# Alternative Voting Systems <br> Updated_Feb. 20, 2019 

You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete. - Buckminster Fuller

The significant problems we have cannot be solved at the same level of thinking with which we created them. - Albert Einstein

I'm the Mendocino County Coordinator for Californians for Electoral Reform (CfER). CfER is an all-volunteer, non-profit organization promoting election reform through education.

CfER's immediate concern is to provide all parties with accurate information about options recognized by the California Voting Rights Act (CVRA). We have alternatives to a rock-or-hard-place decision between fighting it out in court or switching to district elections. I'm not a lawyer, but based on what I've heard from legal experts, once a court orders a specific voting system, changing it later could be very difficult.

## If You're Not at the Table, You're on the Menu

One could say that the best election system is the one that reliably elects my preferred candidates. When one voter's preferred candidate wins, another voter's preferred candidate loses. We could take a step back and ask, "what would be the most preferred outcome for the entire community?" Keep in mind you are part of the community and should also be satisfied with the result. If the candidates preferred by $40 \%$ of the voters consistently win, those $40 \%$ will be happy with the existing voting system. Is that the most preferred outcome for the entire community? If there are 6 candidates that $60 \%$ of the voters like, and all those candidates lose because the vote splits among the 6 , is that the most preferred outcome for the entire community? If many voters like a particular candidate, but voting for that candidate might throw the election to the candidate they like least, and those voters decide instead to vote for the lesser of two evils among the candidates designated front runners, is that the most preferred outcome for the entire community?

I'm asking you to take that step back and see a bigger picture. What if you could more reliably elect candidates you like, and also improve the outcome for the entire community?

My ideal election system adheres to a few fundamental principles:

- Build consensus
- Share
- Treat everyone equally
- People should feel safe voting their hopes, not their fears
- Play nice

In practical terms, this means:

- Each interest group gets a fair share of power
- Representatives are approved by the greatest possible number of voters
- The governing body reflects the diverse interests of those represented
- The greatest possible number of citizens have at least one sympathetic ear on the governing body
- Discussions among representatives reflect discussions around the community
- All voters have a say about every representative (no districts). By extension, all representatives are directly accountable to all voters.
- Voters can vote their hopes without fear of unintended consequences or strategic-voting dilemmas such as:
- Fear of "wasting" their vote on a candidate that many say can't win.
- Inadvertently contributing to the election of the candidate they like least by voting for a "spoiler" candidate.
- Diluting their power due to vote-splitting among several similar candidates

Other concerns are:

- Reducing costs
- Discouraging negative campaigning
- Eliminating gerrymandering

I like to separate discussion about election procedures and election results. If you're not satisfied with the results of recent elections at all levels (local through
national), remember the adage, "If you do what you've always done, you'll get what you always got." Changes at the state and federal levels often begin with local reforms.

In many of our life decisions, we don't just choose one option, and then accept the choice made by others if our preference isn't available. We prioritize items on our to-do lists. We make backup or contingency plans if our first effort doesn't work out. If our first choice isn't available, we expect the opportunity to make another selection from all the remaining options. If the ice cream store is out of our favorite flavor, we want to select an alternate from all the store's flavors, not just the two flavors chosen most often by other customers. Why should we settle for less when we choose representatives who influence many aspects of our lives?

If a city council wants to know what people care about, the council could:

- Ask everyone to submit one issue they care about most
- If $80 \%$ of the citizens mention the same issue, does that mean nobody cares about anything else?
- What if many issues are mentioned and no issue concerns more than $20 \%$ of the citizens? Does that mean that $80 \%$ don't care about anything?
- If a serious issue only affects about $10 \%$ of the citizens, should they list that issue, or consider another strategy?
- If people are divided about what's most important, should there be a separate runoff round between the two issues with the most votes?
- If there's a runoff, what if $55 \%$ if the people prioritized an issue other than the two in the final runoff?
- Ask everyone for several issues people care about
- If several issues concern at least $50 \%$ if the voters, what should be done first?
- How well does this method accommodate those who only want to list one issue?
- If people are extremely concerned about one issue, and less concerned about other issues, should they list all issues of concern
knowing the lessor concerns are competing against their highest priority, or consider another strategy?
- Divide the community into geographic groups and take one issue from each group.
- What if there is a minority within each group that together make up $30 \%$ of the total population? That's more than the $20 \%$ of the population in each geographic group.
- If people are divided about what's most important, should there be a separate runoff round between the two issues with the most votes?
- If there's a runoff, what if $55 \%$ if the people prioritized an issue other than the two in the final runoff?
- Ask everyone to prioritize any issues they care about
- How well does this method accommodate those who only want to list one or more issues?
- How well does this method accommodate any of the strategies that might have been considered with the previous methods?

How does each method affect the results?
How accurately does each method reflect the concerns of the community at large?

How does each method affect the power of each individual?
How useful are the results of each method to the city council?
What if there are serious issues affecting only $20 \%$ of the citizens?
How much do each of these systems resemble the way we make decisions in our own lives (to-do list, choosing a college, applying for a job, choosing a place to live)?

For multi-member governing bodies such as city councils, CfER promotes rankedchoice voting (RCV) which addresses all the above concerns. In RCV, voters rank candidates in order of preference, much like prioritizing items on a to-do list. Voters who want to keep it simple can mark just one candidate and leave the other selections blank. Those with nuanced opinions that don't reduce to a simple yes/no, black/white selection can express their preference for each candidate.

The computer that tallies the votes uses some fifth-grade math such as fractions, percentages, and decimal places. Voters may choose to learn the details, or just mark their ballots and leave the math to the computer.

The multi-winner version of RCV used for city councils and school boards extends the basic principles of single-winner RCV, also known as instant-runoff voting (IRV), or single-transferable vote (STV).

Runoff elections are about second choices. A primary election asks, "who is your preferred candidate?" A general or runoff election asks, "If your first choice lost, who is your second choice?" RCV asks both questions on the same ballot. If there are more than 3 candidates, an RCV election could also ask for a third (or fourth, fifth, etc.) choice. That's the "instant" part of "instant runoff". Voters indicate their thoughts about all the candidates by ranking their choices in order of preference. Voters may rank as many or as few candidates as they wish.

To help visualize the process, imagine that all voters and all candidates gather in one place.

1. Voters line up behind their favorite candidate.
2. Count the people in each line. If over half the voters are in one line, that candidate wins.
3. If there's no winner, one candidate with the shortest line loses. Each voter in that line either moves to a different line for a runoff round or goes home if they don't care which remaining candidate wins. Go back to step 2 and count everyone again.

RCV has the obvious result of eliminating the need for a separate runoff election if there's no winner the first time, but also saves candidates money by only running in one election. RCV also builds consensus as like-minded voters can transfer their vote to a similar candidate if their most-preferred candidate is eliminated. This eliminates problems due to similar candidates splitting the vote and unintentionally contributing to a win by a very different candidate.

RCV also reduces negative campaigning. Suppose you're ranking candidates $A, B$, and $C$. The race is close, and the winner will likely need some second-choice votes to win. You fully support candidate $B$ as your first choice, but are uncertain how to rank A or C. Then candidate A says, "Candidate B eats babies. Don't vote for that baby killer". Will that influence who gets your second-choice vote?

## Choose 1 winner from 3 candidates

Here's a simplified example with 30 voters. A candidate needs 16 votes to win ( $50 \%$ of $30+1$ ).

## Round 1

The gray candidate got 12 votes which is more than either the orange ( 10 votes) or purple ( 8 votes) candidates. We could say gray is more popular than orange or purple. We could also say "not gray" is more popular than gray since 18 voters want someone other than the gray candidate. One of the goals is to build concensus. Nobody got a majority so we continue to round 2.


## Round 2

The purple candidate got the fewest votes and loses. RCV now does a runoff between gray and orange, this time using the second choice votes of everyone who chose purple as their first choice. 6 of them selected orange as their second choice, 2 selected gray.


With only 3 candidates, the result is the same as a traditional runoff election. If there had been 5 candidates, Round 2 would have been a runoff between 4 candidates. If there was still no winner, there would be additional runoff rounds
until one candidate gets over half the votes. This has significant practical implications.


The three purple candidates are very similar to each other and split the purple vote. We could say that gray and orange ( 8 votes each) are more popular than any purple candidate ( $5-7$ votes each). We could also say that not gray or orange ( 18 total purple votes against gray and orange) is more popular than gray and orange together ( 16 votes total between them). A traditional runoff would include only the orange and gray candidates even though a majority of voters (18 out of 34) prefer one of the purple candidates.

In an RCV election, the purple/orange candidate ( 5 votes) would lose after the first round. Purple/orange voters could then transfer their second-choice vote to another candidate, probably either purple/gray or purple/green. As vote counting continues through additional rounds, all the purple voters would likely unite behind the the most popular purple candidate who would win the election.

A multi-winner RCV election uses the same principles but has an additional goal of forming a governing body that best resembles those represented. It's about the entire governing body, not individual winners. The goal is to provide the greatest
possible number of voters with one of their own among the representatives, or at least a sympathetic ear.

The first step is to decide how many votes it takes to get a seat at the table. If $60 \%$ of the voters have much in common and vote for similar candidates, we might consider those voters an interest group or voting bloc. $60 \%$ is a clear majority, but nowhere near unanimous. There are many other voters with different interests. A fair share of power for $60 \%$ of the voters would be $60 \%$ of the seats. On a 5-member city council, this group has the power to choose three representatives, with the other $40 \%$ of the voters choosing the other two. If the $40 \%$ was further divided into roughly equal size groups, each small group might elect one representative each. The result is majority control with minority representation. The city council closely resembles the community they represent.

It's important to understand that voter divisions are fluid and change from one election to the next. One election, voters might prioritize cultural issues. The next election voters might prioritize philosophical differences about balancing business interests and the environment. RCV elections automatically adapt to voter priorities. If there are no significant interest groups, RCV still works well. The winners are still the group of candidates favored by the largest possible number of voters.

If there are more interest groups than seats, only the larger interest groups get a seat, but everyone has an equal say. Voters in small interest groups can still influence which candidates get elected. Smaller groups might build consensus by ranking candidates in a similar way, and together select one winner. All this happens automatically as voters rank all the candidates. If a voters first choice doesn't win, they still have a say in which of the remaining candidates win.

The computer can precisely calculate a vote threshold to qualify for a seat at the table as $1 /(n+1)+1$ where $n$ is the number of seats. This is the smallest possible threshold for minority representation. If we make it any smaller, there could be more winners than seats. If we make it bigger, it's harder for minority interest groups to get a seat at the table. This meets the goal of offering a fair share of power to everyone.

If electing 3 council members, any candidate getting ( $1 / 4+1$ ) of the total votes is elected. An interest group with twice that many votes $(1 / 2+2)$ could elect 2
candidates. A large group with 3 times the threshold (3/4+3), could fill all three seats.

What happens if a candidate gets more than the minimum votes needed? Suppose there are several like-minded candidates from a large interest group including 60\% of the voters. Previously, we said that a fair share of power for this group would be 3 of 5 seats. What if the first-choice votes were very lopsided with 1 of the candidates getting most of the group's first-choice votes, and the others getting only a small percentage? If we eliminate the candidate with the fewest votes, we might eliminate candidates from the large group we expect to produce 3 winners. Furthermore, those voting for the very popular candidate would likely prefer the similar candidates over any others. That would violate some of the fundamental principles such as building consensus, sharing, and treating everyone equally.

We solve this by going back to the original threshold of $(1 /(n+1)+1)$. Any votes over this amount are a surplus. We give the winning candidate just enough votes to meet the threshold and transfer any leftover votes to the voters' next choice. How do we decide which votes to keep and which to transfer? The fundamental goals include treating everyone equally and allowing all voters to have a say about all the candidates.

If the voters in the large group were well-organized, they might caucus before the election, reach a consensus about which candidates they want to win, and allocate their votes accordingly.

The computer can get the same result with some fifth-grade math. Voters can choose to just rank the candidates and leave the math to the computer or learn the details. The winning candidate gets just enough votes to win, and the remaining votes are allocated to other candidates proportionally based on each voter's next-choice preference.

Like the single-winner version, this process builds consensus, allocates power fairly, and gives everyone a say about which candidates get elected.

To help visualize this one, imagine all voters and candidates gathering to elect three city council members.

1. Everyone starts lining up behind their favorite candidate.
2. As lines reach the $1 / 4+1$ vote threshold, that candidate is an instant winner and that line is closed. Voters who were heading for that line may choose a different line, knowing that their favorite candidate is already elected, or they may go home if they don't care which remaining candidates win. Once there are three winners, over $3 / 4$ of the voters are in line behind winners and the election is over.
3. One candidate with the shortest line loses. Each voter in that line either heads to a different line or goes home. Go back to step 2 and count everyone again.

Here's a simple example of the Orange Clique vs. the Purple Clique Choose 3 winners
50 voters total: 30 purple, 20 orange

13 votes are needed to win ( $1 / 4$ of $50+1$ ). A likely result is two purple winners and one orange winner, giving everyone a fair share of power.

## Round 1



The purple/orange candidate got 16 votes which is enough to be elected, with 3 votes to spare. If we stopped here, the winners would be the purple/orange, orange/red, and orange/brown candidates. This outcome would violate the principle of fair representation as 20 orange voters chose 2 winners while 30
purple voters only chose 1 winner. We'll keep going to find the next 2 winners. The 3 surplus purple/orange votes are now transferred to other candidates based on each voter's second choice. 10 of the 16 purple/orange voters selected purple/green as their second choice. The other 6 purple/orange voters selected purple/gray as their second choice.


The computer can precisely calculate this vote split as $62 \%$ (10/16) of 3 votes for the purple/green candidate, and $38 \%(6 / 16)$ of 3 votes for the purple/gray candidate. We'll approximate that in the next round as 2 more votes for the purple/green candidate and 1 more vote for the purple/gray candidate. Note that the total number of votes stays the same, and each voter has exactly 1 vote. We just split each purple/orange vote between each voters first and second choice. The computer uses fractions, percentages, and decimal places to precisely calculate the proper split based on everyone's votes.

## Round 1 After Transferring Surplus Votes



Still no second winner as no other candidate got more than the required 13 votes, but the purple/green candidate is now ahead of the orange/brown candidate. The computer follows the next RCV rule and eliminates the candidate with the fewest votes. In this example, the purple/gray candidate is eliminated and the computer looks at the second-choice votes of all the purple/gray voters. All the purple/gray voters selected the purple/green candidate as their next choice which makes purple/green the next winner.

Round 2


Orange/Red Orange/Brown Purple/Orange Purple/Green Purple/Gray 11 votes

9 votes
13 votes winner 17 votes winner

## 

20 votes for orange


Now we're down to just orange candidates. The computer continues following the RCV rules to determine which of the orange candidates is the third winner. Charted cities can switch to RCV with a simple charter, or amendment to an existing charter. Here's a simple example:

## [Sample] CHARTER

## PREAMBLE

We, the citizens of the City of $\qquad$ , with a desire for self-determination in selecting our elected officials and to initiate the process to govern our City by charter government, do hereby adopt this charter.

## ARTICLE I. - CITY COUNCIL

101.     - Governing Body.

The governing body of the City is a Council of [for example] five (5) members elected as specified in this Charter. [Substitute the appropriate number.]
102. - Terms of Office.

The term of the office of Council Member is four (4) years.
103. - Method of election.

Notwithstanding any other provision of law, the Council shall be elected using [name of electoral system], with two members elected in (month) of (year) and every four years thereafter, and three members elected in (month) of (year+2) and every four years thereafter. If the County of $\qquad$ is unable to conduct these elections for the City, the City, under its plenary authority as granted to it by Article 11, Section 5(b)(4) of the Constitution of the State of California, may contract with a vendor of its choice capable of conducting a [name of electoral system] election, or may conduct the election itself.
[Adjust number elected each cycle as appropriate.]
104. - Method in special elections to fill vacancies.

Notwithstanding any other provision of law, if a special election is called to fill a vacancy, the same electoral system as specified by Section 103 shall be used.

ARTICLE II. - GENERAL
201. - Initiative and Referenda.

This charter does not abridge or modify the rights of citizens to propose initiatives and referenda (including amendments to this charter) as provided for in the general laws of the State of California.
202. - General Law Governs.

Except as expressly set forth in this charter, the general law set forth in the Constitution of the State of California and the laws of the State of California shall govern the operations of the City of $\qquad$ .
203. - City Ordinances Enacted by the Voters Remain in Effect.

Ordinances of the City of $\qquad$ adopted by the voters prior to the enactment of this charter shall remain in full force and effect and may only be modified or repealed by a vote of the people.

After passing a charter specifying RCV for city council elections, there are still issues with voter education and obtaining suitable voting equipment. CfER, FairVote, and other organizations can help with voter education. A couple years ago, San Francisco started funding development of an open-source RCVcompatible voting system. Once it's completed, it would still have to be certified. Commercial systems are also available. When most voters vote by mail, the need for machines is greatly reduced. Simplified hand-counting procedures are feasible for small cities. The hand-counting process is basically separating ballots into piles by candidate in the first round and moving ballots between piles in later rounds. CfER and other non-profit organizations can help educate those who might be involved in the process of obtaining and operating RCV-compatible voting equipment or doing hand counts.

For more about RCV and other voting reforms, visit

- cfer.org (Californians for Electoral Reform website)
- fairvote.org (FairVote website)
- fairelections.org (I like the humor page)
- voteyourhopes.org (fair disclosure: this is my website with a Mendocino County emphasis and a discussion forum)


## Editorials

One Reform to Save America RCV has often been a partisan issue with republicans usually opposed, and others usually in favor. This article by conservative columnist David Brooks is a refreshing exception. He writes: The way to do that [Save America] is through multimember districts and ranked-choice voting. Read the complete article at https://www.nytimes.com/2018/05/31/opinion/voting-reform-partisanshipcongress.html?rref=collection\%2Fsectioncollection\%2Fopinion\&action=click\&cont entCollection=opinion\&region=stream\&module=stream unit\&version=search\&co ntentPlacement=1\&pgtype=sectionfront

The Best Way to Fix Gerrymandering Is to Make It Useless by Lee Drutman. Mr. Drutman is a senior fellow at New America. He writes: The only way to make most districts truly competitive in today's regionally polarized politics is to expand them. For example, a single-member district in Manhattan is a cakewalk for a Democratic incumbent. But a five-member district in Manhattan - which would
combine that borough and parts of others - could yield a New York City Republican, and maybe a Michael Bloomberg-style independent, because such candidates could win a seat with 20 percent of the vote instead of 50 . Read the complete article at https://www.nytimes.com/2018/06/19/opinion/gerrymandering-districtsmultimember.html

Ranked Choice Voting - Progress and Not Looking Back By David Campos, Chair, San Francisco Democratic Party, for an overview of how RCV is working in Bay Area cities. Read the complete article at https://medium.com/@davidcamposesq/ranked-choice-voting-progress-and-not-looking-back-db00261b07a0

## Questions About RCV

> How can anyone rank all those candidates? Those who want to keep it simple can just mark their first choice and leave the other options blank. Those with nuanced opinions can express their preference for each candidate. I admit I was a bit overwhelmed the first time I voted using an RCV ballot. CfER uses RCV to elect its leadership. There were over a dozen candidates. I only knew a few of them. CfER uses a flexible method of counting votes that allows ranking several candidates the same. This option can simplify things for voters and reduce invalid ballots, but counting the votes involves math that I won't cover here. My first thought was to eliminate the candidates I didn't want and rank all others 1. As I read the candidate statements, I realized I did have preferences. "Divide and conquer" seemed like a good strategy. I divided the candidates into three groups: Most preferred, good, and least preferred. After that, I quickly ranked all candidates within each group with a unique ranking.
> What's wrong with voters taking a close look at just two candidates? OK, I get it. Selecting between two candidates is simple and convenient. If you like what you hear about a candidate, vote for that candidate. If you don't like what you hear, vote for the other one. What if you don't like either candidate, or you really wanted a different candidate? How satisfied are you with the results of past elections at all levels (local, state and federal)? If you're not very satisfied, remember the adage, "if you do what you've always done, you'll get what you always got".
> What about other voting systems such as Condorcet or Cumulative Voting? Other options are improvements over plurality at-large (pile up the votes for each candidate and the candidates with the biggest piles win) or single-winner districts. My preference for RCV is based on a few fundamental principles:

- Build consensus
- Share
- Treat everyone equally
- Play nice

RCV does a better job of meeting my goals. People with different priorities might prefer something else.

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