

## Understanding Aspen's Proposed Instant Runoff Voting

For reference in this charter I consider good and bad as the systems as compared to Aspen's current election system and based on fairness. It is my understanding that a key goal in adapting instant runoff voting is that it should not change the outcome of an election that would be held using the traditional runoff system.

### **Mayor's Race:**

First let us examine the mayor's race. The current voting technique is to have an election in May among all the candidates and if no one receives a majority (50+%) then the top two candidates will participate in a runoff in June. Instant runoff voting (IRV) has voters rank each candidate so that the runoff could be simulated and conducted immediately following the initial count. The IRV taskforce has chosen a method that should produce the same results in the instant runoff as the traditional votes in May and June, based on mathematical considerations alone.

To examine the dynamics of how IRV works consider the example of a mayor's race with four candidates. When filling out the ballot you would rank your preference for mayor from one to four. The person you list at one is the person who your ballot is counted for in the first round of voting. If one of the candidates receives a majority of the votes then they have won the election, just as in previous years. However if the vote is split so that no one receives a majority then the two candidates who received the most first place votes will enter into a runoff. Now every vote will then be recounted based on the candidates' relative ranking on each ballot. For clarity, examine how the following two votes will be counted, in a race between Joe, Mark, Sue and Nancy.

Voter A rankings: Mark, Sue, Nancy, and Joe fourth.

Voter B ranking: Sue, Joe, Mark, and Nancy fourth.

In the first tabulation of votes Voter A's ballot is cast for Mark and voter B's ballot is cast for Sue. Assume that no candidate received a majority but Mark and Nancy had the most first place votes. Then each ballot is counted again looking only at the relative rankings of Mark and Nancy. So in the runoff Voter A's ballot is again cast for Mark and Voter B's ballot is also cast for Mark because Sue and Joe have been eliminated.

In this case IRV has the exact same outcome as the traditional runoff system would have (assuming the same people vote in each election, and vote the same way they did in the first election.). When there is one position and one vote, IRV as proposed by the taskforce is exactly the same as the traditional runoff election.

## **City Council Race:**

Now that the easy case is out of the way, let us begin to examine the council race and the challenges of using IRV for a two seat/two vote election. **Aspen will be the first place in America to attempt IRV for this type of multi-seat, multi-vote, majority required, election.** Before examining the details of how IRV should be handled it should be clear exactly how the previous system has worked. Traditionally, when voting for city council everyone got to cast a vote for their two favorite candidates. To be elected a candidate must receive 45% plus one vote. In the case where two candidates meet that threshold, the election is over and both seats are filled. When only one candidate meets the threshold, the two candidates who received the 2<sup>nd</sup> and 3<sup>rd</sup> most votes will enter into a runoff and everyone will get to vote again for one of the two candidates. When no candidate receives the 45% plus one threshold in the original election, then the top four candidates will enter into a runoff. During the runoff election everyone voting again chooses their top two candidate choices and the two candidates exceeding the threshold requirement win. This last scenario with a four person runoff is where IRV gets tricky for a two seat/two vote election.

## **City Council Race with IRV**

So now that we all understand the current system let's examine how IRV results should be the same and how it could be different than the traditional runoff system. The best way to conduct IRV is still being debated so I will present the strengths and weaknesses of each system.

I will begin with the IRV Taskforce proposal for choosing the city council seats because it most closely follows the traditional runoff system. The IRV Taskforce has voters rank each candidate. In the first round of voting everyone's top two votes are counted. If two candidates reach a majority here the election is over and the seats are filled, exactly the same as in the traditional system. If one candidate reaches a majority then that seat is filled and a runoff between the two candidates with the next highest vote totals. Since there is now only one seat each ballot only counts for one vote so the counting procedure is exactly the same as the one for the mayor's race. The winner of this runoff gets the second seat. So far so good, the IRV is exactly the same as the traditional runoff.

Now to begin to explain the last scenario where the result may or may not be exactly the same as the traditional election run-off, depending on how individuals choose to vote. Before we get too far know that the cases where this may not be the same would be extremely rare. So no seat has been filled and the top four vote getters counting both 1<sup>st</sup> and 2<sup>nd</sup> place votes are then entered into a four person runoff. Since no seat has been filled each voter still has their top two choices (of the four remaining candidates) count in the runoff and the winners will be the two candidates who receive a majority.

The question here is how is this different than the traditional runoff? Well it only comes down to a few unique situations in which a voter's desires may change depending on who is in the runoff. Since the voter must fill out the ballot before they know who is in the runoff, the voter has incomplete information and may not be able to vote exactly as they would in a traditional runoff. So the difference occurs if you chose only one city council candidate in the runoff because you really liked that candidate

and wanted to make sure that candidate didn't lose a tie, because you also gave a vote to one of their opponents. However if your favorite guy wasn't in the runoff, you would choose two of the remaining four candidates to cast votes for. It is impossible to make an IRV ballot that satisfies both desires. If you never cast only one vote for two seats and have no interest in voting this way, then the IRV Taskforce proposal will count your vote in exactly the same way as the traditional runoff would.

If you have no desire to ever cast only one vote when you have two votes available, skip this paragraph as it will explain how to approximate that as best as possible for an IRV ballot. To fill out an IRV ballot to best approximate only voting for only one candidate in a runoff you must first choose between one of two voting goals. You must decide if you really want your favorite candidates or if you really don't want certain candidates. If all you want is to get your favorites into office you should only rank the candidates up to your favorites. That way, if there is only one of your favorites remaining in the runoff, you will cast only one vote. The second goal is if there are a few candidates you really dislike and would never cast a vote for then you should rank every candidate up to those you really dislike. You do not rank any of the candidates you dislike so one of your votes could never be cast for them. This strategy just drops the sum of the vote totals of the three opponents by one, giving your favorite or least disliked the marginally better chance at winning a seat.

To reiterate, if you are an individual who would always choose at least two of the candidates to vote for in the traditional 4 candidate runoff, then there is no difference for you in IRV as proposed by the taskforce and the traditional runoffs.

### **The FairVote.org Challenge to the IRV Taskforce Proposal**

In fact this minor difference from the traditional election is why one council member has proposed an alternate IRV method that is radically different than the tradition runoff. First, I should explain how they may describe the difference I described above so you do not think they have found another variation from the traditional runoff. The opponents of the taskforce proposal (FairVote.org and Councilman Johnson) frame their opposition using the following example in a council election with candidates A, B, C, D, E, F, G, and H.

My ranking of candidates: B, D, G, H, A, C, E, and F.

So in the first count my top two votes of B and D count.

Assume after the first count B, C, E, and F are the top four candidates.

So in the runoff my vote is cast for B and C. FairVote is claiming the vote for C is a vote "against" B. Again, if as a voter you always exercise your two votes in the runoff this is exactly how you would have voted in the traditional system and nothing has changed for you. If you were a voter who would have only voted for B you can read above to figure out how to do basically the same thing with the IRV ballot. It is important to understand how FairVote is framing this argument to examine how their proposed changes solve this "problem".

The challengers to the taskforce proposal had two alternatives drafted by FairVote which is an organization that specializes in IRV for one seat/one vote elections. **Aspen has a two seat/two vote election.** Both of these proposed changes have SIGNIFIGANT impacts on who may be elected. First we need to examine one more variation on IRV voting for one seat/one vote elections.

### Sequential Elimination Voting

Before we get into the details of the FairVote proposals it would be helpful to examine one technique they use that is different than anything previously discussed. In their proposals they recommend using sequential elimination techniques. Sequential elimination just means that after a round of voting only the candidate with the fewest number of votes is eliminated. So let's again examine the mayor's race with sequential elimination (one vote/one seat is easier to understand). Again we can examine how each of these votes will be counted, in a race between Joe, Mark, Sue and Nancy.

Voter A ranks: Mark, Sue, Nancy, and Joe fourth.

Voter B ranks: Sue, Joe, Mark, and Nancy fourth.

In round 1, Voter A votes for Mark and Voter B votes for Sue. Assume after the first tally is taken no candidate has a majority and the candidates are ranked Mark, Nancy, Joe, and Sue last.

After the first vote only Sue is eliminated. So now the race is between Mark, Nancy and Joe.

In round 2 Voter A votes for Mark and Voter B votes for Joe. Assume now that the Joe got more of the second choice votes so that the rank after two rounds is Mark, Joe, and Nancy. So Nancy is eliminated.

In round 3 Voter A votes for Mark and Voter B votes for Joe. Assume this time Joe got more of the second the third place votes from the votes that were cast for Nancy and Joe wins the election.

Note that this is a **different outcome** than our first simulated mayor's race and it's debatable as to which method of eliminating is "best". However it is clear that the first method described for the mayor's race is the IRV representation of Aspen's current system. The key here is to understand sequential elimination and then we will see how that would work with Aspen's two vote/two seat election.

### **FairVote Method 1: My Term for it—"Disenfranchisement"**

The first proposed method by FairVote is to hold two sequential elimination races for the two seats. In this case only the highest ranking candidate on each ballot is examined. After each round the person with the fewest votes is eliminated. At first glance it seems ok, but a closer look reveals some disturbing potential consequences of this method.

Remember the problem this is designed to fix, people rarely casting a vote for a lower preference that breaks a tie with their higher preference. This is a problem that Aspen could go 100 elections and never have happen once to any voter.

**Why does sequential elimination stink if you are a voter?** Many voters will only receive one vote for city council in this method, while others still receive two. **So the council race went from two seats and two votes to two seats and sometimes two votes.**

Back to The “Disenfranchisement” Method, people won’t just lose votes in strange tie breaking circumstances, there will likely be at least 20-30 percent of the population who only get one vote, namely the individuals who vote for the second or third place candidate as their first choice. Examine an election with candidates A, B, C, D, and E. Let’s call this a “Tale of Two Voters”

Voter 1 rank: C, D, A, B and E

Voter 2 rank: B, E, A, C, and D

Round 1: Voter 1 votes for C and voter 2 votes for B. After round 1 assume Candidate D has the fewest votes and is eliminated. The race is now between A, B, C and E.

Round 2: Voter 1 votes for C and voter 2 votes for B. After round 2 assume Candidate A had the fewest votes and is eliminated. The race is now between B, C and E.

Round 3: Voter 1 votes for C and voter 2 votes for B. After round 3 assume Candidate E had the fewest votes and is eliminated. The race is now between B and C.

Round 4: Voter 1 votes for C and voter 2 votes for B. After round 4 assume Candidate B wins and gets the first council seat.

One seat has now been filled, so now the election begins again with A, C, D, and E.

Round 1: Voter 1 votes for C and voter 2 votes for E. After round 1 assume Candidate D has the fewest votes and is eliminated. The race is now between A, C and E.

Round 2: Voter 1 votes for C and voter 2 votes for E. After round 2 assume Candidate A has the fewest votes and is eliminated. The race is now between C and E.

Round 3: Voter 1 votes for C and voter 2 votes for E. After round 3 assume Candidate E wins.

Now examine how each of our two voters’ tales has turned out. In every round filling both seats voter 1’s first choice was the **only** choice ever considered. Voter 2 because their candidate won the first seat now gets their second choice to fully count throughout the selection of the second seat. Anytime some people’s votes start counting **more than others it is a VERY bad system in a democracy.** Our tale was a sad one for the unlucky first voter but a happy one for the second; democracies should not favor one vote over another and that is what this system will do each and every election if it is adapted. FairVote should reconsider their proposal. The kicker is we have only examined as to why this method stinks if you’re a voter but what about if you are running for office?

**Why The “Disenfranchisement” Method stinks if you are a candidate.** There are two situations in which something like this could easily occur. One situation is for the candidate who gets

placed at the bottom of the ballot and the second situation is if there is a lot of negative campaigning between several candidates and a moderate candidate without a lot of first choice support becomes everyone's second choice. Think about going in to vote for two council seats and being accustomed to having two votes, it is likely individuals will look down the ballot to find their first candidate and mark them as their first choice and then continue down marking the guy at the bottom as their second choice, although thinking about them as equally favored candidates.

Let's assume our unlucky candidate, Moe Zella, who was listed last on the ballot is actually really popular and received 60% of the 2<sup>nd</sup> place votes. With the traditional or Task Force proposed system he would be elected without a runoff. However, Moe only received 2% of the first place votes and gets eliminated first in both rounds of the election under the Fair(???)Vote system. Now this may not happen every year like the voter "disenfranchisement", but it would almost certainly happen before someone accidentally cast the tie break vote in favor of their sixth choice over their first.

The second example shows how this counting technique could diverge wildly from the traditional runoff system. The first example shows how two voters get have a **different degree of influence** over the election with one voter clearly getting two choices and a second voter only getting one. That is a scenario that would happen in almost every, if not every, election. The individuals who vote for the candidate who comes in second for the first seat would almost *never* have their second choice for council considered. While the person who voted for the winner of the first seat gets their second choice fully considered, giving them a greater influence in the outcome of the election than any other voter.

So examining here the first "solution" to someone accidentally voting against their first choice with a lower choice is to eliminate the second choice for some but not all voters. "Disenfranchisement" is not a good solution, ever.

### **FairVote proposal 2: My Term for it-- "The Incumbent Bias"**

After considering FairVote's first proposal, ("Disenfranchisement") this second proposal seems better until you examine it closely for the situation in Aspen. In this proposal they recommend following the first step in the Taskforce proposal, so everyone's top two votes are counted and the top four will enter into a runoff (assuming no one gets a majority). So at this point there are 4 candidates and 2 seats available, traditionally and with the Taskforce proposal everyone still has two votes and those votes will be counted. However to protect people from casting a vote "against" their top candidate, at this point instead of a four person runoff only the top two candidates are entered into a runoff for one of the seats. The winner of the two person runoff (calculated the same as in the mayor's race) gets a seat and the loser gets thrown in with the other two who survived the first round and a sequential elimination runoff is held between the three remaining candidates.

After reading that, you may ask how does that help incumbents? The best way to understand how this helps is through a scenario. Let's say 40% of the town thinks the council is doing a great job and wants to go vote for the incumbents, then the two incumbents each will receive 40% of the vote between 1<sup>st</sup> and 2<sup>nd</sup> selections. Assume the other 60% of the town thinks the council needs some fresh

faces and just wants a change; however there are 5 candidates that divide the first and second place votes of 60% of the town. The top two change candidates here may only receive 35% and 30% of first and second place votes. So this means the two incumbents get to run against each other in the first runoff and one of them gets to keep their seat. However in a traditional runoff and the IRV Taskforce proposal, all the change voters would likely rally around the two challengers that make it to the runoff to beat both of the incumbents 60/40. So a traditional runoff wouldn't have even yielded a very close election, but one of the incumbents would keep their seat anyway.

Just to make it clear, examine the ballot of a "change" voter in a council election where the "Incumbent Bias" Method is used: Candidates A and B are incumbents and Candidates C, D, E, F and G are challengers.

Change Vote: D, C, E, G, F, B, A

If A and B are the top two vote getters in the initial tabulation and C and G come in third and fourth. With the incumbent bias method, A and B then are the only choices for the first seat, so the Change Vote is cast for B. Assume B ekes out the win over A.

Then a sequential runoff would then begin between A, C, and G.

Assume G is eliminated and then C wins the final round 60/40 over A.

So one incumbent and one challenger are elected.

However with a traditional runoff, or the taskforce proposal, C and G would have both been elected with generous margins in the runoff. If this Incumbent Bias method were adopted it would either take discipline to only promote two candidates from the change crowd or a massive landslide to get both incumbents out of office.

It should also be noted that because the two seats have been split and filled one at a time the same problem occurs with some voters having greater influence than others as occurs in the disenfranchisement method. In this case everyone has their first and second choices counted in the first round but after the initial tabulation the votes are counted differently. In the race for the first seat every voter casts a vote for which ever candidate they had ranked higher. The individuals that ranked this candidate first will now have their next highest remaining preference counted fully in the second round. The disparity between a voter casting their top preference for the winner of the first seat and the other voters is reduced in this tabulation method but it still exists. Despite this increased equality between voters there is still a greater degree of influence given to the voters who cast their top preference and other voters. I believe that any disparity between relative voter influence should be avoided. \*

Also remember why they purportedly opposed the taskforce proposal,-- to protect voters from accidentally breaking a tie between their top choice in favor of one of their lower choices. In this scenario there is no accident as to how this voter's second vote in the runoff is cast, it is cast for their

next to last choice to beat out their least favorite choice instead of being able to cast their two votes **for** their second and fourth choices.

## **Summary**

First examine the argument against the Taskforce IRV proposal. The argument can be made that by casting two votes in an election with two seats that utilizing your second vote you are voting “against” your first choice. This is an issue that has been inherent to the voting system in Aspen for years, presumably without anyone ever pressing to change the rules to prevent this scenario-- (so why is it an issue now?). Note the only rare circumstance where this matters is when your lower ranked vote becomes the tie making or tie breaking vote for your top preference to lose. Also note that if a voter is extremely worried about this happening they can prevent it by filling out the ballot to prevent that scenario from happening. With the last two methods there is nothing an individual voter can do to alleviate the flaws in the design.

There is room for some debate as to what the optimal way to conduct a two seat/two vote election. **However what is clear is that of the proposed methods the Taskforce has presented the voters with the one that best approximates the traditional voting system in Aspen.** The two alternative proposals vary from the traditional system of Aspen elections. The “Disenfranchisement” approach literally strips a significant percentage of voters of their second choice. This is a problem that would occur each and every election (barring a miracle) to some voters, probably 20-30% of voters. The bias built into the second voting system (The “Incumbent Bias” method), is much more subtle but based on Aspen’s tradition of having 7 or 8 candidates vying for the 2 spots would almost guarantee a win by at least one of the incumbents.

\*paragraph added since 2.14.09 memo

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Feel free to post your questions on [www.TheRedAnt.com](http://www.TheRedAnt.com) on the mathematical implications of the various methods, and I will attempt to answer as time permits.