (N.T. at 1489-90.)

407. Dr. McCarty criticized the method Dr. Chen used to calculate the partisan performance of a district and opined that it is an imperfect predictor of how a district will vote in congressional elections. (LR-17 at 3, 20; N.T. at 1458-76.) Dr. Chen testified on rebuttal and addressed Dr. McCarty's criticisms to the satisfaction of the Court. (N.T. at 1675-1701.)

408. Dr. McCarty criticized Dr. Warshaw's claim that gerrymandering exacerbates the problems associated with the level of disagreement between members of opposing political parties—*i.e.*, polarization. Dr. McCarty essentially opined that gerrymandering does not exacerbate problems associated with polarization because: (1) Democratic voters who are "packed" into congressional voting districts benefit by being packed because they have a better chance to elect a candidate of their choice; and (2) Democratic voters who are "cracked" are placed in districts with small Republican majorities that elect Democrats with some regularity. (LR-17 at 14-15; N.T. at 1477-82.) Dr. McCarty also criticized Dr. Warshaw's reliance on the efficiency gap as an indicator of gerrymandering, contending that: (1) the efficiency gap does not account for partisan bias resulting naturally from geographic sorting; (2) proponents of the

efficiency gap have not developed principled ways of determining when an efficiency gap is too large to be justified by geographic sorting; and (3) close elections can have an effect on the calculation of efficiency gaps. He opined that there are many components to wasted votes that are not related to partisan districting. (LR-17 at 18-20; N.T. at 1482-89.)

409. The Court finds Dr. McCarty's testimony not credible with regard to criticism of Dr. Chen's report, as the methodology employed by Dr. Chen to calculate partisan performance appears to have been a reliable predictor of election outcomes in Pennsylvania since the enactment of the 2011 Plan. The Court notes that Dr. Chen's methodology resulted in accurate predictions for 54 out of 54 congressional elections under the 2011 Plan.

410. With regard to Dr. McCarty's testimony in response to Dr. Warshaw's expert report, the Court finds it not credible to the extent Dr. McCarty disagrees that gerrymandering does not exacerbate problems associated with polarization and with his contention that cracked and packed districts benefit the voters who are placed in cracked and packed districts. The Court further finds his testimony not credible relating to Dr. Warshaw's reliance on the efficiency gap, because Dr. Warshaw accounted for some geographic sorting in his analysis of the efficiency gap and did not dispute that close elections can impact the calculation of an efficiency gap. The Court finds credible Dr. McCarty's testimony that proponents of the efficiency gap have not developed principled ways of determining when an efficiency gap is so large that it evidences partisan gerrymandering and that there are many components to wasted votes that are not related to partisan districting.

411. Dr. McCarty’s testimony does not lessen the weight given to Dr. Chen’s testimony that the 2011 Plan is an outlier with respect to its partisan advantage.

412. Dr. McCarty’s testimony does not lessen the weight given to Dr. Warshaw’s testimony that an efficiency gap exists in Pennsylvania and that gerrymandering exacerbates problems associated with polarization.

413. Dr. McCarty’s testimony failed to provide this Court with any guidance as to the test for when a legislature’s use of partisan considerations results in unconstitutional gerrymandering.

7. Summary of Expert Findings

414. The Court found the testimony of Drs. Chen, Kennedy, Pegden, and Warshaw credible. Their collective testimony, however, has limited utility. Accepting their opinions, the 2011 Plan has a partisan skew in favor of Republican candidates. Indeed, by their respective measures, the skew is substantial in relation to their method of comparison.

415. The Court found the testimony of Drs. Cho and McCarty largely not credible in their criticisms of Petitioners’ expert witnesses, and the testimony of Drs. Cho and McCarty did not provide the Court with any guidance as to the test for when a legislature’s use of partisan considerations results in unconstitutional gerrymandering.

416. Dr. Chen compared the partisanship of the 2011 Plan to 2 sets of simulated districting plans. Dr. Chen created Set 1 using certain traditional districting criteria and created Set 2 with an additional constraint of pairing as few 2012 Incumbents together in a district as possible (how Dr. Chen defines “incumbency protection”). By comparing the partisanship of both sets of

simulated districting plans to the 2011 Plan and assigning a partisanship score to those plans, Dr. Chen concluded, in essence, that the 2011 Plan is much more partisan than the plans he simulated.

417. Dr. Pegden took a different approach. Using his proprietary algorithm, which employed a Markov Chain analysis, Dr. Pegden offered a probability calculation on the likelihood that the 2011 Plan is “similar” to a computer-generated series of plans—what Dr. Pegden referred to as his “bag of districting plans.” Like Dr. Chen, Dr. Pegden assigned a partisanship score to the 2011 Plan and the computer-generated plans in his “bag of districting plans.” Applying his analytics, Dr. Pegden concluded that the 2011 Plan is indeed an outlier from the plans in his “bag of districting plans” in that it is so carefully drawn that its partisan score is skewed in favor of Republican candidates to a further degree than any plan generated by his algorithm.

418. Finally, Dr. Warshaw employed the “efficiency gap” metric. In using this metric, Dr. Warshaw was able to assign a number value (+/-), relative to 0, reflecting the political leaning of each state’s congressional districts. He then compared the value assigned to the 2011 Plan to (a) Pennsylvania’s historical congressional maps and (b) the congressional maps of other states. In offering this comparison, Dr. Warshaw opined that the 2011 Plan is (a) the most partisan plan in Pennsylvania history and (b) one of the most partisan plans in the country (second only to North Carolina) among states with more than 6 congressional seats. This Court notes that while Dr. Warshaw’s testimony was credible, it did little to alleviate concerns regarding the use of the efficiency gap in gerrymandering cases. The efficiency gap determinations were central to the plaintiffs’ case in *Whitford v. Gill*, 218 F. Supp. 3d 837 (W.D. Wis. 2016) (*Whitford*), and undoubtedly will be

addressed in the United States Supreme Court’s ultimate decision in *Gill*. The efficiency gap’s utility is uncertain, and this Court has noted a few reasons why our Supreme Court should hesitate to endorse it as clear evidence of unconstitutional gerrymandering. (See Findings of Fact ¶¶ 388-90.) The very notion of a “wasted” vote is anathema to our democracy, and our courts should not embrace such a concept. The notion of wasted votes is particularly noxious in the context of a close election, where traditionally the American (and Pennsylvanian) mantra is “every vote counts.”

419. In short, each of Petitioners’ experts has established, through different measures and statistical devices, that the 2011 Plan is more partisan than (a) computer-generated “neutral” plans and (b) plans in other states. Though informative, these comparisons do not address the central question in this case.

420. Because the law does not require legislatures to draw congressional lines with equal (actual or rough) distribution of likely Republican voters and likely Democratic voters, nor does it require any proportionality of seats relative to party performance in statewide elections, *see Davis v. Bandemer*, 478 U.S. 109, 130 (1986) (*Bandemer*), partisanship is part of the process. In the elections of members of the General Assembly and the Governor leading up the drawing of the 2011 Plan, Pennsylvania voters elected Republicans to control the congressional redistricting process. There should be no surprise then that when choices had to be made in how to draw congressional districts,¹⁹ elected

¹⁹ By way of example, as a result of the 2010 U.S. Census, Pennsylvania’s apportioned seats in the United States House of Representatives was reduced by 1—from 19 to 18 seats. In essence, this meant that 1 incumbent was doomed to lose his or her seat through *any* redistricting plan. In accounting for this, the General Assembly had 3 options: (1) draw a district that pitted two incumbent Republicans against each other; (2) draw a district that pitted incumbent
(Footnote continued on next page...)

Republicans made choices that favored their party (and thereby their voters). This type of partisanship has never been ruled unconstitutional (unless you are in a state, like Florida, that expressly makes it unlawful under its state constitution). Rather, it is a reasonably anticipated, if not expected, consequence of the political process.

421. The comparison, then, that is most meaningful for a constitutional analysis, is the partisan bias (by whatever metric) of the 2011 Plan when compared to the most partisan congressional plan that could be drawn, but not violate the Pennsylvania or United States Constitutions. Bringing this back to Drs. Chen, Pegden, and Warshaw, none of these experts opined as to where on their relative scales of partisanship, the line is between a constitutionally partisan map and an unconstitutionally partisan districting plan. This is the point that has bedeviled courts throughout history.

I. 2018 Pennsylvania Elections Schedule

422. Under the current election schedule, Pennsylvania's 2018 general primary election, which will include the next congressional primary, is scheduled for May 15, 2018. (Joint Stip. of Facts at ¶ 130; EBD-2 at ¶ 8.) See Section 603(a) of the Pennsylvania Election Code (Election Code), Act of June 3, 1937, P.L. 1333, *as amended*, 25 P.S. § 2753(a).

(continued...)

Democrats against each other; or (3) draw a district that pitted 1 incumbent Republican against 1 incumbent Democrat. The 2011 Plan reflects option 2, although the actual reasons the General Assembly made this choice are not of record. Regardless of the reasons, however, there is no constitutional imperative that mandated a different choice.

423. Under the current election schedule, the first day to circulate and file nomination petitions is February 13, 2018. (Joint Stip. of Facts at ¶ 131.) *See* Section 908 of the Election Code, Act of June 3, 1937, P.L. 1333, *as amended*, 25 P.S. § 2868.

424. Under the current election schedule, the last day to circulate and file nomination petitions is March 6, 2018. (Joint Stip. of Facts at ¶ 132.) *See* Section 908 of the Election Code.

425. Under the current election schedule, the first day to circulate and file nomination papers is March 7, 2018. (Joint Stip. of Facts at ¶ 133.) *See* Section 953(b) of the Election Code, Act of June 3, 1937, P.L. 1333, *as amended*, 25 P.S. § 2913(b).

426. Under the current election schedule, the last day for withdrawal by candidates who filed nomination petitions is March 21, 2018. (Joint Stip. of Facts at ¶ 134.) *See* Section 914 of the Election Code, Act of June 3, 1937, P.L. 1333, *as amended*, 25 P.S. § 2874.

427. Under the current election schedule, remote military-overseas absentee ballots for the primary election must be sent by March 26, 2018. (Joint Stip. of Facts at ¶ 135.) *See* 25 Pa. C.S. § 3508(b)(1).

428. Under the current election schedule, all remaining military-overseas absentee ballots for the primary election must be sent by March 30, 2018. (Joint Stip. of Facts at ¶ 136.) *See* 25 Pa. C.S. § 3508(a)(1).

429. Under the current election schedule, the last day for voters to register before the primary election is April 16, 2018. (Joint Stip. of Facts at ¶ 137.) *See* 25 Pa. C.S. § 1326(b).

430. Under the current election schedule, the last day to apply for a civilian absentee ballot for the primary election is May 8, 2018. (Joint Stip. of Facts at ¶ 138.) *See* Section 1302.1(a) of the Election Code, Act of June 3, 1937, P.L. 1333, added by the Act of August 13, 1963, P.L. 707, *as amended*, 25 P.S. § 3146.2a(a).

431. Under the current election schedule, the last day for County Boards of Elections to receive voted civilian absentee ballots for the primary election is May 11, 2018. (Joint Stip. of Facts at ¶ 139.) *See* Section 1306(a) of the Election Code, Act of June 3, 1937, P.L. 1333, added by the Act of March 6, 1951, P.L. 707, *as amended*, 25 P.S. § 3146.6(a).

432. Under the current election schedule, the first day for voters to register after the primary election is May 16, 2018. (Joint Stip. of Facts at ¶ 140.) *See* 25 Pa. C.S. § 1326(c)(2)(iii).

433. Under the current election schedule, the last day for County Boards of Elections to receive voted military-overseas ballots for the primary election is May 22, 2018. (Joint Stip. of Facts at ¶ 141.) *See* 25 Pa. C.S. § 3511(a).

434. Under the current election schedule, the last day to circulate and file nomination papers is August 1, 2018. (Joint Stip. of Facts at ¶ 142.) *See* Consent Decree, *Hall v. Davis* (No. 84-1057, E.D. Pa., June 14, 1984).

435. Under the current election schedule, the last day for withdrawal by minor political party and political body candidates who filed nomination papers is August 8, 2018. (Joint Stip. of Facts at ¶ 143.) *See* Section 978(b) of the Election Code, Act of June 3, 1937, P.L. 1333, *as amended*, 25 P.S. § 2938(b).

436. Under the current election schedule, the last day for withdrawal by candidates nominated by a political party is August 13, 2018. (Joint Stip. of Facts at ¶ 144.) *See* Section 978(a) of the Election Code, Act of June 3, 1937, P.L. 1333, *as amended*, 25 P.S. § 2938(a).

437. Under the current election schedule, remote military-absentee ballots for the November general election must be sent by August 28, 2018. (Joint Stip. of Facts at ¶ 145.) *See* 25 Pa. C.S. § 3508(b)(1).

438. Under the current election schedule, all remaining military-overseas absentee ballots for the November general election must be sent by September 21, 2018. (Joint Stip. of Facts at ¶ 146.) *See* 52 U.S.C. § 20302(a)(8)(A); 25 Pa. C.S. § 3508(a)(1).

439. Under the current election schedule, the last day for voters to register before the November general election is October 9, 2018. (Joint Stip. of Facts at ¶ 147.) *See* 25 Pa. C.S. § 1326(b).

440. Under the current election schedule, the last day to apply for a civilian absentee ballot for the November general election is October 30, 2018. (Joint Stip. of Facts at ¶ 148.) *See* Section 1302.1(a) of the Election Code.

441. Under the current election schedule, the last day for County Boards of Elections to receive voted civilian absentee ballots for the November general election is November 2, 2018. (Joint Stip. of Facts at ¶ 149.) *See* Section 1306(a) of the Election Code.

442. Under the current election schedule, Pennsylvania's 2018 general election is scheduled for November 6, 2018. (Joint Stip. of Facts at ¶ 150.) *See* Article VII, Section 2 of the Pennsylvania Constitution; Section 601

of the Election Code, Act of June 3, 1937, P.L. 1333, as affected by the Act of April 28, 1978, P.L. 202, 25 P.S. § 2751.

443. Under the current election schedule, the first day for voters to register after the November general election is November 7, 2018. (Joint Stip. of Facts at ¶ 151.) *See* 25 Pa. C.S. § 1326(c)(2)(iii).

444. Under the current election schedule, the last day for County Boards of Elections to receive voted military-overseas ballots for the general election is November 13, 2018. *See* 25 Pa. C.S. § 3511(a).

445. The election deadlines set forth above are required by federal or state law. (EBD-2 at ¶ 10.)

446. In order to prepare for the earliest deadline in the 2018 election schedule, which is February 13, 2018, the first day for circulating and filing nomination petitions, it would be highly preferable to DOS to have all congressional district boundaries finalized and in place by January 23, 2018. This would give DOS 3 weeks to prepare. (EBD-2 at ¶¶ 11-12.)

447. Should there be a court order directing that a new congressional districting plan be put into place, and that congressional districting plan is not ready until after January 23, 2018, it may still be possible for the 2018 primary election to proceed as scheduled using the new plan. (EBD-2 at ¶ 13.)

448. Through a combination of internal administrative adjustments and court-ordered date changes, it would be possible to hold the primary election on the scheduled May 15, 2018 date even if a new congressional districting plan is not put into place until on or before February 20, 2018. (EBD-2 at ¶ 14.)

449. The current election schedule gives the counties 10 weeks between the last date for circulating and filing nomination petitions (currently

March 6, 2018) and the primary election date to prepare for the primary election. (EBD-2 at ¶ 15.)

450. Based on Commissioner Marks' experience, counties could fully prepare for the primary election in 6 to 8 weeks. (EBD-2 at ¶ 16.)

451. Commissioner Marks believes that the close of the nomination petitions period could be moved back 2 weeks to March 20, 2018, without compromising the elections process in any way. (EBD-2 at ¶ 17.)

452. If the Court were to order a time period for circulating and filing nomination petitions that lasted 2 weeks, instead of 3, the nomination period could start on March 6, 2018. (EBD-2 at ¶ 18.)

453. DOS would normally need 3 weeks of preparation time before the first date for the filing and circulating of nomination petitions, however, with the addition of staff and increased staff hours, it would be possible for DOS to complete its preparations in 2 weeks instead of 3. (EBD-2 at ¶¶ 19-20.)

454. Accordingly, if the first date for circulating and filing nomination petitions is moved to March 6, 2018, DOS would need to have a final congressional districting plan in place by approximately February 20, 2018. (EBD-2 at ¶ 21.)

455. Should there be a court order directing that a new congressional districting plan be put in place, and that congressional districting plan is not ready until after February 20, 2018, it would also be possible to postpone the 2018 primary election from May 15, 2018, to a date in the summer of 2018. Under this scenario, there would be 2 options: (1) the Pennsylvania Supreme Court could postpone all of the primary elections currently scheduled for May 15, 2018; or

(2) the Pennsylvania Supreme Court could postpone the congressional primary election alone. (EBD-2 at ¶¶ 22-23.)

456. Depending on the date of the postponed primary election, the date by which the new congressional districting plan would be put into place could be as late as the beginning of April 2018. (EBD-2 at ¶ 24.)

457. Postponement of the primary election in any manner would not be preferable because it would result in significant logistical challenges for county election administrators. If postponement takes place, for administrative and cost savings reasons, DOS's preferred option would be postponement of the entire primary. (EBD-2 at ¶ 25.)

458. Postponing the congressional primary alone would require the administration of 2 separate primary elections (1 for congressional seats and 1 for other positions), which would result in an additional expenditure of a significant amount of public funds. (EBD-2 at ¶ 26.)

459. The cost of holding a single primary in 2018 would be approximately \$20 million. If 2 primary elections were held, each would cost approximately \$20 million. (EBD-2 at ¶ 27.)

460. For each primary, Pennsylvania's 67 counties will be reimbursed a portion of the costs associated with mailing absentee ballots to certain military and overseas civilian voters and bedridden or hospitalized veterans. The other costs of the primary are paid by the counties. This is similar to the way that costs are allocated in special congressional elections. (EBD-2 at ¶ 28.)

461. DOS will make every effort to comply with any election schedule that the Pennsylvania Supreme Court puts in place. (EBD-2 at ¶ 30.)

J. Ongoing Activities for the 2018 Elections

462. Five Democratic candidates have registered with the Federal Election Commission to run in the 7th Congressional District race in 2018. (Joint Stip. of Facts at ¶ 219.)

463. Four Democratic candidates have registered with the Federal Election Commission to run in the 12th Congressional District race in 2018. (Joint Stip. of Facts at ¶ 220.)

464. Democratic candidate Chrissy Houlahan has raised \$810,649.55 in her campaign for the 6th Congressional District in 2018. (Joint Stip. of Facts at ¶ 221.)

465. According to the Federal Election Commission, 1 Democratic candidate has raised over \$100,000 to challenge an incumbent in the 16th Congressional District in 2018. (Joint Stip. of Facts at ¶ 222.)

466. Governor Wolf issued a Writ of Election to hold a special election for the vacancy in the 18th Congressional District on March 13, 2018. The special election in the 18th Congressional District is to fill the seat vacated by Congressman Murphy only for the duration of his term, which ends in January 2019. (Joint Stip. of Facts at ¶ 223.)

467. The special election for the existing 18th Congressional District will be held 28 days after nomination petitions begin to circulate for the election for the 18th Congressional District in November 2018. (Joint Stip. of Facts at ¶ 224.)

468. The following chart contains the names and addresses of the Republican and Democratic nominated candidates for the March 13, 2018 special election in the 18th Congressional District:

D	Conor Lamb	928 Washington Road Pittsburgh, PA 15228
R	Rick Saccone	404 Boston Hollow Road Elizabeth, PA 15037

(Joint Stip. of Facts at ¶ 156.)

469. Campaigns for members of the United States Congress start far in advance of the year of election. The existing congressional districts under the 2011 Plan have now been in effect for 3 election cycles. Intervenors work to elect their preferred candidates to the United States Congress in reliance on the existing congressional districts. Before the filing of the Petition, Intervenors did not expect that the existing congressional districts would change between the 2016 and 2018 elections. (Joint Stip. of Facts at ¶¶ 199-202; I-16 at ¶¶ 5, 17, 23; I-17 at ¶¶ 9, 26.)

470. One of the Intervenors has been performing his duties and responsibilities in connection with the 2018 congressional election as Chairman for the Monroe County Republican Committee since November 2016. Those duties and responsibilities have included, but have not been limited to, actively recruiting candidates to run against the incumbent Democratic candidate in the 17th Congressional District. (I-16 at ¶¶ 5-9.)

471. Such Intervenor has also been actively involved in election activities intended to benefit Republican congressional candidates in the 2018 elections. Those activities have included, but have not been limited to: (1) communicating with candidates and their committee representatives; (2) generating support for the candidates; and (3) reviewing and identifying issues that could affect the campaign. (I-16 at ¶ 20.)

472. Such Intervenor believes that he will be harmed if the congressional district boundaries are changed before the 2018 election because it

could negate all of the activities that he has undertaken in connection with the 2018 congressional elections. (I-16 at ¶¶ 18, 20.)

473. Another of the Intervenors has been actively involved in election activities intended to benefit her Republican candidate for the 2018 congressional elections. Those activities have included, but have not been limited to: (1) attending a statewide planning conference in December 2016; (2) attending events in support of her candidate; and (3) recruiting donors and volunteers for her candidate’s campaign. Such Intervenor believes that at least some of her efforts will be lost if the congressional district boundaries are changed before the 2018 elections. (I-17 at ¶¶ 5, 8-9, 23.)

III. RECOMMENDED CONCLUSIONS OF LAW

A. Congressional Reapportionment Generally

1. Every decade, the 435 seats in the United States House of Representatives must be reapportioned among the 50 states according to the results of the U.S. Census. U.S. Const. art. I, § 2.

2. State legislatures, vested with the power, *inter alia*, to determine the “Times, Places and Manner of holding Elections for . . . Representatives,” control the process of reapportionment and resulting redistricting (drawing of congressional district lines), subject to any rules that Congress may establish. U.S. Const. art. I, § 4.

3. The Pennsylvania Constitution includes express provisions that guide and limit reapportionment of the General Assembly²⁰ and local

²⁰ Reapportionment of the General Assembly is governed by Article II, Section 16 of the Pennsylvania Constitution, which provides:

(Footnote continued on next page...)

municipalities.²¹ There is, however, no similar provision in the Pennsylvania Constitution with respect to congressional reapportionment.

4. Like all states, Pennsylvania must draw its congressional districts “with populations as close to perfect equality as possible.” *Evenwel v. Abbott*, ___ U.S. ___, 136 S. Ct. 1120, 1124 (2016).

5. Like all states, Pennsylvania must draw its congressional districts in compliance with Section 2 of the Voting Rights Act of 1965, 52 U.S.C. § 10301.

6. While the General Assembly derives its authority over congressional redistricting from the United States Constitution and there are no explicit provisions in the Pennsylvania Constitution or any Pennsylvania statute that govern congressional reapportionment, redistricting plans nonetheless may be scrutinized under other provisions of the Pennsylvania Constitution, as any law

(continued...)

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.

²¹ Reapportionment of local municipalities is governed by Article IX, Section 11 of the Pennsylvania Constitution, which provides:

Within the year following that in which the Federal decennial census is officially reported as required by Federal law, and at such other times as the governing body of any municipality shall deem necessary, each municipality having a governing body not entirely elected at large shall be reapportioned, by its governing body or as shall otherwise be provided by uniform law, into districts which shall be composed of compact and contiguous territory as nearly equal in population as practicable, for the purpose of describing the districts for those not elected at large.

passed by the General Assembly would be. *See Erfer v. Commonwealth*, 794 A.2d 325, 331 (Pa. 2002).

7. While many states have adopted constitutional provisions regulating reapportionment, at least one of which mandates that districts be “contiguous and compact,” *see, e.g.*, Va. Const. art. II, § 6, there is no Pennsylvania constitutional provision specifically dealing with congressional reapportionment.²²

8. In light of the Speech and Debate Clause, the General Assembly and its members cannot be compelled by the Court to explain individual lines and boundaries in the 2011 Plan. (*See* this Court’s Memorandum and Order, dated November 22, 2017.)

9. The 2011 Plan is legislation passed by a majority of duly-elected members of the PA House and PA Senate from state legislative districts approved by the Pennsylvania Supreme Court, *Albert v. 2001 Legislative Reapportionment Commission*, 790 A.2d 989 (Pa. 2002), and signed into law by the duly-elected Governor of the Commonwealth.

B. Partisan Gerrymandering Generally

10. Partisan gerrymandering cases are justiciable under the United States and Pennsylvania Constitutions. *See Bandemer*, 478 U.S. at 124-27;

²² At numerous times throughout the trial, various witnesses and parties characterized Pennsylvania’s 2011 Plan as one of the most politically gerrymandered in the country. If true, the reputation can be explained by the following: (1) Pennsylvania does not have any limiting standards for the drawing of congressional districts; (2) Pennsylvania has not opted to adopt an independent, nonpartisan commission to craft a politically neutral plan; and (3) when the 2011 Plan was drawn, the voters of Pennsylvania chose single party (Republican) rule in the General Assembly and the Office of the Governor.

Erfer, 794 A.2d at 331 (citing *In re 1991 Pa. Legislative Reapportionment Comm'n*, 609 A.2d 132 (Pa. 1992) (*1991 Reapportionment*), *abrogated on other grounds by Holt v. 2011 Legislative Reapportionment Comm'n*, 38 A.3d 711 (Pa. 2012)).

11. Partisanship and political classifications are permissible considerations in the creation of congressional districts. See *Vieth*, 541 U.S. at 285 (plurality opinion) (“The Constitution clearly contemplates districting by political entities, and unsurprisingly that turns out to be root-and-branch a matter of politics.” (internal citation omitted)); *id.* at 307 (Kennedy, J., concurring) (noting that “[a] determination that a gerrymander violates the law must rest on something more than the conclusion that political classifications were applied” because such classifications are “generally permissible”); *id.* at 336 (Stevens, J., dissenting) (“[P]artisanship [can] be a permissible consideration in drawing district lines, so long as it does not predominate.”); *id.* at 344 (Souter, J., dissenting) (“[S]ome intent to gain political advantage is inescapable whenever political bodies devise a district plan”); *id.* at 360 (Breyer, J., dissenting) (“[T]raditional or historically based boundaries are not, and should not be, ‘politics free.’”); *Hunt v. Cromartie*, 526 U.S. 541, 551 (1999) (“Our prior decisions have made clear that a jurisdiction may engage in constitutional political gerrymandering, even if it so happens that the most loyal Democrats happen to be black Democrats and even if the State were *conscious* of that fact.” (emphasis in original)); *Vera*, 517 U.S. at 1047-48 (Souter, J., dissenting) (noting that incumbency protection is traditional districting principle that is “entirely consistent” with Fourteenth Amendment); *Gaffney v. Cummings*, 412 U.S. 735, 753 (1973) (“The reality is that districting inevitably has and is intended to have substantial political consequences.”).

12. There is no Pennsylvania constitutional provision that expressly prohibits partisanship in the drawing of congressional districts. *But see, e.g.*, Cal. Const. art. XXI, § 2(e) (“The place of residence of any incumbent or political candidate shall not be considered in the creation of a map. Districts shall not be drawn for the purpose of favoring or discriminating against an incumbent, political candidate, or political party.”); Fla. Const. art. III, § 20 (“No [congressional] apportionment plan or individual [congressional] district shall be drawn with the intent to favor or disfavor a political party or an incumbent.”).

13. There is no Pennsylvania statute that expressly prohibits partisanship in the drawing of congressional districts.

14. Congressional reapportionment is “the most political of legislative functions,” and judicial intervention should be reserved for only the most egregious abuses of the power conferred to the General Assembly. *Erfer*, 794 A.2d at 334 (quoting *Bandemer*, 478 U.S. at 143 (plurality opinion)).

15. The question presented in a political gerrymandering case is not whether the General Assembly, in drawing congressional districts, may make decisions that favor one political party or even a particular incumbent; rather, the question is how much partisan bias is too much. *See Holt*, 38 A.3d at 745 (“It is true, of course, that redistricting has an inevitably legislative, and therefore an inevitably political, element; but, the constitutional commands and restrictions on the process exist precisely as a brake on the most overt of potential excesses and abuse.”); *see also Vieth*, 541 U.S. at 344 (Souter, J., dissenting) (noting that in partisan gerrymandering context, “the issue is one of how much is too much”).

C. Burden of Proof – Constitutionality of Enacted Legislation

16. Petitioners bear the heavy burden of proving that the 2011 Plan is unconstitutional. *Singer v. Sheppard*, 346 A.2d 897, 900 (Pa. 1975). There is a presumption in favor of constitutionality for all lawfully enacted legislation and “all doubt is to be resolved in favor of sustaining the legislation.” *Id.* (quoting *Milk Control Comm’n v. Battista*, 198 A.2d 840, 843 (Pa.), *appeal dismissed*, 379 U.S. 3 (1964)). “An Act of Assembly will not be declared unconstitutional unless it [c]learly, palpably and [p]lainly violates the [Pennsylvania] Constitution.” *Id.* (quoting *Daly v. Hemphill*, 191 A.2d 835, 840 (Pa. 1963)).

17. In challenging the constitutionality of the 2011 Plan, it is Petitioners’ burden of establishing not that a better or fairer plan can be drawn, but rather that the 2011 Plan fails to meet constitutional requirements. *See Albert*, 790 A.2d at 995.

D. Free Expression and Association (Count I)

18. Article I, Section 7 of the Pennsylvania Constitution provides, in relevant part: “The free communication of thoughts and opinions is one of the invaluable rights of man, and every citizen may freely speak, write and print on any subject, being responsible for the abuse of that liberty.”

19. Article I, Section 20 of the Pennsylvania Constitution provides: “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.”

20. “The protections afforded by Article I, [Section] 7 . . . are distinct and firmly rooted in Pennsylvania history and experience. The provision is

an ancestor, not a stepchild, of the First Amendment.” *Pap’s A.M. v. City of Erie*, 812 A.2d 591, 605 (Pa. 2002) (*Pap’s II*). Thus, Article I, Section 7 of the Pennsylvania Constitution “provides protection for freedom of expression that is broader than the federal constitutional guarantee.” *Id.* (quoting *Bureau of Prof’l and Occupational Affairs v. State Bd. of Physical Therapy*, 728 A.2d 340, 343-44 (Pa. 1999)); see also *Working Families Party v. Commonwealth*, 169 A.3d 1247, 1260 (Pa. Cmwlth. 2017) (“The Pennsylvania Constitution affords greater protection of speech and associational rights than does our Federal Constitution.”). “Nevertheless, [the Pennsylvania] Supreme Court has explained that reference to ‘First Amendment authority remains instructive in construing Article I, Section 7’ of the Pennsylvania Constitution.” *Working Families Party*, 169 A.3d at 1260 (quoting *DePaul v. Commonwealth*, 969 A.2d 536, 547 (Pa. 2009)).

21. “[W]here a party to litigation ‘mounts an individual rights challenge under the Pennsylvania Constitution, the party should undertake an independent analysis’ to explain why ‘state constitutional doctrine should depart from the applicable federal standard.’” *Working Families Party*, 169 A.3d at 1262 (quoting *DePaul*, 696 A.2d at 541). The party advocating for the departure from the analogous federal standard should brief: “(1) the text of the Pennsylvania Constitution[;] (2) its history and Pennsylvania case law thereon[;] (3) case law from other jurisdictions[;] and (4) policy considerations, including unique issues of state and local concern.” *Id.* at 1262 n.25 (citing *Commonwealth v. Edmunds*, 586 A.2d 887 (Pa. 1991)). While Petitioners cite *Edmunds* in their post-trial filing, it does not appear that they have performed a thorough *Edmunds* analysis. Nonetheless, the Pennsylvania Supreme Court is free to conduct its constitutional analysis of Petitioners’ claim that the 2011 Plan violates their rights to free

expression under Article I, Section 7 of the Pennsylvania Constitution consistently with the model set forth by *Edmunds*. See *Pap's II*, 812 A.2d at 603.

22. In *Pap's A.M. v. City of Erie*, 719 A.2d 273 (Pa. 1988) (*Pap's I*), reversed and remanded, 529 U.S. 277 (2000), the Pennsylvania Supreme Court concluded that a public indecency ordinance that made it a summary offense to appear in public in a “state of nudity” placed an unconstitutional burden on the right to freedom of expression guaranteed by the First Amendment to the United States Constitution. *Pap's I*, 719 A.2d at 275-76, 280. The United States Supreme Court granted certiorari to consider whether the Pennsylvania Supreme Court properly evaluated the subject ordinance’s constitutionality under the First Amendment. *City of Erie v. Pap's A.M.*, 529 U.S. 277, 283 (2000). In a plurality opinion, the United States Supreme Court held that the subject ordinance was a content-neutral regulation that satisfied the four-part test set forth in *United States v. O'Brien*, 391 U.S. 367 (1968), and, therefore, did not violate the First Amendment. *Id.* at 289-302 (plurality opinion). As a result, the United States Supreme Court reversed the decision of the Pennsylvania Supreme Court and remanded the matter for the consideration of any remaining issues. *Id.* at 302.

23. On remand in *Pap's II*, the Pennsylvania Supreme Court considered whether the same public indecency ordinance violated the right to freedom of expression guaranteed by Article I, Section 7 of the Pennsylvania Constitution. *Pap's II*, 812 A.2d at 593. Ultimately, the Pennsylvania Supreme Court concluded that the subject ordinance was unconstitutional because “the legitimate governmental goals in [the] case [could] be achieved by less restrictive means, without burdening the right to expression guaranteed” by Article I, Section 7 of the Pennsylvania Constitution. *Id.* at 613. Essentially, the

Pennsylvania Supreme Court issued the same holding in *Pap's II* that it had issued in *Pap's I*, but rested its decision on Article I, Section 7 of the Pennsylvania Constitution, not the First Amendment. *Id.* In reaching its decision under the Pennsylvania Constitution, the Pennsylvania Supreme Court noted:

We are left, then, with a circumstance where we must decide a Pennsylvania constitutional question, but the governing federal law, to which we ordinarily would look for insight and comparison, has been fluid and changing and still is not entirely clear. As a matter of policy, Pennsylvania citizens should not have the contours of their fundamental rights under our charter rendered uncertain, unknowable, or changeable, while the [United States] Supreme Court struggles to articulate a standard to govern a similar federal question. There is an entirely different jurisprudential and constitutional imperative at work when this Court, which is the final word on the meaning of our own charter in a properly joined case or controversy, is charged with the duty to render a judgment. In addition, it is a settled principle of Pennsylvania jurisprudence that a provision of the Pennsylvania Constitution may, in appropriate circumstances, provide broader protections than are afforded by its federal counterpart.

Id. at 611.

24. The rights of free expression and free association are fundamental rights. *See Schneider v. New Jersey*, 308 U.S. 147, 161 (1939); *Working Families Party*, 169 A.3d at 1260.

25. In *Working Families Party*, the Commonwealth Court analyzed, *inter alia*, whether the anti-fusion provisions of the Election Code violated the petitioners' speech and associational rights under Article I, Sections 7 and 20 of the Pennsylvania Constitution. *Working Families Party*, 169 A.3d at 1260-64. In

so doing, the Commonwealth Court relied upon the model set forth in *Timmons v. Twin Cities Area New Party*, 520 U.S. 351 (1997).²³ *Id.* at 1260-62. The Commonwealth Court concluded that in deciding whether speech and associational rights have been violated, “we weigh the character and magnitude of the burden imposed by the provisions against the interests proffered to justify that burden.” *Id.* at 1260. Quoting the United States Supreme Court in *Timmons*, the Commonwealth Court observed that “regulations imposing severe burdens on plaintiffs’ rights must be narrowly tailored and advance a compelling state interest. Lesser burdens, however, trigger less exacting review, and a [s]tate’s ‘important regulatory interests’ will usually be enough to justify ‘reasonable, nondiscriminatory restrictions.’” *Id.* at 1262 (quoting *Timmons*, 520 U.S. at 358).

26. The Pennsylvania Supreme Court has acknowledged that the United States Supreme Court has “consistently recognized that retaliation by public officials against the exercise of First Amendment rights is itself a violation of the First Amendment.” *Uniontown Newspapers, Inc. v. Roberts*, 839 A.2d 185, 198 (Pa. 2003) (quoting *McBride v. Village of Michiana*, 100 F.3d 457, 460-61 (6th Cir. 1996), *abrogated on other grounds as recognized by Fritz v. Charter Twp. of Comstock*, 592 F.3d 718, 724-25 (6th Cir. 2010)). In *Uniontown Newspapers*, the Pennsylvania Supreme Court held:

To prove a claim of retaliation, a plaintiff must establish: (1) the plaintiff was engaged in a constitutionally protected activity; (2) the defendant’s action caused the plaintiff to suffer an injury that would likely chill a person of ordinary firmness from continuing to engage in

²³ In *Working Families Party*, the Commonwealth Court determined that the petitioners had failed to perform the *Edmunds* analysis. *Working Families Party*, 169 A.3d at 1262 n.25.

that activity; and (3) the adverse action was motivated at least in part as a response to the exercise of the plaintiff's constitutional rights.

Id.

27. No Pennsylvania courts have analyzed a partisan gerrymandering challenge to congressional districts under Article I, Sections 7 and 20 of the Pennsylvania Constitution.

28. A majority of the United States Supreme Court Justices have not analyzed a partisan gerrymandering challenge to congressional districts under the First Amendment to the United States Constitution.

29. The 2011 Plan does not preclude Petitioners from freely associating with a political party or a candidate, nor does it preclude Petitioners from exercising their right to vote for the candidate of their choice.

30. What Petitioners seek in Count I is in essence a declaration, in the name of free speech and association, that under Article I, Sections 7 and 20 of the Pennsylvania Constitution, Petitioners are entitled to a nonpartisan, neutral redistricting process free of any and all partisan considerations. Such a right is not apparent in the Pennsylvania Constitution or in the history of gerrymandering decisions in Pennsylvania and throughout the country.

31. Moreover, as courts have uniformly recognized that partisanship can and does play a role in congressional reapportionment cases, particularly in a state, like Pennsylvania, that leaves the process in the control of a partisan state legislature, Petitioners, in order to prevail, must articulate a judicially manageable standard by which a court can determine that partisanship crossed the line into an unconstitutional infringement on Petitioners' free speech and associational rights. *See Holt*, 38 A.3d at 745; *see also Vieth*, 541 U.S. at 315

(Kennedy, J., concurring) (“Of course, all this depends first on courts’ [sic] having available a manageable standard by which to measure the effect of the apportionment and so to conclude that the State did impose a burden or restriction on the rights of a party’s voters.”). Petitioners have not presented a judicially manageable standard.

32. Assuming a free speech and association retaliation claim is cognizable under the Pennsylvania Constitution with respect to political gerrymandering claims, to maintain the action Petitioners bear the burden of proving: (1) that Petitioners were “engaged in a constitutionally protected activity”; (2) that the General Assembly caused Petitioners “to suffer an injury that would likely chill a person of ordinary firmness from continuing to engage in that activity”; and (3) that “the adverse action was motivated at least in part as a response to the exercise of” Petitioners’ constitutional rights. *Uniontown Newspapers*, 839 A.2d at 198.

33. Of these elements, Petitioners satisfy the first.

34. With respect to the second element, Petitioners all continue to participate in the political process. Indeed, they have voted in congressional races since the implementation of the 2011 Plan. The Court assumes that each Petitioner is a “person of [at least] ordinary firmness.” Accordingly, Petitioners have failed to prove the second element of their claim.

35. With respect to the third element, Petitioners have similarly failed to adduce evidence that the General Assembly passed the 2011 Plan with any motive to retaliate against Petitioners (or others who voted for Democratic candidates in any particular election) for exercising their right to vote.

36. Intent to favor one party's candidates over another should not be conflated with motive to retaliate against voters for casting their votes for a particular candidate in a prior election. There is no record evidence to suggest that in voting for the 2011 Plan, the General Assembly, or any particular member thereof, was motivated by a desire to punish or retaliate against Pennsylvanians who voted for Democratic candidates. Indeed, it is difficult to assign a singular and dastardly motive to a branch of government made up of 253 individual members elected from distinct districts with distinct constituencies and divided party affiliations.

37. On final passage of the 2011 Plan in the PA House, of the 197 members voting, 136 voted in the affirmative, with some Republican members voting in the negative and 36 Democratic members voting in the affirmative. Given the negative Republican votes, the 2011 Plan would not have passed the PA House without Democratic support. The fact that some Democrats voted in favor of the 2011 Plan further militates against a finding or conclusion that the General Assembly passed the 2011 Plan, in whole or in part, as a response to actual votes cast by Democrats in prior elections.

38. Based on the evidence presented and the current state of the law, Petitioners have failed to meet their burden of proving that the 2011 Plan clearly, plainly, and palpably violates Petitioners' rights under Article I, Sections 7 and 20 of the Pennsylvania Constitution.

**E. Equal Protection Guarantee and Free and
Equal Elections Clause
(Count II)**

39. Article I, Section 5 of the Pennsylvania Constitution, which is commonly referred to as 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.”

40. The Pennsylvania Supreme Court has defined the Free and Equal Elections Clause as follows:

“[E]lections are free and equal within the meaning of the Constitution when they are public and open to all qualified electors alike; when every voter has the same right as any other voter; when each voter under the law has the right to cast his ballot and have it honestly counted; when the regulation of the right to exercise the franchise does not deny the franchise itself, . . . and when no constitutional right of the qualified elector is subverted or denied him.”

1991 Reapportionment, 609 A.2d at 142 (alteration and omission in original) (quoting *City Council of City of Bethlehem v. Marcincin*, 515 A.2d 1320, 1323 (Pa. 1986)).

41. In the context of partisan gerrymandering, the Free and Equal Elections Clause provides no greater protection than the United States Constitution’s Equal Protection Clause, and the Pennsylvania Supreme Court has considered claims brought under the Free and Equal Elections Clause and the equal protection provisions of Article I, Sections 1 and 26 of the Pennsylvania Constitution using the same standard. *See Erfer*, 794 A.2d at 332 (“[W]e reject Petitioners’ claim that the Pennsylvania Constitution’s free and equal elections clause provides further protection to the right to vote than does the Equal Protection Clause.”).

42. Article I, Section 1 of the Pennsylvania Constitution provides: “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.”

43. Article I, Section 26 of the Pennsylvania Constitution provides: “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.”

44. Article I, Sections 1 and 26 of the Pennsylvania Constitution together constitute what is commonly referred to as the equal protection guarantee (Equal Protection Guarantee).

45. In the context of partisan gerrymandering, the Pennsylvania Supreme Court has stated that the Equal Protection Guarantee is coterminous with the Equal Protection Clause of the Fourteenth Amendment to the United States Constitution. *Erfer*, 794 A.2d at 332 (citing *Love v. Borough of Stroudsburg*, 597 A.2d 1137, 1139 (Pa. 1991)). This holding is consistent with decades of Pennsylvania Supreme Court precedent holding that the “equal protection provisions of the Pennsylvania Constitution are analyzed . . . under the same standards used by the United States Supreme Court when reviewing equal protection claims under the Fourteenth Amendment to the United States Constitution.” *Love*, 597 A.2d at 1139; see *Commonwealth v. Albert*, 758 A.2d 1149, 1151 (Pa. 2000) (recognizing Pennsylvania Supreme Court’s holding that equal protection provisions under Pennsylvania Constitution and United States Constitution are analyzed using same standards); *James v. Se. Pa. Transp. Auth.*, 477 A.2d 1302, 1305 (Pa. 1984) (noting that claims made under Fourteenth Amendment to United States Constitution and Article I, Section 26 of Pennsylvania Constitution “are in essence the same”); *Laudenberger v. Port Auth.*

of *Allegheny Cty.*, 436 A.2d 147, 155 n.13 (Pa. 1981) (stating that equal protection claims under United States Constitution and Pennsylvania Constitution “may be reviewed simultaneously, for the meaning and purpose of the two are sufficiently similar to warrant like treatment”), *appeal dismissed*, 456 U.S. 940 (1982); *Baltimore & Ohio R.R. Co. v. Commonwealth.*, 334 A.2d 636, 643 (Pa.) (stating that equal protection under Pennsylvania Constitution and United States Constitution “may be considered together, for the content of the two provisions is not significantly different”), *appeal dismissed*, 423 U.S. 806 (1975). Since *Erfer*, Pennsylvania courts have continued to uphold the Pennsylvania Supreme Court’s precedent regarding the coterminous nature of the Equal Protection Guarantee and the Equal Protection Clause of the Fourteenth Amendment to the United States Constitution. See *Kramer v. Workers’ Comp. Appeal Bd. (Rite Aid Corp.)*, 883 A.2d 518, 532 (Pa. 2005); *Zauflik v. Pennsbury Sch. Dist.*, 72 A.3d 773, 789 n.24 (Pa. Cmwlth. 2013), *aff’d*, 104 A.3d 1096 (Pa. 2014); *Doe v. Miller*, 886 A.2d 310, 314 n.9 (Pa. Cmwlth. 2005), *aff’d*, 901 A.2d 495 (Pa. 2006).

46. In *1991 Reapportionment*, the Pennsylvania Supreme Court adopted the three-part test set forth by the *Bandemer* plurality as a means to establish a prima facie case of partisan gerrymandering. *1991 Reapportionment*, 609 A.2d at 142.

47. In *Erfer*, the Pennsylvania Supreme Court noted that in determining whether a specific legislation constituted a partisan gerrymander in violation of the Pennsylvania Constitution, the Pennsylvania Supreme Court would “continue the precedent enunciated in *1991 Reapportionment* and apply the test set forth by the *Bandemer* plurality.” *Erfer*, 794 A.2d at 331-32. By “carefully parsing out the plurality’s language,” the Pennsylvania Supreme Court identified

“a simple . . . recitation of the test.” *Id.* at 332. “[A] plaintiff raising a gerrymandering claim must establish that there was intentional discrimination against an identifiable political group and that there was an actual discriminatory effect on that group.” *Id.* In order to establish discriminatory effect, the plaintiff must show: (1) “that the identifiable group has been, or is projected to be, disadvantaged at the polls”; and (2) “that by being disadvantaged at the polls, the identifiable group will ‘lack . . . political power and [be denied] fair representation.’” *Id.* (omission and alteration in original) (quoting *Bandemer*, 478 U.S. at 139).

48. In *Vieth*, a majority of the United States Supreme Court Justices concluded that the test developed by the *Bandemer* plurality was misguided and unworkable. *Vieth*, 541 U.S. at 283-84 (plurality opinion); *id.* at 307-08 (Kennedy, J., concurring). As a result, the *Bandemer* plurality test is no longer used to determine whether a partisan gerrymander violates the Equal Protection Clause of the Fourteenth Amendment to the United States Constitution. *See Common Cause v. Rucho*, 240 F. Supp. 3d 376, 387 (M.D.N.C. 2017) (concluding “the effects test proposed by the *Bandemer* plurality is unworkable, and, therefore, no longer controlling”); *Whitford*, 218 F. Supp. 3d at 877 (holding that, as a result of *Vieth*, “the *specific test* for political gerrymandering set forth in *Bandemer* no longer is good law”).

49. While *Erfer* may have been abrogated by the decision of a majority of the United States Supreme Court Justices in *Vieth*, there is no Pennsylvania Supreme Court precedent that specifically abandons the principles set forth in *Erfer*. As *Erfer* is the only Pennsylvania authority that has been developed to evaluate whether a specific congressional redistricting plan is an

unconstitutional partisan gerrymander under the Equal Protection Guarantee of the Pennsylvania Constitution, this Court will apply the *Erfer* test to the facts of this case.

50. Intentional discrimination is “not . . . difficult to show since ‘[a]s long as redistricting is done by a legislature, it should not be very difficult to prove that the likely political consequences of the reapportionment were intended.’” *Erfer*, 794 A.2d at 332 (quoting *Bandemer*, 478 U.S. at 129).

51. In light of the standard articulated in *Erfer*, and based on the evidence adduced at trial, Petitioners have established intentional discrimination, in that the 2011 Plan was intentionally drawn so as to grant Republican candidates an advantage in certain districts within the Commonwealth.

52. Although the 2011 Plan was drawn to give Republican candidates an advantage in certain districts within the Commonwealth, Petitioners have failed to meet their burden of showing that the 2011 Plan equated to intentional discrimination against an identifiable political group.

53. Voters who are likely to vote Democratic (or Republican) in a particular district based on the candidates or issues, regardless of the voters’ political affiliation, are not an identifiable political group for purposes of the Equal Protection Guarantee under the Pennsylvania Constitution.

54. Even assuming, however, that Petitioners satisfy the first prong of the *Erfer/Bandemer* test, Petitioners must also show that the 2011 Plan works an actual discriminatory effect by showing: (1) “that the identifiable group has been, or is projected to be, disadvantaged at the polls”; and (2) “that by being disadvantaged at the polls, the identifiable group will ‘lack . . . political power and [be denied] fair representation.’” *Erfer*, 794 A.2d at 332 (omission and alteration

in original) (quoting *Bandemer*, 478 U.S. at 139). With respect to the latter, Petitioners must establish that they have “effectively been shut out of the political process.” *Id.* at 334.

55. This second prong is “unquestionably an onerous standard,” in recognition of the state legislature’s prerogative to craft congressional reapportionment plans. *Id.* at 333-34.

56. Petitioners have failed to meet their burden under the second *Erfer* prong for the following reasons:

a. While Petitioners contend that Republican candidates who prevail in congressional districts do not represent their particular views on issues important to them and will effectively ignore them, the Court refuses to make such a broad finding based on Petitioners’ feelings. There is no constitutional provision that creates a right in voters to their elected official of choice. As a matter of law, an elected member of Congress represents his or her district in its entirety, even those within the district who do not share his or her views. This Court will not presume that members of Congress represent only a portion of their constituents simply because some constituents have different priorities and views on controversial issues.

b. At least 3 of the 18 congressional districts in the 2011 Plan are safe Democratic seats. *See Erfer*, 794 A.2d at 334.

c. Petitioners can, and still do, campaign for, financially support, and vote for their candidate of choice in every congressional election.

d. Petitioners can still exercise their right to protest and attempt to influence public opinion in their congressional district and throughout the Commonwealth.

e. Perhaps most importantly, Petitioners and likeminded voters from across the Commonwealth can exercise their political power at the polls to elect legislators and a Governor who will address and remedy any unfairness in the 2011 Plan through the next reapportionment following the 2020 U.S. Census.

57. Based on the evidence presented and the current state of the law, Petitioners have failed to meet their burden of proving that the 2011 Plan clearly, plainly, and palpably violates Petitioners' rights under the Free and Equal Elections Clause and Equal Protection Guarantee of the Pennsylvania Constitution.

F. Summary of Key Findings and Conclusions

58. Petitioners have established by a preponderance of the evidence that partisan considerations are evident in the enacted 2011 Plan, such that the 2011 Plan overall favors Republican Party candidates in certain congressional districts.

59. Petitioners have established by a preponderance of the evidence that Republican candidates have consistently won 13 out of 18 congressional seats in every congressional election under the 2011 Plan.

60. Petitioners have established by a preponderance of the evidence that by using neutral, or nonpartisan, criteria *only*, it is possible to draw alternative maps that are not as favorable to Republican candidates as is the 2011 Plan.

61. While Petitioners characterize the level of partisanship evident in the 2011 Plan as "excessive" and "unfair," Petitioners have not articulated a

judicially manageable standard by which this Court can discern whether the 2011 Plan crosses the line between permissible partisan considerations and unconstitutional partisan gerrymandering under the Pennsylvania Constitution.²⁴

62. Petitioners do not contend that the 2011 Plan fails to comply with all provisions of the United States and Pennsylvania Constitutions specifically applicable to congressional reapportionment.

63. A lot can and has been said about the 2011 Plan, much of which is unflattering and yet justified.

64. Petitioners, however, have failed to meet their burden of proving that the 2011 Plan, as a piece of legislation, clearly, plainly, and palpably violates the Pennsylvania Constitution. For the judiciary, this should be the end of the inquiry.

65. The Court based its conclusions of law on the evidence presented and the current state of the law. Pending before the United States Supreme Court are *Gill* and *Benisek v. Lamone* (U.S. Supreme Court, No. 17-333, jurisdictional statement filed September 1, 2017). In *Gill*, the United States Supreme Court is considering the merits of a split three-judge panel decision by the United States District Court for the Western District of Wisconsin, declaring that the legislatively enacted redistricting plan for state legislative districts violates the

²⁴ Some unanswered questions that arise based on Petitioners' presentation include: (1) what is a constitutionally permissible efficiency gap; (2) how many districts must be competitive in order for a plan to pass constitutional muster (realizing that a competitive district would result in a skewed efficiency gap); (3) how is a "competitive" district defined; (4) how is a "fair" district defined; and (5) must a plan guarantee a minimum number of congressional seats in favor of one party or another to be constitutional.

First and Fourteenth Amendments to the United States Constitution.²⁵ In *Benisek*, the United States Supreme Court is considering the merits of a split three-judge panel decision by the United States District Court for Maryland, a political gerrymandering case raising claims under the First Amendment to the United States Constitution, including a claim of retaliation.

Respectfully submitted,



P. Kevin Brobson, Judge
Commonwealth Court of Pennsylvania

²⁵ By opinion dated June 19, 2017, a divided Supreme Court stayed the district court's judgment in *Whitford*, pending its disposition of the appeal. *Gill*, ___ U.S. ___, 137 S. Ct. 2289 (2017).

Exhibit "A"

Exhibits Admitted into Evidence at Trial Without Objection

Exhibit No.	Description
Petitioners' Ex. 2	Jowei Chen, Ph.D. - Curriculum Vitae
Petitioners' Ex. 3	Chart: Example of a Simulated Districting Plan from Simulation Set 1 (Adhering to Traditional Districting Criteria) [Figure 1 of Chen Report]
Petitioners' Ex. 4	Chart: County and Municipality Splits of 500 Simulated Plans Following Only Traditional Districting Criteria (No Consideration of Incumbent Protection) [Figure 3 of Chen Report]
Petitioners' Ex. 5	Chart: Compactness of 500 Simulated Plans Following Only Traditional Districting Criteria (No Consideration of Incumbent Protection) [Figure 4 of Chen Report]
Petitioners' Ex. 6	Chart: Partisan Breakdown of 500 Simulated Plans Following Only Traditional Districting Criteria [Figure 2 of Chen Report]
Petitioners' Ex. 7	Chart: Example of a Simulated Districting Plan from Simulation Set 2 (Adhering to Traditional Districting Criteria and Protecting 17 Incumbents) [Figure 1A of Chen Report]
Petitioners' Ex. 8	Chart: County and Municipality Splits of 500 Simulated Plans Following Traditional Districting Criteria and Protecting 17 incumbents [Figure 6 of Chen Report]
Petitioners' Ex. 9	Chart: Compactness of 500 Simulated Plans Following Traditional Districting Criteria and Protecting 17 Incumbents [Figure 7 to Chen Report]
Petitioners' Ex. 10	Chart: Partisan Breakdown of 500 Simulated Plans Following Traditional Districting Criteria and Protecting 17 Incumbents [Figure 8 of Chen Report]
Petitioners' Ex. 11	Table: Paired Incumbents under Simulation Set 2 (Simulations Protecting 17 of 19 Incumbents While Following Traditional Districting Criteria) [Table 3 to Chen Report]
Petitioners' Ex. 12	Table: Summary of Two Sets of Simulated Districting Plans and Enacted Act 131 Plan [Table 1 of Chen Report]
Petitioners' Ex. 13	Racial and ethnic composition of each of the 18 Congressional Districts in Pennsylvania's current enacted congressional plan [Appendix A of Chen Report]
Petitioners' Ex. 14	Racial and ethnic composition of each of the 19 Congressional Districts in the 2002 Congressional Plan [Appendix B of Chen Report]

Petitioners' Ex. 15	Chart: Partisan Breakdown of 205 Simulated Plans Following Only Traditional Districting Criteria (No Incumbent Protection) Containing One District with Black VAP over 56.8% and 54 Simulated Plans Following Traditional Directing Criteria and Protecting 17 Incumbents Containing One District with Black VAP over 56.8% [Figure 10 of Chen Report]
Petitioners' Ex. 16	Chart: Mean-Median Gap of 500 Simulated Plans Following Only Traditional Districting Criteria (No Consideration of Incumbent Protection) [Figure 5 of Chen Report]
Petitioners' Ex. 17	Chart: Mean-Median Gap of 500 Simulated Plans Following Traditional Districting Criteria and Protecting 17 Incumbents [Figure 9 of Chen Report]
Petitioners' Ex. 18	Table: Petitioners' Districts in Act 131 and in Simulation Sets 1 and 2 Districting Plans Percent of Simulated Plans Placing Petitioner into a Democratic District [Table 4 of Chen Report]
Petitioners' Ex. 19	Chart: Partisan Breakdown Using 2012-2016 Elections Data of 500 Simulated Plans Following Only Traditional Districting Criteria (No Consideration of Incumbent Protection) and 205 Simulated Plans Following Only Traditional Districting Criteria (No Incumbent Protection) and Containing One District with Black VAP over 56.8% [Figure C1 of Chen Report]
Petitioners' Ex. 20	Chart: Partisan Breakdown Using 2012-2016 Elections Data of 500 Simulated Plans Following Traditional Districting Criteria and Protecting 17 Incumbents and 54 Simulated Plans Following Traditional Districting Criteria and Protecting 17 Incumbents Containing One District with Black VAP over 56.8% [Figure C2 of Chen Report]
Petitioners' Ex. 25	Chen & Chen Replication Code
Petitioners' Ex. 26	Chen & Cottrell Replication Code
Petitioners' Ex. 34	Analysis of McCarty PVI Data
Petitioners' Ex. 35	Expert Report of Christopher Warshaw, Ph.D.
Petitioners' Ex. 36	Christopher Warshaw, Ph.D. - Curriculum Vitae
Petitioners' Ex. 37	Chart - Distribution of Efficiency Gaps in States with More than 6 Seats: 1972-2016 (Figure 1 to Warshaw Report)
Petitioners' Ex. 38	Chart - Historical Trajectory of the Efficiency Gap (Figure 2 to Warshaw Report)
Petitioners' Ex. 39	Chart - Durability of Efficiency Gap. (Figure 3 to Warshaw

	Report)
Petitioners' Ex. 40	Chart - Historical Trajectory of the Efficiency Gap in Pennsylvania (Figure 4 to Warshaw Report)
Petitioners' Ex. 41	Table - Results in 2012 Pennsylvania Congressional Elections (Table 1 to Warshaw Report)
Petitioners' Ex. 42	Chart - Efficiency Gap in Pennsylvania Relative to Other States (Figure 5 to Warshaw Report)
Petitioners' Ex. 43	Chart - Difference in the Proportion of the Time that Members of Each Party Vote Conservatively (Figure 6 to Warshaw Report)
Petitioners' Ex. 44	Chart - The Average Ideology of Members of Each Party (Figure 7 to Warshaw Report)
Petitioners' Ex. 45	Chart - The Growth in Polarization Between Members of the Two Parties (Figure 8 to Warshaw Report)
Petitioners' Ex. 46	Chart - Polarization Among Pennsylvania Representatives (Figure 9 to Warshaw Report)
Petitioners' Ex. 47	Chart - Proportion of Non-Unanimous Votes Where Representatives from Pennsylvania Vote Together (Figure 10 to Warshaw Report)
Petitioners' Ex. 48	Table - Polarization in Pennsylvania's Delegation: The Percentage of Time PA Representatives Vote with a Majority of Their Party on All Votes and Non- Unanimous Votes (Table 2 to Warshaw Report)
Petitioners' Ex. 49	Table - Effect of Efficiency Gap on Average Legislator Ideology in Each State (Table 3 to Warshaw Report)
Petitioners' Ex. 50	Chart - Association Between Efficiency Gap and the Congruence Between Public Opinion and Legislators' ACA Repeal Vote (Figure 11 to Warshaw Report)
Petitioners' Ex. 51	Chart - Association Between Efficiency Gap and Citizens' Trust in Their Representative in Congress (Figure 12 to Warshaw Report)
Petitioners' Ex. 52	Chart - Validation of the Efficiency Gap Measure (Figure A1 to Warshaw Report)
Petitioners' Ex. 53	Expert Report of John J. Kennedy, Ph.D.
Petitioners' Ex. 54	John J. Kennedy, Ph.D. - Curriculum Vitae
Petitioners' Ex. 56	Table - Split Counties and Municipalities by Decade [Table B to Kennedy Report]
Petitioners' Ex. 57	Table - Number of Municipalities Split at the Block Level by Decade [Table C to Kennedy Report]

Petitioners' Ex. 68	Map – Pennsylvania Congressional Districts (Current Map) [Map 6 to Kennedy Report]
Petitioners' Ex. 70	Map – 1 st Congressional District (red/blue)
Petitioners' Ex. 73	Map – 3 rd Congressional District (red/blue)
Petitioners' Ex. 75	Map – 4 th Congressional District (red/blue)
Petitioners' Ex. 78	Map – 6 th Congressional District (red/blue)
Petitioners' Ex. 81	Map – Pennsylvania 7 th District (Creed's Seafood and Steak House)
Petitioners' Ex. 82	Map – Pennsylvania 7 th District (Brandywine Hospital)
Petitioners' Ex. 83	Map – 7 th Congressional District (red/blue)
Petitioners' Ex. 93	Map – 14 th Congressional District (red/blue)
Petitioners' Ex. 95	Map – 15 th Congressional District (red/blue)
Petitioners' Ex. 97	Map – 16 th Congressional District (red/blue)
Petitioners' Ex. 99	Map – 16 th Congressional District (Reed's Mulch Products and Degler's Service Center)
Petitioners' Ex. 102	Map – 17 th Congressional District (red/blue)
Petitioners' Ex. 117	Expert Report of Wesley Pegden, Ph.D.
Petitioners' Ex. 118	Wesley Pegden, Ph.D. - Curriculum Vitae (Exhibit A to Pegden Report)
Petitioners' Ex. 119	Article – Chikina, Maria et al. “Assessing significance in a Markov chain without mixing” (Exhibit B to Pegden Report)
Petitioners' Ex. 121	Figure 2 to Pegden Report
Petitioners' Ex. 122	Table (page 8 of Pegden Report)
Petitioners' Ex. 123	Pegden Theorem
Petitioners' Ex. 162	McCarty PVI Estimation Errors in Simulated Districts
Petitioners' Ex. 163	Designations from the Deposition of Carmen Febo San Miguel

Petitioners' Ex. 164	Designations from the Deposition of Donald Lancaster
Petitioners' Ex. 165	Designations from the Deposition of Gretchen Brandt
Petitioners' Ex. 166	Designations from the Deposition of John Capowski
Petitioners' Ex. 167	Designations from the Deposition of Jordi Comas
Petitioners' Ex. 168	Designations from the Deposition of John Greiner
Petitioners' Ex. 169	Designations from the Deposition of James Solomon
Petitioners' Ex. 170	Designations from the Deposition of Lisa Isaacs
Petitioners' Ex. 171	Designations from the Deposition of Lorraine Petrosky
Petitioners' Ex. 172	Designations from the Deposition of Mark Lichty
Petitioners' Ex. 173	Designations from the Deposition of Priscilla McNulty
Petitioners' Ex. 174	Designations from the Deposition of Richard Mantell
Petitioners' Ex. 175	Designations from the Deposition of Robert McKinstry
Petitioners' Ex. 176	Designations from the Deposition of Robert Smith
Petitioners' Ex. 177	Designations from the Deposition of Thomas Ulrich
Petitioners' Ex. 178	Designations from the Trial Testimony of State Senator Andrew E. Dinniman in the <i>Agre</i> case
Petitioners' Ex. 179	Designations from the Deposition of State Representative Gregory Vitali
Petitioners' Ex. 266	"Does Gerrymandering Cause Polarization?"
Legislative Respondents' Ex. 10	Wendy K. Tam Cho, Ph.D. CV
Legislative Respondents' Ex. 11	Wendy K. Tam Cho, Ph.D. Expert Report
Legislative Respondents' Ex.	Wendy K. Tam Cho, Ph.D. Report – Figures and Tables

12	
Legislative Respondents' Ex. 16	Nolan McCarty, Ph.D. CV
Legislative Respondents' Ex. 17	Nolan McCarty, Ph.D. Expert Report
Legislative Respondents' Ex. 18	Nolan McCarty, Ph.D. Figures and Tables
Legislative Respondents' Ex. 19	Senate Dem. Congressional Plan Map
Lt. Governor Stack's Ex. 11	Affidavit of Lt. Governor Stack
Lt. Governor Stack's Ex. 12	Untitled Document [ADMITTED FOR ILLUSTRATIVE PURPOSES ONLY]
Governor Wolf, Acting Secretary Torres, and Commissioner Marks' Ex. 2	Affidavit of Commissioner Marks
Intervenors' Ex. 2	Voter Registration Statistics
Intervenors' Ex. 16	Affidavit of Intervenor Witness Thomas Whitehead
Intervenors' Ex. 17	Affidavit of Intervenor Witness Carol Lynne Ryan

Exhibit "B"

Exhibits Entered into Evidence at Trial
Upon Stipulation of the Parties
(Attached to Joint Stipulation of Facts Filed 12/8/17)

Exhibit No.	Description
Joint Exhibit 1	SB 1249, PN 1520 (Form of Bill as introduced to the PA Senate on September 14, 2011)
Joint Exhibit 2	SB 1249, PN 1862 (Form of Bill as amended on December 14, 2011 in the PA Senate State Government Committee)
Joint Exhibit 3	SB 1249, PN 1869 (Form of Bill as rewritten in the PA Senate Appropriations Committee on December 14, 2011)
Joint Exhibit 4	SB 1249, PN 1869 (Form of Bill as reported out by the PA House Appropriations Committee on December 20, 2011)
Joint Exhibit 5	2011 Plan
Joint Exhibit 6	Map of the 1 st Congressional District
Joint Exhibit 7	Map of the 2 nd Congressional District
Joint Exhibit 8	Map of the 3 rd Congressional District
Joint Exhibit 9	Map of the 4 th Congressional District
Joint Exhibit 10	Map of the 5 th Congressional District
Joint Exhibit 11	Map of the 6 th Congressional District
Joint Exhibit 12	Map of the 7 th Congressional District
Joint Exhibit 13	Map of the 8 th Congressional District
Joint Exhibit 14	Map of the 9 th Congressional District
Joint Exhibit 15	Map of the 10 th Congressional District
Joint Exhibit 16	Map of the 11 th Congressional District
Joint Exhibit 17	Map of the 12 th Congressional District

Joint Exhibit 18	Map of the 13 th Congressional District
Joint Exhibit 19	Map of the 14 th Congressional District
Joint Exhibit 20	Map of the 15 th Congressional District
Joint Exhibit 21	Map of the 16 th Congressional District
Joint Exhibit 22	Map of the 17 th Congressional District
Joint Exhibit 23	Map of the 18 th Congressional District
Joint Exhibit 24	The Evolution of Pennsylvania's 7 th District
Joint Exhibit 25	List of Representatives for Each Congressional District from 2005 to Present
Joint Exhibit 26	Pennsylvania Congressional District Maps for 1943, 1951, 1962, 1972, 1982, 1992, 2002, and 2011 from the Pennsylvania Manual