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TESTIMONY ON LWVSC AND HOUSE DRAFT PLANS BEFORE THE REDISTRICTING COMMITTEE OF THE SC HOUSE OF REPRESENTATIVES

November 10, 2021

## LWVSC MAP PROPOSAL

On September 15 we provided testimony to this committee on our criteria and our approach to mapmaking. I will not reiterate them in full here. However, reviewing briefly, we used traditional redistricting criteria beginning with equal population, using the common ±5% standard instead of the ±2.5% standard currently in use by the House. We have maintained contiguity. We protected minority voting rights while avoiding packing districts, a practice that wastes minority votes in the packed district and dilutes minority influence in adjacent districts. We respected as much as possible political subdivisions including counties, cities, and voting precincts. We considered major communities of interest. We did not use partisan voting history data or information on current incumbents in drawing maps and did not create artificially homogenous "safe" districts. We did not expect the House to replicate our map but hoped that it would influence the plan drafted by the House. The South Carolina League adds to these criteria respect for precinct boundaries.

Some of the most basic data that we used in evaluating (not drawing) our maps are provided in Appendix 1.

We wish to clarify and restate our response to points raised in the November 10 public hearing. First, Rep. Collins was convinced that the League had adopted a position in favor of drawing maps with the specific intent to eject incumbents from their districts, presumably to increase turnover in representation. He based this on figures indicating that our map dislodged about three times as many incumbents as the map prepared by House staff. Rep. Collins unfortunately fell into a logical error. He got the cause of this discrepancy backwards.

Few incumbents are drawn out of their districts in the House map because keeping incumbents in their districts was an explicit goal of the House committee, so called "constituent consistency." The staff who drew the map did what they were instructed and paid to do – they avoided dislodging most incumbents and designed districts around incumbents. The League, on the other hand, believes that maps should be drawn entirely from the perspective of the interests of citizens and voters. Minority voting rights must be protected and emphasis must be placed on preserving the integrity of representation of genuine communities of interest and political entities. We simply paid no attention at all to where incumbents lived in drawing our maps. To put it as clearly as possible, it isn't that the League didn't want to keep incumbents in their districts. Difficult as it may be for a legislator to believe, we simply didn't care one way or the other. We believe in letting voters decide. (For this reason, the League also opposes term limits.)

We also note that our desire for competitiveness does not arise from a desire to remove incumbents. It arises from the belief that in areas where the community is sufficiently diverse that competitive districts arise naturally without consideration of voting histories – as they did in the League map – districts should not be manipulated to avoid competition and provide legislators with a "safe" district. Voters deserve to have a choice in November unless (as is sometimes the case) the area is simply so homogenous politically that the natural consequence of drawing districts is non-competitive.

Finally, protection of minority voting rights is a very high priority for the League. Accordingly, we did not use some simple numerical standard to create districts of opportunity for minorities. Instead, we considered the total population composition including all minority cultural and linguistic groups, detailed racial polarization voting data, and an overall perspective on how various regions of the state are developing. We are confident that the League proposal preserves minority voting rights and political influence.

# HOUSE DRAFT PROPOSAL

The League evaluates maps in a variety of ways, from basic issues such as numbers of competitive districts to complex mathematical analysis to test for gerrymanders.

We have considered levels of competitiveness in the plan proposed by the House.<sup>1</sup> We recognize that population in our state is not evenly distributed so that many districts will not be competitive in general elections. However, based on our data the House draft map produces only 12 districts in which the partisan lean margin is ±5%, which is considered competitive in general elections (see Appendix for individual district figures). This is 4 districts fewer than in the current map and 7 districts fewer than in the League map. Noncompetitive districts deprive citizens of a meaningful vote. Legislators have picked their voters, leaving nothing for the voters to do. With more than 41,000 persons in each House district, 7 non-competitive districts add up to more than a quarter million residents whose representation is decided by legislators, without the participation of district voters.

This unfortunate non-competitive effect may have been achieved in part by splitting precincts. 371 precincts are split in the House map, versus 82 in the League map. While the  $\pm 2.5\%$  population margin chosen by the House might be blamed for this effect, that would not be true. Only 123 precincts would need to be split to achieve almost exactly equal populations. A margin of  $\pm 2.5\%$  could be achieved with fewer than 123, and certainly with fewer than 371. The very high level of precinct splits in this map must be attributed to some other factor or factors.

This map also fails to respect genuine and important communities of interest. James Island, for example, is thoroughly fragmented. The districts that converge there are oddly configured, for example with H.110 linking one James Island fragment with part of Mt. Pleasant. The map submitted by the League shows that it is possible to map this area with more compact districts and with greater adherence to political subdivisions and communities of interest.

Finally, and very importantly, we have initial results of a Monte Carlo Markov Chain analysis of the House proposal compared to the League proposal and to current maps (Appendix 2). More information on the methodology of this study can be found in a thesis by Anna Marie Vagnozzi, which can be provided to the committee in digital form on request.<sup>2</sup> Appendix II provides histograms of the results of the current test.

Vagnozzi has reported that out of about one billion simulated maps (actually 2<sup>30</sup>) only 1410 maps are more extreme than the House proposal at a p=0.0016206.<sup>3</sup> "More extreme" in this context specifically means more

<sup>&</sup>lt;sup>1</sup> We used a partisan lean indicator that is a composite of 2016 and 2020 presidential races, 2016 and 2020 senatorial races, and 2018 gubernatorial and attorney general races, developed for Dave's Redistricting App (DRA) (see Appendix 1).

<sup>&</sup>lt;sup>2</sup> Anna Marie Vagnozzi, "Detecting Partisan Gerrymandering through Mathematical Analysis: A Case Study of South Carolina," MS Thesis, the Graduate School of Clemson University, May 2020.

<sup>&</sup>lt;sup>3</sup> In the context of the simulation, the p-value is the probability of seeing a map as extreme as this or more so if one is drawn at random from the population of maps that we sampled in the simulation. Those have

extreme with respect to the median-mean measure of partisan bias, which is widely accepted and commonly used in election map analysis. This contrasts with 83,777,304 maps more extreme than the League proposal at p=0.39503. The League map basically shows the amount of bias that can be expected arising from the underlying demographics of our state in 2020, but not exaggerated by introduction of additional bias. Current maps are also far less biased than the House proposal with 41,976,233 maps more biased than the current map at p=0.27962.

In addition to median-mean, another metric of partisan bias referred to as *geometric partisan bias* was used alongside median-mean to determine if it also yields evidence that the House proposal is an outlier (more details on this measure can also be found in the thesis referenced above). The math again suggests that the House map is an extreme partisan gerrymander with respect to this second bias measure. Only 130 simulated maps out of the billion that were sampled are more extreme than the House map, at p=0.00049208. 627,004 maps more extreme than the League proposal, at p=0.03446. The sample produced 13,218,624 maps more biased than the current House map, at p=0.15691. The League map is again a reasonable standard of comparison showing a map drawn with current South Carolina demographics but without partisan or incumbent protection and confirms the strong bias in the House map.

### SUMMARY

We conclude that there is an extremely high probability that the House map is an extreme partisan gerrymander (in contrast not just to the League proposal but to current maps). We also find it excessive in incumbent protection and non-competitiveness. We urge this committee to completely rethink this unfortunate plan and consider the approach taken in the League proposal.

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districts that are contiguous, within population limits (+/-5%), and no less compact overall than the proposed map.

# Appendix 1

#### BASIC SC HOUSE DRAFT MAP COMPARISON WITH CURRENT AND LWVSC MAPS

Partisan Lean is calculated as a composite of 2016 and 2020 presidential, 2016 and 2020 senatorial, and 2018 gubernatorial and attorney general elections.

The district-by-district figures below are reasonable comparisons for those districts that have not changed markedly from those in the current map in the League or House proposals. However, in some cases geographic change may be so great that the comparison is useful only for contributing to statewide calculations.

HD #	Current Map Partisan Lean		LWVSC Proposal Partisan Lean			House Working Draft			
	Rep	Dem	Margin	Rep	Dem	Margin	Rep	Dem	Margin
1	78.04	20.14	58	78.09	20.09	58	78.4	19.9	51
2	68.75	29.13	40	68.46	29.40	39	68.8	29.1	40
3	61.93	35.16	27	54.68	31.22	23	60.0	37.0	23
4	83.35	14.95	68	83.39	14.85	69	83.4	14.9	69
5	75.83	22.60	53	76.08	22.22	54	73.7	24.5	49
6	68.94	29.01	40	51.52	46.70	5	72.3	25.7	47
7	72.76	25.70	47	77.34	21.07	56	70.9	27.6	43
8	68.69	29.61	39	75.35	22.77	53	66.5	31.8	35
9	65.59	32.54	33	68.74	29.15	40	67.4	30.6	37
10	74.99	22.96	52	76.85	21.09	56	72.0	25.9	46
11	66.22	32.35	34	69.14	29.69	39	68.2	30.3	38
12	44.85	53.77	9	45.44	53.20	8	46.1	52.6	7
13	67.85	30.44	37	70.41	27.87	43	71.1	27.2	44
14	68.87	29.70	39	58.53	39.95	19	63.8	34.6	29
15	47.69	49.77	2	51.16	46.13	5	50.7	46.6	4
16	59.87	38.11	22	66.45	31.44	35	64.5	33.2	31
17	76.26	21.50	55	76.75	21.10	56	76.9	20.8	56
18	71.37	26.24	45	71.67	25.90	46	71.6	26.02	46

19	59.80	37.59	22	66.35	31.11	35	58.8	38.61	20
20	68.22	30.99	37	64.22	32.93	31	66.4	30.78	36
21	65.17	32.49	33	64.06	33.59	30	64.9	32.74	32
22	58.43	38.88	20	51.22	45.89	5	58.43	38.91	20
23	36.24	61.21	25	37.89	59.90	22	36.04	61.50	28
24	55.91	41.68	14	55.55	41.96	14	56.0	41.6	14
25	32.78	65.58	32	31.59	66.62	35	32.86	65.52	33
26	57.22	40.24	17	60.07	37.62	22	59.0	38.5	21
27	58.35	39.36	19	61.82	35.85	26	57.6	40.1	18
28	62.12	35.53	27	65.29	32.48	33	61.3	36.4	25
29	55.91	27.57	28	74.27	23.98	50	69.5	29.0	41
30	70.99	27.52	43	65.15	33.52	32	72.8	25.7	47
31	26.89	71.60	45	25.59	72.96	47	26.9	71.5	45
32	63.93	34.12	30	66.59	31.57	35	61.0	37.0	24
33	71.75	26.63	45	66.35	31.89	34	67.1	31.2	36
34	55.25	42.79	12	57.65	40.10	18	62.1	35.9	26
35	67.51	30.29	37	68.02	29.93	38	67.7	30.1	38
36	64.22	33.45	31	67.24	30.69	37	64.4	33.3	31
37	65.55	32.41	33	65.11	32.71	32	65.3	32.7	33
38	77.49	20.87	57	77.90	20.45	57	78.7	19.7	59
39	70.46	27.72	43	70.66	27.32	43	72.3	25.8	47
40	60.46	37.81	23	67.76	30.28	37	62.4	35.9	27
41	36.67	61.78	25	35.40	63.03	28	38.0	60.5	23
42	60.94	37.5	23	64.45	33.81	31	59.1	39.3	20
43	62.46	35.72	27	62.68	35.39	27	62.9	35.2	28
44	58.7	40.05	19	64.80	33.46	31	59.2	38.8	20

45	60.10	37.83	22	57.05	40.50	16	59.2	38.8	16
46	53.86	43.47	10	52.98	44.36	9	55.9	41.6	14
47	68.37	29.23	39	66.36	31.44	35	70.7	26.9	44
48	59.31	38.35	21	57.61	39.78	18	62.0	35.6	26
49	35.33	63.06	28	34.58	63.79	29	34.1	64.1	30
50	39.10	59.79	21	66.33	31.79	35	39.2	59.7	21
51	27.40	71.34	44	30.65	68.33	28	31.4	67.3	36
52	59.61	38.61	21	59.44	38.79	21	58.4	39.4	18
53	59.12	39.91	19	56.97	42.07	15	66.0	32.8	33
54	45.57	53.16	8	41.75	57.11	15	41.0	57.8	16
55	51.16	47.93	3	53.23	45.95	7	55.2	43.8	11
56	62.07	36.08	26	66.40	31.98	34	65.4	32.8	33
57	41.37	57.83	16	48.71	50.27	2	42.0	57.1	15
58	68.54	30.06	38	59.25	39.10	20	67.9	30.7	37
59	30.78	67.82	37	40.54	58.26	18	34.1	64.6	31
60	61.39	37.43	24	47.95	50.73	3	62.8	36.0	27
61	52.84	46.10	7	57.38	39.96	17	64.1	34.1	30
62	38.12	60.85	23	57.52	40.17	17	42.7	56.3	14
63	60.59	37.49	23	57.64	40.45	17	61.5	36.6	25
64	45.69	53.17	7	47.88	50.91	3	47.4	51.4	4
65	69.78	28.38	41	56.18	42.35	14	67.7	30.5	37
66	30.27	68.98	39	35.66	63.41	28	37.2	61.8	25
67	59.47	38.82	21	52.58	45.81	7	59.8	38.5	21
68	66.10	31.93	34	64.96	33.18	32	66.8	31.5	35
69	62.81	34.41	28	67.44	29.87	38	63.1	34.1	29
70	26.88	71.73	45	30.68	67.97	37	20.7	77.9	57

71	59.09	38.44	21	57.59	39.95	18	60.5	37.0	24
72	26.3	71.05	45	35.40	62.06	17	26.4	70.9	45
73	21.83	76.23	54	27.35	70.92	44	22.6	75.5	53
74	19.00	78.87	60	24.17	73.49	49	16.4	81.5	65
75	49.39	48.24	1	32.23	65.93	34	48.5	49.1	1
76	20.86	77.60	57	17.63	80.93	63	19.1	79.4	60
77	27.32	71.05	44	28.02	70.18	42	30.5	67.8	37
78	43.20	54.75	12	39.40	58.62	19	42.5	55.5	13
79	23.61	74.48	51	39.35	58.41	19	25.9	72.2	46
80	39.74	58.28	19	59.56	38.95	21	58.5	39.4	19
81	64.83	33.01	31	64.60	33.29	31	65.3	32.6	33
82	44.78	53.88	9	45.80	52.75	7	44.0	54.6	11
83	66.89	31.01	36	67.93	30.03	38	68.2	29.8	38
84	64.29	33.92	30	63.56	34.55	29	65.1	33.1	32
85	62.99	34.60	28	52.85	44.72	8	61.3	36.2	25
86	62.23	35.80	26	63.67	34.32	29	62.3	35.7	27
87	72.82	24.79	48	58.89	38.48	20	72.5	25.2	47
88	67.40	29.75	38	69.23	27.94	41	67.3	29.8	38
89	55.21	41.84	13	61.73	35.34	26	55.7	41.4	14
90	52.05	46.92	6	56.46	41.86	15	33.9	65.1	31
91	40.72	58.31	18	41.90	57.29	15	46.1	52.9	7
92	59.64	37.80	22	68.44	29.18	39	50.5	47.0	4
93	45.01	53.59	9	52.23	45.61	7	37.9	60.7	23
94	59.54	37.63	22	59.88	37.25	23	60.1	37.1	23
95	69.25	26.89	42	69.64	29.26	40	37.2	61.8	22
96	69.45	27.89	42	58.18	39.87	18	68.8	28.4	40

97	58.68	39.04	20	62.51	35.07	17	61.1	36.9	24
98	53.66	43.58	10	54.27	42.94	11	52.9	44.1	9
99	60.80	36.83	24	60.91	36.40	25	60.2	37.2	23
100	62.32	35.32	27	62.16	35.87	26	61.7	36.2	26
101	37.62	61.58	24	44.20	55.01	11	39.0	59.9	21
102	53.23	45.41	8	42.01	56.56	15	47.4	50.8	3
103	37.62	57.75	20	44.36	54.54	10	40.6	58.2	18
104	68.52	30.14	38	68.56	30.14	38	66.8	31.8	35
105	69.12	29.36	40	69.50	29.17	40	68.5	30.0	39
106	68.52	29.75	39	68.64	29.95	39	69.0	29.7	39
107	62.18	36.34	26	60.66	37.81	23	61.1	37.4	24
108	68.85	35.14	34	67.97	30.64	37	64.3	34.3	30
109	28.65	69.19	41	30.56	67.26	37	34.3	63.5	29
110	52.86	44.44	8	49.40	48.08	1	52.2	45.1	7
111	21.25	76.26	55	18.42	79.19	61	18.8	78.7	60
112	56.22	41.42	15	55.55	41.71	14	55.6	42.0	14
113	28.64	68.95	40	32.83	64.56	32	26.8	70.8	44
114	55.27	42.06	13	49.39	47.88	2	57.6	39.8	18
115	49.41	48.04	1	45.59	52.72	7	48.7	48.8	0
116	47.27	51.11	4	46.16	52.19	6	47.5	50.7	3
117	47.03	50.15	3	52.67	44.81	8	54.9	42.4	13
118	56.52	41.81	15	60.69	37.89	23	59.1	39.1	7
119	44.81	52.26	7	49.10	48.26	1	45.2	51.8	8
120	60.74	37.80	23	60.05	38.25	22	61.3	37.2	24
121	37.28	61.38	24	37.54	61.09	24	36.0	62.6	19
122	41.84	57.11	15	41.79	57.06	15	44.2	40.9	3

123	58.80	39.66	19	58.86	39.64	19	57.5	40.0	18
124	58.12	39.77	18	57.88	39.98	18	58.0	40.0	18

Splits

	Current Districts	LWVSC Districts	House Staff Draft
County Splits	34 counties split 131 times	34 counties split 131 times	32 counties split 137 times
Precinct Splits	123 split	82 split	371 split

# DISTRICT PARTISAN LEAN AND MAJORITY MINORITY DISTRICTS

	Districts w/ Republican Lean	Districts w/ Democratic Lean	Competitive (±5%)	Majority Minority (DRA Figures)
Current Map	79	29	16	30
LWVSC Map	77	28	19	30
House Proposal	82	30	12	30

# APPENDIX 2 proposed house draft

After  $2^{30} \approx 1$  billion maps were sampled, the p-values were...

p=0.0016206 for median-mean (only 1410 maps found to have worse measures)

p=0.00049208 for geometric partisan bias (only 130 maps found to have worse measures)

Distribution of measure statistics for a systematic sample (every  $2^{22}$  steps) of maps:



#### **LWV'S HOUSE MAP**

p=0.39503 for median-mean (83,777,304 maps were worse)

p=0.03446 for geometric partisan bias (627,004 maps were worse)

Distribution of measure statistics for a systematic sample (every 2<sup>22</sup> steps) of maps:



More negative means more biased

Larger means more biased

#### ORIGINAL (2011) MAPS - what if we stick with what we had last time?

p=0.27962 for median-mean (41,976,233 maps were worse)

p=0.15691 for geometric partisan bias (13,218,624 maps were worse)

Distribution of measure statistics for a systematic sample (every 2<sup>22</sup> steps) of maps:



More negative means more biased

Larger means more biased