

Comments on Santa Clara City Council Elections
3 districts, 2 seats per district, using various methods
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Comments on Transitions:

A. To transition to 3 districts, 2 seats per district, where a district elects both at once:

2020: Four people elected from each of the four remaining single-member districts.

2022: Mayor + New District 1

2024: New Districts 2 and 3

2026: Mayor + New District 1

2028: New Districts 2 and 3

etc.

B. To transition to 3 districts, 2 seats per district, where each district elects one person every two years:

2020: Four people elected from each of the four remaining single-member districts.

2022: Mayor + one each from New Districts 1 and 2

2024: One each from New Districts 1 and 2, and two from New District 3. In New District 3, the first-place finisher gets a four year term, and the other winner gets a two-year term.

2026: Mayor + one each from New Districts 1, 2, and 3.

2028: One each from New Districts 1, 2, and 3.

etc.

Comments on the minimum number of votes needed to win a seat:

Let's assume that there are 36,000 voters in Santa Clara, uniformly distributed among the districts[1].

With 6 single-member districts (6,000 voters per district), to guarantee a win it takes 3,001 votes. (One *can* win with less if there are more than two candidates, but it takes 3,001 votes to *guarantee* a win.) For a faction to win 2 districts, they'd need 6,002 voters (3,001 in each of two districts.)

Now let's look at three two-member districts (12,000 voters per district). To win a seat in a district in the alternating model, it takes 6,001 votes. To win two seats, a faction would need 12,002 voters (6,001 in each of two districts).

To win a seat in the "both at once" model, using plurality voting, to guarantee a win takes 6,001 votes, *if those voters bullet vote just for one candidate*. (If they don't, and also vote for a second candidate, it takes 8,001 votes to guarantee a win[2].) To win both seats in a district, a faction only needs 6,001 votes.

To win a seat in the "two at once" model, using either STV or limited voting, to guarantee a win takes 4,001 votes. To win both seats, a faction needs 8,002 votes.

[1] In the 2018 election, 35,788 votes were cast for Mayor, 5,743 votes were cast in the District 2 contest, and 5,766 votes were cast in the District 3 contest. For sake of simplicity, we'll assume 36,000 voters city-wide, 6,000 voters in each single-member district, and 12,000 voters in each two-member district.

[2] To show why 6,001 votes isn't enough to guarantee a win in a 2-seat plurality election, consider a contest with three candidates for the two seats: A, B, C. 3,001 people vote for A and B. 3,000 people vote for A and C. The remaining 5,999 people vote for B and C. So we have this (see over):

POST MEETING MATERIAL

Comments on Santa Clara City Council Elections (continued)

A	B	C
3001	3001	-----
3000	-----	3000
-----	5999	5999

Total: 6001 9000 8999
B and C (easily) win.

So even though more than half the voters voted for A, A loses. But if A's supporters only voted for A, A would win:

A	B	C
6001	-----	-----
-----	5999	5999

Total: 6001 5999 5999
A wins, and B and C draw lots to see who takes the second seat.

For A to win with A's supporters also casting ballots for B or C, A would need at least 8,001 votes:

A	B	C
4001	4001	-----
4000	-----	4000
-----	3999	3999

Total: 8001 8000 7999
A and B (barely) win.

Quick Analytical Overview of Electoral Options

For City of Santa Clara 2019 CRC

Representativeness, Overview

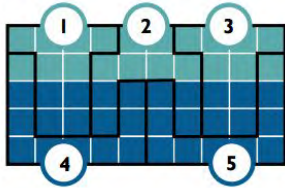
In a city with 36,000 voters, minimum number of voters in group to guarantee:

	1 Seat	6 Seats
City-Wide Plurality (At Large)	18,001 (50%)	18,001 (50%)
6 Single Member Districts	3,001* (8.34%)	33,001* (91.68%)
6 Limited/STV	5,143 (14.3%)	30,858 (85.72%)
3 Districts, 2 Members, Plurality	6,001* (16.68%)	30,001* (83.34%)
3 Districts, 2 Members, Limited	4,001 (11.12%)	32,001 * (88.90%)

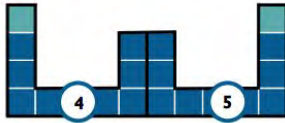
Why don't districts always perform ideally?

Intentional: Gerrymandering

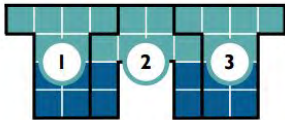
A POSSIBLE DISTRICT PLAN



THE PACKED DISTRICTS



THE CRACKED DISTRICTS



Unintentional:

- Drawing lines for fair representation for one voting block may not be compatible with other voting blocks
- People drawing lines may not know how people are actually voting.

Representativeness, Overview

In a city with 36,000 voters, minimum number of voters in group to guarantee:

	1 Seat	6 Seats
City-Wide Plurality (At Large)	18,001 (50%)	18,001 (50%)
6 Single Member Districts	3,001 - 18,001 (8.34% - 50%)	18,001 - 33,001 (50% - 91.68%)
6 Limited/STV	5,143 (14.3%)	30,858 (85.72%)
3 Districts, 2 Members, Plurality	6,001 - 18,001 (16.68% - 50.01%)	18,001 - 30,001 (50.01% - 83.34%)
3 Districts, 2 Members, Limited	4,001 - 12,001 (11.12% - 33.34%)	24,001 - 32,001 (66.68% - 88.90%)

Voting Methods

City-Wide Plurality (At Large)

- Simple
- Can elect in multiple elections
- Multiple Representatives

6 Single Member Districts, Plurality

- Simple
- Better than At-Large on representation
- Dependant on districting
- Different voting blocks fare differently.

Limited

- Some complexity
- Best on representation
- Multiple Representatives

Multi-Member Districts

The CRC is currently evaluating 3 District, 2 Member plans.

Two Options

1. Districts/Plurality
2. Districts/Limited

Note: Shares the Pro's and Con's of the city-wide versions, although moderated.

District / Plurality

3 Districts, one member elected every election. (Similar to US Senate)

Pros:

- Every voter participates in council elections every cycle

Cons:

- Regresses performance from court-ordered system

	1 Seat	6 Seats
3 Districts, 2 Members, Plurality	6,001 - 18,001 (16.68% - 50.01%)	18,001 - 30,001 (50.01% - 83.34%)

District / Limited

Each district elects two members out of one election every four years

Pros:

- As good (or better) performance as 6 single member districts

Cons:

- Have to define how you elect multiple people out of one election.

	1 Seat	6 Seats
3 Districts, 2 Members, Limited	4,001 - 12,001 (11.12% - 33.34%)	16,001 - 32,001 (66.68% - 88.90%)

Table 1: Data from the perspective of a single 1 / 3 city District

Voting Block needed for:	1 Seat	2 Seats
Plurality	50.01	50.01
2 Districts (Equivalent of Citywide 6 Districts)		
Best	25.01	50.01
Worst	50.01	75.01
Limited	33.34	66.68

Table 2: Data from the perspective of entire City.

Voting Block needed for:	1 Seat	2 Seats	3 Seats	4 Seats	5 Seats	6 Seats
City Wide Plurality / At Large	50.01	50.01	50.01	50.01	50.01	50.01
6 Districts						
Best	8.34	16.68	25.01	33.34	41.68	50.01
Worst	50.01	58.34	66.68	75.01	83.34	91.68
City-Wide Limited / STV	14.30	28.58	42.87	57.15	71.44	85.72
3 Districts / Plurality						
Best	16.68	16.68	33.34	33.34	50.01	50.01
Worst	50.01	50.01	66.68	66.68	83.34	83.34
3 Districts / Limited						
Best	11.12	22.23	33.34	44.45	55.57	66.68
Worst	33.34	44.45	55.57	66.68	77.79	88.90

Example

The City of New Fountainland has a voting population of 36,000 people. It recently came to light that the groundwater contained a toxic chemical. This polarized the local election with people falling into either a camp that wants to install an expensive filter on the fountains (“Pro-Fountain”), and a camp that wants to remove the fountain (“Anti-Fountain”)

On election day, 14,400 voters vote for Pro-Fountain Candidates, and 21,600 vote for Anti-Fountain Candidates

City-Wide Plurality / At Large	18,001 Voters Required for One	0 Pro Fountain Reps
STV / Limited	10,286 required for 2. 15,429 Required for 3.	2 Pro Fountain Reps
6 Districts	3,001 Voters Required per District	
Best Case	Pro-Fountain distributes evenly between four districts (3,600/District)	4 Pro Fountain Reps
Worst Case	Pro-Fountain distributes evenly between six districts (2,400/District)	0 pro Fountain Reps
3 Districts, Plurality	6,001 Voters required per District	
Best Case	Pro-Fountain voters split evenly between two districts (7,200/District)	4 Pro Fountain Reps
Worst Case	Pro-Fountain voters split evenly between three differences (4,800/District)	0 Pro Fountain Reps
3 Districts, Limited	4,000 Voters required per District	
Best case	Pro-Fountain voters split evenly between 3 districts (4,800 / District)	3 Pro Fountain Reps
Worst Case	Pro-Fountain splits unevenly (7,200 District 1, 3,600 District 2 & 3)	1 Pro Fountain Rep