

TO: Citizens Redistricting Commission

FROM: Karin Mac Donald

DATE: July 21, 2011

RE: Deferral and Numbering System for Senate Districts – Implementation of Methodology and Results

Below is a brief description of the steps used to assess deferral, followed by the results and the analysis of the outcome of numbering for each of the three processes described in my memo from July 12, 2011, in which I explained the various options theoretically.

I. Assigning Districts to Odd/Even Pool

Step 1- The percentage of the total population for each Senate district visualization that is currently in an even or odd district was calculated.

Step 2- Current visualizations that had a majority (>50%) of the total population in an even district were assigned to the 'even pool'. Visualizations that had a majority of the total population in an odd district were assigned to the 'odd pool'.

Result: Because the population was more evenly distributed within the 'even pool,' this process created 21 even districts and 19 odd districts. To be able to designate the same number of odd and even districts, one district had to be shifted from the even to the odd pool. This adjustment was made by moving the even district with the next highest percentage of total population from an odd district (SF-48.5%) to the odd pool.

Table I

ODD		#	EVEN	
2011.07.19 Senate	% origin odd 2001 Senate #		2011.07.19 Senate	% origin odd 2001 Senate #
IRVTST	100.0%	1	LAPVB	44.3%
RIVMV	100.0%	2	CCHTM	41.2%
SBWVE	100.0%	3	SANOC	39.2%
SJOSE	100.0%	4	LAPRW	38.2%
WMONT	99.1%	5	WSTSA	37.9%
LAADV	96.6%	6	NORCO	32.8%
RAMON	92.2%	7	SAC	28.5%
RCHMD	91.8%	8	LASFE	25.4%
LASGF	90.3%	9	LACVN	19.8%
SBBAN	84.5%	10	YUBA	19.5%
EVENT	79.8%	11	FREOAK	19.5%
CHFUL	73.4%	12	ISAND	16.1%
CSAND	70.9%	13	FTHLL	14.3%
WINE	65.9%	14	LAVSQ	13.8%
LAWBC	61.0%	15	POMSB	11.7%
LALBS	59.0%	16	LAELA	11.4%
SNMAT	58.6%	17	NESAN	9.7%
SNJOA	57.5%	18	TULKE	3.1%
MTCAP	54.0%	19	MRCED	0.2%
SF	48.5%	20	KINGS	0.0%

II. Assigning individual numbers (Geographic Method)

Step 1- The odd districts were numbered from north to south starting at the Oregon border and continuing with the most northern point of each district until all odd numbers (1, 3, 5...) had been assigned.

Step 2- The even districts were numbered from north to south starting at the Oregon border and continuing with the most northern point of each district until all even numbers (2, 4, 6...) had been assigned.

Table II

MTCAP	1
NORCO	2
WINE	3
YUBA	4
SNJOA	5
SAC	6
RAMON	7
FTHLL	8
RCHMD	9
FREOAK	10

SF	11
MRCED	12
SNMAT	13
KINGS	14
SJOSE	15
TULKE	16
WMONT	17
LASFE	18
SBWVE	19
POMSB	20

LAADV	21
LACVN	22
SBBAN	23
LAELA	24
LASGF	25
LAPVB	26
EVENT	27
CCHTM	28
CHFUL	29
LAVSQ	30

RIVMV	31
LAPRW	32
LALBS	33
WSTSA	34
LAWBC	35
SANOC	36
IRVTST	37
NESAN	38
CSAND	39
ISAND	40

III. Assigning Individual numbers (Consistency/Overlap with current districts Method)

Step 1- The odd districts were assigned the number of the odd district with the biggest overlap.

Step 2 – the even districts were assigned the number of the even district with the biggest overlap.

Step 3- A check was performed to ensure no districts or numbers had been double counted.

- 19 has the biggest overlap with EVENT. However SBWVE has an even bigger overlap with 19 (523,727 vs. 360,647). Thus EVENT was assigned the number of its next biggest overlap (23)

19	SBWVE	523727	EVENT	360647
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- CCHTM is an anomaly in that every number that CCHTM overlaps with is already assigned to another district, because the other district has a bigger overlap with it than CCHTM does.
- Thus CCHTM was assigned the only available, unassigned, even number (08) from the even pool.

31	SBBAN	458444	CCHTM	9074
36	NESAN	458448	CCHTM	302327
37	RIVMV	537741	CCHTM	374441
40	ISAND	744964	CCHTM	244230

- WINE is another anomaly in that every number that WINE overlaps with is already assigned to another district with a bigger overlap.
- Thus WINE was assigned the only available, unassigned, odd number (33) from the odd pool.

01	MTCAP	504829	WINE	2566
02	NORCO	581031	WINE	316402
03	NORCO	304650	WINE	124196
05	SNJOA	511705	WINE	405292
06	SAC	668996	WINE	70
07	RAMON	722671	WINE	79605

Table III

MTCAP	1
NORCO	2
SF	3
YUBA	4
SNJOA	5
SAC	6
RAMON	7
CCHTM	8
RCHMD	9
FREOAK	10

SNMAT	11
MRCED	12
SJOSE	13
FTHLL	14
WMONT	15
KINGS	16
LAADV	17
TULKE	18
SBWVE	19
LASFE	20

LASGF	21
LAELA	22
EVENT	23
LACVN	24
LAWBC	25
LAVSQ	26
LALBS	27
LAPVB	28
CHFUL	29
LAPRW	30

SBBAN	31
POMSB	32
WINE	33
WSTSA	34
IRVTST	35
NESAN	36
RIVMV	37
SANOC	38
CSAND	39
ISAND	40

IV. Assigning individual numbers (Hybrid Method)

Step 1- The odd districts were assigned the number of an existing odd district only if there was at least a 50% overlap. (note that in the Consistency method, a district only needed to have the largest share of overlap to be assigned the respective number). Using the Consistency method, in the example below, EVENT would be assigned the number 19 even though the overlap is less than 50%.

EVENT	17	75,701	6.89%
EVENT	19	360,647	39.56%
EVENT	20	188,335	21.24%
EVENT	21	19,909	2.33%
EVENT	23	288,423	32.08%

Step 2- The remaining odd districts that did not have at least a 50% overlap were numbered from north to south, using the district numbers that had not been assigned from the odd pool, starting at the Oregon border and continuing with the most northern point of each district until all remaining odd numbers had been assigned.

Step 3- The even districts were assigned the number of an existing even district only if there was at least a 50% overlap.

Step 4- The remaining even districts that did not have at least a 50% overlap were numbered from north to south, using the district numbers that had not been assigned from the even pool, starting at the Oregon border and continuing with the most northern point of each district until all remaining even numbers had been assigned.

Table IV

MTCAP	1
NORCO	2
WINE	3
YUBA	4
SNJOA	5
SAC	6
RAMON	7
LAELA	8
RCHMD	9
FREOAK	10

SF	11
MRCED	12
SNMAT	13
FTHLL	14
WMONT	15
KINGS	16
LAADV	17
TULKE	18
SBWVE	19
LASFE	20

LASGF	21
LAPVB	22
SJOSE	23
LACVN	24
LAWBC	25
LAVSQ	26
SBBAN	27
CCHTM	28
EVENT	29
LAPRW	30

CHFUL	31
POMSB	32
LALBS	33
WSTSA	34
IRVTST	35
NESAN	36
RIVMV	37
SANOC	38
CSAND	39
ISAND	40

V. Comparison

All three methods defer the same number of people. The continuity and hybrid methods result in district numbers that more closely relate to the current district numbers. However these methods also create anomalies such as a district in Napa being assigned 33 and a district in Riverside being assigned 8.

Table V

2011.07.19 Senate	Odd/Even	Continuity	Geographic	Hybrid
CCHTM	Even	8	28	28
CHFUL	Odd	29	29	31
CSAND	Odd	39	39	39
EVENT	Odd	23	27	29
FREOAK	Even	10	10	10
FTHLL	Even	14	8	14
IRVTST	Odd	35	37	35
ISAND	Even	40	40	40
KINGS	Even	16	14	16
LAADV	Odd	17	21	17
LACVN	Even	24	22	24
LAELA	Even	22	24	8
LALBS	Odd	27	33	33
LAPRW	Even	30	32	30
LAPVB	Even	28	26	22
LASF	Even	20	18	20
LASGF	Odd	21	25	21
LAVSQ	Even	26	30	26
LAWBC	Odd	25	35	25
MRCED	Even	12	12	12

2011.07.19 Senate	Odd/Even	Continuity	Geographic	Hybrid
MTCAP	Odd	1	1	1
NESAN	Even	36	38	36
NORCO	Even	2	2	2
POMSB	Even	32	20	32
RAMON	Odd	7	7	7
RCHMD	Odd	9	9	9
RIVMV	Odd	37	31	37
SAC	Even	6	6	6
SANOC	Even	38	36	38
SBBAN	Odd	31	23	27
SBWVE	Odd	19	19	19
SF	Odd	3	11	11
SJOSE	Odd	13	15	23
SNJOA	Odd	5	5	5
SNMAT	Odd	11	13	13
TULKE	Even	18	16	18
WINE	Odd	33	3	3
WMONT	Odd	15	17	15
WSTSA	Even	34	34	34
YUBA	Even	4	4	4