

EXHIBIT 3

Comparison of Congressional Plans for Alabama

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1 Background

I am a Professor of Mathematics and a Senior Fellow in the Jonathan M. Tisch College of Civic Life at Tufts University. Besides the current case, I have previously filed expert reports and/or testified in court or deposition in *Johnson v. Wis. Elections Comm'n*, No. 2021AP1450-OA, 2022 WL 621082 (Wis. Mar. 3, 2022); *NC League of Conservation Voters, et al. v. Hall, et al.* No. 21-cvs-500085 (Wake Cnty. Sup. Ct. 2021); *Carter v. Chapman*, No. 7 MM 2022, 2022 WL 702894 (Pa. Mar. 9, 2022); *O'Shea v. Boston City Council*, Case No. 1:22-cv-12048 (D. Mass. 2023); *SC NAACP et al. v. Alexander, et al.*, Case No. 3-21-cv-03302-MBS-TJH-RMG (D.S.C.) (three-judge ct.); *TX NAACP et al. v. Abbott*, Case No. 1:21-CV-00943-RP-JES-JVB., and *Georgia State Conference of the NAACP et al. v. State of Georgia*, Case No. 1:21-CV-5338-ELB-SCJ-SDG.

1.1 Summary

This short report expands on my prior reports in this case, whose substance is incorporated by reference. Here, I compare five Congressional plans for Alabama:

- SB-5, a plan introduced by Senator Livingston in 2023 and enacted in law before being enjoined by the court;
- SM1, SM2, SM3, three proposed remedial plans released by the court-appointed Special Master (of which SM3 was selected by the court and now in place for elections in 2024); and
- Plan E, a new illustrative plan for the Gingles 1 VRA factor, supplementing my prior Plans A–D. In drawing this plan, I began with SM2 as a starting point and made refinements with compactness as a paramount priority, while maintaining other criteria. The plan restores CD 2 to being majority-Black by voting age population, as I understand is required in a Gingles 1 illustrative plan.

The plans are shown in Figure 1. In the same bill (SB-5) that introduced a new Congressional plan, legislators also included an updated set of state guidelines for redistricting. These guidelines are extremely restrictive and can be regarded as an attempt to lock in specific features of the SB-5 plan under cover of updating the redistricting principles.

In particular, the bill specifies three county clusters as "communities of interest" (or "COIs"), while asserting that the legislature has the sole authority to designate them in what they allow is an "intensely political process." In sharp contrast to this top-down approach, it is more customary for legislatures to solicit public testimony in an attempt to learn from their constituents about their salient communities. Indeed, in 2021, the state of Alabama engaged in just such a public hearing process consisting of 28 meetings in which members of the public endeavored to describe their communities of interest.¹

¹I am aware that there were also hearings in 2023, but no list of meetings or corresponding transcripts were made available on the state redistricting website, as far as I can find.

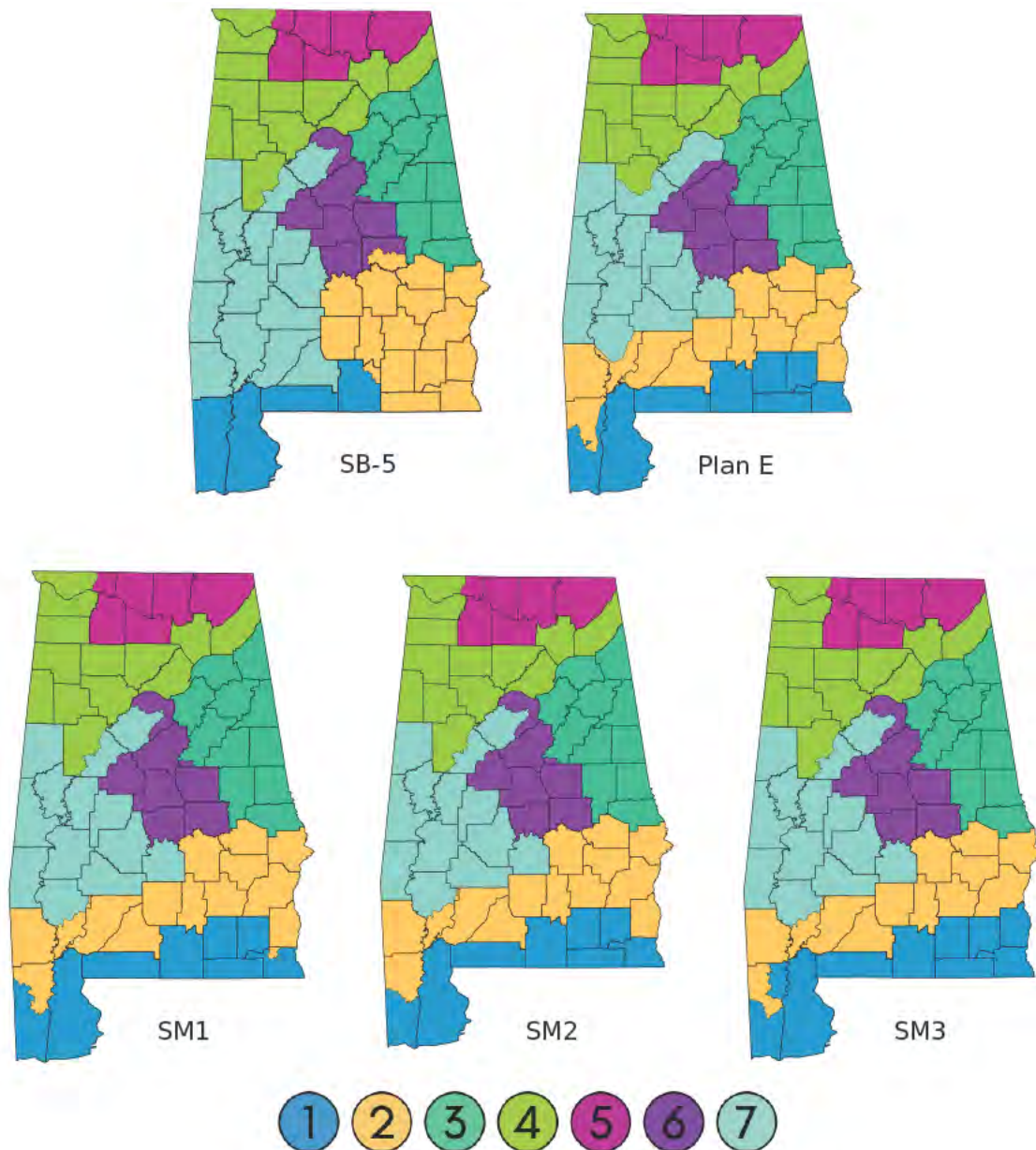


Figure 1: Districts 3, 4, 5, and 6 are substantially similar across all five plans. The main differences occur in districts 1, 2, and 7. All three Special Master plans handle the CD1-CD2 boundary slightly differently; the third Special Master plan also modifies the CD6-CD7 boundary in Jefferson County. Plan E has substantially the same district cores as the Special Master plans, but makes small adjustments throughout.

Information from the state can be accessed at the following links.

- Alabama Redistricting Page: alison.legislature.state.al.us/reapportionment-2023-proposed
- 2021 Public Hearings: alison.legislature.state.al.us/reapportionment-meetings-notice-2021
- SB-5 Guidelines: alison.legislature.state.al.us/files/pdffdocs/SearchableInstruments/2023SS2/SB5-eng.pdf

Below, I will compare the five plans in §2; then I will discuss the feasibility of following the updated guidelines in §3.

2 Comparison of Congressional districting plans

2.1 Metrics relating to traditional districting principles

In my assessment, all five maps are reasonably configured and take into consideration compactness, contiguity, and respect for political subdivisions and COIs.² All five plans are contiguous and have *de minimis* deviation (one person top-to-bottom differential in Decennial census population). Other metrics relating to districting principles are shown in Table 1.

Districting Criteria					
metric	SB-5	Plan E	SM1	SM2	SM3
avg Reock	0.411	0.363	0.352	0.350	0.349
avg Polsby-Popper	0.282	0.273	0.231	0.237	0.235
block cut edges	3246	3291	3829	3647	3597
counties split	6	6	7	6	6
cities and towns split	34	34	37	35	33
retention vs 2011	83.37%	71.23%	75.23%	73.89%	72.84%
retention vs 2021	84.88%	71.38%	75.97%	74.63%	73.95%
retention vs SB-5	—	82.02%	88.88%	87.54%	86.85%

Table 1: The first three rows show scores of compactness. For Reock and Polsby-Popper scores, higher is better. For block cut edges, lower is better. Next, the table shows the number of counties, then cities and towns, that are split (i.e., that have parts in more than one district). Finally, the retention rows show the share of population (in the 2020 Census) whose address keeps them in the same district as in various benchmark plans.

The three compactness scores—average Reock, average Polsby-Popper, and the number of cut edges between census blocks—are frequently used metrics of the shape of the districts in a plan. (Higher scores are better for Reock and Polsby-Popper, while fewer cut edges indicates a less complicated and therefore more compact plan.) In a Voting Rights Act (VRA) case, the first Gingles precondition addresses the possibility of drawing a reasonably configured map with an additional majority-minority district. The existence of such a map is taken to demonstrate that the minority community is "sufficiently large and geographically compact to constitute a majority in a single-member district." Thus the sufficient compactness of the Black community in Alabama has been demonstrated by numerous illustrative plans in the course of the current lawsuit.

²See §3.2 for further discussion of the state's new approach to communities of interest.

With regard to compactness, I further note that scores of compactness depend on both state-specific geography and state-specific history of district configurations, given that line-drawers pay attention to core retention. I find that all five of these plans are reasonably compact not only in the context of Alabama Congressional redistricting, but also by national standards.

The number of counties split across multiple districts is shown below the compactness scores in Table 1, followed by city and town splits. The final rows record the share of 2020 Decennial Census population for whom the district assignment in the listed plan is identical to earlier benchmark assignments (the 2011 plan, the 2021 plan, or SB-5); this is regarded as a metric of core retention.

2.2 Demographic shares

	CD	SB-5	Plan E	SM1	SM2	SM3
BVAP	1	24.63%	14.95%	14.92%	16.51%	16.25%
	2	39.93%	50.00%	50.08%	48.49%	48.69%
	3	20.70%	20.69%	20.70%	20.70%	20.70%
	4	7.22%	6.64%	7.22%	7.22%	7.22%
	5	18.33%	18.32%	18.33%	18.33%	18.33%
	6	19.26%	17.84%	16.75%	16.75%	17.55%
	7	50.65%	53.00%	52.79%	52.79%	51.91%
	CD	SB-5	Plan E	SM1	SM2	SM3
BCVAP	1	24.77%	14.98%	14.96%	16.56%	16.30%
	2	40.48%	50.71%	50.76%	49.14%	49.41%
	3	20.86%	20.86%	20.86%	20.86%	20.86%
	4	7.25%	6.65%	7.25%	7.25%	7.25%
	5	18.53%	18.52%	18.53%	18.53%	18.53%
	6	19.62%	18.17%	17.01%	17.01%	17.84%
	7	51.58%	53.75%	53.81%	53.81%	52.91%
	CD	SB-5	Plan E	SM1	SM2	SM3
BARPOP	1	24.28%	14.36%	14.39%	15.88%	15.63%
	2	41.10%	52.05%	52.18%	50.63%	50.97%
	3	19.77%	19.77%	19.77%	19.77%	19.77%
	4	6.74%	5.92%	6.74%	6.74%	6.74%
	5	17.24%	17.22%	17.24%	17.24%	17.24%
	6	18.54%	16.24%	15.67%	15.67%	16.56%
	7	54.26%	55.79%	56.70%	56.70%	55.64%

Table 2: Shares by district of Black voting age population (BVAP), Black citizen voting age population (BCVAP), and Black active registered voters (BARPOP). Darker shading shows shares over 50%, lighter shading shows shares in the 48-50% range.

3 Alabama's state guidelines

In the legislative bill SB-5 passed in 2023 in the wake of the *Milligan* decision, Alabama lawmakers asserted new redistricting guidelines that are significantly different and more stringent than the guidelines previously in place. In §1(3)A-F, a list of criteria is presented as "traditional districting principles," subsequently described in the new bill as "non-negotiable for the Legislature" in creation of districting plans. These are as follows, paraphrased here for succinctness.

- A: Population balance.
- B: Contiguity.
- C: Reasonable compactness.
- D: *De minimis* number of county pieces.
- E: Keeping together three specific county clusters as "communities of interest." (See Fig 2.)
- F: Zero incumbent pairings.



Figure 2: The three official COIs designated in SB-5.

Next, §1(3)G lists three lower-priority principles which are to be observed if consistent with A-F. These are:

- Core preservation.
- Minimizing number of counties in each district.
- Minimizing splits of "neighborhoods and other political subdivisions."

3.1 The cumulative effect of the new "traditional" principles

The "non-negotiable" principles D, E and F are far from traditional, but actually are novel and quite restrictive if treated as requirements. I find that SB-5, by presenting these as traditional and emphasizing that "Section 2 of the Voting Rights Act 'never requires adoption of districts that violate traditional redistricting principles'", seeks simply to legitimate and in some cases to lock in the features of the Livingston SB-5 plan, which was discussed above and introduced concurrently. The SB-5 plan was subsequently rejected by the court for failing to remedy the vote dilution the court had identified in the prior plan.

- To my knowledge, the new law codifies a way of measuring county preservation that has never before been used in Alabama, and its requirement of literal minimization is also appearing for the first time. Even the state's 2011 Congressional map would fail this test, as would most enacted maps nationwide, making it hard to characterize this as traditional.³
- The rigid designation by the state of county clusters as the only admissible COIs is new in Alabama. To my knowledge, no assertion that the state alone defines salient communities has been in practice for COI identification anywhere in the country. In addition, these particular choices are extremely restrictive on mappers.
 1. The Gulf Coast county cluster has population 646,576, which is over 90% of the ideal Congressional district size of 717,754. That means that requiring these counties be kept together amounts to nearly prescribing a Congressional district in law. Insisting on keeping this area together is not reasonably described as traditional, as this area was split in Congressional plans before 1970 and in the 2011 and 2021 State Board of Education plans. Instead, it effectively requires drawing of an entire district from the SB-5 plan under cover of redistricting principles.
 2. The Black Belt COI has population 562,358, the Wiregrass has population 362,794, and they overlap. Together, their population is 853,726, greater than a Congressional district. This means that far from being traditional, it is in fact mathematically *impossible* to keep both the Black Belt and the Wiregrass unsplit in a single districting plan.
- The mentions of community constituted by ethnic, racial, and tribal identity are excised in the new language, though those are common features that buttress community identification in the redistricting context.

OLD: "A community of interest is defined as an area with recognized similarities of interests, including but not limited to **ethnic, racial, economic, tribal, social, geographic, or historical identities.**" (emphasis added)

NEW: "A community of interest is a defined area of the state that may be characterized by, among other commonalities, shared economic interests, geographic features, transportation infrastructure, broadcast and print media, educational institutions, and historical or cultural factors."
- It is not traditional to elevate incumbent protection from a priority to a requirement—setting zero pairings as a primary non-negotiable factor—and it has never been proposed in Alabama guidelines before, to my knowledge. The previous (2021) guidelines used language of priority, which is much more typical in other states: "Contests between incumbents will be avoided whenever possible."⁴

³However, my demonstrative Plan D discussed in my expert report of December 10, 2021 passes this test while containing two majority-Black districts.

⁴I also note that many states have a residency requirement for state legislators to live in their districts, but this is not a requirement for Congressional districts, and numerous members of Congress do live outside of their districts.

3.2 State-designated communities of interest

As described above, the Black Belt, Wiregrass, and Gulf Coast COIs are county clusters designated by the state in SB-5. It is notable that they are all located in the part of the state that is contested in VRA litigation, namely in the area covered by Congressional districts 1, 2, and 7. It seems implausible that a good-faith list of important communities in Alabama would completely exclude the Northern and Northeastern areas of the state.

The new guidelines indicate that the three regions should be held whole if possible, and if not, then "division into two districts is preferable to division into three or more districts." By this standard, all five maps meet the requirements, since they keep the number of districts touching any designated region to a maximum of two.

Districts Touching State-Designated COIs

COI	SB-5	Plan E	SM1	SM2	SM3
Black Belt	2, 7	2, 7	2,7	2,7	2,7
Wiregrass	1, 2	1, 2	1,2	1,2	1,2
Gulf Coast	1	1, 2	1,2	1,2	1,2

3.3 Incumbent protection

Rounding out the top-line principles, we consider incumbent protection: the Livingston map (SB-5) keeps all seven incumbents in their districts, while the other maps all pair incumbents Jerry Carl (CD 1) and Barry Moore (CD 2), and Plan E additionally pairs Terri Sewell (CD 7) and Gary Palmer (CD 6). If needed, the pairing of Carl and Moore could be easily repaired by balancing changes to Coffee County with an adjustment in Mobile County, keeping Barry Moore in CD 2, at the cost of an additional county split.⁵

Forbidding additional county splits while requiring paramount incumbent protection is another way that the new guidelines lock in features of the SB-5 plan.

3.4 Lower priorities

I will briefly touch on the three lower-order criteria in the new framework: core preservation; minimizing counties per district; and respecting neighborhoods.

Core preservation is usually measured by the share of current population whose address puts them in the same-numbered district today as they would have belonged to in the previous cycle. These shares are shown in Table 1.

The next criterion, also present in the previous guidelines, says to "Minimize the number of counties in each district"; if this refers to the average, then this requirement is redundant with the rule requiring six split counties. Any plan splitting six counties two ways, as required in rule A, will have exactly $7\frac{3}{7}$ (roughly 10.4) counties per district overall. If the criterion refers to individual districts, it is also impossible to interpret literally: no district will be able to go below that average without making some other district go above that average.⁶ I am aware of no other state that has a similar rule, which makes it difficult to reconstruct what is meant by this language and also makes it clear that the rule should not be regarded as "traditional."

⁵I have confirmed that the Sewell/Palmer pairing in Plan E can be avoided without an additional split, if needed.

⁶It is worth noting that a high number of counties in a district occurs exactly when those counties are small and rural, as is the case across the Black Belt. The Black Belt has 18 counties and an average population of just 31,242 people per county, while the other 49 counties have an average population of 91,060—nearly three times as high. Therefore a rule that discourages high numbers of counties per district is at odds with the designation of the Black Belt as a community to be kept largely whole.

Finally, the guidelines do not provide a list of relevant neighborhoods nor do they specify how "other political subdivisions" are to be identified, leaving the last-listed criterion without a precise or measurable interpretation.

4 Conclusion

I have based my analysis of the five plans on traditional districting principles—both drawing from best practices in national redistricting and as reflected in past Alabama guidelines and plans. This has led me to two conclusions. First, the Black population in Alabama is sufficiently large and geographically compact to form a voting majority in two Congressional districts. Second, the 2023 revised guidelines are far from traditional and appear designed to lock in a specific districting configuration and to inhibit the creation of a second majority-Black district.

I reserve the right to continue to supplement my report in light of additional facts, testimony and/or materials that may come to light. Pursuant to 28 U.S.C. 1746, I declare under penalty of perjury of the laws of the United States that the foregoing is true and correct according to the best of my knowledge, information, and belief.

Executed this 17th day of May, 2024.



Moon Duchin