

## 2. STV in Perspective

What is the purpose of adopting a complicated voting system like STV?

If you are reading this handbook, you have likely heard about how IRV mitigates the “spoiler effect” of third party candidacies. Possibly of broader interest is that IRV can also save the cost and delay of an actual run-off election. IRV becomes useful, in single seat elections, when neither of the two top vote getters receives more than half the votes cast. The lowest vote getter is eliminated and her votes are transferred to subsequent choices on the ballot. Voters who indicated the eliminated candidate as their preference still may determine the outcome of the election. By voting their true preference, which may have been for a losing candidate, IRV provides that voters need not waste their vote.

Similarly, in multi-office elections, such as for boards and councils, STV method allows ballots which may have been cast for losing candidates to not be wasted, but rather to help elect voters’ second and subsequent choices. With STV, even votes cast for winning candidates are used more efficiently. Here is an illustration:

Suppose there are 8 candidates seeking 4 seats on a board, with an electorate of 1,000 voters, in a conventional plurality election top 4 vote getters are elected. Let’s suppose that Candidate A is hugely popular, and at election time garners 600 votes. The other three candidates who ultimately are elected get their offices with an average of about 133 votes, yet they presumably have as much power and status on the board as Candidate A, who represents 600 voters. This is true even if the three winners besides Candidate A are roundly detested by Candidate A’s 600 voters. In effect many of the votes cast for Candidate A went to waste, because if you divide 1000 votes among 4 seats, it would seem that 250 votes should yield a seat on the board.

Here is where STV comes into play, with its formula for transfer of “surplus” votes cast for a winning candidate. These surplus votes assist candidates indicated as second and subsequent choices. With STV, roughly speaking, Candidate A’s surplus votes about  $600 - 250 = 350$  would have transferred to choices determined by Candidate A’s supporters. They would not have to feel they were wasting a vote by indicating a front-runner as their first choice, because Candidate A’s surplus will be transferred to reflect the intent of Candidate A’s supporters.

From this example it should be clear how STV tends to reflect the various proportions of the electorate more accurately than a plurality election. Election systems aiming to do so fall within the larger category of Proportional Representation. An election system is said to be proportional to the extent that it is capable of representing the overall makeup of the electorate. The ideal for Proportional Representation is that every significant voting group should have some means of finding political expression. Consequently, the ultimate measure of STV in application is its *proportionality*.

With sizeable, computer tallied elections a few, scattered procedural decisions likely will not

affect the outcome, nor the proportionality, of the election. But in small, hand-tallied elections, such as when a Local Station Board elects its representatives to the Pacifica National Board, each ballot can affect who gets elected, and each procedural decision may have an impact on the proportionality of the process as well. Voters, candidates and observers generally come to understand this, and are certainly justified in expecting a transparent and comprehensible process. In order to provide a process acceptable by these criteria, it is vital for election operators to thoroughly understand why things are done a certain way.

One crucial point is that the total STV universe entails any number of variants, often contradictory, perhaps even to be deemed quirky, by reasonable standards. A few of the serious contradictions between these variants may become apparent if you attempt to apply Pacifica rules to an election using a computer tally. It is primarily because of these contradictions that the KPFK Elections Working Group has come to discourage the use of computers in small elections, such as elections by the body of Delegates, or LSB.

As a baseline to understanding STV you need to have clearly in mind that there is no recognized STV standards body and no widely accepted manual on STV – no STV “bible”. You can’t run an STV election “by the book”, because there is no such definitive reference work.

Instead there is a wealth of articles, a few books, and some computer software with occasionally helpful documentation. Small guides appropriate for particular venues have been published by universities, local governments, non-profit organizations, and commercial vendors of election terminals and systems. There is overall similarity among the sources about STV, and some definitions and procedures are universally recognized (at least in English-language venues and publications). One example is the mathematical definition of the Droop threshold, which is a common formula for determining how many votes a candidate will need to get elected. But the Droop threshold is not in universal use by any means. In fact, the older (and arguably less proportional) Hare threshold is fairly common. A quick search of the Internet will reveal how tally rules, in detail, vary significantly from one source to another.

Seeing as CP Pro is the STV software already adopted by Pacifica to some extent, it would seem that adapting to the rules followed by CP Pro would be a suitable course of action. Unfortunately, the CP Pro rules do not perfectly conform to the election procedures spelled out in the Pacifica Bylaws (Article Fifteen, Section 1, *Voting Methods*). The Bylaws specifications must take precedent in all Pacifica elections, so contradictions between the CP Pro rules and the Bylaws rules do create a dilemma.

To make lemonade out of lemons, as the colloquialism has it, perhaps we should just consider that an examination of these problem areas will reveal some of the finer points of STV transfer methods. Whether these issues between common computer tally methods, and the potentially different outcomes arrived at via appropriate hand tally, can be resolved legally is another matter. What is beyond question is that any hand tally can be carried out in conformity to the Bylaws, while some computer tallies may not.

One problem area involves dealing with ties. Vote counting tallies in STV are made up of cycles of distributions of votes called *rounds*. On a given round a tie may occur, either for the candidate with the most votes, or for the candidate with the least. The Bylaws specify that last place ties be resolved by the drawing of straws, but CP Pro follows the *previous round method*,

when applicable, which is a decidedly non random procedure. Issues surrounding ties will be explored more fully in Section 5 of this handbook, which contains a step by step guide to a hand tally.

Other thorny issues appear in STV, upon which the Bylaws are silent.

*Duplicate rankings* are the occurrence on a ballot of more than one candidate receiving the same rank. Permitted by National Election Supervisors in two Pacifica election cycles, it is the recommendation of the Elections Working Group that duplicate rankings be discouraged, and where possible, banned. Duplicate rankings complicate hand tallies to a significant degree in small elections, and render all hand tallying unthinkable in even relatively large elections. There will be a full discussion of duplicate rankings in the Appendix to this handbook, albeit in a future edition.

With STV, especially in large elections, *gaps* will inevitably appear on some ballots. A gap is an instance where a voter has indicated rankings in sequence, but has omitted one or more rankings. The Elections Working Group recommends that you simply skip any gaps on a ballot when doing hand tallies. After all, you should have instructed the electorate about the inadvisability of using low rankings to punish candidates more about that later so anyone voting with such a deliberate strategy has no excuse. The software programs used by Pacifica to date employ a similar method, actually the software equivalent of skipping over the gap. Doing so in a hand tally should not be viewed as a departure from normal practice.

Another quirk related question that may come up goes something like this: “How come the first candidates elected have to meet a threshold of X votes, while some candidates elected at late rounds make it with fewer than X votes?”

The explanation lies in the fact that, quite likely, not every voter will rank every candidate. When such ballots transfer, it is very possible that they will have no place to transfer to. Such ballots are termed *exhausted*.

It is because of exhausted ballots, essentially having no value, that the threshold may effectively be reduced in late rounds. It is as though the pool of valid ballots, calculated early on into the threshold formula, has shrunk, and so the threshold is recalculated later with a smaller value. In some systems the threshold is reduced in practice, whereas with Pacifica STV a threshold can only be said to have been reduced *theoretically*. With practice this should become clear, so encouragement is given to practice a hand tally before taking on a real election.

And finally, something comparatively easy: a note about the value of a ballot that gets transferred twice or more as a result of candidates being elected. Such a ballot can get “marked down” twice, thereby reaching a very small fractional value – so small it is unlikely to have a significant influence over an election’s outcome. Election operators might be persuaded to have a pocket calculator, or notebook computer, handy to calculate very small fractions.

It should be clear by now that explanations of STV in the abstract are not, perhaps, terrifically simple to follow. Fortunately an example tally of a suitable mock election, with specific ballots, vote counts, etc. is, by comparison, easy enough to comprehend. A “numerical example” is exactly what is presented in Section 6 with some possibly helpful forms available in Section 7, so that Section 6 becomes the concrete illustration of the generalities of the step by step guide in Section 5. It is our hope that sections 5 and 6 taken together may prove to be the fastest and best path to an understanding of Pacifica STV.