



BC-STV VOTE COUNT SIMULATION 1

This document uses pictures and text to demonstrate how an election in an electoral district might look under BC-STV. Each page represents one stage of the vote-counting process.

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The first step is to count all the valid ballots (all ballots that clearly indicate at least a first preference) and determine the electoral quota – the number of votes needed to get elected.

In this simulation, there are 3 MLAs to be elected, and there were 100,000 valid ballots cast.

To calculate the electoral quota, a formula is used that divides the total number of valid votes by the number of MLAs plus one, then adding one to that number. This formula (known as the Droop quota) provides for the lowest possible number of votes needed to win, while making it impossible for too many candidates to be elected at any stage of the counting.

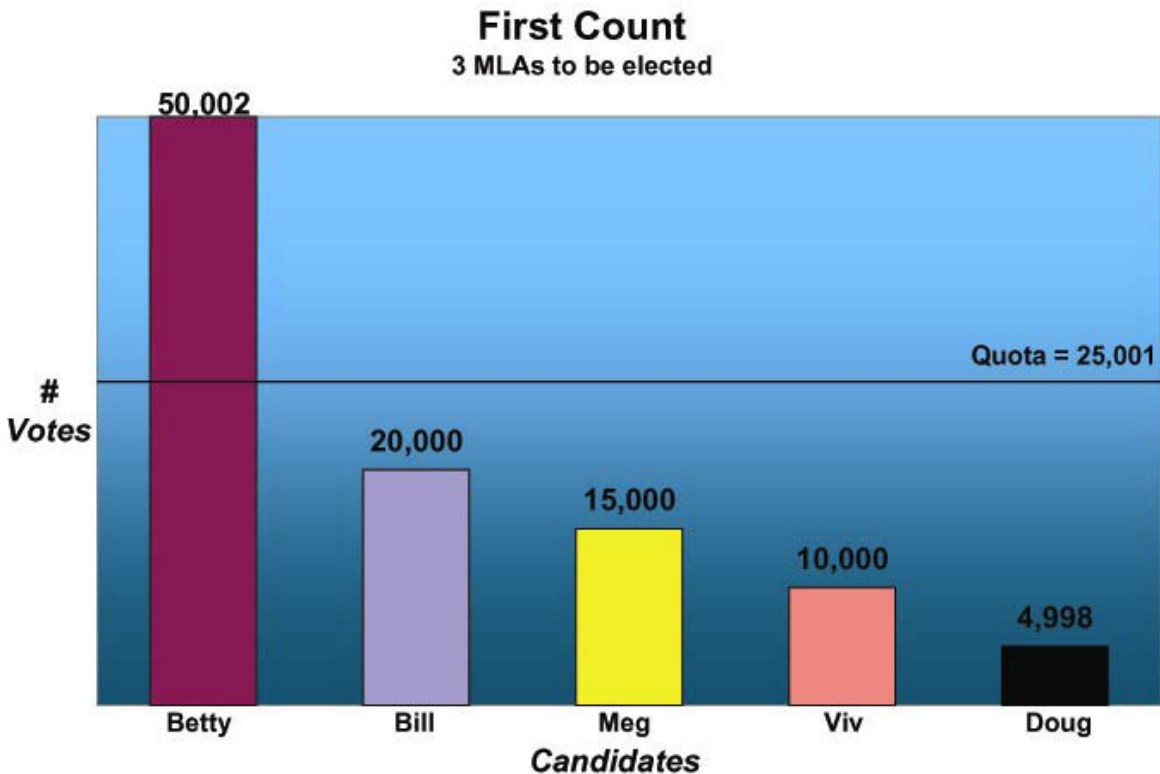
In the case of our model election, the electoral quota is as follows:

$$\frac{100,000 \text{ votes}}{(3 + 1)} + 1 = 25,001$$

So to be successful, a candidate needs to receive 25,001 votes.

The candidates in this electoral district are Betty, Bill, Meg, Viv and Doug.

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BC-STV VOTE COUNT SIMULATION 1



After the first count, only Betty has received enough votes to be elected. She also received double the votes she needed, meaning she has a surplus of 25,001 votes.

The next step is to transfer Betty's surplus votes to the second choices of all 50,002 voters who voted for her.

How does this transfer work?

Under STV, the people who voted for Betty as their first choice still have part of their ballot "left over" – that is, there was more than enough support to elect Betty, so a portion of those votes are still available to be used. That remaining portion (known as the "transfer value") will be transferred to those voters' second choices, based on a formula that divides the number of surplus votes by the number of total votes.

In this case, everyone who voted for Betty would have their vote transferred to their second choice at the following value:

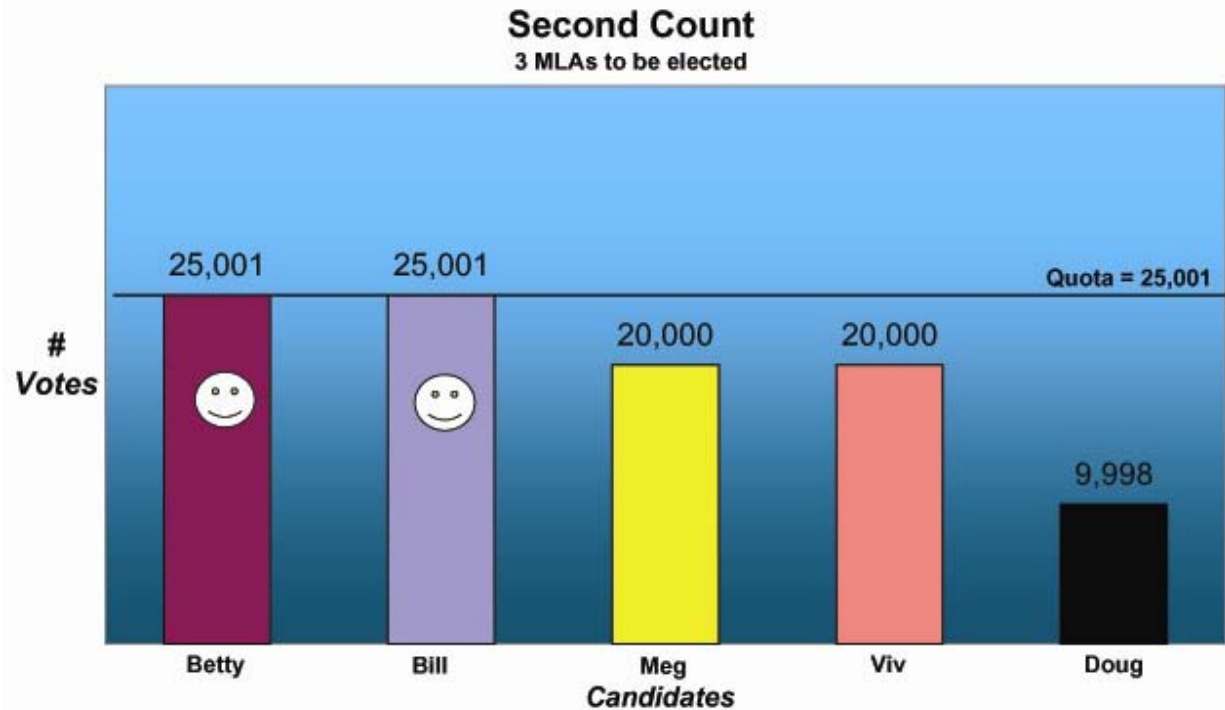
$$\frac{25,001 \text{ (surplus votes)}}{50,002 \text{ (total votes)}} = 0.5 \text{ (transfer value)}$$

Why a fraction of a vote?

What this formula does is ensure that all of Betty's voters have their second choices examined and transferred – rather than randomly picking 25,001 of them – but only transferring the number of actual votes of Betty's surplus. It's a way of fitting 50,002 voters' preferences into a "package" of 25,001 votes.

next.....

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BC-STV VOTE COUNT SIMULATION 1



Betty's 25,001 surplus votes are transferred like this:

5,001 to Bill 5,000 to Meg 10,000 to Viv 5,000 to Erik

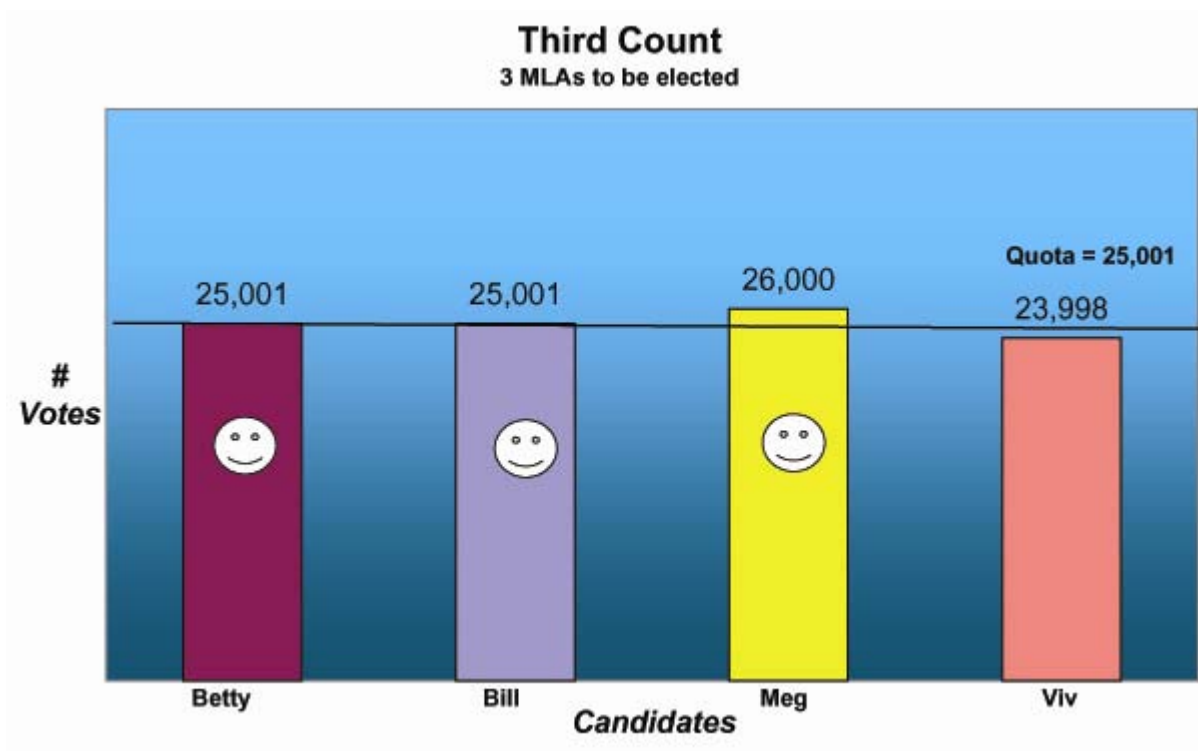
What this shows is that approximately 40% of Betty's supporters ranked Viv as their second choice, and approximately 20% ranked Bill, Meg and Erik respectively as their second choices. These votes are then transferred to these candidates at their transfer value.

After this transfer, Bill has been elected. Because he has reached the quota exactly, there are no surplus votes to be transferred. (In real-life elections, it is rare for a candidate to reach the quota exactly.)

There is still one MLA to be elected, so under STV the lowest vote-getter (Doug) will be dropped from further counting and the second choices of his supporters will be transferred to the remaining candidates at full value.

next....

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BC-STV VOTE COUNT SIMULATION 1



Here's how Doug's 9,998 votes are transferred:

6,000 to Meg 3,998 to Viv

Why are these votes transferred at full value?

The second choices of those who ranked Doug first are transferred at full value because they have not contributed to electing him, unlike the surplus votes of Betty's that were transferred after the first count.

After this count, Meg is elected and the three MLAs for this district have been chosen.

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Want more information?

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