

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ALABAMA
SOUTHERN DIVISION**

MARCUS CASTER, LAKEISHA
CHESTNUT, BOBBY LEE DUBOSE,
BENJAMIN JONES, RODNEY ALLEN
LOVE, MANASSEH POWELL,
RONALD SMITH, and WENDELL
THOMAS,

Plaintiffs,

v.

JOHN H. MERRILL, in his official
capacity as Alabama Secretary of State,

Defendant.

Case No. 2:21-CV-1536-AMM

SECOND DECLARATION OF WILLIAM S. COOPER

WILLIAM S. COOPER, acting in accordance with 28 U.S.C. § 1746,
Federal Rule of Civil Procedure 26(a)(2)(B), and Federal Rules of Evidence 702
and 703, does hereby declare and say:

1. My name is William S. Cooper. I serve as a demographic and redistricting expert for the Plaintiffs. I filed a declaration in this lawsuit on December 10, 2021.
2. I file this second declaration to respond to assertions made in Thomas Bryan's December 10, 2021 report as it pertains to the *Gingles* 1 analysis in my December 10, 2021 declaration ("December 10 Declaration").

2:21-cv-01536-AMM
02/10/2025 Trial
Plaintiff Exhibit No. 12

I. Illustrative Plan 7

3. First, Mr. Bryan criticizes an illustrative plan that “scores worse” than the 2021 Plan in his opinion on compactness. *See* Bryan Milligan and Caster Report at 31.

4. To be clear, there is no bright line rule as to what constitutes a sufficiently compact redistricting plan or district. There are many factors that the map drawer must take into account, such as odd-shaped precincts and jurisdictional lines, that can impact compactness.

5. While Illustrative Plans 1-6 offer multiple ways to draw an additional majority-Black district consistent with traditional districting principles, they are by no means the sole way to do so. Specific to Mr. Bryan’s concern, it is certainly possible to draw another such district while prioritizing compactness.

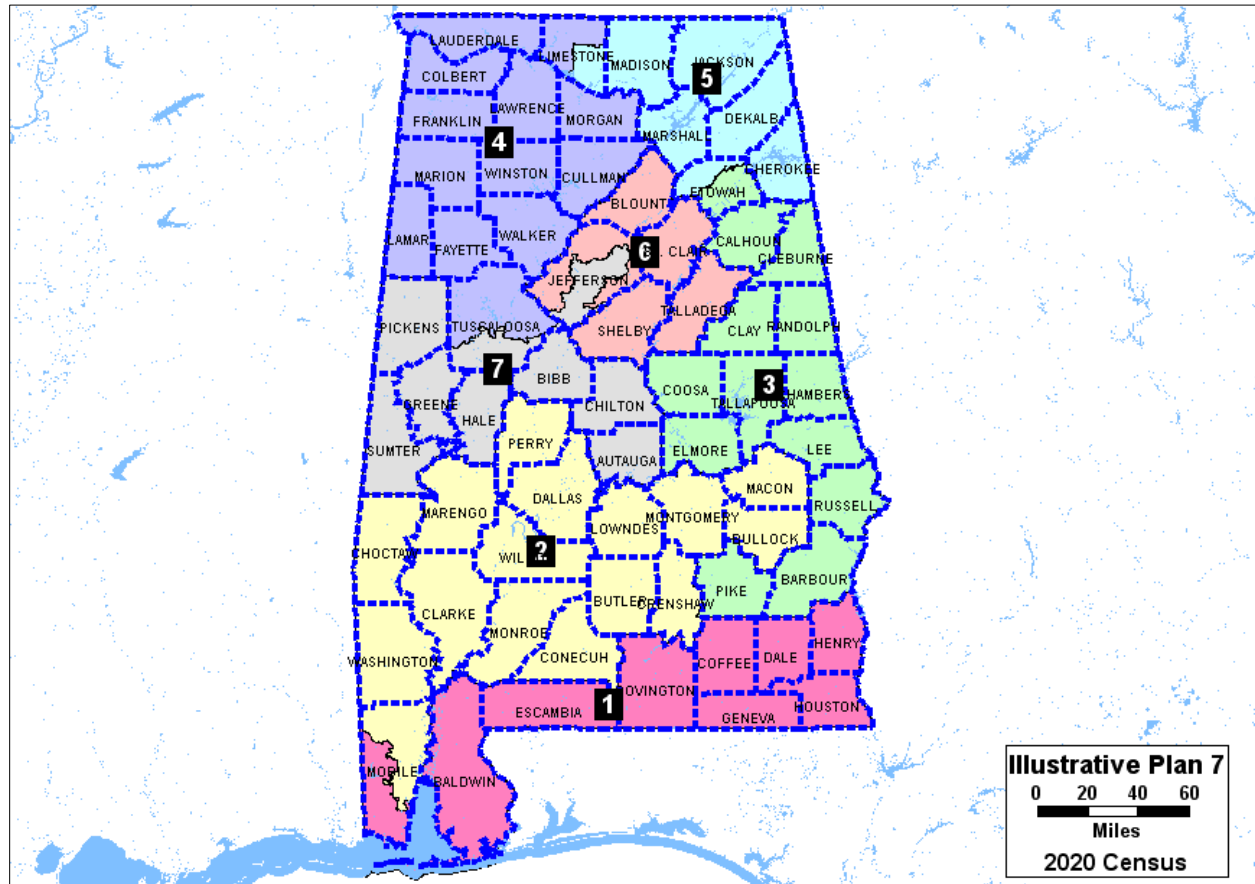
6. In response to Mr. Bryan’s criticism, I present an additional plan – Illustrative Plan 7 – to add to the six illustrative plans presented in my December 10 Declaration. Illustrative Plan 7 achieves higher compactness scores than the compactness scores I documented for Illustrative Plans 1 through 6. Compactness scores for Illustrative Plan 7 are on par with, or superior to, the 2021 Enacted Plan. Illustrative Plan 7 splits just five counties – one less than the 2021 Enacted Plan.

7. The map in **Figure 1** depicts Illustrative Plan 7. District 2 is 51.88% BVAP and District 7 is 50.31% BVAP.

8. As in Illustrative Plan 6, majority-Black District 2 is drawn so that both the City of Mobile and the City of Montgomery (and Montgomery County) are entirely in District 2.

Figure 1

Alabama U.S. House – Illustrative Plan 7



9. Majority-Black District 2 extends north to Choctaw County and then east through the Black Belt, encompassing whole counties. Macon and Bullock Counties form the easternmost border.

10. As is the case under the enacted 2021 BOE Plan, from District 1 it is necessary to drive for a short distance through District 2 (BOE District 5) in order

to get to the Baldwin County portion of District 1 (BOE District 1).¹ The enacted 2021 Senate Plan also contains this feature. There are no roads directly connecting the Washington County and Mobile County portions of SD 22 with the Baldwin County portion of SD 22 without driving outside of the district to reach I-10 or I-65 into Baldwin County.

11. Majority-Black District 7 in Illustrative Plan 7 encompasses part of the Counties of Jefferson and Tuscaloosa, extending west to Hale, Green, Sumter, and Pickens Counties. To the southeast, District 7 encompasses all of Bibb, Autauga, and Chilton Counties.

12. The table in **Figure 2** shows 2020 summary population statistics for Illustrative Plan 7. **Exhibit A-1** contains detailed 2020 population statistics by district.

¹ In Illustrative Plans 1 through 6, there is a direct route from District 1 in Mobile County to District 1 in Baldwin County.

Figure 2**2021 Illustrative Plan 7 – 2020 Census**

District	Population	18+ Pop	% 18+ AP Black	% 18+ NH White
1	717753	556689	15.58%	75.40%
2	717752	559658	51.88%	42.02%
3	717755	564958	25.51%	66.69%
4	717755	564081	8.63%	82.48%
5	717755	557105	16.11%	71.57%
6	717755	555983	13.25%	78.02%
7	717754	558692	50.31%	42.08%

13. The map in **Exhibit A-2** is a higher resolution version of the **Figure 1** map.

Exhibit A-3 contains maps focusing on District 2 and District 7 and adjacent areas.

14. As shown in **Exhibit A-4**, Illustrative Plan 7 splits five counties and populated areas in 28 VTDs. However, ten of the 28 VTD splits are created because the plan generally follows the city limits of the City of Mobile (rather than VTDs) to define the boundary between District 1 and District 2.

15. In addition to being majority-BVAP, Districts 2 and 7 are majority-non-Hispanic AP BVAP—50.97% and 50.83%, respectively—a feature Illustrative Plan 7 shares with Illustrative Plan 6.²

16. I have therefore provided the Court with seven illustrative congressional plans that adhere to traditional redistricting principles and the state’s redistricting

² Under Illustrative Plan 6, District 2 and District 7 are also majority SR BVAP – 50.19% and 50.05%, respectively.

guidelines, which include population equality, compactness, contiguity, respect for communities of interest, and the non-dilution of minority voting strength.

II. Compactness Scores -- Illustrative Plans and 2021 Enacted Statewide Plans

17. I present expanded district-by-district compactness scores (including Convex Hull and Schwartzberg analyses) for each of my seven illustrative plans, as well as the four statewide plans signed into law in 2021 by Governor Ivey – the 2021 U.S. House Plan (“2021 Plan”), the Board of Education Plan (“2021 BOE Plan”), the 2021 Senate Plan (“2021 Senate Plan”), and the 2021 State House Plan (“2021 House Plan”).³ Mr. Bryan presents these scores for various enacted and hypothetical district plans. Bryan Milligan and Caster Report at 29-30.

18. **Figure 3** reports compactness scores generated by Maptitude for Illustrative Plan 7, the 2021 U.S. Congressional Plan, the 2021 BOE Plan, the 2021 State Senate Plan, and the 2021 State House Plan. The Figure 3 table summarizes the Reock and Polsby-Popper scores – the two most widely-referenced measures of compactness. Higher scores indicate higher compactness.⁴

³ I was unable to provide this information in my December 10 Declaration because I did not have the GIS shapefile of the plans. The GIS shapefiles for the three statewide plans were obtained by the attorneys for the plaintiffs during the post-December 10 discovery process.

⁴ See my December 10 Declaration at ¶¶ 82-84 for a similar table with compactness scores for Illustrative Plans 1 through 6 and the 2011 BOE and 2011 U.S. House plans.

Figure 3**Compactness Scores – Illustrative Plan 7 vs 2021 Plans**

	Reock		High		Polsby-Popper		High
		Low				Low	
Illustrative Plan 7							
All Districts (mean avg.)	.41	.20	.56		.21	.13	.39
District 2	.39				.19		
District 7	.37				.13		
2021 U.S. Congressional Plan							
All Districts (mean avg.)	.38	.30	.50		.22	.15	.32
CD 2	.50				.26		
CD 7	.43				.19		
2021 BOE Plan							
All Districts (mean avg.)	.39	.24	.52		.24	.18	.38
District 4	.35				.18		
District 5	.36				.19		
2021 Senate Plan							
All Districts (mean avg.)	.41	.19	.63		.26	.12	.54
2021 House Plan							
All Districts (mean avg.)	.39	.11	.62		.24	.07	.60

19. **Exhibit B-1** through **B-7** contains district-by-district compactness scores for the seven illustrative plans. In addition to Reock and Polsby-Popper, there are Maptitude generated scores under the Convex/Hull⁵ measure (higher is better) and the Schwartzberg measure⁶ (lower is better).

⁵ “The Area/Convex Hull test computes the ratio the district area to the area of the convex hull of the district (minimum convex polygon which completely contains the district). The measure is always between 0 and 1, with 1 being the most compact. The Minimum Convex Polygon test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan.” *Maptitude For Redistricting* software documentation (authored by the Caliper Corporation).

⁶ “The Schwartzberg test is a perimeter-based measure that compares a simplified version of each district to a circle, which is considered to be the most compact shape possible. This test requires the base layer that was used to create the districts. The base layer is used to simplify each district to exclude complicated coastlines. . . . This measure is usually greater than or equal

20. The four compactness measures in the Exhibit B series are the ones that Mr. Bryan purports to use in his analysis of the Hatcher Plan and the 2021 Plan. Mr. Bryan's report of the Schwartzberg scores is plainly erroneous, because those scores cannot fall below 1. Lower (not higher) scores are better and 1.0 is both the lowest and the most compact score possible.

21. Also, with respect to compactness scores, it was methodologically flawed for Mr. Bryan to sum the compactness scores across measures to compare and contrast scores with a single consolidated data point.

22. The **Exhibit C** series contains district-by-district compactness scores for the 2021 Plan, the 2021 BOE Plan, the 2021 State Senate, and 2021 State House in the same format as the Exhibit B series.

III. Comparative Compactness Scores – A Texas Case Study

23. In my December 10 Declaration, I referenced a 2012 study conducted by Azavea with compactness score comparisons for congressional plans in the 2010 Census redistricting cycle.⁷ Based on the Azavea report, in my opinion, compactness scores for the Illustrative Plans fall within a normal range when compared with plans in other states.

to 1, with 1 being the most compact.” *Maptitude For Redistricting* software documentation (authored by the Caliper Corporation).

⁷ https://2rct3i2488gxf9jvb1lqhek9-wpengine.netdna-ssl.com/wp-content/uploads/2019/08/Azavea_Redistricting-White-Paper-Addendum-2012_sm.pdf

24. **Exhibit D-1** contains Reock and Polsby Popper scores for the 2021 congressional plan recently enacted in Texas, where Mr. Bryan serves as a consultant to the Republican House Redistricting Committee. Bryan Milligan and Caster Report at 3.

25. As shown in **Exhibit D-1**, the mean average Reock and Polsby-Popper scores for the 2021 Texas congressional plan is about the same as those of the Illustrative Plans. Several Texas congressional districts score significantly worse than the Illustrative Plan districts.

26. Eight Texas congressional districts have Reock scores below .29, which is the lowest score for the Illustrative Plans. The lowest Reock scores are TX CD 14 (.19), TX CD 15 (.12), and TX CD 35 (.08).

27. Nine Texas districts have Polsby-Popper scores below .11 – the lowest score for the Illustrative Plans. The lowest Polsby-Popper score is registered by TX CD 33 at .04.

28. **Exhibit D-2** (Texas Senate) and **Exhibit D-3** (Texas House) are in a similar format as Exhibit D-1. Both exhibits reveal a number of compactness scores lower than the Illustrative Plans.

IV. Proper BVAP Metric

29. In my December 10 Declaration, I discuss how AP Black, as opposed to SR Black, is the appropriate metric for determining the Black population of a given district. Initial Declaration at 3 n.3. Mr. Bryan claims SR Black has been “most consistently used historically in VRA cases.” *See* Bryan Milligan and Caster Report at 10. In my experience, this is wrong and courts have consistently accepted AP Black as the correct measure in Section 2 cases.

30. As explained in *Georgia v. Ashcroft*, 539 U.S. 461, 473 n.1 (2003), the appropriate *Gingles* 1 metric in this case is AP BVAP due to the relatively small population percentage of single-race minority voters in Alabama who are some race other than Black.

31. Throughout the 2010s, I have consistently reported AP BVAP in litigation and non-litigation settings.

32. Courts in Section 2 cases in which I served as an expert in the 2010s have accepted the Any Part classification for the *Gingles* 1 analysis. *See Ga. State Conf. of NAACP v. Fayette Cnty. Bd. of Comm’rs*, 118 F. Supp. 3d 1338 (N.D. Ga. 2015); *Missouri State Conference NAACP et al. v. Ferguson-Florissant School District*, 201 F. Supp. 3d 1006 (E.D. Mo. 2016).⁸

⁸ I have also used AP BVAP in other cases where the court relied on my testimony without making a specific finding as to the appropriateness of using the figure.

33. To my recollection, the first time I reported Any Part VAP statistics was in the 2006 remedial phase of *Bone Shirt v. Hazeltine*, No. 01-cv-3032 (D.S.D.). In that lawsuit, an illustrative plan that I developed became the court-ordered remedial plan.⁹

V. Voter Registration by Race by District– Illustrative Plans and 2021 Plan

34. Regardless, my Illustrative Plans demonstrate the ability to draw two majority-Black congressional districts using either AP BVAP or SR BVAP. *See supra* n.2.

35. Voter registration data further demonstrates that the majority of eligible voters in these district are Black. Though he is incorrect, Mr. Bryan claims Black alone is the “most defensible” definition to use when measuring the Black population. Bryan Milligan and Caster Report at 10. Because Alabama’s voter registration form allows voters to choose only one race, those statistics demonstrate that the majority of registered voters in Districts 2 and 7 in all seven Illustrative Plans self-identified as Black.

36. Below, I provide 2021 voter registration statistics for active voters who self-identified as Black in areas encompassed by District 2 and District 7 in the

⁹ In Footnote 14 in my December 10 Declaration, I mistakenly stated that the Any Part classification was not available from the 2000 PL94-171 redistricting file. While Any Part Black counts were not available in the 1990 Census PL 94-171 file, they were available in the 2000 PL94-171 file.

Illustrative Plans.

37. I used *Maptitude for Redistricting* to geocode a statewide list of 3.16 million active registered voters obtained by the plaintiffs' attorneys through discovery.

38. As shown in **Figure 4**, under all seven illustrative plans, Black registered voters are a majority in District 2 and District 7.

Figure 4

Black Registered Voters in District 2 and District 7 by Illustrative Plan

Plan Number	District 2	District 7
Plan 1	51.8%	57.7%
Plan 2	52.3%	58.3%
Plan 3	52.0%	52.7%
Plan 4	51.7%	54.2%
Plan 5	52.3%	53.8%
Plan 6	53.3%	54.6%
Plan 7	53.6%	53.5%

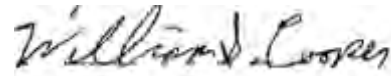
39. Current Black registered voter percentages are higher than the CVAP estimates I reported in my December 10 Declaration. There are at least two reasons for this difference: (1) the CVAP estimates count only persons who are non-Hispanic single-race Black; and (2) the 2015-2019 ACS is historical, with a survey midpoint of July 1, 2017.

#

I reserve the right to continue to supplement my reports in light of additional facts, testimony and/or materials that may come to light.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: December 20, 2021

A handwritten signature in cursive script, appearing to read "William S. Cooper", is written in dark ink on a light background.

WILLIAM S. COOPER

Exhibit A-1

Population Summary Report

Alabama U.S. House -- 2020 Census -- Illustrative Plan 7

District	Population	Deviation	% Deviation	AP Black	% AP Black	Latino	% Latino	NH White	% NH White
1	717753	-1	0.00%	122027	17.00%	34598	4.82%	523807	72.98%
2	717752	-2	0.00%	387918	54.05%	21090	2.94%	282195	39.32%
3	717755	1	0.00%	192791	26.86%	30459	4.24%	463244	64.54%
4	717755	1	0.00%	66791	9.31%	42029	5.86%	578131	80.55%
5	717755	1	0.00%	121073	16.87%	59677	8.31%	494174	68.85%
6	717755	1	0.00%	99797	13.90%	35961	5.01%	547302	76.25%
7	717754	0	0.00%	374339	52.15%	40233	5.61%	282498	39.36%
Total	5024279		0.00%	1364736	27.16%	264047	5.26%	3171351	63.12%

District	18+ Pop	18+ AP Black	% 18+ AP Black	18+ Latino	% 18+ Latino	18+ NH White	% 18+ NH White
1	556689	86748	15.58%	22107	3.97%	419740	75.40%
2	559658	290359	51.88%	13865	2.48%	235182	42.02%
3	564958	144134	25.51%	19491	3.45%	376779	66.69%
4	564081	48672	8.63%	26382	4.68%	465274	82.48%
5	557105	89743	16.11%	35996	6.46%	398712	71.57%
6	555983	73644	13.25%	22902	4.12%	433769	78.02%
7	558692	281072	50.31%	26113	4.67%	235088	42.08%
Total	3917166	1014372	25.90%	166856	4.26%	2564544	65.47%

District	% NH Single-Race Black CVAP*	% Latino CVAP	% SR NH White CVAP	% Black Active Registered Voters
1	15.59%	2.57%	79.16%	14.89%
2	52.92%	1.22%	43.73%	53.57%
3	25.74%	1.98%	70.50%	24.88%
4	8.32%	1.88%	87.55%	8.08%
5	15.98%	2.79%	77.80%	15.39%
6	12.80%	1.80%	83.49%	12.02%
7	52.12%	1.50%	44.84%	53.49%

Note: Citizen Voting Age Population (CVAP) percentages are disaggregated from block-group level ACS estimates (with a survey midpoint of July 2017)

Source for CVAP disaggregation: Redistricting Data Hub

<https://redistrictingdatahub.org/dataset/alabama-cvap-data-disaggregated-to-the-2020-block-level-2019/>

Exhibit A-2

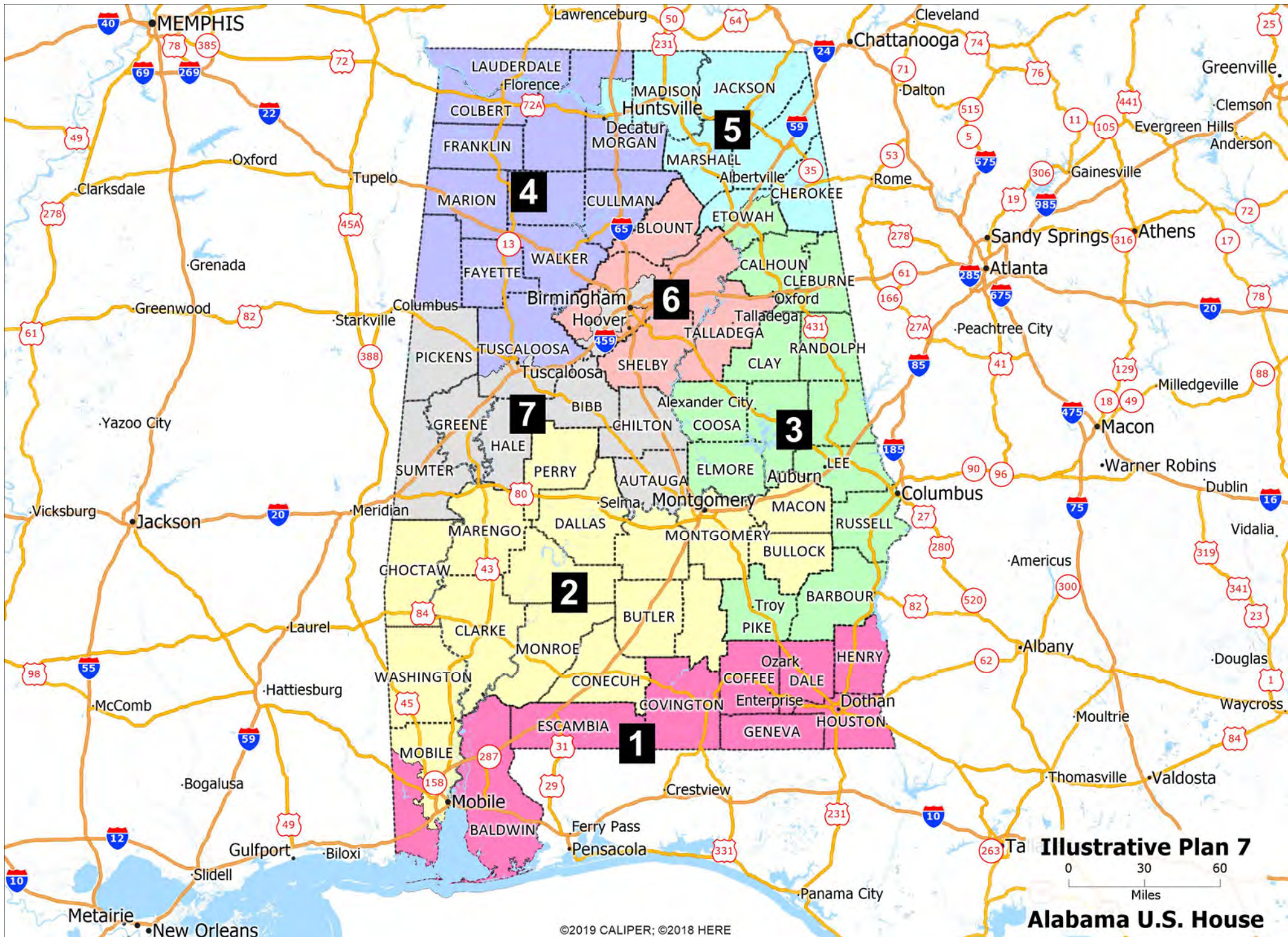
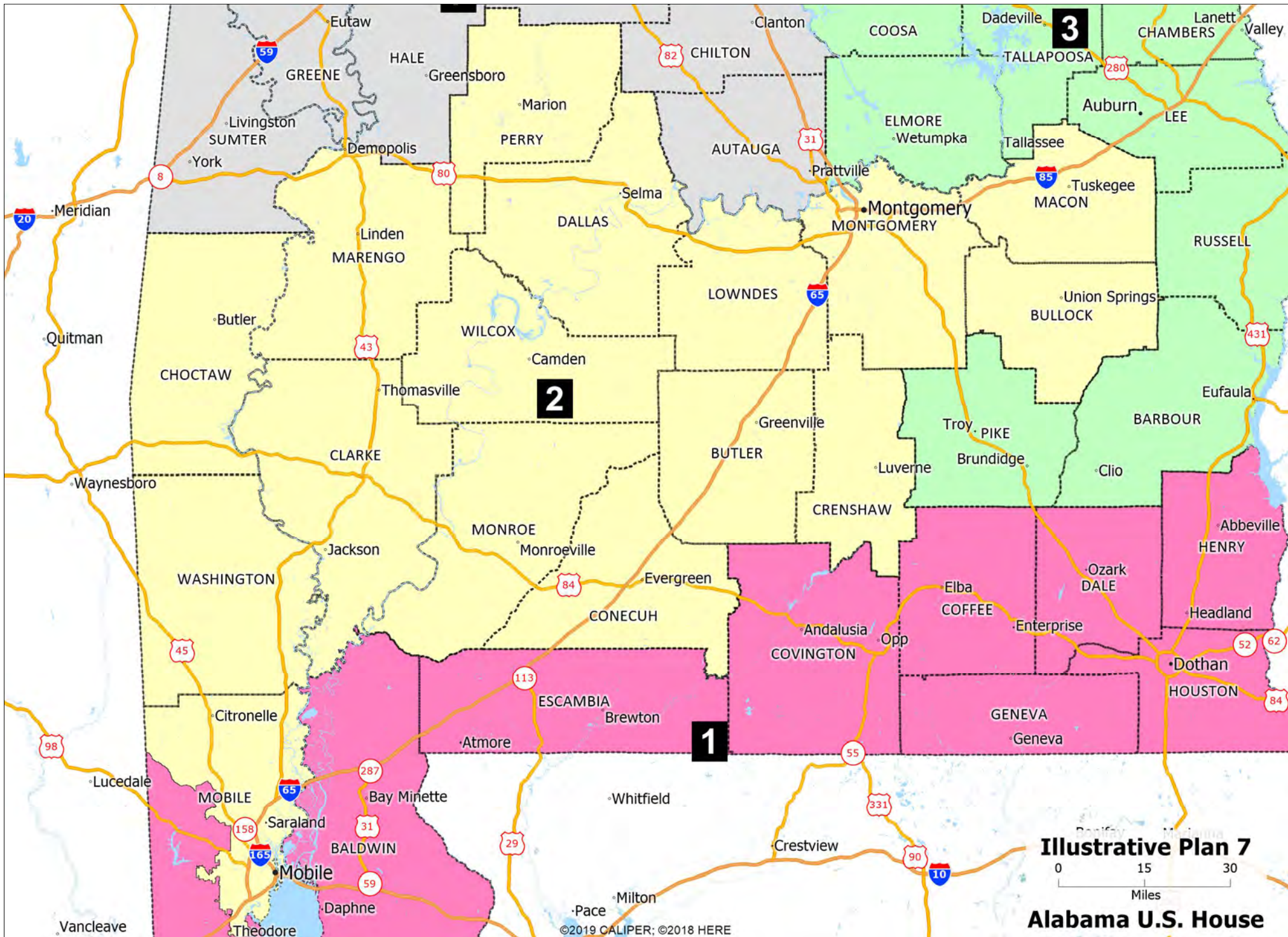


Exhibit A-3



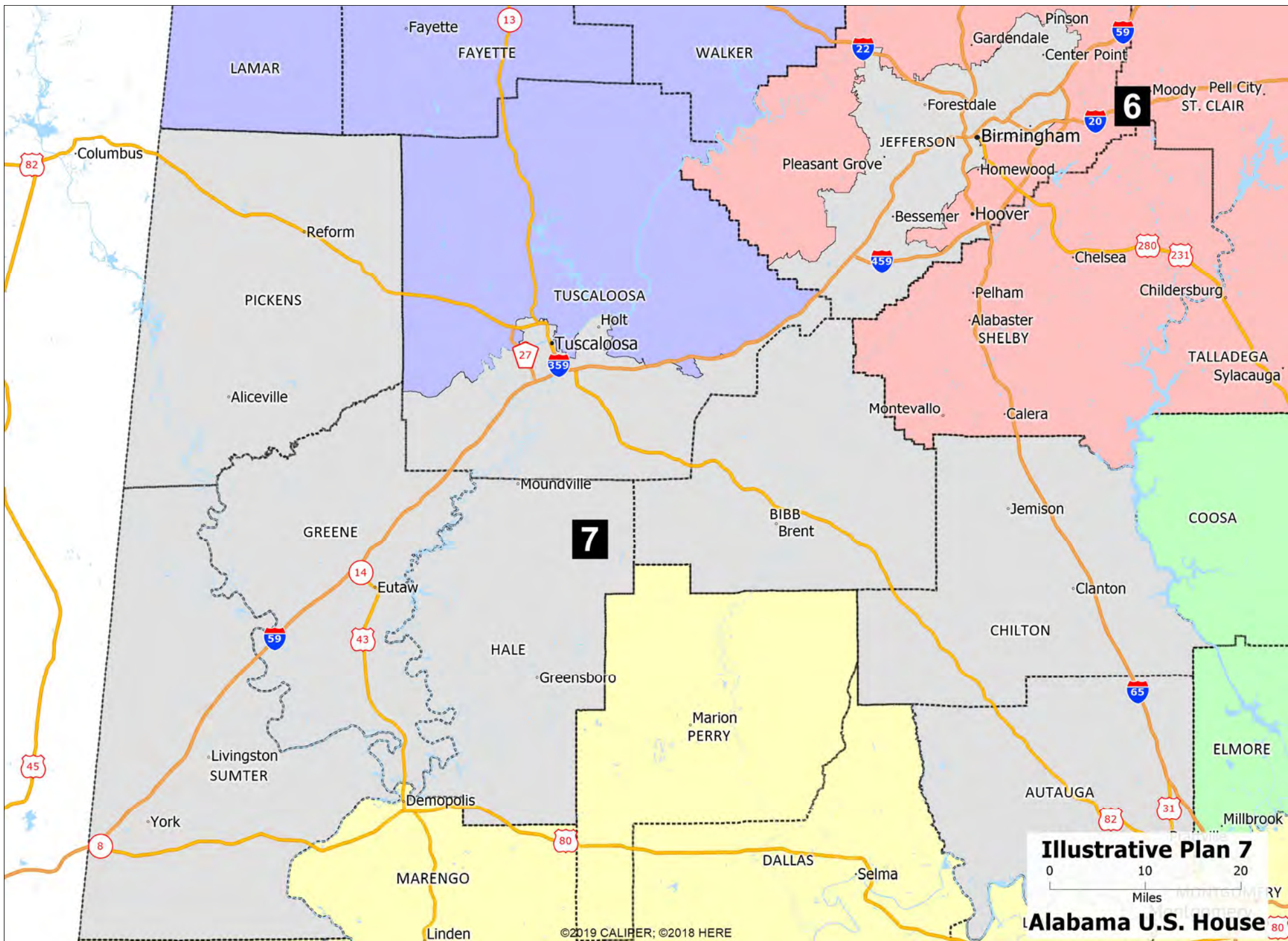


Exhibit A-4

User:

Plan Name: Illustrative Plan 7

Plan Type: Congress

Political Subdivision Splits Between Districts

Sunday, December 19, 2021

7:44 PM

Number of subdivisions not split:

County	62
Voting District	1,804

Number of subdivisions split into more than one district:

County	5
Voting District	33

Number of splits involving no population:

County	0
Voting District	5

Split Counts

County

Cases where an area is split among 2 Districts: 5

Voting District

Cases where an area is split among 2 Districts: 33

County	Voting District	District	Population
<i>Split Counties:</i>			
Etowah AL		3	83,952
Etowah AL		5	19,484
Jefferson AL		6	262,345
Jefferson AL		7	412,376
Limestone AL		4	40,222
Limestone AL		5	63,348
Mobile AL		1	157,861
Mobile AL		2	256,948
Tuscaloosa AL		4	101,753
Tuscaloosa AL		7	125,283
<i>Split VTDs:</i>			
Etowah AL	Lookout Mtn. Comm. Ctr.	3	2,337
Etowah AL	Lookout Mtn. Comm. Ctr.	5	626
Jefferson AL	Bluff Pk UM Church	6	5,846
Jefferson AL	Bluff Pk UM Church	7	0
Jefferson AL	Church at Grants Mill	6	906
Jefferson AL	Church at Grants Mill	7	2,256
Jefferson AL	Fultondale Sr Citizens Bldg	6	0
Jefferson AL	Fultondale Sr Citizens Bldg	7	5,086
Jefferson AL	Guiding Light Church	6	342
Jefferson AL	Guiding Light Church	7	1,924
Jefferson AL	Irondale City Hall	6	0

Political Subdivision Splits Between Districts

al_dec19_2pm

County	Voting District	District	Population
Jefferson AL	Irondale City Hall	7	1,385
Jefferson AL	Maurice West Comm Ctr	6	1,247
Jefferson AL	Maurice West Comm Ctr	7	841
Limestone AL	Athens Rec/Sr Ctr/Linsay/Friendship/Elkton	4	3,340
Limestone AL	Athens Rec/Sr Ctr/Linsay/Friendship/Elkton	5	25,413
Limestone AL	Isom's/Copeland/Bethel/Capshaw	4	2,055
Limestone AL	Isom's/Copeland/Bethel/Capshaw	5	23,261
Limestone AL	Westside Comm Ctr	4	6,959
Limestone AL	Westside Comm Ctr	5	32
Mobile AL	Churchula Bapt Ch	1	67
Mobile AL	Churchula Bapt Ch	2	2,143
Mobile AL	Creekwood Ch of Christ	1	9,827
Mobile AL	Creekwood Ch of Christ	2	455
Mobile AL	Dauphin Island UM Church	1	1,778
Mobile AL	Dauphin Island UM Church	2	0
Mobile AL	Dayspring Bapt Church	1	8,126
Mobile AL	Dayspring Bapt Church	2	668
Mobile AL	Friendship Miss Bapt Church	1	151
Mobile AL	Friendship Miss Bapt Church	2	3,677
Mobile AL	Georgetown Bapt Church	1	1,968
Mobile AL	Georgetown Bapt Church	2	1,362
Mobile AL	Hollingers Island Elem	1	2,426
Mobile AL	Hollingers Island Elem	2	184
Mobile AL	Holy Name of Jesus Church	1	7,746
Mobile AL	Holy Name of Jesus Church	2	164
Mobile AL	Indian Springs Church	1	3,007
Mobile AL	Indian Springs Church	2	5
Mobile AL	Magnolia Springs Church	1	4,756
Mobile AL	Magnolia Springs Church	2	314
Mobile AL	Mt. Ararat Bapt Church	1	1,552
Mobile AL	Mt. Ararat Bapt Church	2	1,154
Mobile AL	Seven Hills Church	1	8,595
Mobile AL	Seven Hills Church	2	7
Mobile AL	Sonrise Bapt Church	1	3,072
Mobile AL	Sonrise Bapt Church	2	0
Mobile AL	Tillmans Corner Comm	1	6,990

Political Subdivision Splits Between Districts

al_dec19_2pm

County	Voting District	District	Population
Mobile AL	Tillmans Corner Comm	2	120
Tuscaloosa AL	Church of Highlands	4	7,277
Tuscaloosa AL	Church of Highlands	7	617
Tuscaloosa AL	Coaling Town Hall	4	849
Tuscaloosa AL	Coaling Town Hall	7	3,173
Tuscaloosa AL	Cornerstone Church	4	4
Tuscaloosa AL	Cornerstone Church	7	4,801
Tuscaloosa AL	Cottondale Comm Church	4	2,571
Tuscaloosa AL	Cottondale Comm Church	7	871
Tuscaloosa AL	Flatwoods Church	4	2,590
Tuscaloosa AL	Flatwoods Church	7	3,094
Tuscaloosa AL	Northport City Hall	4	6,352
Tuscaloosa AL	Northport City Hall	7	571
Tuscaloosa AL	Tuscaloosa Courthouse	4	5,021
Tuscaloosa AL	Tuscaloosa Courthouse	7	1,537
Tuscaloosa AL	UA Rec Ctr	4	14,047
Tuscaloosa AL	UA Rec Ctr	7	350
Tuscaloosa AL	Vance Town Hall	4	467
Tuscaloosa AL	Vance Town Hall	7	3,305

Exhibit B-1

User:

Plan Name: **AL_Illustrative_1**Plan Type: **Congress**

Measures of Compactness Report

Monday, December 20, 2021

12:43 PM

	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
Mean	0.34	0.18	0.66	2.22
Min	0.21	0.13	0.56	1.65
Max	0.47	0.33	0.85	2.43
Std. Dev.	0.08	0.07	0.10	0.29
Sum				

	Higher Number is Better			Lower Number is Better
District	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
1	0.21	0.15	0.56	2.36
2	0.33	0.14	0.61	2.40
3	0.37	0.14	0.57	2.39
4	0.28	0.21	0.69	2.02
5	0.33	0.33	0.85	1.65
6	0.47	0.16	0.73	2.32
7	0.37	0.13	0.64	2.43

Measures of Compactness Report

AL_Illustrative_1

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.

Exhibit B-2

User:

Plan Name: **AL_Illustrative_2**Plan Type: **Congress**

Measures of Compactness Report

Monday, December 20, 2021

12:47 PM

	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
Mean	0.34	0.18	0.65	2.27
Min	0.21	0.12	0.56	1.65
Max	0.52	0.33	0.85	2.65
Std. Dev.	0.10	0.07	0.11	0.34
Sum				

	Higher Number is Better			Lower Number is Better
District	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
1	0.21	0.14	0.56	2.43
2	0.31	0.12	0.56	2.65
3	0.34	0.14	0.56	2.41
4	0.28	0.21	0.69	2.02
5	0.33	0.33	0.85	1.65
6	0.52	0.17	0.73	2.24
7	0.40	0.13	0.61	2.47

Measures of Compactness Report

AL_Illustrative_2

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.

Exhibit B-3

User:

Plan Name: **AL_Illustrative_3**Plan Type: **Congress**

Measures of Compactness Report

Monday, December 20, 2021

12:49 PM

	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
Mean	0.34	0.18	0.68	2.19
Min	0.20	0.12	0.58	1.65
Max	0.47	0.33	0.85	2.57
Std. Dev.	0.09	0.07	0.10	0.32
Sum				

Higher Number is Better

Lower Number is Better

District	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
1	0.20	0.16	0.58	2.22
2	0.39	0.22	0.74	1.90
3	0.41	0.16	0.65	2.22
4	0.31	0.12	0.58	2.57
5	0.33	0.33	0.85	1.65
6	0.47	0.13	0.72	2.46
7	0.30	0.15	0.66	2.34

Measures of Compactness Report

AL_Illustrative_3

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.

Exhibit B-4

User:

Plan Name: **AL_Illustrative_4**Plan Type: **Congress**

Measures of Compactness Report

Monday, December 20, 2021

12:51 PM

	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
Mean	0.33	0.22	0.72	2.00
Min	0.20	0.13	0.58	1.65
Max	0.41	0.34	0.85	2.40
Std. Dev.	0.07	0.07	0.09	0.25
Sum				

	Higher Number is Better			Lower Number is Better
District	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
1	0.20	0.16	0.58	2.22
2	0.36	0.18	0.70	2.07
3	0.33	0.24	0.79	1.84
4	0.30	0.22	0.72	1.97
5	0.33	0.34	0.85	1.65
6	0.35	0.13	0.65	2.40
7	0.41	0.24	0.78	1.88

Measures of Compactness Report

AL_Illustrative_4

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.

Exhibit B-5

User:

Plan Name: **AL_Illustrative_5**Plan Type: **Congress**

Measures of Compactness Report

Monday, December 20, 2021

12:53 PM

	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
Mean	0.29	0.18	0.67	2.20
Min	0.19	0.11	0.53	1.65
Max	0.39	0.33	0.85	2.58
Std. Dev.	0.07	0.07	0.10	0.36
Sum				

Higher Number is Better

Lower Number is Better

District	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
1	0.19	0.13	0.53	2.54
2	0.39	0.19	0.70	1.98
3	0.33	0.18	0.62	2.08
4	0.29	0.20	0.68	2.04
5	0.33	0.33	0.85	1.65
6	0.30	0.13	0.66	2.54
7	0.23	0.11	0.65	2.58

Measures of Compactness Report

AL_Illustrative_5

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.

Exhibit B-6

User:

Plan Name: **AL_Illustrative_6**Plan Type: **Congress**

Measures of Compactness Report

Monday, December 20, 2021

12:55 PM

	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
Mean	0.31	0.16	0.64	2.40
Min	0.24	0.10	0.51	1.65
Max	0.35	0.34	0.85	2.86
Std. Dev.	0.04	0.08	0.11	0.42
Sum				

	Higher Number is Better			Lower Number is Better
District	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
1	0.24	0.12	0.51	2.59
2	0.29	0.11	0.57	2.66
3	0.35	0.16	0.63	2.29
4	0.30	0.18	0.70	2.09
5	0.33	0.34	0.85	1.65
6	0.29	0.10	0.65	2.86
7	0.34	0.11	0.56	2.64

Measures of Compactness Report

AL_Illustrative_6

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.

Exhibit B-7

User:

Plan Name: Illustrative Plan 7

Plan Type: Congress

Measures of Compactness Report

Sunday, December 19, 2021

7:25 PM

	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
Mean	0.41	0.21	0.71	2.08
Min	0.20	0.13	0.58	1.53
Max	0.56	0.39	0.82	2.52
Std. Dev.	0.13	0.10	0.10	0.39
Sum				

	Higher Number is Better			Lower Number is Better
District	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
1	0.20	0.13	0.58	2.43
2	0.39	0.19	0.72	2.00
3	0.32	0.17	0.68	2.19
4	0.54	0.32	0.82	1.61
5	0.47	0.39	0.82	1.53
6	0.56	0.14	0.77	2.29
7	0.37	0.13	0.59	2.52

Measures of Compactness Report

al_dec19_2pm

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.

Exhibit C-1

User:

Plan Name: **AL_2021_Enacted_Congress**Plan Type: **Congress**

Measures of Compactness Report

Monday, December 20, 2021

8:39 AM

	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
Mean	0.38	0.22	0.72	1.95
Min	0.30	0.15	0.61	1.68
Max	0.50	0.32	0.80	2.28
Std. Dev.	0.07	0.06	0.07	0.21
Sum				

	Higher Number is Better			Lower Number is Better
District	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
1	0.40	0.20	0.71	1.98
2	0.50	0.26	0.76	1.78
3	0.36	0.25	0.77	1.79
4	0.36	0.19	0.61	2.09
5	0.30	0.32	0.80	1.68
6	0.31	0.15	0.68	2.28
7	0.43	0.19	0.68	2.04

Measures of Compactness Report

AL_2021_Enacted_Congress

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.

Exhibit C-2

User:

Plan Name: AL_BOE_adopted_2021

Plan Type: Congress

Measures of Compactness Report

Friday, December 17, 2021

2:53 PM

	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
Mean	0.39	0.24	0.72	1.93
Min	0.24	0.18	0.66	1.51
Max	0.52	0.38	0.85	2.21
Std. Dev.	0.10	0.07	0.07	0.23
Sum				

Higher Number is Better

Lower Number is Better

District	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
1	0.29	0.21	0.66	1.97
2	0.24	0.18	0.66	2.21
3	0.47	0.22	0.77	1.95
4	0.35	0.18	0.67	2.11
5	0.36	0.19	0.67	2.10
6	0.51	0.26	0.72	1.81
7	0.52	0.28	0.75	1.76
8	0.41	0.38	0.85	1.51

Measures of Compactness Report

AL_BOE_adopted_2021

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.

Exhibit C-3

User:

Plan Name: **AL_Senate_adopted_2021**Plan Type: **Congress**

Measures of Compactness Report

Friday, December 17, 2021

2:59 PM

	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
Mean	0.41	0.26	0.74	1.89
Min	0.19	0.12	0.54	1.33
Max	0.63	0.54	0.92	2.53
Std. Dev.	0.12	0.10	0.10	0.33
Sum				

Higher Number is Better

Lower Number is Better

District	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
1	0.21	0.29	0.78	1.82
2	0.63	0.37	0.82	1.58
3	0.62	0.54	0.92	1.33
4	0.26	0.33	0.84	1.60
5	0.57	0.38	0.84	1.50
6	0.43	0.44	0.83	1.49
7	0.26	0.14	0.59	2.49
8	0.53	0.35	0.87	1.53
9	0.48	0.21	0.67	1.98
10	0.44	0.28	0.74	1.70
11	0.32	0.12	0.56	2.53
12	0.19	0.16	0.62	2.30
13	0.30	0.27	0.71	1.82
14	0.48	0.29	0.82	1.67
15	0.53	0.16	0.71	2.20
16	0.50	0.20	0.74	1.98

Measures of Compactness Report

AL_Senate_adopted_2021

District	Higher Number is Better			Lower Number is Better	
	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg	
17	0.46	0.13	0.73	2.31	
18	0.26	0.23	0.70	1.99	
19	0.37	0.20	0.76	1.93	
20	0.43	0.18	0.69	2.16	
21	0.29	0.17	0.63	2.16	
22	0.30	0.12	0.54	2.47	
23	0.57	0.29	0.79	1.53	
24	0.39	0.37	0.88	1.47	
25	0.24	0.14	0.65	2.40	
26	0.50	0.18	0.76	1.93	
27	0.27	0.21	0.59	2.07	
28	0.42	0.25	0.72	1.77	
29	0.33	0.28	0.75	1.80	
30	0.44	0.23	0.70	1.80	
31	0.44	0.22	0.70	1.93	
32	0.46	0.34	0.81	1.57	
33	0.38	0.21	0.64	2.03	
34	0.48	0.26	0.84	1.78	
35	0.56	0.42	0.88	1.45	

Measures of Compactness Report

AL_Senate_adopted_2021

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.

Exhibit C-4

User:

Plan Name: **AL_House_adopted_2021**Plan Type: **Congress**

Measures of Compactness Report

Friday, December 17, 2021

3:04 PM

	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
Mean	0.39	0.24	0.71	1.97
Min	0.11	0.07	0.45	1.27
Max	0.62	0.60	0.92	3.53
Std. Dev.	0.11	0.10	0.11	0.42
Sum				

Higher Number is Better

Lower Number is Better

District	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg
1	0.24	0.28	0.82	1.77
2	0.38	0.29	0.70	1.71
3	0.38	0.27	0.83	1.86
4	0.38	0.30	0.72	1.73
5	0.37	0.27	0.70	1.77
6	0.47	0.24	0.77	2.00
7	0.54	0.34	0.82	1.64
8	0.33	0.15	0.81	2.25
9	0.40	0.21	0.75	1.97
10	0.52	0.35	0.78	1.60
11	0.44	0.16	0.74	2.22
12	0.58	0.22	0.79	1.76
13	0.39	0.27	0.81	1.69
14	0.35	0.11	0.56	2.72
15	0.25	0.15	0.61	2.29
16	0.43	0.21	0.70	1.93

Measures of Compactness Report

AL_House_adopted_2021

District	Higher Number is Better			Lower Number is Better	
	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg	
17	0.41	0.47	0.83	1.44	
18	0.51	0.53	0.92	1.33	
19	0.34	0.18	0.58	2.31	
20	0.27	0.18	0.64	2.10	
21	0.26	0.19	0.62	2.15	
22	0.44	0.19	0.76	1.86	
23	0.55	0.38	0.89	1.40	
24	0.34	0.43	0.83	1.44	
25	0.47	0.27	0.71	1.87	
26	0.53	0.22	0.75	1.86	
27	0.56	0.20	0.73	1.90	
28	0.34	0.14	0.68	2.31	
29	0.36	0.16	0.61	2.26	
30	0.39	0.13	0.66	2.44	
31	0.41	0.22	0.68	1.98	
32	0.16	0.07	0.54	3.53	
33	0.50	0.27	0.78	1.77	
34	0.37	0.17	0.76	2.04	
35	0.53	0.23	0.80	1.96	
36	0.19	0.07	0.45	3.33	
37	0.35	0.37	0.85	1.61	
38	0.46	0.29	0.79	1.72	
39	0.41	0.32	0.71	1.69	
40	0.47	0.30	0.78	1.72	
41	0.38	0.33	0.82	1.52	
42	0.50	0.38	0.78	1.56	
43	0.36	0.22	0.73	1.91	
44	0.50	0.39	0.84	1.51	
45	0.24	0.14	0.63	2.33	
46	0.11	0.09	0.46	3.10	

Measures of Compactness Report

AL_House_adopted_2021

District	Higher Number is Better			Lower Number is Better	
	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg	
47	0.41	0.21	0.69	1.98	
48	0.39	0.21	0.77	2.02	
49	0.54	0.25	0.76	1.79	
50	0.30	0.15	0.62	2.34	
51	0.56	0.36	0.88	1.47	
52	0.23	0.14	0.60	2.59	
53	0.28	0.33	0.73	1.72	
54	0.21	0.14	0.62	2.61	
55	0.19	0.10	0.45	3.15	
56	0.31	0.24	0.74	1.80	
57	0.41	0.12	0.61	2.52	
58	0.33	0.18	0.66	2.20	
59	0.31	0.15	0.72	2.30	
60	0.42	0.13	0.67	2.35	
61	0.44	0.40	0.87	1.50	
62	0.23	0.17	0.65	2.10	
63	0.30	0.23	0.57	1.99	
64	0.25	0.20	0.62	2.14	
65	0.33	0.15	0.74	2.20	
66	0.26	0.17	0.53	2.13	
67	0.51	0.40	0.88	1.32	
68	0.38	0.11	0.57	2.60	
69	0.40	0.19	0.61	1.97	
70	0.50	0.21	0.70	2.09	
71	0.29	0.12	0.55	2.43	
72	0.52	0.19	0.75	1.83	
73	0.32	0.15	0.59	2.33	
74	0.36	0.26	0.69	1.94	
75	0.34	0.19	0.66	1.98	
76	0.41	0.23	0.70	1.93	

Measures of Compactness Report

AL_House_adopted_2021

District	Higher Number is Better			Lower Number is Better	
	Reock	Polsby-Popper	Area/Convex Hull	Schwartzberg	
77	0.58	0.27	0.75	1.91	
78	0.25	0.12	0.56	2.39	
79	0.51	0.23	0.72	1.91	
80	0.48	0.35	0.76	1.57	
81	0.50	0.41	0.81	1.46	
82	0.58	0.35	0.87	1.45	
83	0.32	0.18	0.57	2.19	
84	0.51	0.32	0.75	1.54	
85	0.43	0.46	0.84	1.38	
86	0.53	0.36	0.87	1.58	
87	0.36	0.39	0.85	1.53	
88	0.42	0.23	0.67	1.88	
89	0.35	0.19	0.57	2.03	
90	0.28	0.15	0.56	2.36	
91	0.46	0.27	0.71	1.83	
92	0.32	0.24	0.78	1.83	
93	0.39	0.32	0.78	1.60	
94	0.62	0.60	0.91	1.27	
95	0.37	0.36	0.78	1.52	
96	0.58	0.46	0.86	1.39	
97	0.30	0.18	0.55	2.17	
98	0.32	0.18	0.63	2.12	
99	0.35	0.18	0.55	2.29	
100	0.52	0.28	0.72	1.72	
101	0.28	0.22	0.64	2.01	
102	0.43	0.16	0.64	2.22	
103	0.36	0.18	0.66	2.16	
104	0.35	0.22	0.58	2.08	
105	0.50	0.41	0.83	1.46	

Measures of Compactness Report

AL_House_adopted_2021

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.

Exhibit D-1

Plan Name: tx_congress
 Plan Type:
 Date: 12/17/2021
 Time: 5:31:03PM
 Administrator:

Measures of Compactness

12/17/202

DISTRICT	Reock	Polsby-Popper
1	0.32	0.16
2	0.40	0.23
3	0.50	0.34
4	0.26	0.08
5	0.35	0.15
6	0.30	0.15
7	0.23	0.09
8	0.29	0.22
9	0.46	0.16
10	0.37	0.19
11	0.25	0.31
12	0.43	0.21
13	0.26	0.28
14	0.19	0.16
15	0.12	0.11
16	0.27	0.23
17	0.29	0.14
18	0.42	0.07
19	0.50	0.53
20	0.45	0.13
21	0.41	0.31
22	0.36	0.16
23	0.26	0.20
24	0.27	0.11
25	0.46	0.26
26	0.35	0.15
27	0.44	0.37
28	0.25	0.21
29	0.29	0.09
30	0.42	0.20
31	0.45	0.20
32	0.23	0.08
33	0.23	0.04
34	0.40	0.27
35	0.08	0.08
36	0.35	0.25
37	0.37	0.15
38	0.39	0.12
Sum	N/A	N/A
Min	0.08	0.04
Max	0.50	0.53
Mean	0.33	0.19
Std. Dev.	0.10	0.10

Exhibit D-2

Plan Name: tx_senate
 Plan Type:
 Date: 12/17/2021
 Time: 4:28:41PM
 Administrator:

Measures of Compactness

12/17/202

DISTRICT	Reock	Polsby-Popper
1	0.48	0.30
2	0.46	0.19
3	0.37	0.18
4	0.21	0.12
5	0.33	0.12
6	0.33	0.07
7	0.38	0.14
8	0.36	0.36
9	0.43	0.21
10	0.32	0.15
11	0.40	0.14
12	0.34	0.22
13	0.22	0.12
14	0.41	0.30
15	0.31	0.07
16	0.29	0.09
17	0.53	0.13
18	0.32	0.11
19	0.26	0.10
20	0.22	0.11
21	0.26	0.18
22	0.37	0.23
23	0.42	0.19
24	0.28	0.15
25	0.52	0.25
26	0.39	0.15
27	0.25	0.13
28	0.35	0.18
29	0.35	0.25
30	0.39	0.14
31	0.30	0.17
Sum	N/A	N/A
Min	0.21	0.07
Max	0.53	0.36
Mean	0.35	0.17
Std. Dev.	0.08	0.07

Exhibit D-3

Plan Name: tx_house
 Plan Type:
 Date: 12/20/2021
 Time: 1:02:37PM
 Administrator:

Measures of Compactness

12/20/202

DISTRICT	Reock	Polsby-Popper
1	0.35	0.19
2	0.44	0.22
3	0.28	0.16
4	0.42	0.31
5	0.45	0.27
6	0.32	0.33
7	0.48	0.53
8	0.31	0.18
9	0.48	0.17
10	0.58	0.61
11	0.24	0.13
12	0.48	0.14
13	0.35	0.18
14	0.43	0.13
15	0.28	0.28
16	0.36	0.32
17	0.38	0.30
18	0.46	0.27
19	0.42	0.30
20	0.46	0.25
21	0.21	0.09
22	0.36	0.14
23	0.37	0.32
24	0.38	0.19
25	0.43	0.20
26	0.32	0.22
27	0.47	0.53
28	0.44	0.17
29	0.34	0.30
30	0.41	0.28
31	0.34	0.20
32	0.26	0.25
33	0.27	0.31
34	0.50	0.27
35	0.26	0.08
36	0.38	0.19
37	0.48	0.31
38	0.35	0.27
39	0.50	0.27
40	0.38	0.20
41	0.40	0.24
42	0.36	0.27
43	0.30	0.13
44	0.45	0.37
45	0.40	0.34
46	0.50	0.26
47	0.31	0.18

Plan Name: tx_house

Administrator:

Plan Type:

User:

DISTRICT	Roeck	
48	0.21	0.14
49	0.18	0.19
50	0.48	0.39
51	0.54	0.35
52	0.41	0.32
53	0.30	0.21
54	0.45	0.19
55	0.34	0.25
56	0.48	0.26
57	0.26	0.19
58	0.38	0.48
59	0.38	0.35
60	0.39	0.58
61	0.32	0.20
62	0.21	0.13
63	0.17	0.26
64	0.52	0.44
65	0.18	0.16
66	0.23	0.17
67	0.37	0.22
68	0.24	0.15
69	0.41	0.32
70	0.30	0.12
71	0.51	0.51
72	0.48	0.49
73	0.42	0.31
74	0.19	0.14
75	0.42	0.50
76	0.35	0.29
77	0.21	0.22
78	0.67	0.49
79	0.25	0.31
80	0.37	0.22
81	0.40	0.33
82	0.37	0.55
83	0.47	0.34
84	0.41	0.26
85	0.47	0.22
86	0.38	0.40
87	0.41	0.51
88	0.22	0.26
89	0.46	0.31
90	0.27	0.07
91	0.48	0.44
92	0.27	0.10
93	0.41	0.31
94	0.33	0.08
95	0.29	0.09
96	0.35	0.18
97	0.48	0.26
98	0.55	0.45
99	0.39	0.25
100	0.30	0.12
101	0.30	0.32
102	0.43	0.27
103	0.30	0.14
104	0.35	0.29

Plan Name: tx_house Administrator:
 Plan Type: User:

DISTRICT	Roeck	
105	0.41	0.43
106	0.39	0.32
107	0.21	0.17
108	0.37	0.11
109	0.26	0.19
110	0.36	0.17
111	0.46	0.28
112	0.18	0.11
113	0.18	0.11
114	0.36	0.15
115	0.40	0.26
116	0.24	0.22
117	0.25	0.17
118	0.32	0.15
119	0.27	0.11
120	0.57	0.31
121	0.32	0.17
122	0.45	0.30
123	0.28	0.17
124	0.43	0.29
125	0.27	0.23
126	0.29	0.21
127	0.35	0.25
128	0.26	0.12
129	0.46	0.15
130	0.29	0.26
131	0.13	0.13
132	0.31	0.31
133	0.26	0.35
134	0.41	0.32
135	0.28	0.22
136	0.40	0.35
137	0.40	0.28
138	0.35	0.16
139	0.22	0.13
140	0.44	0.39
141	0.32	0.20
142	0.31	0.16
143	0.20	0.14
144	0.32	0.20
145	0.17	0.12
146	0.28	0.15
147	0.19	0.20
148	0.22	0.09
149	0.32	0.24
150	0.33	0.22
Sum	N/A	N/A
Min	0.13	0.07
Max	0.67	0.61
Mean	0.36	0.25
Std. Dev.	0.10	0.11