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IN THE THIRD JUDICIAL DISTRICT COURT
IN AND FOR SALT LAKE COUNTY, STATE OF UTAH

LEAGUE OF WOMEN VOTERS OF UTAH, MORMON WOMEN FOR ETHICAL GOVERNMENT, STEFANIE CONDIE, MALCOLM REID, VICTORIA REID, WENDY MARTIN, ELEANOR SUNDWALL, and JACK MARKMAN, Plaintiffs, v. UTAH STATE LEGISLATURE; UTAH LEGISLATIVE REDISTRICTING COMMITTEE; SENATOR SCOTT SANDALL, in his official capacity; REPRESENTATIVE MIKE SCHULTZ, in his official capacity; SENATOR J. STUART ADAMS, in his official capacity; and LIEUTENANT GOVERNOR DEIDRE HENDERSON, in her official capacity, Defendants.	**LEGISLATIVE DEFENDANTS' BRIEF IN SUPPORT OF 2025 CONGRESSIONAL PLAN AND OBJECTIONS TO PLAINTIFFS' PROPOSED MAPS** Case No.: 220901712 Honorable Dianna Gibson

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INTRODUCTION

The Legislature's 2025 Congressional Redistricting Plan complies with the provisions of Proposition 4 that this Court held apply to these remedial proceedings. To start, the Legislative Redistricting Committee far exceeded baseline compliance with each of Proposition 4's applicable requirements. It held two lengthy public hearings during which over fifty members of the public participated. The Committee then published five proposed plans for public comment for ten days; thousands of comments were received. And the Legislature's expert transparently applied credible, reliable, and industry-leading statistical methods to confirm that the maps neither purposefully nor unduly favor any political party.

Still dissatisfied, Plaintiffs propose two alternative congressional plans. They also want this Court to preliminarily enjoin S.B. 1011—the culmination of the Legislature's good-faith effort to define key (and vague) terms in Proposition 4, "determin[e] what judicial standards are applicable," and exercise its "discretion" to decide what constitutes "the 'best available data and scientific and statistical methods' to use in evaluating redistricting plans for compliance with state and federal law and the Proposition 4 redistricting standards." Doc. 470 (Op.) at 29.

Plaintiffs' plans do not satisfy the Legislature's chosen standards. At best, their plans are not as fair as the 2025 Plan and, at worst, their plans are themselves purposeful partisan gerrymanders. The forthcoming evidentiary hearing will confirm why the 2025 Plan is lawful and Plaintiffs' proposals are extreme partisan outliers.

BACKGROUND

I.   The Court enjoins the 2021 Congressional Plan.

Following a remand from the Utah Supreme Court, *League of Women Voters of Utah v. Utah State Legislature*, 2024 UT 21, ¶¶48-50, Plaintiffs moved for summary judgment on Count V of their complaint. Count V challenged S.B. 200 as violating the people's right to alter or reform the government by impairing the citizen initiative known as Proposition 4. The Court entered an order in August 2025 granting summary judgment to Plaintiffs. Op. at 69.

As a remedy, this Court enjoined the 2021 Congressional Map, H.B. 2004, calling it the "fruit" of S.B. 200's "unlawful repeal" of Proposition 4. The problem with the 2021 Congressional Map, according to the Court, was not its substance—which was "irrelevant." *Id.* at 73. Instead, the problem was that the map was "drawn independent of the mandatory redistricting standards and procedures" and the "redistricting *process* established by the people under Proposition 4," so it was an "extension of the very constitutional violation that tainted the process from the start." *Id.* at 71. The Court emphasized the "need for" the "mandatory, neutral, prioritized redistricting standards and procedures enacted under Proposition 4." *Id.* at 29. Compliance with those standards, in the Court's view, provided the "obvious defense against challenges that a map "unduly favor[s]" one party or another. *Id.* In short, because "Proposition 4's procedural requirements are so integral to the governmental reforms it put into place," any "map enacted in their absence is, itself, a violation of the people's right to alter and reform their government." *Id.* at 73.

Consistent with the Court's conclusion that Proposition 4 is for now the "law in Utah," *id.* at 68, the Court ordered the Legislature to "design and enact a remedial congressional

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redistricting map in conformity with Proposition 4's mandatory redistricting standards and requirements," *id.* at 76. Proposition 4 requires any redistricting plan adopted by the Legislature to be evaluated using "judicial standards and the best available data and scientific and statistical methods, including measures of partisan symmetry," to assess whether the plan complies with Proposition 4's standards. *See* Utah Code §20A-19-103(4). The Court confirmed that "the legislature retains discretion in determining what judicial standards are applicable" and "to determine the 'best available data and scientific and statistical methods' … given the general, non-specific nature of [Proposition 4's] language." Op. at 29-30.

A few days later, on August 28, Legislative Defendants asked the Court to clarify its order. *See* Doc. 476. They asked: (1) whether a new commission must be convened under Proposition 4; (2) whether the Legislature needs to take an up-or-down vote on the maps proposed by the commission in 2021 under S.B. 200; (3) whether the Legislature needs to comply with Proposition 4's requirement to issue a written report explaining why its alternative remedial map better satisfies Proposition 4 than the 2021 commission's recommendations under S.B. 200; (4) whether the Legislature must make its proposed remedial map available online for at least 10 calendar days before enacting it; (5) whether the Legislature must make the remedial map's data available; and (6) whether the Legislature may also submit objections to any maps proposed by Plaintiffs or any other third parties. The next morning, Plaintiffs stated their positions on each of Legislative Defendants' questions. *See* Doc. 486.

On August 29, the Court held a status conference, where it orally adopted each of Plaintiffs' proposed answers to Legislative Defendants' questions. It ordered that the Legislature did not need to convene a new commission, take an up-or-down vote on the 2021

commission's recommendations or a new commission's recommendations, or issue a report with reasons for rejecting a commission's recommendation. *See* Doc. 514 at 27:7-17. The court also adopted Plaintiffs' reading that the Legislature *does* need to make its map available online for at least 10 calendar days and make the underlying data available. Docs. 486, 506.

Before the status conference, Legislative Defendants moved the Court to stay the permanent injunction of H.B. 2004 pending remedial proceedings and appeals. *See* Doc. 482. On September 2, the Lieutenant Governor explained that a congressional map must be in place by November 10 to ensure that her office and the county clerks can conduct the 2026 election in an orderly fashion. *See* Doc. 494. Also on September 2, the Court denied the motion for stay. The Court acknowledged "the importance of legal issues and the consequential nature" of the permanent injunction. Doc. 496 at 2. The Court also recognized that the "timelines here are short," but said that redistricting has been accomplished in other states "under tighter timelines." *Id.* As examples, the Court referred to Texas and California. *Id.* Those and others, according to the Court, "suggest[]" that "there is time to redistrict and comply with Proposition 4." *Id.* And as the Court saw it, because the 2026 election was "more than a year away" and because election deadlines "can be moved without impacting the 2026 elections," it was "not impossible for the parties to have a final decision from the Utah Supreme Court in time for and without impacting the 2026 midterm elections." *Id.* at 3. The Court also stated that the 2026 election should proceed "with a lawful congressional plan designed in compliance with Proposition 4's traditional redistricting standards and its prohibition on partisan gerrymandering." *Id.*

The parties stipulated by motion to the following schedule for the remedial proceedings, and the court adopted it by order. *See* Docs. 500, 506. By September 25, the Legislature would publish its proposed alternative map. Between September 26 and October 5, the Legislature would make the proposed alternative map available for public comment. By October 6, the Legislature would enact the proposed alternative map and submit it to the Court. If Plaintiffs chose to submit their own proposed map, they would do so also by October 6. The parties would then submit supporting briefs, objections, and expert reports by October 17, and this Court would hold an evidentiary hearing on the alternative map(s) on October 23/24. By October 28, the parties would submit proposed findings of fact and conclusions of law.[1]

II.   The Legislature enacts the 2025 Plan.

Following the Court's order and clarification, the Legislative Redistricting Committee began the redistricting process.

A. The Legislative Redistricting Committee holds a public hearing on September 22.

The Legislative Redistricting Committee held its first public hearing on Monday, September 22, at 9:00 AM. The meeting was open to the public and livestreamed on the Legislature's website. *See* Utah State Legislature, Legis. Redistricting comm. Meeting (Sept. 22, 2025), https://bit.ly/3KS56yx.

At the meeting, Committee Chair Senator Scott Sandall noted that the committee met "in compliance with the court's orders and under protest." *Id.* at 1:04. But the Legislature "maintain[ed] its constitutional duty to produce a map." *Id.* Chair Sandall also clarified that

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[1] The Legislature also requested extraordinary relief from the Utah Supreme Court, which that Court denied. *See* 2025 UT 39.

unlike prior redistricting efforts, Proposition 4 prohibited the consideration of "any partisan data" when crafting a congressional map. *Id.* at 3:30-4:15. Chair Sandall asked staff to sort and remove any partisan comments in the public comment and forward to the committee only those that met the requirement of nonpartisan discussion.

Legislative staff then provided an update on the status of the ongoing litigation and an overview of the redistricting process. *Id.* at 7:47. They confirmed that districts would be drawn using the 2020 U.S. Census data. *Id.* at 12:24. Staff then presented the Proposition 4 standards, noting that the Legislature was required to follow these criteria to the "greatest extent practicable" in the following order of priority: (a) adhering to federal law and achieving equal population between districts; (b) minimizing the division of municipalities and counties in the formation of districts; (c) creating geographically compact districts; (d) making districts contiguous and allow for efficient transportation throughout the district; (e) preserving traditional neighborhoods and communities of interest; (f) following natural and geographic features; and (g) maximizing boundary agreement among different types of electoral and government districts. *See* Utah Code §20A-19-103(3)(a)-(g).

Staff also clarified that Proposition 4 prohibited the dividing of districts "in a manner that purposefully or unduly favors or disfavors any incumbent, elected official, candidate or prospective candidate for elective office, or any political party." *Id.* §20A-19-103(4); Legis. Redistricting Comm. Meeting (Sept. 22, 2025) https://bit.ly/3KS56yx, at 28:41. This provision's plain text applies to both a map drawer's intent ("purposefully") and a map's result ("unduly"). *Id.* Partisan political data could be taken into account only on the "back end" analysis of the map, not while drawing lines. Regarding those redistricting standards, the

Court's opinion said that the "statute itself provides some discretion in balancing competing interests and in making policy considerations." Op. at 28.

An attorney from the Office of Legal Research and General Counsel then explained that Proposition 4 requires evaluating a plan's compliance with redistricting criteria by using "judicial standards and the best available data and scientific and statistical methods, including measures of partisan symmetry … to assess whether a proposed redistricting plan abides by and conforms to" Proposition 4's redistricting standards. Utah Code §20A-19-103(4); Legis. Redistricting Comm. Meeting (Sept. 26, 2025), https://bit.ly/3KS56yx, at 31:57.

Quoting U.S. Supreme Court Justice Stevens, OLRGC defined the concept of "partisan symmetry" as requiring "that the electoral system treat similarly-situated parties equally, so that each receives the same fraction of legislative seats for a particular vote percentage as the other party would receive if it had received the same percentage." *LULAC v. Perry*, 548 U.S. 399, 466 (2006) (Stevens, J., concurring) (citation omitted). Put differently, "[u]nder symmetry, the question isn't whether the seat share is … proportional … to the vote share, it's whether if Party A gets [a certain] percent and has a vote outcome, if we flip the vote and Party B gets that same vote, do they also get the same outcome." Legis. Redistricting Comm. Meeting (Sept. 22, 2025) https://bit.ly/3KS56yx, at 34:50.

1. Senator Brammer presents his bill.

Senator Brady Brammer then presented a draft bill. It provided a statutory definition of Proposition 4's "partisan symmetry" test and standards to use to evaluate whether a map "purposefully or unduly favored" either party. *Id.* at 40:15. It also clarified that any "judicial

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review" of congressional redistricting plans should be based on the outcomes of the tests laid out in the bill.

The goal of the bill was to "facilitate" Proposition 4's reforms, given that the Court had "invited" the Legislature to define the standards for what counted as partisan symmetry. *Id.* at 45:37; *see* Op. at 29-30 (recognizing the legislature's discretion to "determin[e] what judicial standards are applicable").

Given that Proposition 4 specifically says "partisan symmetry"—the first time any state statute had done so—Senator Brammer's bill proposed a method for measuring partisan symmetry. Legis. Redistricting Comm. Meeting (Sept. 22, 2025) https://bit.ly/3KS56yx, at 44:20. He explained that the key principle behind partisan symmetry is that "the outcome of an election should be determined by the voters and not the map." *Id.* at 47:06. He emphasized this Court's statement that the Legislature has the authority to determine which methods to use. This would help provide "clarity for the courts." *Id.* at 43:22. "We are following what we see in the judge's order as something that would be helpful to the court." *Id.* at 43:50. The Legislature did that to "support exactly what Prop 4 says," which is "partisan symmetry." *Id.* Because of that, any judicial review of this provision should be governed by "rational basis," not "strict scrutiny," since it effectuates Proposition 4 rather than reforms it. *Id.* at 45:35.

Senator Brammer proposed assessing partisan symmetry using a method known as the "partisan bias test." He said the partisan bias test was used to "measure partisan symmetry by measuring lines of a district map and determining whether each party has a symmetrical opportunity to win a seat." *Id.* at 45:54. Votes are then "equalized to evaluate if lines of a district map are fair." The election used to determine bias is a hypothetical one, separate from the

actual outcome of the election. And the result demonstrates if the map is skewed to one party or another. The key principle, according to Sen. Brammer, is "the outcome of an election should be determined by the voters and not the map." *Id.* at 47:01. The test would help avoid "packing" and "cracking" of districts.

Senator Brammer said the "partisan bias test" is more accurate than other proposed standards of symmetry, such as the efficiency gap. Senator Escamilla (D-SD10), another committee member, said she "a hundred percent" agreed that the efficiency gap test was not applicable to a jurisdiction with fewer than six districts. *Id.* at 57:45. Senator Escamilla then said that there are additional measures of partisan symmetry, such as the mean-median difference and an ensemble analysis, which she included in her proposed amendment to Senator Brammer's bill. *Id.*; *see* Escamilla Proposed Amendment (Sept. 22, 2025), https://perma.cc/36KH-EH8X. Representative Doug Owens (D-HD33) similarly expressed concern about only having one test of partisan symmetry in the bill. *Id.* at 1:16:21.

2. Dr. Sean Trende discusses his work.

Dr. Sean Trende then spoke to the committee. He was retained as an expert for the ongoing litigation, and retained separately by the Legislature to assess maps. *Id.* at 1:33:00. Dr. Trende is an expert in political science, redistricting, and demographics. He is a Senior Elections Analyst for Real Clear Politics. Dr. Trende earned his undergraduate degree at Yale University, his Juris Doctor from Duke University, a Master's Degree in Political Science from Duke, a Master's Degree in Applied Statistics, and a Ph.D in Political Science from The Ohio State University.

Dr. Trende has served as an expert witness in numerous cases, and as a special master appointed by the Supreme Court of Virginia to redraw the districts for the Commonwealth's representatives to the House of Delegates, State Senate, and U.S. Congress for the next decade. Courts routinely find him credible and reliable as a witness. *See, e.g.*, *Szeliga v. Lamone*, 2022 WL 2132194 at *41 (Md. Cir. Ct. Mar. 25, 2022) (observing that Dr. Trende's "presentation was an example of a deliberate, multifaceted, and reliable presentation that this fact finder found and determined to be very powerful"); *Ala. State. Conf. of the NAACP v. Allen*, 2025 WL 2451166 at *58 (N.D. Ala. Aug. 22, 2025) ("[T]he Court finds Dr. Trende's testimony credible. The parties do not dispute his qualification as an expert, and he explained his methods and work clearly and consistently. The Court carefully observed Dr. Trende's demeanor during trial and found him to be candid …. Dr. Trende took care to limit his testimony to his expertise and not to overstate his conclusions.").

Dr. Trende began with Proposition 4's requirements for map drawing, the first of which is complying with federal law. The U.S. Constitution requires equalized populations for congressional districts. Legis. Redistricting Comm. Meeting (Sept. 22, 2025) https://bit.ly/3KS56yx, at 1:36:33. This equalized population requirement means Salt Lake County needs to be split because its population exceeds the maximum number of people who can make up a congressional district in Utah. *Id.* at 1:37:38.

Dr. Trende explained that "compactness" was another requirement, and that there are several ways to mathematically measure it. One is the Reock score, which in effect draws a circle around a district and asks what percentage of the circle the district would fill. *Id.* at 1:40:52. The lower the number, the less compact; the higher the number, approaching 1, the

more compact. Another method is the Polsby Popper score. *Id.* at 1:41:32. This method measures more closely the numbers of "arms" and "inlets" a district might have, which is often indicative of a gerrymandered district. *Id.* at 1:42:26. One downside of the Polsby Popper score, he said, is that it does not account for natural boundaries, which is one of Proposition 4's requirements for drawing district lines. *Id.* at 1:42:56. That means even if a district is drawn in accordance with a natural boundary—like a river—the Polsby Popper method may return a lower score, even though nothing suspicious occurred when drawing the district.

He also explained that his maps avoided drawing districts that crossed a major trafficway or would be shaped in such a way that it would be impossible for a representative to stay in her district when traveling to see all of her constituents. *Id.* at 1:45:55.

Another Proposition 4 requirement is that "communities of interest" be kept together. Utah Code §20A-19-103(3)(e). Dr. Trende noted that he identified "high-level, well-established communities of interest" he should account for when creating and evaluating maps. *Id.* at 1:48:35. This included keeping interstate corridors intact; keeping Native American reservations together and college campuses together; and separating military bases into separate districts to ensure each of Utah's members of Congress was incentivized to support the military. He also recognized that the political science literature considers cities and counties de facto communities of interest, so by keeping cities and counties together, that "communities of interest concept" is "hardwired" into Proposition 4's requirements. *Id.* at 1:48:54

Dr. Trende then explained the partisan symmetry requirement and the partisan bias test. Proposition 4, he explained, asked two questions: whether a map "purposefully" favors a partisan outcome, and whether it "unduly" does so. The "purpose" test asks "if you were

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drawing without any political data," would this map "look like what you would expect to produce?" Is this map "trying to help Republicans or trying to help Democrats?" *Id.* at 1:52:38.

Dr. Trende explained that the "standard-issue" way to determine whether a map "purposefully" favors a partisan outcome is by using computer simulations. He compared the maps he produced to simulation "ensembles," which are sets of maps generated by computers to conform with certain requirements, such as the Proposition 4 requirements. *Id.* at 1:53:00.

One of the ensemble sets he compared his maps to was produced by Dr. Christopher Kenny. *See* Algorithm-Assisted Redistricting Methodology (ALARM) Project, https://alarm-redist.org/. The ALARM project is directed by political scientists and researchers at Harvard and elsewhere, including Kosuke Imai, Christopher Kenny, Cory McCartan, and Tyler Simko (the "Harvard maps"). The group created a set of publicly available "50-State Redistricting Simulations." Each state has its own "ensemble of alternative redistricting plans" which are "tailored to its redistricting rules." *Id.* This allows the simulations to "directly account for the state's political geography and redistricting criteria." *Id.* The project generated 5,000 simulated plans for each state.

Dr. Trende compared the maps he drew to the Harvard Utah ensemble to ensure they conformed to the expected range of partisan outcomes. *See* ALARM Project, Utah Congressional Districts, https://alarm-redist.org/fifty-states/UT_cd_2020/. The Harvard ensemble was "drawn by a computer," leaving "no question" that no partisan intent was involved. Legis. Redistricting Comm. Meeting (Sept. 22, 2025) https://bit.ly/3KS56yx, at 1:53:43. So if Dr. Trende's maps yielded a partisan makeup similar to the Harvard set, then he concluded they

were not the product of improper partisan intent. But if the outcomes diverged from the Harvard set, then he concluded his maps were impermissibly biased. *Id.* at 1:53:49.

Dr. Trende also compared the proposed maps to two different ensembles, both of which he generated. *Id.* at 1:53:50. One set incorporated the first three Proposition 4 standards: compliance with federal law, minimized city and county splits, and geographic compactness. Utah Code §20A-19-103(3)(a)-(c). The other set required contiguous districts, the preservation of traditional neighborhoods and communities of interest, following natural and geographic features, and maximizing boundary agreement among different types of districts. *Id.* §20A-19-103(3)(d)-(g). In this second set, he incorporated these geographic concerns and removed the possibility of crossing mountain ranges without a road or rivers without a bridge and kept the Native American reservation intact. Legis. Redistricting Comm. Meeting (Sept. 22, 2025) https://bit.ly/3KS56yx, at 1:54:21. Each of his proposed maps fell within the acceptable range of partisan outcomes of both ensembles. *Id.* at 1:54:53.

Dr. Trende then compared the proposed maps to another set of simulations. He said that it was an "open question" whether simulation sets should include maps that would fail the partisan bias test—asymmetric maps—since those maps would be illegal under Utah law. *Id.* at 1:55:08. To account for this open question, he included only "culled" simulations in the second set of ensembles—in other words, only maps that complied with all Proposition 4 requirements.

Dr. Trende then evaluated each map using the "partisan bias test." He said that "partisan symmetry" was the "gold standard" for determining whether the outcome of a map favors one party or the other. *Id.* at 1:55:58. He described it as the "do unto others as you would

have them do unto you" standard. *Id.* at 1:56:18. Based on his experience, expertise, and the social science literature, he concluded that the "only test" that measures partisan symmetry is the partisan bias test. *Id.* at 1:57:05; *see also* Jonathan Katz, Gary King, and Elizabeth Rosenblatt, *Theoretical Foundations and Empirical Evaluations of Partisan Fairness in District-Based Democracies*, 114 Kam. Pol. Sci. Rev. 164, 164 (2020). And because Proposition 4's plain text requires "partisan symmetry," there is no "option to *not* include a partisan bias test." Legis. Redistricting Comm. Meeting (Sept. 22, 2025) https://bit.ly/3KS56yx, at 1:57:29.

Chair Sandall asked whether Dr. Trende had compared the Independent Redistricting Committee maps to the Proposition 4 standards. *Id.* at 2:00:44. Dr. Trende answered that all of them fail the partisan bias test and aren't as compact as they could be. Given that, none of them were "live options" under Proposition 4.

Dr. Trende then presented the Legislature's five proposed maps. He clarified that he evaluated all of them using the same techniques he had just described. *Id.* at 2:01:57. All of them fell within the acceptable range of partisan outcomes in the simulation analysis and passed the partisan bias test.

After Dr. Trende presented all of the maps, a committee staff member explained that the public could view and comment on the proposed maps at redistricting.utah.gov. This allowed the public to "view" and "comment" on maps and to create their own. Legis. Redistricting Comm. Meeting, Recording 2 (Sept. 22, 2025) https://bit.ly/3KS56yx, at 1:46.

Chair Sandall then opened the meeting for public comment. Thirty-eight members of the public commented on the proposed maps, both in person and over Zoom. The meeting was then adjourned.

B. The Legislative Redistricting Committee holds a second public hearing on September 24.

Two days later, on Wednesday, September 24, at 11:00 AM, the Legislative Redistricting Committee held another public meeting to review the proposed maps and allow for further public comment. Representative Candice Pierucci, a committee co-chair, noted that public comment would be taken into account when the committee determined which map to recommend to the full Legislature. Legis. Redistricting Comm. Meeting (Sept. 24, 2025), https://bit.ly/4n2xDyB, at 4:02.

Chair Pierucci then presented the Legislature's proposed maps for a second time and formally introduced them. All plans complied with the Proposition 4 standards, were drawn with no partisan intent, and passed the partisan bias test. *Id.* at 6:10.

The Chair then explained that the Legislature identified various communities of interest that it deemed important to keep together in any potential map, including the Uintah Basin, Tribal lands and reservations, and institutions of higher education. *Id.* at 11:27. And to get active support from multiple members of Congress, military installations should not all fall into one district. All those represented important communities and had a "nexus to the federal government," meaning that they mattered for occasions of work in partnership with the federal government. *Id.* at 11:49.

Senator Escamilla and Representative Owens then presented their own proposed map, alongside Dr. Daniel Magelby, whom they hired as their expert. *Id.* at 56:17. The proposed map was based on an old Independent Redistricting Commission Map, adjusted in an effort to comply with Proposition 4. *Id.* at 59:40. The map did not have equal population among the four proposed districts. Dr. Magelby said that could be fixed later. *Id.* The map also had 13

municipal splits and 4 county splits. *Id.* at 1:02:54; 1:39:57 (discussing the original amount of splits in the IRC map). The committee asked questions about the map and discussed Dr. Magelby's background. *Id.* at 1:13:20.

Multiple committee members asked about the number of city splits, since after following federal law, keeping cities and counties intact is Proposition 4's top priority. *Id.* at 1:12:27; 1:39:57; 1:42:07; 1:47:56. Dr. Magelby confirmed that the original IRC map had 13 city splits and 5 county splits, so the proposed map did not, in fact, reduce the number of city splits. *Id.* at 1:50:24.

Afterward, the committee heard more public comment. In total 27 people spoke in person and over Zoom. *Id.* at 1:52:04. The Committee staff again made clear that the maps, data, and information would be available on the redistricting website and that members of the public could propose their own maps and provide commentary on the ones there. *Id.* at 3:00:14. Altogether, more than 10,000 comments were submitted on 64 proposed maps. On the 2025 Plan, there were nearly 3,000 comments.

C. Senator Brammer introduces S.B. 1011.

On Friday, October 3, 2025, Senator Brammer made public S.B. 1011—his bill that defined what "scientific and statistical measures" of "partisan symmetry" mapmakers should use to ensure that a map does not "unduly favor[] or disfavor[]" any political party. Utah Code §20A-19-103(4)-(5).

Based on prior discussion from committee members and public input calling for more tests, Senator Brammer amended his initial proposal to add two additional tests to "ensure the analysis of maps is more robust to identify undue favoring or disfavoring of any party." *Proposed*

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Redistricting Standards Bill Now Include Three Tests, Utah State Senate (Oct. 3, 2025) https://perma.cc/CT2K-W83Q; *see also* Legis. Redistricting Comm. Meeting (Sept. 22, 2025) https://bit.ly/3KS56yx, at 1:01:12 (Sen. Escamilla criticizing the original Brammer bill as only having one test, and proposing in her amendment that the mean-median test be included); *id.* at 1:16:43 (Rep. Owens expressing concern about only having one test of partisan symmetry in the bill) *id.* Recording 2, at 29:46 44:36; 1:16:54 (members of the public calling for more than one test of partisan symmetry). Legis. Redistricting Comm. Meeting (Sept. 24, 2025) https://bit.ly/4n2xDyB, at 2:08:38 (same). In total, S.B. 1011 defined and required three statistical methods for analyzing maps: the ensemble analysis, the partisan bias test, and the median-mean difference test. These tests measure both the front-end "intent" of map drawers and the back-end "effect" of undue partisan bias a map may create.

Described more below, those tests operate under S.B. 1011 in practice as follows. First, a map drawer generates a "representative ensemble" of districting plans and compares the proposed map or maps to it. If the proposed map falls within 95% of the ensemble districts, it passes the analysis and is deemed to be drawn without the "purpose[]" of favoring a particular political party. Utah Code §20A-19-103(4)(b). Then, a proposed map is evaluated for whether it has a partisan "effect," by first using the partisan bias test to determine whether both parties are operating on a level playing field. The proposed map is then analyzed under a mean-median test, which calculates the difference "between a party's average statewide vote share and the party's median vote share across all districts in a proposed redistricting plan." If a redistricting plan passes both measures, it is "symmetrical," and does not "unduly favor or disfavor a political party." *Id.* §20A-19-103(4)(c).

1. Ensemble analysis. S.B. 1011 requires a proposed redistricting plan to be compared against a set of computer-drawn simulations to determine if that proposed redistricting plan exhibits evidence of partisan purpose. *See* Utah Code 20A-19-103(1)(a)(ii). The basic idea is that a computer produces a large set of maps—in the thousands or more—subject to Proposition 4's redistricting parameters, including population equality, municipal and county integrity, contiguity, and compactness. This creates an "ensemble" of maps both compliant with the State's substantive districting standards and drawn without respect to partisan criteria or data. A map drawn without partisan input should fall within a range, or representative sample, of the computer-generated ensemble. The more a proposed map deviates from the simulated range of politically neutral maps, the more likely it is that partisan considerations played a role.

The "point" is to answer "what … a variety of neutral, legally valid Utah plans look like," and "where does a proposed map sit relative to that neutral baseline"? **Barber Report at 23**. This sort of analysis allows a map drawer or judge to "sample a large number of maps from the universe of maps drawn without respect to politics"—to essentially "conduct a poll of maps drawn without respect to politics." **Trende Report at 21**. The focus is on intent, not effect. *Id.* **at 22**. Even if a map favors one party or another by "chance," or because "the political geography of a jurisdiction naturally favors one party or the other," using the ensemble analysis helps ensure that the act of map-drawing itself was unbiased. *Id.*

Ensemble analysis using simulations is widespread in political science and is the industry-standard way to ensure and demonstrate that maps are not drawn with a partisan purpose. Comparisons against computer-simulated ensembles began in the 1960s following the Supreme Court's decision in *Baker v. Carr*, 369 U.S. 186 (1962). **Trende Report at 20**. It has

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since been accepted and used in multiple courts for redistricting purposes, including state courts in Maryland, New York, Ohio, North Carolina, New Mexico, and Pennsylvania. *See, e.g., Harkenrider v. Hochul*, 197 N.E.3d 437 (N.Y. 2022), *Harper v. Hall*, 868 S.E.2d 499 (N.C. 2023); *League of Women Voters v. Commonwealth,* 178 A.3d 737 (Pa. 2018); *Republican Party of N.M. v. Oliver*, 2023 WL 8182964 (N.M. Nov. 27, 2023); *Republican Party of N.M. v. Oliver,* No. D-506-CV-202200041 (N.M. 5th Dist. Oct. 6, 2023); *League of Women Voters of Ohio v. Ohio Redistricting Comm'n*, 195 N.E.3d 974 (Ohio 2022).

S.B. 1011 uses the "ranked marginal deviation" test to compare the enacted map to the simulations. This is a standard method of evaluating how a particular map stacks up to the computer-simulated ensemble. A map "fail[s] the ensemble analysis" if it falls outside in either of two ways: first, if it falls outside of 95% of the ensemble districts; and second, if it falls outside of the 95% of the ensemble districts "after culling the ensemble to include only redistricting plans that pass the partisan bias test." Utah Code §20A-19-103(1)(a)(iii)(A)-(B); *see* **Barber Report at 23** (noting that the 95% number is a "standard statistical significance threshold"). In plain language, a map is first compared to the entire set of ensemble districts. Then, all maps that fail the partisan bias test—in other words, all illegal maps—are removed from the ensemble, and the proposed map is compared to the "culled" set. This ensures that a map is not an outlier regardless of whether compared to all maps or only to legal ones.

2. Partisan bias test. Proposition 4 requires the Legislature to use "measures of partisan symmetry" to assess whether a proposed redistricting plan "unduly favors" one political party or the other. Utah Code §20A-19-103(4)(c). Partisan symmetry is an "'outcome-based measure' that describes the effects of the plan." **Trende Report at 29**. In theory and design,

partisan symmetry measures fairness: whether "both parties are treated even-handedly" in how votes translate into seats. **Barber Report at 15**. In other words, "whether comparable swings would yield comparable seat changes." *Id.* "A plan can be fair even if the winner's seat share exceeds its vote share, so long as the rules of conversion are even for both sides across the range of elections the state actually experiences." *Id.* On the other hand, a plan "can look 'proportional' in one election yet be unfair if its structure systematically blunts one party's ability to convert additional votes into seats." *Id.*

The idea is that "parties with the same level of voter support be treated equally by the electoral system." **Katz Report at 2**. If "each party can translate votes into seats" with equal ease a plan is symmetrical. **Barber Report at 16**. The partisan bias test measures deviations from symmetry by using electoral data in a "seats-votes curve." **Katz Report at 3**. The curve describes "for a given party's average vote share what fraction of the seats they will receive." *Id.* A symmetrical plan is one in which the seats-votes curve is the "same for all political parties contesting an election." *Id.* For example, if Republicans get 55% of the statewide vote and win 65% of the seats, Democrats should also win 65% of the seats if they were to receive 55% of the vote. **Trende Report at 29**; **Katz Report at 2-3**. *See Common Cause v. Rucho*, 318 F.Supp.3d 777, 891-92 (M.D. N.C. 2018); *see also LULAC*, 548 U.S. at 420 (explaining that partisan bias is measured by "comparing how both parties would fare hypothetically if they each (in turn) had received a given percentage of the vote" (citation omitted)).

S.B. 1011 tests for partisan bias by answering an "intuitive" question: would both parties "win half of the seats if they both won half of the votes." **Barber Report at 16**. To run the calculation, the first step is to "shift[] each district's vote by a uniform amount to simulate

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a 50-50 statewide vote." ***Id.*** Second, "read off which party would win more seats at that tie."

Id. If one party wins three or more seats, then the proposed plan is biased in that party's favor.

See Utah Code §20-19-103(1)(d)(i). Simple enough.

In the heyday of *federal* partisan gerrymandering litigation leading up to and ending with

Rucho v. Common Cause, 588 U.S. 684 (2019), political scientists proposed multiple measures of

partisan symmetry, including mean-median difference, efficiency gap, partisan bias, declina-

tion, and lopsided margins. Recent academic research has demonstrated that—except for par-

tisan bias—those tests either do not measure partisan symmetry at all or do so only under

narrow circumstances. *See* **Katz Report at 9-11**; Katz, et al, *supra* (describing the problems

with each test). The efficiency gap, for example was "never intended to be used in a state with

four congressional districts" or in "uncompetitive states." **Trende Report at 57**; **Katz Report**

at 11 (observing that the "efficiency gap is not a reliable measure of partisan fairness"); *see also*

Annika King, Jacob Murri, Jake Callahan, Adrienne Russell, & Tyler J. Jarvis, *Mathematical*

Analysis of Redistricting in Utah, 9 Stat. & Pub. Pol'y 136, 136-48 (2022) (applying the efficiency

gap to Utah is "deeply problematic"). It performs "poorly in small delegations like Utah's four

seats because its arithmetic is too coarse and volatile at that scale." **Barber Report at 39**.

Partisan bias has emerged as a superior test for measuring partisan symmetry, even in states

like Utah. *See* **Katz Report at 8** (discussing the efficacy of the partisan bias test even in states

where one party dominates).

3. Mean-median difference test. The mean-median test "is a simple way to detect

skew in the distribution of district vote shares." **Barber Report at 20**. The idea is "that a

party's average vote share across a jurisdiction should be close to the party's vote share in the

median district." **Trende Report at 30**. If the mean and median coincide, the difference is zero, and the map is symmetric. The higher the divergence, the more a distribution is skewed in favor of one party and against its opponent. **Barber Report at 20**.

If a district's votes are weighted one way or the other, the median and mean will begin to diverge. The "upper tail of district votes" might be "heavier than the lower tail," which would make the mean larger than the median and the mean-median value negative. In that case, a party must win x percent more than 50% to get the median seat. *Id.* The opposite can be true as well—where the median is greater than the mean—making the value positive.

S.B. 1011 deems a plan acceptable for a given election if the mean-median falls within (-2, 2) percentage points, *see* Utah Code §20A-19-103(1)(b)(ii),[2] "meaning that it is agnostic regarding the direction of any bias." **Barber Report at 20-21**. Values within that window demonstrate limited skew in a four-seat map; values outside of it signal "unusual skew that warrants scrutiny." *Id.* **at 21**.

Like partisan bias, this test is used by courts evaluating redistricting plans. *See, e.g.*, *LWV*, 178 A.3d at 774; *Common Cause*, 318 F.Supp.3d at 892-93. It has also been used by special masters when drawing congressional and state house maps. *See* **Trende Report at 30**.

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The Brammer bill was introduced in the House and Senate during the Legislature's special session on October 6. When that session opened, Senator Brammer introduced a

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[2] *See* S.B. 1011, https://le.utah.gov/asp/passedbills/passedbills.asp?session=2025S1 (last visited Oct. 17, 2025).

substitute bill that retained the three measures—ensemble analysis, partisan bias, and mean-median—and further refined how to conduct the ensemble analysis.

Representative Abbott later introduced a substitute bill that would have removed the mean-median test from the bill. The substitute bill failed on a voice vote.

The first substitute bill with all three measures passed out of both chambers and was signed by Governor Cox that same morning.

D. The Legislature enacts the 2025 Plan

On the morning of October 6—before the special session started—the Legislative Re-districting Committee met to discuss whether to recommend S.B. 1012, which selected pro-posed Map C as the congressional plan, to the full legislature. Chair Sandall observed that there were "thousands of comments" and "two and a half hours" of public comment during the hearings. Senator Ipson moved to recommend Map C for consideration in the 2025 special session. The Committed voted 8-2 along a party-line vote to recommend Map C to the full Legislature for consideration, and the committee adjourned.

Later that day, when the House and Senate convened in special session, each body voted to adopt S.B. 1012 as the 2025 Congressional Plan. Governor Cox signed it into law later that night.[3] Map C as enacted by S.B. 1012 appears on the page below.

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[3] An interactive version of the 2025 Plan can be accessed at https://davesredistrict-ing.org/maps#viewmap::91c33cec-aaab-4c0a-93aa-5c1fc7f18b83
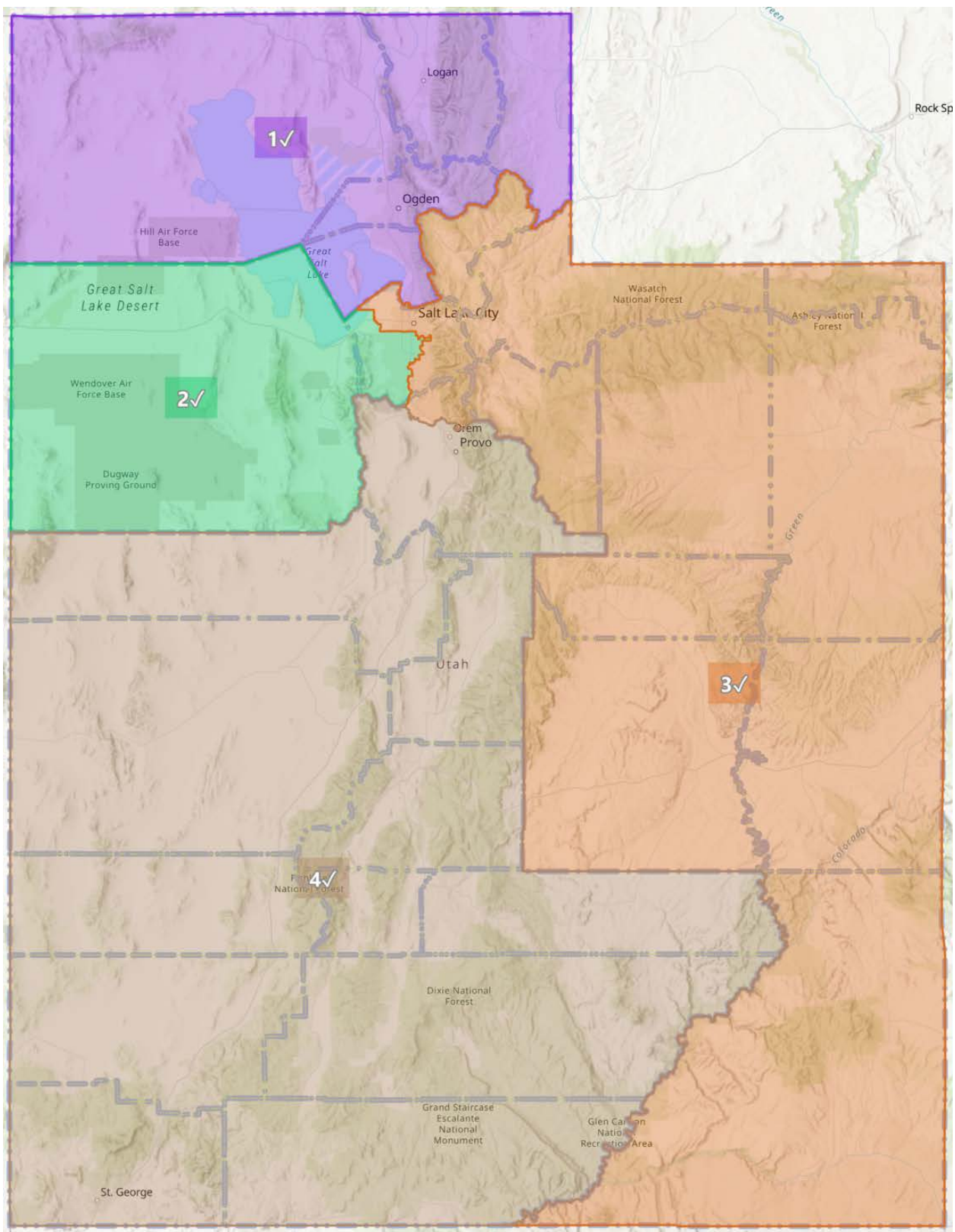
ARGUMENT

I. The 2025 Plan Satisfies the Proposition 4 Procedural Requirements Ordered by This Court.

The Legislature enacted a remedial redistricting plan in full compliance with the procedural provisions of Proposition 4 that the Court held govern these proceedings. The Legislative Redistricting Committee hosted lengthy public hearings, received and incorporated feedback from Utahns and members of the minority party, published proposed plans along with underlying data for ten days before taking a vote, and avoided the use and discussion of partisan information throughout the legislative process. This "transparent process," Doc. 470 (Op.) at 15, 50, 71, followed this Court's invitation to "enact a new or alternative redistricting plan that abides by and conforms to the redistricting standards, procedures, and requirements" of Proposition 4, Doc. 506 at 2. If the 2021 Plan was enjoined for arising in the "absence" of Proposition 4's "integral" "procedural requirements," Op. at 73, the 2025 Plan must be upheld as following every applicable jot and tittle of "the law in Utah on redistricting," *id.* at 71.

A. The Legislature made its proposed maps available for ten days and solicited public comment.

Proposition 4 requires the Legislature to make any proposed map "available on the Legislature's website or other equivalent electronic platform, for a period of no less than 10 calendar days and in a manner and format that allows the public to assess the plan for adherence to the redistricting standards and requirements contained in this chapter and that allows the public to submit comments on the plan to the Legislature." Utah Code §20A-19-204(4).

The Legislative Redistricting Committee made Maps A through E, including Map C—later enacted as the 2025 Plan—available to the public for more than 10 days, from

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September 21 to October 6 on the Legislative Redistricting Committee's public website: re-districting.utah.gov. The public left over 3,000 comments on the 2025 Plan itself and thousands more comments on the other maps, providing the Committee with feedback and commentary. Beyond making the five proposed plans publicly available in a highly interactive format, the Committee allowed the public to draw, submit, and comment on their own proposed plans. Sixty-four proposals were submitted. The Committee also hosted two public hearings, described *supra*, during which dozens of members of the public spoke to the Committee in person and via Zoom. If Proposition 4's "10-day notice requirement" was passed to "ensur[e] transparency and public involvement in the redistricting process," that goal was realized here. Op. at 46.

B. The Legislature made its redistricting software and data available to the public.

Proposition 4 requires the Legislature to make the data and software upon which the maps are drawn "reasonably available." Utah Code §20A-19-103(7). The Legislature published its data and software on the redistricting website beginning on September 21. Sean Trende, the Legislature's expert, spoke during the first public hearing about the methodology, software, and data sets he used to create and evaluate the proposed maps. These too were made available for public inspection and use. No data, code, or software relied upon by the Legislature was hidden from the public during this highly "transparent" process. Op. at 71.

C. The Legislature did not consider any partisan data or information when redistricting.

Proposition 4 prohibits the Legislature from considering any partisan "political data and information, such as partisan election results, voting records, political party affiliation

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information, and residential addresses of incumbent elected officials and candidates or prospective candidates for elective office." Utah Code §20A-19-103(6). Only after the fact, once the map has been drawn, may the Legislature use "judicial standards and the best available data and scientific and statistical methods, including measures of partisan symmetry," *id.* §20A-19-103(5), to assess the plan and determine whether it "purposefully or unduly favors or disfavors any incumbent elected official, candidate or prospective candidate for elective office, or any political party." *Id.* §20A-19-103(4)(a).

The Legislative Redistricting Committee took great care to shield itself and other members of the Legislature from any partisan information when creating and reviewing potential maps. Staff screened public comments for partisan content and the co-chairs and presiding officers prohibited discussion about partisan political data. Dr. Trende presented the five proposed plans to the committee, communicated that the plans had passed the partisan bias test (and other standards), and gave the Committee no other partisan information, such as anticipated partisan vote share of the proposed districts. When the Committee and later the Legislature voted on the proposed plans, they did so blind to partisan outcomes. If the goal of Proposition 4 was to avoid the "intentional manipulation of electoral district boundaries purely for partisan or political advantage," the careful steps taken by the Committee and Legislature ensured that goal was achieved. Op. at 19.

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The Legislature complied with Proposition 4's procedural requirements as ordered by this Court.

II.   The 2025 Plan Satisfies Proposition 4's Substantive Redistricting Standards.

Proposition 4 prohibits "the Legislature from 'purposefully or unduly favoring or disfavoring incumbents, candidates, or political parties.'" Op. at 29. Legislative Defendants have argued that this proscription is "difficult to implement," and "implicates 'fairness,' something that is not justiciable." *Id.* Defendants have also contended that Proposition 4 violates the Legislature's constitutional prerogative to redistrict by requiring the Legislature to use "'judicial standards and the best available data and scientific and statistical methods, including measures of partisan symmetry … to assess whether a proposed redistricting plan abides by and conforms to' Proposition 4's redistricting standards." *Id.* The Court rejected the Legislature's arguments based on two assurances. First, it reasoned that the "obvious defense against challenges of partisan motivation and 'unfairness' is compliance with the codified standards and the procedures." *Id.* Second, the Court observed that "given the general, non-specific nature of the language, the legislature retains discretion in determining what judicial standards are applicable and they retain discretion to determine the 'best available data and scientific methods' to use in evaluating redistricting plans for compliance" with the law. *Id.*

Taking the Court at its word, the Legislature here availed itself of this "obvious defense" by enacting a plan that respects Proposition 4's "mandatory, neutral, prioritized redistricting standards." *Id.* To clarify the "general" and specify the "non-specific," the Legislature enacted S.B. 1011 to "determin[e] what judicial standards are applicable" and what constitutes the "'best available data and scientific and statistical methods' to use in evaluating redistricting plans." *Id.* When measured against those standards and methods, the 2025 Plan readily passes.

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A. The 2025 Plan complies with federal law.

The U.S. Constitution requires that congressional districts be equal in population "using the best census data available." *Karcher v. Daggett*, 462 U.S. 731 (1983); *see also* U.S. Const. art. I, §2; Amend. XIV. The 2025 Plan equalizes population across all four districts, each of which contains 817,804 persons. There is no population deviation. **Trende Report at 14**. As for the Voting Rights Act, no one has alleged that the 2025 Plan illegally dilutes the voting strength of a minority group. *See* 52 U.S.C. §10301. Indeed, when Dr. Trende examined the requirements of the VRA as applied to Utah, he could not identify a minority group "sufficiently large" enough to constitute a majority in a congressional district, meaning that the preconditions for vote dilution are not present in this State's congressional districting system. *See Thornburg v. Gingles*, 478 U.S. 30, 50 (1986); *see* **Trende Report at 14**. The 2025 Plan adheres to federal law.

B. The 2025 Plan prioritizes minimizing the division of municipalities and counties across multiple districts.

Proposition 4 places second in its ranked list of redistricting criteria "minimizing the division of municipalities and counties across multiple districts, giving first priority to minimizing the division of municipalities and second priority to minimizing the division of counties." Utah Code §20A-19-103(3)(b). The 2025 plan splits only three municipalities: Millcreek, North Salt Lake, and Pleasant Grove. It also splits only three counties: Davis, Salt Lake, and Utah. Because Salt Lake County's population is 1,185,238, any congressional map must split this county at least once. **Trende Report at 14**.

The 2025 Plan places Box Elder, Cache, Davis, Rich, and Weber counties in District 1. Together, these five counties' populations places District 1 just 328 persons over the population target. To make that minor downward adjustment, the 2025 Plan splits Davis County at North Salt Lake.[4]
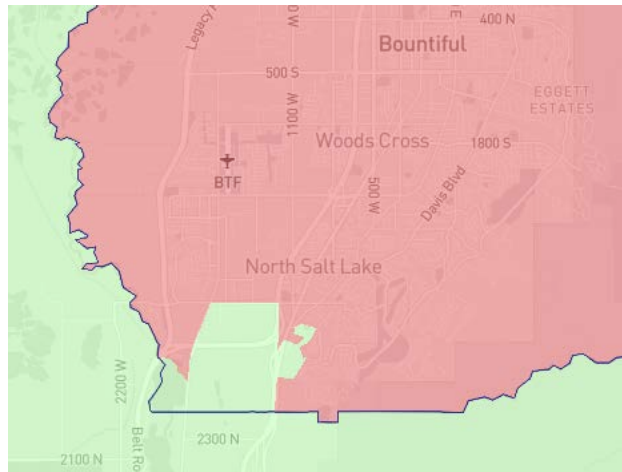
2025 Plan—North Salt Lake
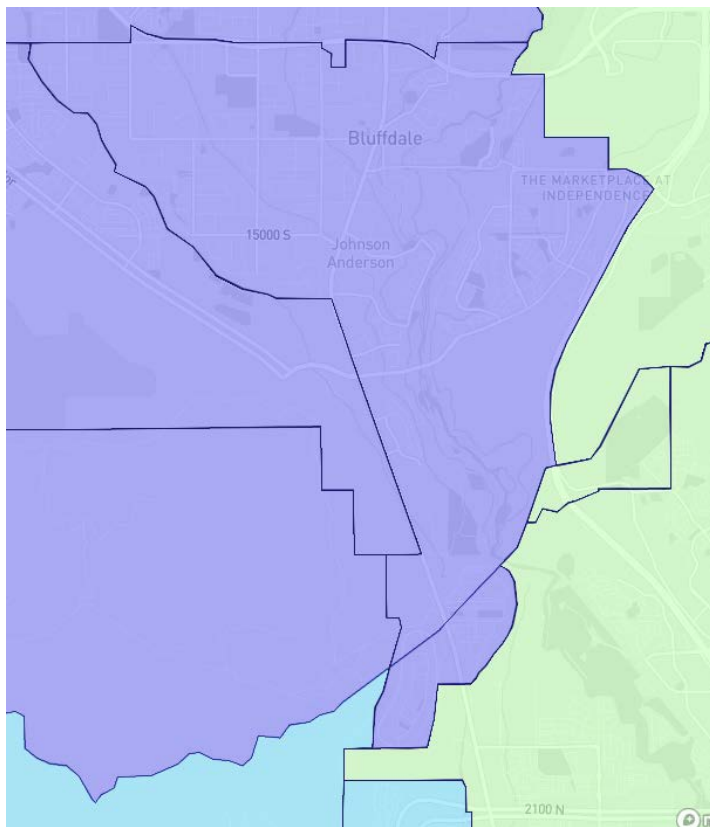
2025 Plan—District 2 (violet);
District 3 (green); District 4 (blue)

Plaintiffs note that the 2025 Plan splits Utah County into three pieces. Doc. 541 at 5. That second split is shown to the left where Districts 2, 3, and 4 converge at the border of Utah and Salt Lake Counties. Bluffdale's city lines cross into Utah County, and rather than split Bluffdale, the 2025 Plan keeps Bluffdale whole. And the Utah County portion of Bluffdale has zero population. **Barber Report at 7**.

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[4] The northernmost district in Plaintiffs' two plans comprises the same five counties as District 1 in the 2025 Plan. To decrease its population 328, both of Plaintiffs' plans split Weber County east of Ogden.

Plaintiffs emphasize that Millcreek is split into six pieces, Doc. 541 at 5, but that is both irrelevant and misleading. First, Proposition 4 orders the minimization of "the division of municipalities … across multiple districts." Utah Code §20A-19-103(3)(b). Millcreek is divided between just two districts, not multiple districts as it was in the 2021 Plan. **Trende Report at 14**. And it does so here in a regular manner. It assigns the "northern and eastern flanks of the city to District 3 and the southern and western flanks of the city to District 2." **Barber Report at 7-8**. But unlike some other Wasatch Front cities, Millcreek's boundaries are far from regular. *Id.* **at 7**. The city juts to the west under South Salt Lake, jumps over I-215 to the east, and all but surrounds the Brickyard Shopping Plaza (part of Salt Lake City) with two pincer-like protrusions.
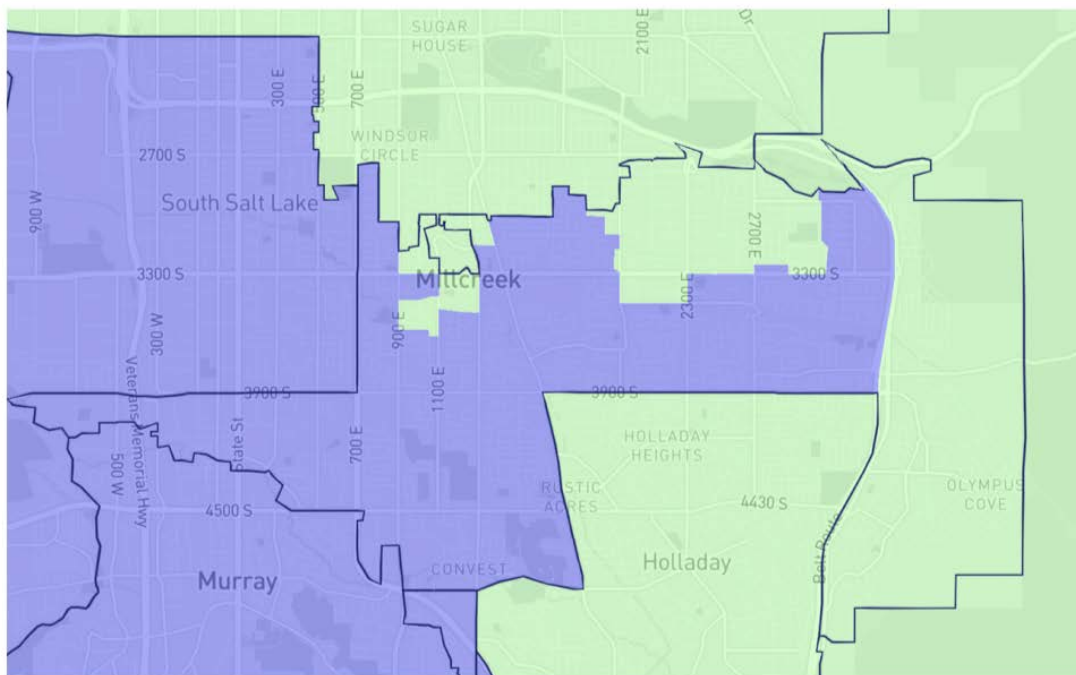
Note: District 3 is displayed in green. District 2 in blue.

Dr. Trende's step-by-step description of his mapdrawing process is revealing here. After locking in District 1 in the north, Dr. Trende needed to add population from Salt Lake County to

underpopulated District 2. Working from left to right, he approached Millcreek last and added just enough of the city "until the population deviation was under 1,000." **Trende Report at 35**. Had he added the whole city, District 2 would have been overpopulated. *Id. See* Utah Code §20A-19-103(3)(b).

C. The 2025 Plan's districts are geographically compact.

Proposition 4 next requires prioritizing the creation of "districts that are geographically compact." Utah Code §20A-19-103(3)(c). The 2025 Plan's districts are compact. Dr. Trende measured compactness using four metrics: Reock, Polsby-Popper, Convex Hull, and IKIWISI (I Know It When I See It). **Trende Report at 15-16**. Reock calculates the ratio of a district's area to the area of its minimum circumscribing circle. In other words, it "imagine[s] the smallest circle that wholly encloses the district without cutting it" and asks what "percentage of that circle the district would fill." *Id.* **at 15**. Polsby-Popper compares a district's shape to that of a circle with the same perimeter as the district. *Id.* Convex-hull imagines a "rubber band snapped around a district," and asks what percentage of that polygon the district would fill." *Id.* **at 16**. Finally, the newer IKIWISI metric incorporates interview responses from "judges, redistricting experts, public officials, lawyers and ordinary citizens." *Id.* Based on the resulting scores, and taking into account Utah's geography, the 2025 Plan's districts are geographically compact. *Id.* **at 17**.

D. The 2025 Plan's districts are contiguous and drivable.

In Utah, districts should be "contiguous and … allow for the ease of transportation throughout the district." Utah Code §20A-19-103(3)(d). In the 2025 Plan, all "four districts are comprised of contiguous territory." **Trende Report at 18**. And all four allow for "ease of

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transportation" as well as that can be accomplished in Utah's geographically large congressional districts. "District 1 is primarily drawn along the I-15 corridor." *Id.* "District 2 follows I-80 into Salt Lake County." *Id.* The 2025 Plan also connects Salt Lake Valley communities to Wasatch Back communities via I-215 and Parley's Canyon without interruption. *See* **Barber Report at 11**. And all of the Salt Lake County Canyons—Emigration, Parleys, Millcreek, Big and Little Cottonwood, as well as American Fork and Provo Canyons in Utah County—are assigned to District 3, which then picks up I-80 and takes it "eastward into Summit County." **Trende Report at 18**. District 3 also includes crossings over the Colorado River (at Moab) and Green River (at Green River). *Id.* "District 4 is built along the I-15 corridor." *Id.*

E. The 2025 Plan respects the State's unique communities.

Utah congressional districts should "preserv[e] traditional neighborhoods and local communities of interest." Utah Code §20A-19-103(3)(e). The Legislature prioritized keeping the Uintah Basin, Tribal lands and reservations, institutions of higher education, and military installations respectively together. Each of these locations represents important communities. The 2025 Plan ensures that these communities are kept together in each district to the greatest degree practicable. Additionally, by minimizing county and city splits, the 2025 Plan, by definition, keeps those de facto communities of interest together. *See Abrams v. Johnson*, 521 U.S. 74, 99-100 (1997) (recognizing counties as "communities of interest"); *In re Apportionment of Colo. Gen. Assembly*, 45 P.3d 1237, 1248 (Colo. 2002) ("Counties and the cities within their boundaries are already established as communities of interest in their own right.").

F. The 2025 Plan respects natural and geographic features.

Proposition 4's penultimate districting factor is that districts "follow[] natural and geographic features, boundaries, and barriers." Utah Code §20A-19-103(3)(f). As Dr. Trende succinctly recounts, the 2025 Plan "avoids crossing mountains, except where an interstate or major highway is available, avoids crossing major rivers, except via bridge, does not cross the Great Salt Lake, and avoids crossing the Great Salt Lake Desert given the dearth of North-South roadways in that area of the state." **Trende Report at 19**.

G. The 2025 Plan respects boundary agreement among different districts.

Last in its ranking of districting criteria, Proposition 4 states that districts should "maximiz[e] boundary agreement among different types of districts." Utah Code §20A-19-103(3)(g). Dr. Trende did not consider this factor, reasoning that other districts "were drawn under prior, superseded standards," *i.e.* not Proposition 4. **Trende Report at 19**. Regardless, as Plaintiffs report, the 2025 Plan maximizes boundary agreement virtually as well as Plaintiffs' plans. Doc. 541 at 5.

Boundary Agreement*			
State House	56	54	51
State Senate	13	13	12
State School Board	3	2	3
	Plaintiffs' Plan 1	Plaintiffs' Plan 2	2025 Plan

III. The 2025 Plan Does Not Purposefully or Unduly Favor Any Partisan Outcome.

In addition to respecting Proposition 4's "mandatory, neutral, prioritized redistricting standards," Op. at 29, the 2025 Plan does not "divide districts in a manner that purposefully or unduly favors or disfavors any incumbent elected official, candidate or prospective candidate for elective office, or any political party." Utah Code §20A-19-103(4)(a).

A. The 2025 Plan does not purposefully favor a political party.

The 2025 Plan was drawn, debated, and voted on blind to party politics. It passed S.B. 1011's "ensemble analysis" designed to root out partisan intent. Utah Code §20A-19-103(4)(b). That comparison to an ensemble of computer-drawn, politically neutral simulations confirms that the 2025 Plan was drawn ambivalent to partisan outcomes.

1. Dr. Trende did not gerrymander what became the 2025 Plan.

Of the five maps Dr. Trende prepared and presented to the Legislative Redistricting Committee, Map C—what later became the 2025 Plan—represented Dr. Trende's attempt to bring the 2021 Plan "into line with the provisions of Prop 4." **Trende Report at 42**. He first set out to resolve the "four-way split of Salt Lake County and accompanying city splits." *Id. at 32* (below left). No one disputes that Salt Lake County with its population of 1,185,238 must be split. The dispute is where the split lies and how many times, if more than once, the county should be split. Shown below, Dr. Trende chose to split the county once, with the District 2 portion taking most of the cities to the west of I-15, and the District 3 portion taking most of the cities to the east of I-15 along with Salt Lake City. (below right)
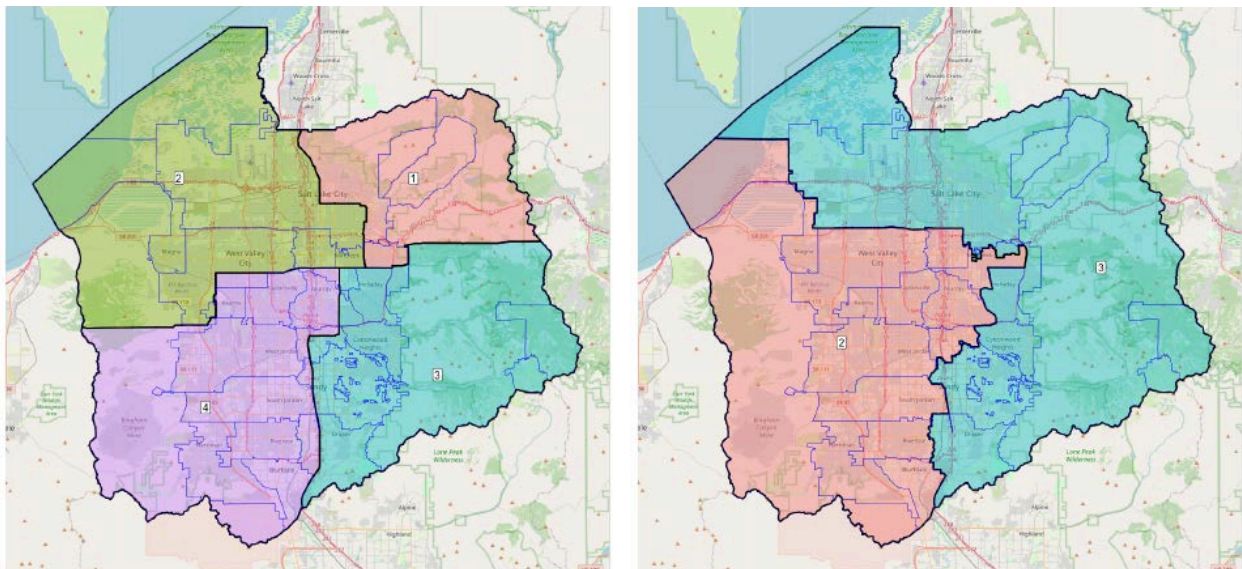
Given the relative positions of Districts 2 and 3, the logical choice was to split Salt Lake County between those two districts instead of between any combination including Districts 1 and 4. **Trende Report at 33**. District 2's portion of Salt Lake County rendered the district "severely overpopulated," meaning that District 2 could not also take Salt Lake City if the city were to remain intact. *Id.* Thus, Dr. Trende opted to place Salt Lake City in District 3 and all of Davis County in District 1 to equalize population. *Id.* **at 34**. The final steps taken in equalizing District 2's population were to add Midvale and Murray and just enough of Millcreek. *Id.* **at 35**. All of Millcreek could not be added in this configuration without pushing District 2 over its population limit. *Id.* Unifying the 2021 Plan's split of Summit County and placing Morgan County in District 3 nearly equalized population in District 1. *Id.* The significant population added to District 2 from Salt Lake County meant that every county south of Tooele (and not in District 3) had to be placed in District 4. *Id.* All that remained was Utah County, which had to be split between Districts 3 and 4. The only municipality Dr. Trende split there to equalize population was Pleasant Grove. The southern portion went into District 4, and the northern into District 3. *Id.*

While Dr. Trende used the 2021 Plan as a starting point, the 2025 Plan in no way resembles a so-called "least changes" map. It effectively "dismembers the preceding plan." *Id.* **at 6**. For example, only 36% of District 2 residents in the 2021 Plan stay in District 2 in the 2025 Plan, and only around 60% of Districts 3 and 4 residents in the 2021 Plan stay in those districts in the 2025 Plan. *Id.* **at 6-7**. The 2025 Plan is not a case of the Legislature making tweaks to previous districts lines. This is a "significant reworking" of prior district lines. *Id.* **at**

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32. 1,271,050 residents (nearly 40% of the State's population) were moved from their 2021 districts. *Id.* **at 7**.

Finally, at "no point did [Dr. Trende] reference any partisan data until the map was complete, and then only to measure partisan symmetry." *Id.* **at 42**. Nor did Dr. Trende look at the political lean or projected performance of these districts during the mapdrawing process. *Id.* He simply ran the partisan bias test on this neutrally drawn map, confirmed that it passed the test, and delivered it to the Legislature with four other compliant maps.

2. The ensemble analysis confirms that the Legislature did not purposefully favor a partisan result when enacting the 2025 Plan.

To test for partisan intent, S.B. 1011 calls for an "ensemble analysis," in which the proposed plan is compared to "at least 4,000 redistricting plans" drawn by a computer without respect to partisanship. Utah Code §20A-19-103(1)(a)(i). To evaluate the 2025 Plan according to S.B. 1011's ensemble analysis, Dr. Trende used a computer simulation to generate 100,000 congressional districting maps that ignore partisan data, minimize county and city splits, deviate no more than +/-1% from the ideal district population, contain contiguous districts, avoid splitting Tribal lands and reservations, respect Utah's unique landforms and geography, and ensure ease of transportation within districts. **Trende Report at 36-37**. Dr. Trende found that the 2025 Plan, when compared to the full ensemble of 100,000 maps, fell at the 94th percentile when using the Ranked Marginal Deviation (RMD) test. *Id.* **at 38**. *See* Utah Code §20A-19-103(1)(a)(ii)(A). When compared to the culled ensemble of 32,259 maps that passed the partisan bias test, the 2025 Plan fell at the 65th percentile under RMD. **Trende Report at 38**. And though Proposition 4 does not require using Plaintiffs' preferred Least Republican Vote Share (LRVS) test, Dr. Trende nevertheless performed that test for the 2025 Plan. When he

compared that plan to the full ensemble, its LRVS score fell at the 94th percentile; when compared to the culled ensemble, the 2025 Plan's LRVS score fell at the 83rd percentile. ***Id.*** Dr. Trende's politics-neutral simulation comparison reveals that the 2025 Plan passes the "ensemble analysis" mandated by S.B. 1011, demonstrating no partisan intent. Utah Code §20A-19-103(4)(b).

Dr. Barber's independent ensemble analysis comparing the 2025 Plan to a separate simulation set yields the same result. His simulation methodology "rests on peer-reviewed algorithms." **Barber Report at 23**. Dr. Barber generated 50,000 congressional plans that prioritize Proposition 4's ranked substantive requirements[5] while entirely ignoring partisan data. ***Id.*** To ensure that the simulated plans followed Proposition 4's ranked districting criteria, Dr. Barber compared those simulated plans to the 2025 Plan and Plaintiffs' plans and observed that his simulation "produce[d] compactness and boundary statistics that mirror the range observed in the submitted maps." ***Id.* at 24**. For example (and shown below), the mean number of county splits in Dr. Barber's simulations is two, compared to three in the 2025 Plan and Plaintiffs' plans. ***Id.* at 25**.

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[5] Specifically, Dr. Barber's algorithm generated maps that "adhere[d] closely to … population equality, contiguity, minimal county and municipal splits, and geographic compactness." **Barber Report at 24**.

Table 4: Simulations Statistics Reflect Submitted Maps and Prop 4 Criteria

Statistic	Submitted Plans			50,000 Simulations		
	Plaintiffs Map 1	Plaintiffs Map 2	Legislature 2025 Plan	2.5%	Mean	97.5%
Municipal splits (count)	1	1	3	1	2	5
Municipal split pieces	2	2	11	1	2	5
County splits	3	3	3	1	2	3
Total County splits	3	3	4	2	3	4
Reock (mean)	0.49	0.49	0.49	0.41	0.47	0.53
Polsby–Popper (mean)	0.44	0.37	0.40	0.27	0.35	0.41

"Because the ensemble is statistically indistinguishable from the submitted plans on these structural metrics, and because we know that partisan data was not available to the computer when it drew these 50,000 maps, they can be relied upon as a valid benchmark of what a set of plans drawn under Proposition 4's criteria, without any partisan input, looks like." *Id.* **at 24-25**. Using the election index prescribed in S.B. 1011, Dr. Barber computed election metrics for each of the 50,000 simulated plans as well as the 2025 Plan and Plaintiffs' two plans. *Id.* **at 26**. He then calculated the Ranked Marginal Deviation, as S.B. 1011 requires, for all plans analyzed. *Id. See* Utah Code §20A-19-103(1)(a)(ii)(A).

His calculations reveal that when compared to the 50,000-map ensemble, the 2025 Plan's Ranked Marginal Deviation "average falls at roughly the 83rd percentile, below the one-sided 95 percent trigger." *Id.* **at 26** (shown below left). And when compared to the 26,282-map culled ensemble of maps that pass Proposition 4's partisan symmetry test, the 2025 Plan's average sits at "about the 66th percentile." *Id.* **at 25** (shown below right).

Ensemble Analysis: Ranked Marginal Deviation
50,000 Simulated Maps

Ensemble Analysis: Ranked Marginal Deviation
26,282 Simulated Maps that Pass Partisan Symmetry Test
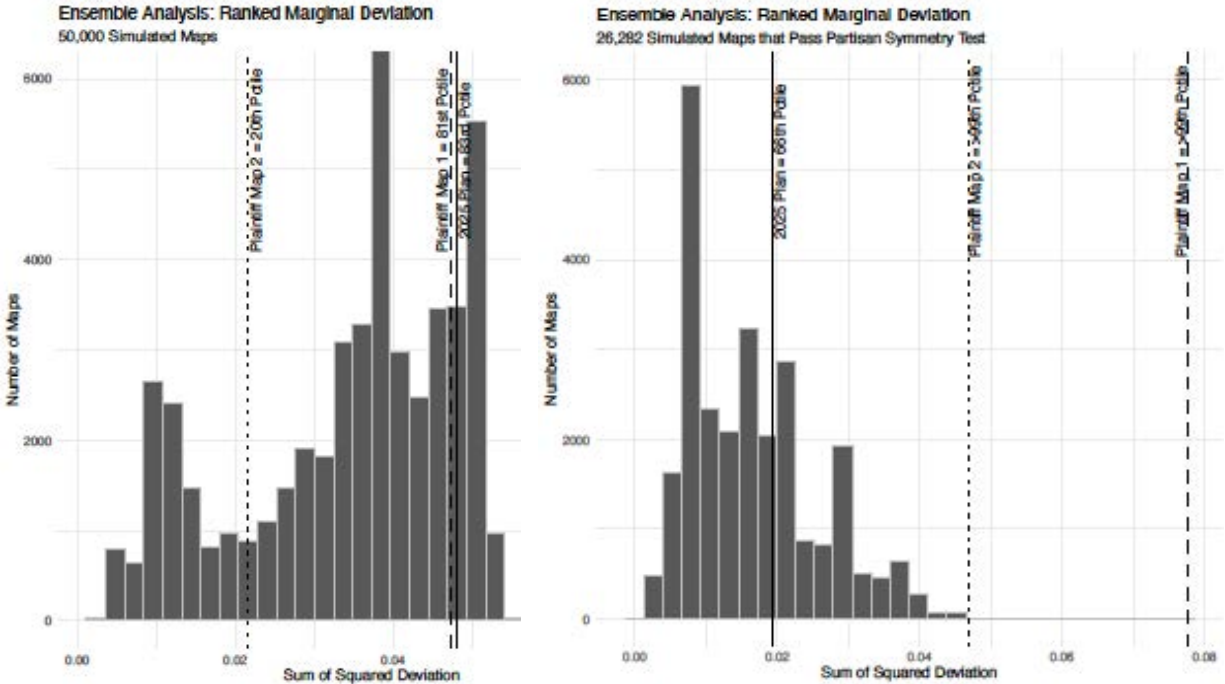
Based on independent and separate ensemble analyses conducted by Dr. Trende and Dr. Barber, the 2025 Plan falls well within the law's 95% threshold, thereby passing S.B. 1011's ensemble analysis. Under Proposition 4, the plan "does not purposefully favor or disfavor a political party." Utah Code §20A-19-103(4)(b).

B. The 2025 Plan does not unduly favor or disfavor a political party.

The 2025 Plan does not unduly favor any partisan outcome. As defined by S.B. 1011, "'Unduly favor or disfavor' … for purposes of a congressional map, means the map is asymmetrical under the measures of partisan symmetry and fails the mean-median difference test." Utah Code §20A-19-103(1)(g). "Measures of partisan symmetry," in turn, refer to "the partisan bias test" and "an ensemble analysis with subsequent culling to include only redistricting plans that pass the partisan bias test." *Id.* §20A-19-103(1)(c). The 2025 Plan satisfies Proposition 4's partisan symmetry requirement by passing the culled ensemble analysis, *see supra* Part III.A.2., the partisan bias test, and mean-median difference test.

1. The 2025 Plan passes the partisan bias test.

After drawing the 2025 Plan, Dr. Trende tested it for partisan symmetry using the partisan bias test. It passed. **Trende Report at 50**. Dr. Barber's independent analysis confirms the 2025 Plan's partisan symmetry under this test. Using the 13-election partisan index required by S.B. 1011, Dr. Barber tested the 2025 Plan and Plaintiffs' two plans for partisan bias. *See* Utah Code §20A-19-103(1)(d) (providing instructions on how to conduct partisan bias test). "A map 'passes' if at the 50/50 statewide vote margin, each major party wins 2 of the 4 congressional seats. If either party wins more than 2 of the seats, it 'fails' the test." **Barber Report at 19**. Shown below, Dr. Barber's analysis demonstrates that the 2025 Plan "consistently satisfies the symmetry standard in every election for which we have data." *Id.*

Election	2025 Plan	Plaintiff Map 1	Plaintiff Map 2
2016 President	Pass	Fail	Fail
2016 Governor	Pass	Fail	Fail
2016 Attorney General	Pass	Fail	Fail
2016 Auditor	Pass	Fail	Fail
2016 Treasurer	Pass	Fail	Fail
2020 President	Pass	Fail	Pass
2020 Governor	Pass	Fail	Pass
2020 Attorney General	Pass	Fail	Pass
2020 Auditor	—	—	—
2020 Treasurer	—	—	—
2024 President	Pass	Fail	Pass
2024 Governor	Pass	Fail	Pass
2024 Attorney General	Pass	Fail	Pass
2024 Auditor	Pass	Fail	Pass
2024 Treasurer	Pass	Fail	Pass
Average of Elections	**Pass**	**Fail**	**Pass**

2. The 2025 Plan passes the mean-median difference test.

Under S.B. 1011, if "the difference between a party's average statewide vote share and the party's median vote share across all districts in a proposed redistricting plan" "is greater than a 2% deviation from the mean," then the proposed plan "fails the mean-median difference test" and is not a symmetrical map. Utah Code §20A-19-103(1)(b).

Dr Trende found that the 2025 Plan exhibited a mean-median difference of 1.45%—a passing score. **Trende Report at 51**. Dr. Barber separately calculated the 2025 Plan's mean-median difference using two different methods. Under the first (shown below), the 2025 Plan's score falls "comfortably within the window" at 1.45. **Barber Report at 21**.

Election	2025 Plan	Plaintiff Map 1	Plaintiff Map 2
2016 President	1.70	-7.27	-3.31
2016 Governor	1.12	-6.47	-2.97
2016 Attorney General	0.76	-6.27	-2.89
2016 Auditor	1.61	-6.20	-2.76
2016 Treasurer	1.96	-6.06	-2.74
2020 President	1.40	-5.87	-2.25
2020 Governor	0.56	-6.47	-2.75
2020 Attorney General	1.46	-5.94	-2.29
2024 President	1.97	-4.72	-1.30
2024 Governor	0.59	-5.78	-2.66
2024 Attorney General	2.02	-5.30	-1.89
2024 Auditor	1.90	-5.22	-1.88
2024 Treasurer	1.97	-5.21	-1.83
Average of Elections	**1.45**	**-5.82**	**-2.38**

Under the alternative method, Dr. Barber used to calculate mean-median (shown below), the 2025 Plan passes with a score of 1.67. ***Id.* at 22**.

Election	2025 Plan	Plaintiff Map 1	Plaintiff Map 2
2016 President	2.46	-6.92	-2.88
2016 Governor	1.62	-6.43	-2.84
2016 Attorney General	1.13	-6.39	-2.95
2016 Auditor	1.96	-6.27	-2.76
2016 Treasurer	2.31	-6.09	-2.73
2020 President	1.69	-6.19	-2.31
2020 Governor	0.95	-6.65	-2.71
2020 Attorney General	1.72	-6.35	-2.42
2024 President	1.88	-5.65	-1.82
2024 Governor	0.98	-5.96	-2.57
2024 Attorney General	1.90	-6.38	-2.51
2024 Auditor	1.81	-6.12	-2.42
2024 Treasurer	1.86	-6.16	-2.40
Average of Elections	**1.67**	**-6.23**	**-2.55**

In short, the 2025 plan "performs the way a compliant plan should." *Id.* **at 21**. "Read alongside the Partisan Symmetry, the mean-median record reinforces the broader conclusion that the 2025 Plan is not a partisan outlier." *Id.*

*

At this point, having passed both the ensemble analysis (Ranked Marginal Deviation) and the partisan symmetry tests (Partisan Bias and Mean-Median), the 2025 Plan does not "purposefully or unduly favor[] or disfavor[] any incumbent elected official, candidate, or prospective candidate for elective office, or any political party," as a matter of law. Utah Code §20A-19-103(4)(a). Still, Plaintiffs contend that these tests are the wrong ones. Even using Plaintiffs' preferred tests (which S.B. 1011 prohibits), the 2025 Plan is not an outlier. *See infra.*

3. The 2025 Plan may not lawfully be scrutinized under Plaintiffs' preferred tests.

When enjoining S.B. 200 and the 2021 Plan, this Court reassured the Legislature that "given the general, non-specific nature of the language" in Proposition 4, "the legislature

retains discretion in determining what judicial standards are applicable and they retain discretion to determine the 'best available data and scientific and statistical methods' to use in evaluating redistricting plans for compliance with state and federal law and the Proposition 4 redistricting standards." Op. at 29-30.

Accordingly, the Legislature concluded S.B. 1011 with the following:

Any judicial review of a congressional redistricting plan to determine whether the Legislature or Commission complies with this section regarding purposefully or unduly favoring or disfavoring a political party shall base the review on the outcomes of the following, in accordance with this section:
(a) an ensemble analysis;
(b) the partisan bias test; and
(c) the mean-median difference test.

Utah Code §20A-19-103(8).

Plaintiffs prefer other tests—namely, the efficiency gap (EG), least republican vote share (LRVS), and standard deviation of vote share (SDVS). These are but three of "dozens of proposed partisan fairness measures designed for single member district systems," **Trende Report at 29**. They are not the tests the Legislature enacted; they have no place here.

4. Still, the 2025 Plan is not a partisan outlier under Plaintiffs' preferred tests.

Even though Plaintiffs' preferred tests are irrelevant, the Legislature, out of an abundance of caution, observes that the 2025 Plan is no partisan outlier under Plaintiffs' Least Republican Vote Share, Standard Deviation of Vote Share, or Efficiency Gap tests.

Plaintiffs offer LRVS "on the theory that Utah's partisan geography makes the lowest-Republican district the best place to look for 'cracking.'" **Barber Report at 30**. LRVS "asks where does the lowest-ranked district sit relative to the distribution from the neutral simulations." *Id.* The fact that in the 2025 Plan the "least Republican" district is "Republican-

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leaning" is not "evidence of cracking, because the simulations show that outcome is quite common, about 50 percent of neutral plans (and 93.5% of the culled simulations) produce a Republican-leaning district at the bottom rank." *Id.* "What matters is whether the bottom-ranked district in a given map is an outlier compared to the neutral ensemble." *Id.* Dr. Barber's LRVS analysis reveals that the least-Republican district is not an outlier.
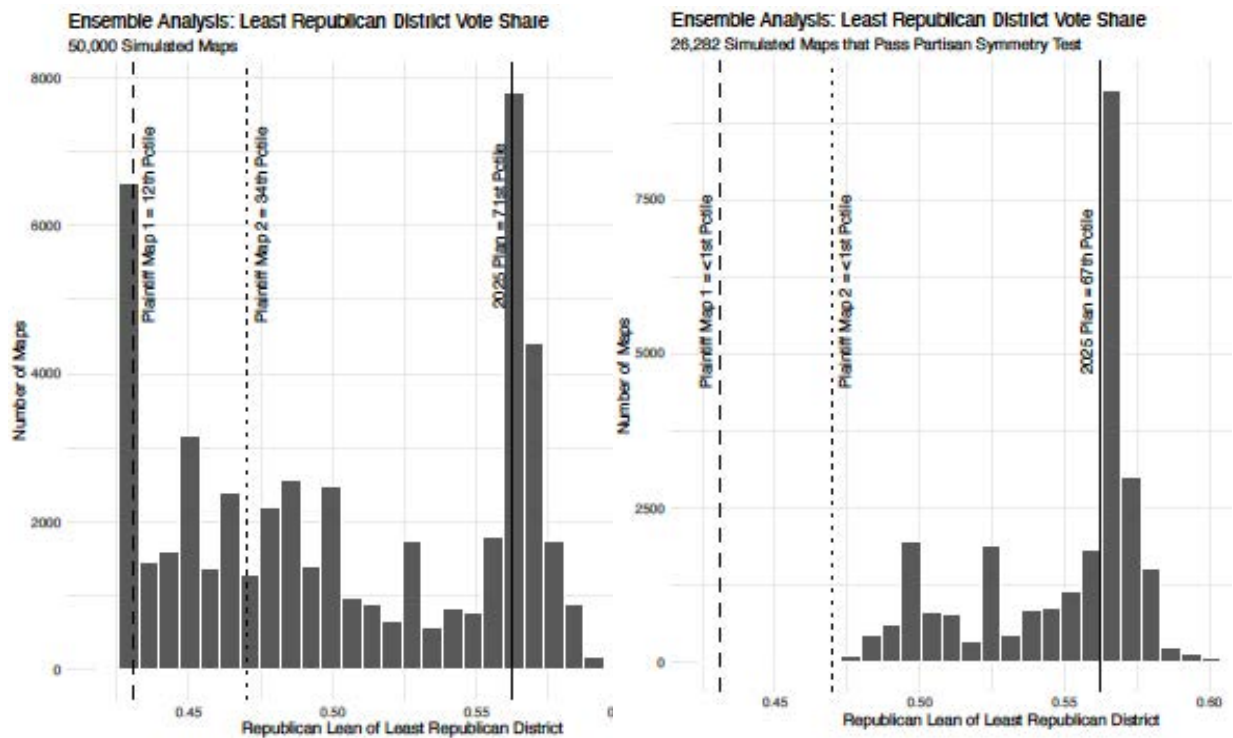
As shown, the 2025 Plan's least-Republican district when compared against either Dr. Barber's full 50,000-map simulation ensemble (left) or the culled ensemble (right) "is typical of neutral Utah plans and well short of any outlier threshold." **Barber Report at 31**. Specifically, "the 2025 Plan's least-Republican district falls around the 71st percentile" when compared to the full simulation ensemble, and the "67th percentile" when compared to the culled ensemble. *Id.* **at 30**. Both percentiles are "comfortably inside the distribution and below S.B. 1011's 95 percent threshold." *Id.*

Similarly, Plaintiffs offer the Standard Deviation of Vote Share test, but the 2025 Plan passes this metric as well. In a four-district system like Utah's congressional districts, SDVS purports to identify "cracking" by looking "at how tightly clustered the four district vote shares are around their mean." **Id. at 34**. On "this metric, lower values are the ones that raise flags for political cracking. Higher values reflect more variation across the four districts and are, instead, a signature of packing." **Id.** Dr. Barber's SDVS analysis, consistent with other simulation comparisons, reveals that the 2025 Plan's SDVS sits "comfortably inside the distribution and, importantly for this test, not unusually low." **Id.**
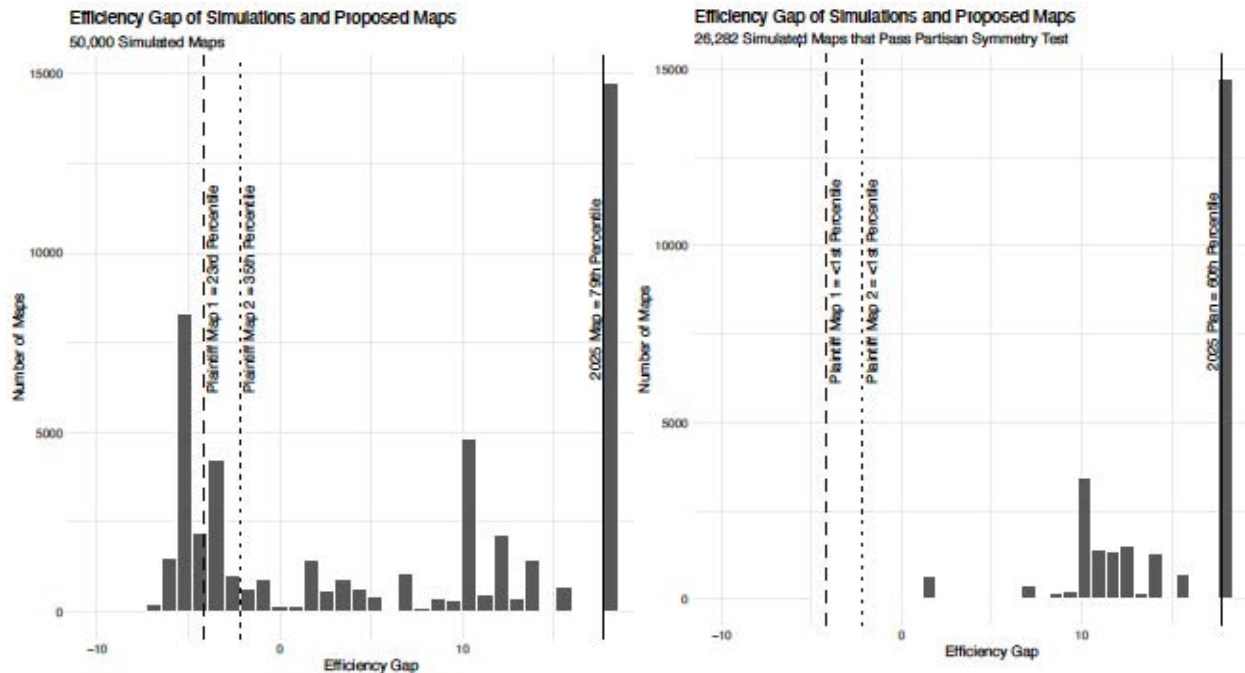
As shown, compared against the full simulation ensemble (left), the 2025 Plan's SDVS "sits around the 42nd percentile," and "moves to the 77th percentile" when compared against the culled ensemble (right). **Id.** The "2025 Plan does not show either a low-variance cracking or high-variance packing pattern." **Id.**
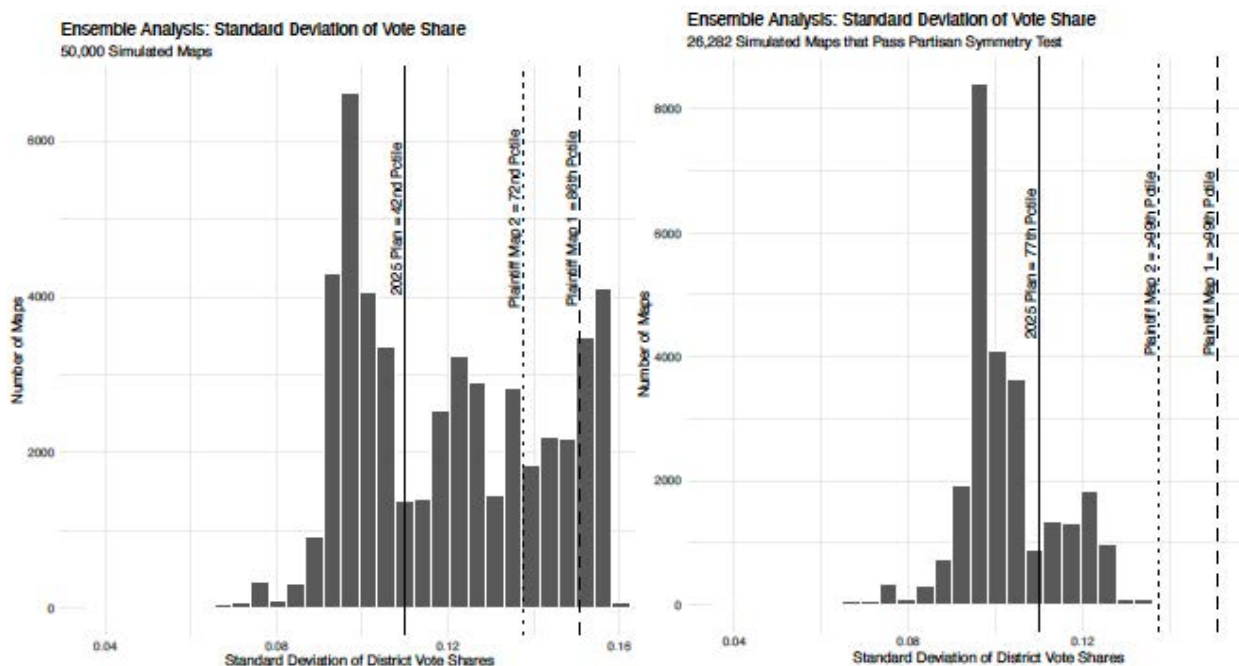
Finally, Plaintiffs insist that proposed congressional plans should satisfy the Efficiency Gap metric. This is curious, given testimony from Plaintiffs' expert Dr. Warshaw in multiple cases that the efficiency gap should *not* be applied in states with fewer than six districts like Utah. In those cases, he even refused to include those states in his EG analyses. *See Ohio A. Philip Randolph Inst. v. Householder*, 373 F. Supp. 3d 978, 1028 n. 329 (S.D. Ohio 2019); *League of Women Voters*, 178 A.3d at 777 (Dr. Warshaw's testimony on the efficiency gap limited to states with more than six congressional districts).

Aside from EG's inapplicability here, there "is substantial peer-reviewed criticism that the EG does not actually measure partisan bias and can behave perversely." **Barber Report at 38** (collecting sources). In short, EG "can be unstable, not scale-invariant, and sensitive to turnout imbalances, so it is a weak proxy for partisan bias in practice." *Id.* **at 39**. Plaintiffs may not reject the Legislature's chosen metrics—especially not for one decried as "sociological gobbledygook," Tr. of Oral Arg. at 40, *Gill v. Whitford*, 585 U.S. 48 (2018) (No. 16-1161) (Roberts, C.J.); *see also* **Katz Report at 10-11** (EG is "controversial" and "is not a reliable measure of partisan fairness"); **Trende Report at 47** (EG is "foundationally flawed"); **Barber Report at 38-41**.

Even so, the 2025 Plan's efficiency gap, while high, is not an outlier when compared to neutral simulation ensembles. As shown below, the 2025 Plan's EG sits "around the 79th percentile on the election index" in the full ensemble and "resembles the vast majority of maps" in the culled simulation set. **Barber Report at 42**.

Efficiency Gap of Simulations and Proposed Maps
50,000 Simulated Maps

Efficiency Gap of Simulations and Proposed Maps
26,282 Simulated Maps that Pass Partisan Symmetry Test

This "apples-to-apples comparison against a neutral baseline of simulated maps" accounting "for the state's political geography and typical voting patterns" *once again* reveals the 2025 Plan *not* to be an outlier. **Barber Report at 42**. Plaintiffs' efforts to hijack Utah redistricting must finally fail.

IV.   Plaintiffs' Plans Purposefully or Unduly Favor the Democratic Party.

Because the 2025 Plan satisfies Proposition 4's requirements, Plaintiffs' proposed plans are irrelevant and the Court should not consider them. But if it does, it should reject them as non-compliant with Proposition 4. Plaintiffs' Plan 1 fails both the partisan bias and mean-median tests. Plaintiffs' Plan 2 fails mean-median. Beyond failing these mandatory metrics of partisan symmetry, Plaintiffs' plans resemble partisan gerrymanders under their own preferred tests.

| Plaintiffs' Plan 1 | Plaintiffs' Plan 2 |
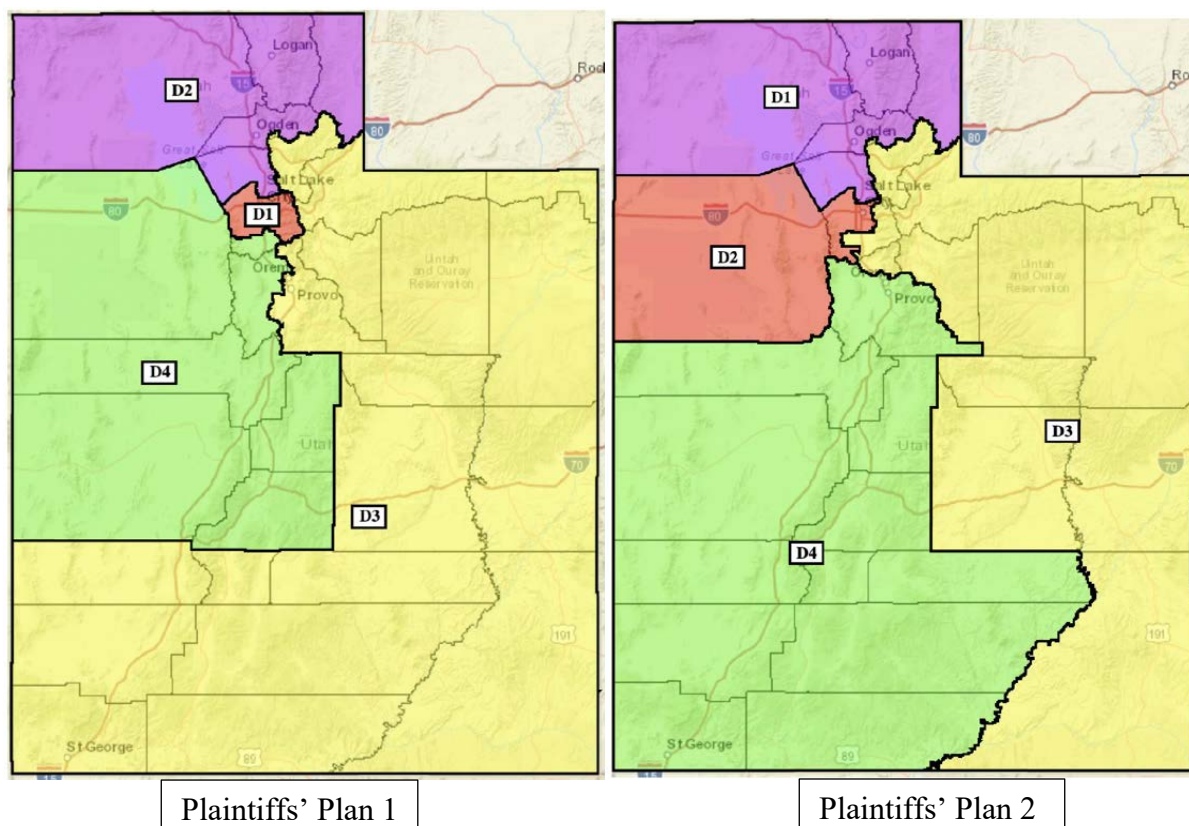
Plaintiffs' Plan 1 places District 1 fully within Salt Lake County, splitting the county above South Jordan and Sandy (and splitting Midvale). District 4 takes the rest of Salt Lake County, the western half of Utah County, and continues west and south to capture Juab, Millard, Sanpete, Sevier, and Tooele counties. District 2 comprises the five northernmost counties, and District 3 takes everything else.[6]

Plaintiffs' Plan 2 purports to improve upon the 2025 Plan. The primary difference is its treatment of Salt Lake City. Plan 2 places Salt Lake City along with a few cities to the south in District 2 with Tooele County. District 2 then skips over West Jordan and South Jordan before picking up Riverton and Herriman in the south of the county. The 2025 Plan includes

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[6] An interactive version of Plaintiffs' Plan 1 can be accessed at https://davesredistricting.org/maps#viewmap::e8d5934c-1a42-4765-8519-406ab5afeabc

Salt Lake City in District 3. Plaintiffs' treatment of the State's most populous city has major consequences for Plaintiffs' plans' lack of partisan symmetry. *See infra.*[7]

A. Plaintiffs ignore Utah's natural features and important communities.

A cursory examination of district lines in Plaintiffs' two plans reveals at least two major failures to respect Utah's significant geographical boundaries and unique communities of interest.

Plaintiffs' Plan 1 places the State's southernmost eight counties[8] into District 3. This creates obvious problems with "ease of transportation throughout the district." Utah Code §20A-19-103(3)(d). For example, the three fast routes from Panguitch in Garfield County to Bluff or Monticello in San Juan County require either leaving District 3 or leaving Utah.

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[7] An interactive version of Plaintiffs' Plan 2 can be accessed at https://davesredistricting.org/maps#viewmap::66f159a3-89c6-4bb4-9f47-fb8ec3ff0056

[8] Beaver, Garfield, Iron, Kane, Piute, San Juan, Washington, and Wayne.
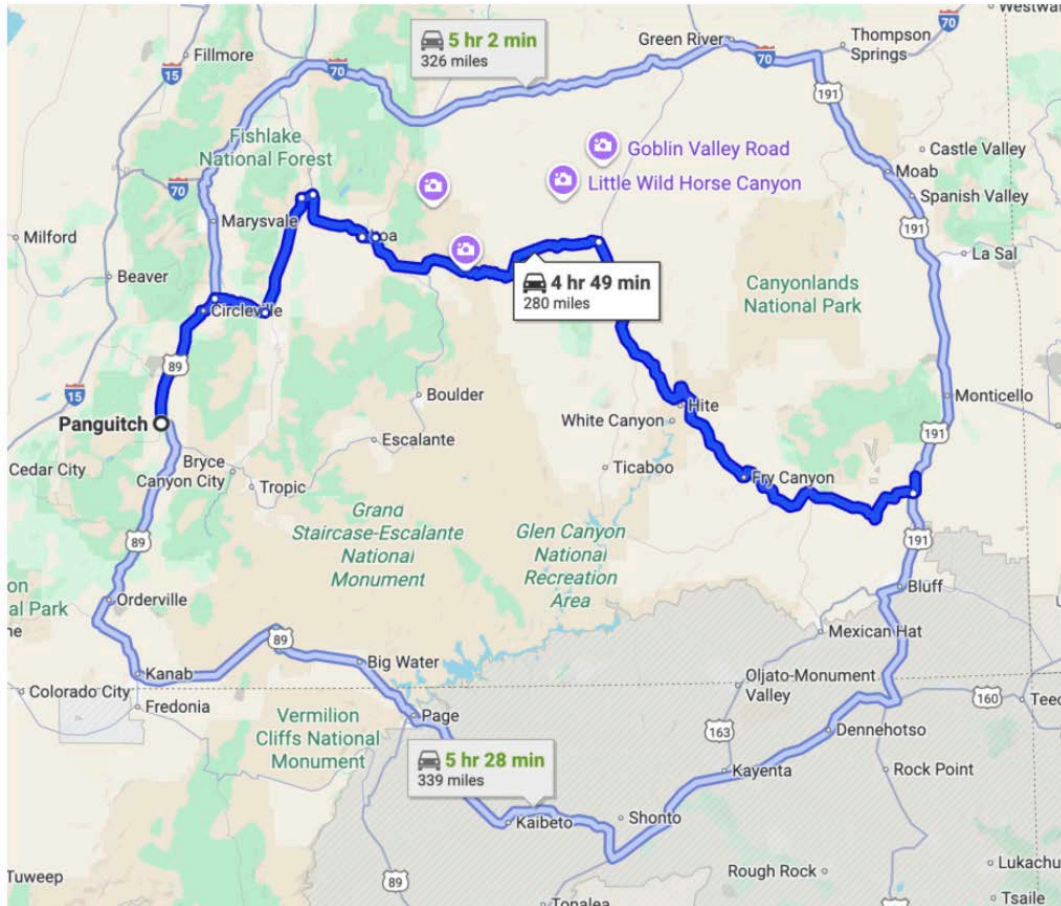
Barber Report at 10. The 2025 Plan avoids this burden on intradistrict travel by using the Colorado River as a natural boundary between Districts 3 and 4. *See supra* II.D.

Plaintiffs' Plan 2 "divides a major community of interest in Salt Lake County by splitting the six primary canyons that empty into the Salt Lake Valley among different districts." **Barber Report at 9**. *See* Utah Code §20A-19-103(3)(e).
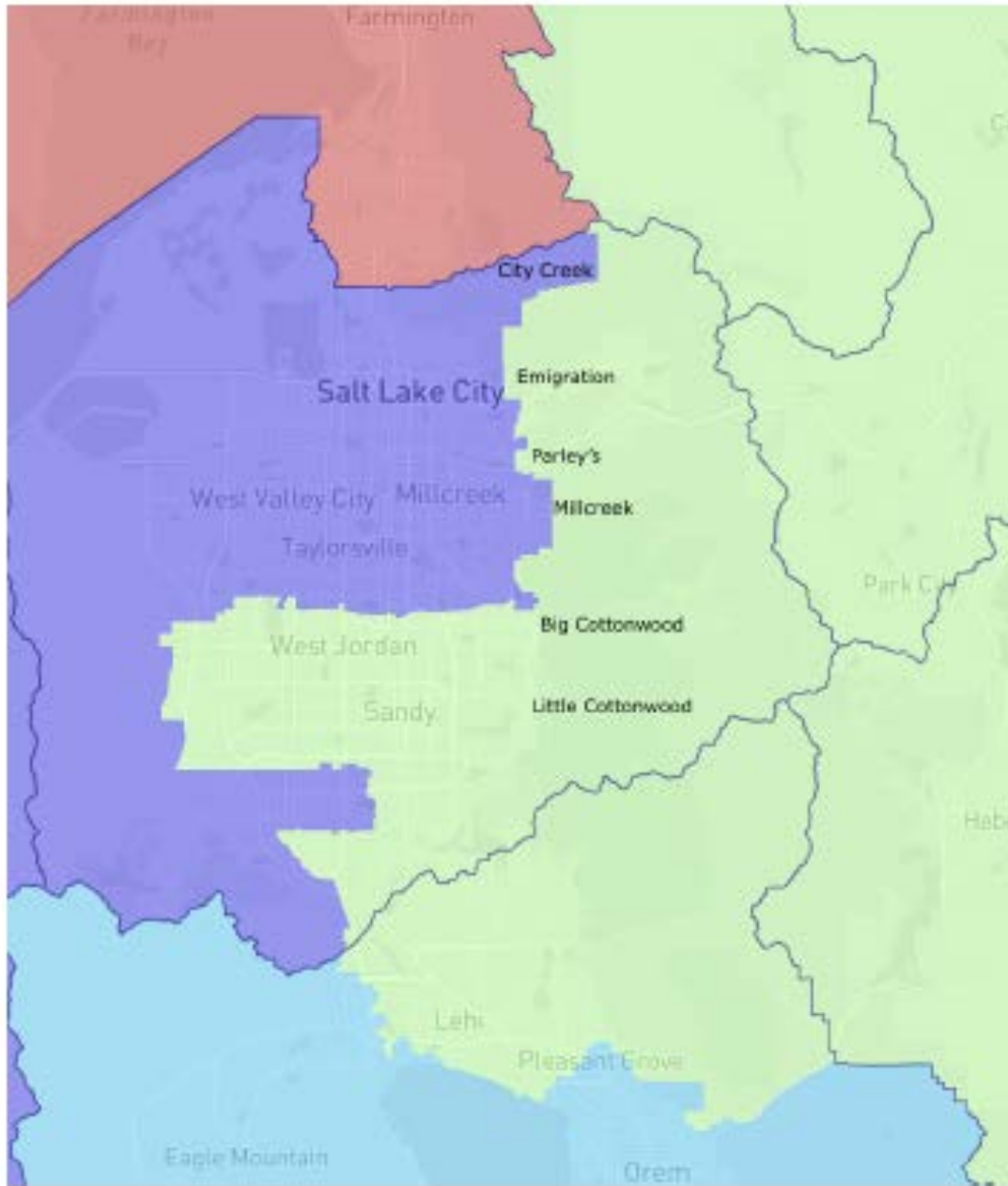
Under this configuration, "City Creek Canyon is placed in District 2, while Emigration, Parley's, Millcreek, Big Cottonwood, and Little Cottonwood are placed in District 3." **Barber Report at 9**. Salt Lake City is in District 2 while Emigration Canyon is in District 3. *Id.* "Similarly, Parley's and Millcreek Canyons are in District 3, but the communities at their mouths—Salt Lake City, Millcreek, and Holladay—are in District 2." *Id.* The 2025 Plan, in contrast,

joins "all six canyons with the east-bench communities at their base," "align[ing] a clear community of interest, streamlin[ing] transportation considerations, and assign[ing] responsibility for these important shared resources to a single representative." ***Id.* at 11**.

Plaintiffs' Plan 2 also splits the community of interest comprising Herriman, Riverton, and Bluffdale, placing the first two in District 2 and Bluffdale in District 3. ***Id.* at 12**. These three cities "have much in common" and face "similar issues such as rapid growth, traffic congestion, lack of infrastructure, and a perceived lack of county funding." ***Id.*** Further, the only way to travel from this community to and from the cities in the northern half of the Salt Lake Valley while staying in District 2 is via the unpopulated Oquirrh Mountain Range. ***Id.***
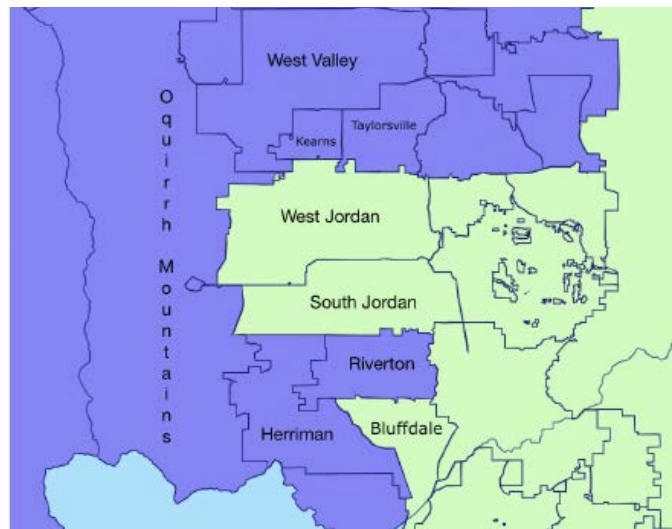
The 2025 Plan "takes a more coherent approach by grouping all of the cities of the west and south west side of Salt Lake Valley, that share many similar concerns, together." ***Id.***

B. Plaintiffs' Plans fail the ensemble analysis.

The Legislature could not have enacted Plaintiffs' plans because both fail Proposition 4's requirement that a redistricting plan "not purposefully favor or disfavor a political party." Utah Code §20A-19-103(4)(b). Under Utah law, a proposed redistricting plan fails the

mandatory ensemble analysis if its Ranked Marginal Deviation score "is greater than the result

… of 95% of the ensemble districts after culling the ensemble to include only redistricting

plans that pass the partisan bias test." *Id.* §20A-19-103(1)(a)(iii)(B). Dr. Barber performed this

analysis on Plaintiffs' plans, with the results shown below.

Ensemble Analysis: Ranked Marginal Deviation
26,282 Simulated Maps that Pass Partisan Symmetry Test
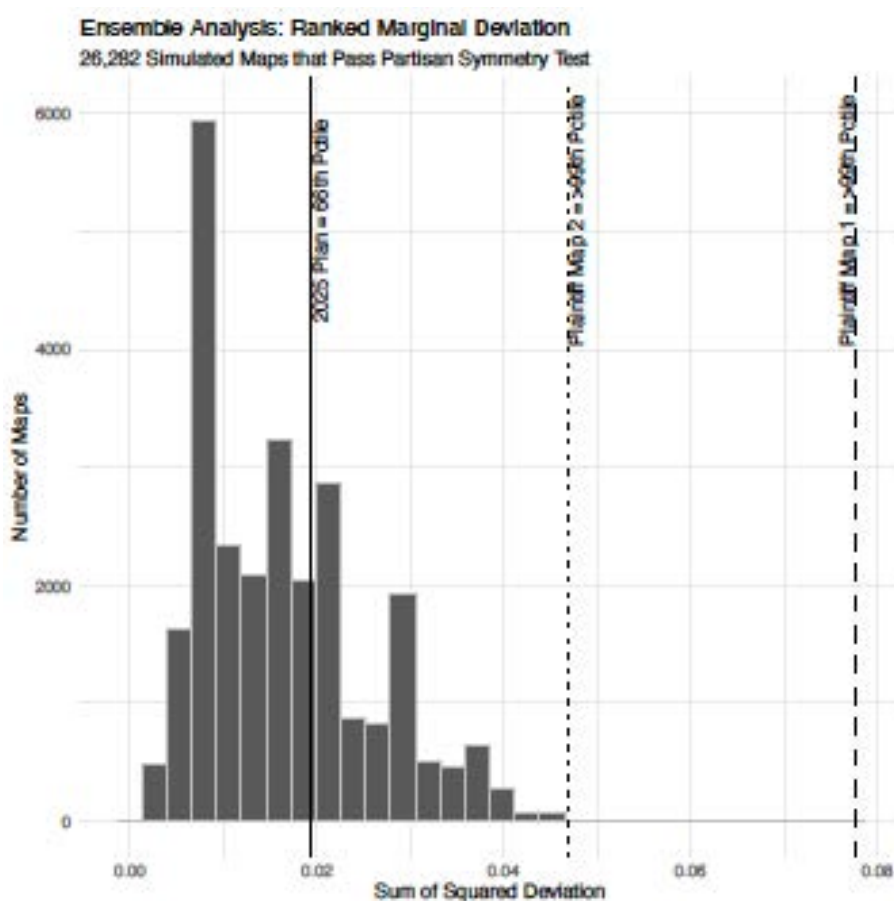
While the 2025 Plan sits at the 66th percentile, well within the range of neutral, symmetrical

simulations, both of Plaintiffs' plans fall off the charts. Plan 2 resembles only a handful of over

26,000 maps passing the partisan symmetry requirement. Plan 1 is a more extreme outlier than

any map in the simulation set. These maps fail the statutory ensemble analysis, providing evi-

dence of an illegal intent to favor a political party.

C. Plaintiffs' Plans fail either the partisan bias test, the mean-median test, or both.

In addition, the Legislature could not have enacted Plaintiffs' Plan 1 because it fails the partisan bias test and, as a result, fails Proposition 4's partisan symmetry requirement.

Election	2025 Plan	Plaintiff Map 1	Plaintiff Map 2
2016 President	Pass	Fail	Fail
2016 Governor	Pass	Fail	Fail
2016 Attorney General	Pass	Fail	Fail
2016 Auditor	Pass	Fail	Fail
2016 Treasurer	Pass	Fail	Fail
2020 President	Pass	Fail	Pass
2020 Governor	Pass	Fail	Pass
2020 Attorney General	Pass	Fail	Pass
2020 Auditor	—	—	—
2020 Treasurer	—	—	—
2024 President	Pass	Fail	Pass
2024 Governor	Pass	Fail	Pass
2024 Attorney General	Pass	Fail	Pass
2024 Auditor	Pass	Fail	Pass
2024 Treasurer	Pass	Fail	Pass
Average of Elections	**Pass**	**Fail**	**Pass**

Not only does Plan 1 fail the partisan bias test, but it fails "in every election across all three cycles, which indicates a persistent structural tilt under the 50-50 thought experiment." **Barber Report at 19**. The reason for the dramatic asymmetry is that Plan 1 "borrows' Democratic votes from that second most Democratic district in order to make a single more Democratic district initially." ***Id.***

While Plaintiffs' Plan 2 passes the partisan bias test with mixed results (failing the 2016 contests), it fails the mean-median test, as does Plaintiffs' Plan 1. ***Id.* at 22**. Both plans fail under either of Dr. Barber's methods for calculating the mean-median difference. ***Id.***

Table 2: Mean-Median Scores by Election and Map

Election	2025 Plan	Plaintiff Map 1	Plaintiff Map 2
2016 President	1.70	-7.27	-3.31
2016 Governor	1.12	-6.47	-2.97
2016 Attorney General	0.76	-6.27	-2.89
2016 Auditor	1.61	-6.20	-2.76
2016 Treasurer	1.96	-6.06	-2.74
2020 President	1.40	-5.87	-2.25
2020 Governor	0.56	-6.47	-2.75
2020 Attorney General	1.46	-5.94	-2.29
2024 President	1.97	-4.72	-1.30
2024 Governor	0.59	-5.78	-2.66
2024 Attorney General	2.02	-5.30	-1.89
2024 Auditor	1.90	-5.22	-1.88
2024 Treasurer	1.97	-5.21	-1.83
Average of Elections	**1.45**	**-5.82**	**-2.38**

Table β: Mean-Median Scores by Election and Map (alternative method of calculation)

Election	2025 Plan	Plaintiff Map 1	Plaintiff Map 2
2016 President	2.46	-6.92	-2.88
2016 Governor	1.62	-6.43	-2.84
2016 Attorney General	1.13	-6.39	-2.95
2016 Auditor	1.96	-6.27	-2.76
2016 Treasurer	2.31	-6.09	-2.73
2020 President	1.69	-6.19	-2.31
2020 Governor	0.95	-6.65	-2.71
2020 Attorney General	1.72	-6.35	-2.42
2024 President	1.88	-5.65	-1.82
2024 Governor	0.98	-5.96	-2.57
2024 Attorney General	1.90	-6.38	-2.51
2024 Auditor	1.81	-6.12	-2.42
2024 Treasurer	1.86	-6.16	-2.40
Average of Elections	**1.67**	**-6.23**	**-2.55**

Compared to the 2025 Plan, which "performs the way a compliant plan should," Plaintiffs' Plan 1 "is a different story." *Id.* **at 21**. Each entry falls well outside the (-2, 2) range. All are "below -4.7 and many below -6.0." *Id.* There "is not a single election in which Map 1 satisfies the S.B. 1011 mean-median requirement." *Id.* The "story" told by these persistently and dramatically failing scores is that Plan 1 "'packs' Republicans into three overwhelmingly

Republican districts in order to make a safely Democratic district," which "has the effect of pushing up the median district (the midpoint between the second and third districts in a 4 district play), and therefore lowering the mean-median score." *Id.* The Legislature could not enact this "partisan outlier" that "categorically" fails the mean-median measure of partisan symmetry. *Id.* Plaintiffs Plan 2 likewise "fails the test" with its 2.38 score, exhibiting a lack of partisan symmetry and, accordingly, undue favor for a partisan outcome. *Id. See* Utah Code §20A-19-103(4)(a), (c).

D. Plaintiffs' Plans resemble partisan gerrymanders under Plaintiffs' preferred tests.

Again, Plaintiffs' own preferred alternative tests for partisan symmetry are irrelevant. But even if they applied, those tests show that Plaintiffs' plans are partisan outliers when held up against neutral simulation ensembles.
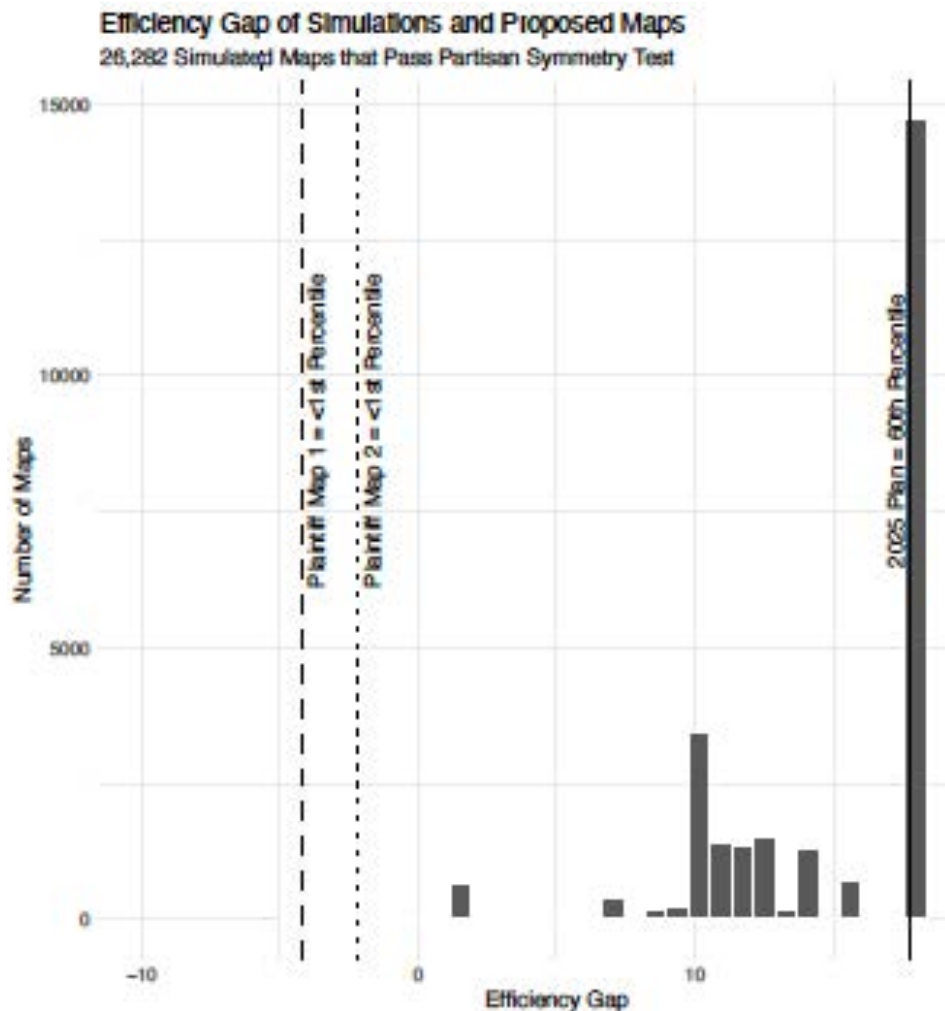

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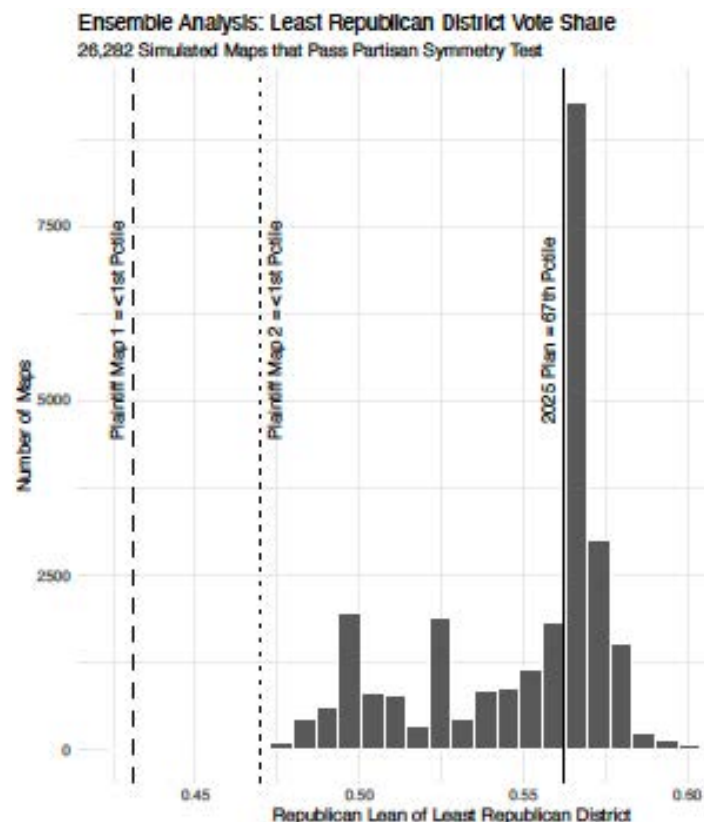
First, **Least Republican Vote Share**. A Republican-leaning "least-Republican" district is far from unusual in the context of Utah's congressional districts. **Barber Report at 30**. To the contrary, the least-Republican district in the overwhelming majority of Dr. Barber's simulated plans (93.5%) that pass the partisan bias test leans Republican. *Id.* What *is* unusual are Plaintiffs' Democratic-leaning "least-Republican" districts. Shown above, just a few, if any, non-biased simulations contain a least-Republican district as Democratic-leaning as Plaintiffs'. Under their plans, Republicans are packed into three districts in order to "construct a single Democratic seat." *Id.* at 5.
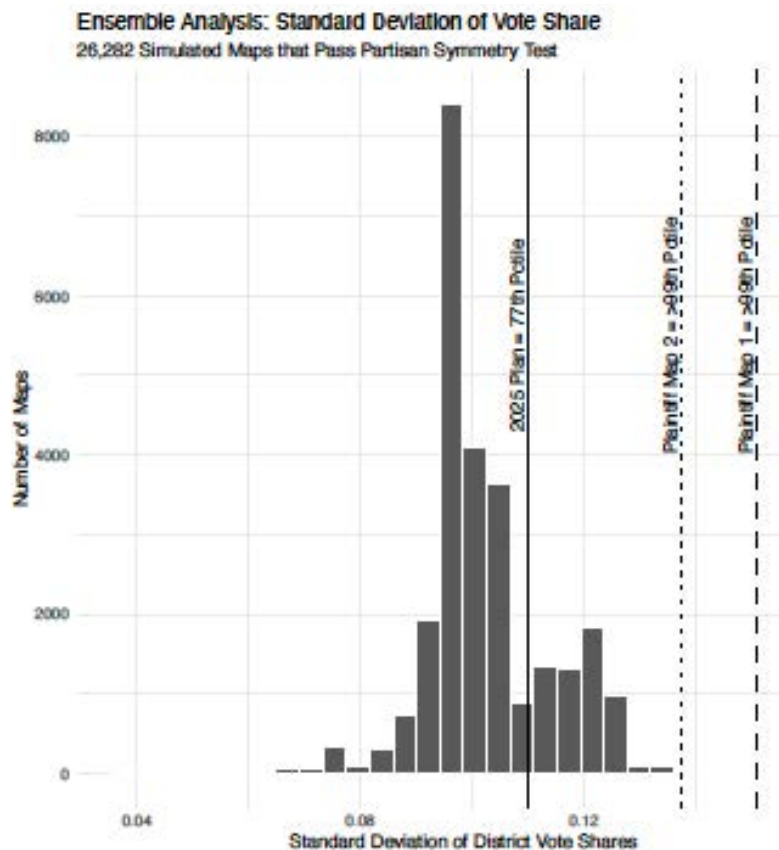
Next, **Standard Deviation of Vote Shares**. Extremely low SDVS scores demonstrate a cracking scheme, while higher values are "a signature of packing." **Barber Report at 34**. In Utah's congressional context, a "plan that placed as many members of the majority party into

three districts to create a district that was favorable to the minority party would exhibit an unusually high standard deviation of vote shares." *Id.* Here Plaintiffs plans bear the signature mark of a packing scheme. When compared against 26,282 politically neutral plans that pass the partisan bias test, both of Plaintiffs' plans fall above the 99th percentile. This "pattern is consistent with packing Republicans into three districts to manufacture an anomalously low, Democratic-leaning fourth district, which inflates that standard deviation of vote shares." *Id.* The 2025 Plan, in contrast "does not show either a low-variance cracking or high-variance packing pattern." *Id.*

Efficiency Gap of Simulations and Proposed Maps
26,282 Simulated Maps that Pass Partisan Symmetry Test

Finally, **Efficiency Gap**. Plaintiffs' Plans are extreme outliers under their prized Efficiency Gap test when compared to over 25,000 symmetrical simulations. *Id.* **at 43**. Nearly 15,000 of these neutral maps align with the 2025 Plan's EG, yet "only a handful of the thousands of maps … resemble Plaintiffs Maps 1 and 2." *Id.* **at 42**. In fact, proving just how unreliable and inapplicable EG is to Utah's congressional districts is the fact that the vast majority of these simulated maps have an EG of 10% or higher. If a passing EG "threshold" is somewhere around 8%, *id.* **at 39**, then the deployment of this metric in this context is nothing less than a means of ensuring that whatever EG-compliant map passes is all but guaranteed to have partisan bias.

*

In sum, the 2025 Plan does not purposefully or unduly favor any partisan outcome; Plaintiffs' plans do. As shown by the table below,[9] "using the methods the statute names as well as those requested by Plaintiffs, the 2025 Plan is not a partisan outlier nor shows signs of undue political favoritism to one political party." **Barber Report at 6**. The 2025 Plan passes every test; Plaintiffs' plans fail them all.

	2025 Plan	Plaintiffs' Map 1	Plaintiffs' Map 2
Partisan Bias	Pass (all elections)	Fail (all elections)	Mixed (fail 2016; pass 2020-24)
Mean–Median (avg.)	+1.45	-5.82	-2.38
Ranked Marginal Deviation (U / C)	83 / 66	81 / >99	20 / >99
Least Republican Vote Share (U / C)	71 / 46	12 / <1	34 / <1
Std. Dev. of Vote Shares (U / C)	42 / 77	86 / >99	72 / >99
Efficiency Gap (U / C)	79 / 60	23 / <1	35 / <1

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[9] "U" on the left reflects a comparison to the unculled simulation ensemble, while "C" on the right provides the comparison to the culled ensemble. **Barber Report at 6**.

CONCLUSION

This Court should enter an order directing the Lieutenant Governor to conduct the 2026 elections using the 2025 Plan.

Dated: October 17, 2025

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CERTIFICATE OF SERVICE

I filed this brief on the Court's electronic filing system, which will email everyone requiring notice.

Dated: October 17, 2025

   /s/ Tyler R. Green