Larry's Guide for Voters: The School Board Endorsement – Edition #1

This first edition focuses on how you can express your preferences for filling the two open seats using the new Ranked Choice ballot, how your vote will be counted, and the implications for both voters and candidates. Future editions will have more information on how you can cast your ballot – including how you can be a "Remote On-line Voter" – a ROVer.

<u>Voting and Vote Counting</u>

Some in-person voters may choose a paper ballot, all other voters will use a computer app called "ElectionBuddy" (EB) to cast their ballots. Either way, voters will see all four candidates listed, and will be able to express their preferences with better articulation by entering 1 (most preferred), 2, 3, & 4 next to each name. When all ballots have been entered, EB will determine the outcome using an algorithm called "Meek's Single Transferable Vote." This method of tallying votes is considered better because it takes into account more than just first-preferences. EB tallies votes in "rounds" of at most four steps; this election may have a second round if the first round does not result in two winners. The steps in each round are:

1. **Determine the "threshold". To win a candidate must have more than some number of votes, this threshold; it depends on the number of ballots to be considered and the number of seats to be filled: (number of ballots) / (number of seats to be filled + 1).**
2. **Count the first-preference votes for each candidate to see if there are any winners**
3. **If there is just one winner then compute that winner's "surplus" votes; surplus votes are the number of votes above the threshold. Those votes are added to the first-preference votes of the winner's second-preference candidates proportionately. This is where the importance of the second-preference votes enters the algorithm's vote counting. Adding those "surplus" second-place votes to each candidate's first-preference votes may produce a second winner**
4. **If there are one or two open seats remaining, then the candidate with the fewest first-preference votes is eliminated. That candidate's second preferences are "transferred", added, to those other candidates' first-preference votes. If the eliminated candidate has fewer second-preferences than first-preference votes (ballots with only a #1 indicated, called a "plunk"), then the number of plunked ballots is subtracted from the "number of ballots to be considered" in the next round. This results in the calculation of a new threshold at the beginning of the next round.**

If there is a need for a second round the difference is in the number and distribution of the eliminated candidate's second-preferences, their #2s.

The following three examples show how EB's algorithm works with 3,605 ballots cast.

In the first round a candidate needs more than 1202 (3,605 / 3 = 1201 + 1/3), the threshold.

(Note: In the first example only the first-preference votes for each candidate, and the second-preferences of the first winner are relevant.)

<u>First Example:</u>

Vote tally:

First-preferences:	A's Second-preferences:
A: 1,803	B: 901
B: 905	C: 901
C: 643	D: 1
D: 255	

In the second step of the initial round Candidate A surpasses the threshold and wins a seat.

A has a surplus of 601 votes; since B & C each received about half of A's second-preference votes these are split equally between B & C – giving each 300 additional votes.

Adding 300 to B's 905 first-preference votes surpasses the threshold making B the other winner.

<u>Second Example:</u>

The key difference between examples 1 and 2, is the distribution of second-preferences on A's ballots, and on D's Second-preferences – these come into play when D is eliminated.

Vote tally:

First-preferences:	A's Second-preferences:	D's Second-preferences:
A: 1,803	B: 450	A: 5
B: 904	C: 1,350	B: 125
C: 643	D: 3	C: 125
D: 255		

Again, A is a winner in the first round, and has 601 surplus votes. Dividing A's surplus proportionately gives B about 150 additional votes, and gives C about 450. Adding these to their first-preference votes gives B 1,054, and C 1,093; neither one is above the threshold. This round ends with the elimination of the candidate with the fewest first-preference votes, Candidate D.

When D is eliminated, D's second-preference votes are transferred to those other candidates:

A: 1,803 + 5 = 1,808, B: 904 + 125 = 1,029, & C: 643 + 125 = 768

Candidate A now has a surplus of 1,808 – 1202 = 606. Dividing this proportionately between B & C gives B about 151 additional votes and C gets about 453. Adding these to their new first-preference votes gives B 1,180 (1,029 + 151), and C 1,221 (768 + 453); and so, C is the second winner. Candidate C's second-preference showing on Candidate A's ballots was enough to overcome a 262 shortfall in first-preference votes.

Surprising? – Perhaps; Counter-intuitive? – Maybe. But that's how this algorithm works.

In any case it draws attention to the importance of your choice for your #2!

<u>Third Example:</u>

The differences between examples 2 and 3 are in the number (there are "plunk" votes, a.k.a. "bullet votes"), and in the distribution of D's second-preferences.

Vote tally:

First-preferences:	A's Second-preferences:	D's Second-preferences:
A: 1,803	B: 450	A: 0
B: 904	C: 1350	B: 124
C: 643	D: 3	C: 76
D: 255		

Again, the threshold starts at 1202. As before adding A's surplus votes to B & C does not produce a second winner. When D is eliminated, D's second-preference votes are transferred to those candidates: A doesn't change, B: 904 + 124 = 1,028, & C: 643 + 76 = 719. But there is another difference because 55 of D's ballots were "plunked." This changes the "number of ballots to be considered"; in the second round it is 3,605 – 55 = 3,550 and this makes the new threshold become 3,550 / 3 = 1,183 + 1/3. In the second round Candidate A has a surplus of 619 + 2/3 (1,803 – 1,183+1/3) Dividing this surplus proportionately between Candidates B & C, gives B a little less than 154.7 additional votes, and C gets a little less than 464. Adding these to their new first place votes gives B a little less than 1,182.7 and C gets a little less than 1,183. Neither one is above the threshold – there is no second winner. So the candidate with the fewest first-preference votes, Candidate C, is eliminated – the election is complete. Candidate B gets the second seat by default.

Obviously, this example was reverse-engineered to see if such a result is possible, but there are many more such examples that can produce unexpected results. Note for example that if C had just a few more first-preference votes (by taking some of D's 255), C would have won the second seat.

The results of this sort of analysis has implications for both voters and candidates.

<u>The Implications for Voters:</u> Arlington Democrats are sophisticated voters; but this method of election is new for us. The main result of my analysis is: <u>your choice for "2" really matters!</u> If you think there are two candidates who really should be on the board then the main question is who wins your "1"; who best represents all the important aspects of governance and policy making for the foreseeable future. On the other hand, you may be strongly committed to a candidate for one particular reason. In that case your best choice for "2" would be the candidate who next best represents the reasons for your first choice.

<u>The Implications for Candidates:</u> Each candidate will develop their own strategy; I undertook this analysis for three main reasons:

- **Applying my experience as a systems engineer working for NASA's development programs at the highest levels (including Space Station and Climate Change Research), this is a way of clearly seeing what <u>could</u> happen – revealing the strengths and risks of my strategy**
- **Applying my experience as a teacher, could I take a complex description written like a specification and provide a useful guide to understanding how this election process works from a voter's perspective**
- **Curiosity and the fun of working through a highly technical description of how the algorithm works in general to reveal how it actually works in our particular case**

<u>The result for my campaign</u>: This analysis validates my strategy:

- **Emphasize the breadth and depth of my experience with the most important aspects relevant to being a board member: as a parent, as a teacher, and as a proven leader in APS advocacy and advisory organizations including Chairmanship of the Advisory Council on Instruction, and Presidency of the County Council of PTAs.**
- **Show the commonalities with the other candidates by comparing my experience and ideas with theirs.**