

Minneapolis Method for Hand-Counting RCV Ballot Sorter & Counter

Job Duties: All duties to be done with a party-balance partner

- **Identify and sort ballots with voter errors**
 1. Remove ballots from regular and Write-In precinct envelopes
 2. Review the entire ballot for voter errors per VEA chart
 3. When an error is found, place a flag at the office & column with the error. Flag etiquette: Place each flag at office & column of the error. Do **not** place flag overhanging the edge of the ballot.
 4. Continue to inspect the rest of the ballot and place a flag at each office & column with an error.
 5. Place ballots without errors aside in an "errorless" pile and place ballots with errors in VEA Inbox
 6. A ballot with a non-standard mark (e.g. a filled-in oval that has been crossed out) are not considered errors on the VEA chart and therefore are not pulled and flagged. On these types of ballots, the two-judge team makes a voter intent determination and will sort the ballot accordingly.

 - **Sort ballots by race and candidate combination (per race), count ballots and create Ballot Summary forms for each unique combination.** Offices will be sorted and counted in this order: Council, Park District, Board of Estimate and Taxation, Park Board (at-large) and Mayor.
 1. Place the candidate name placards for the current office on the workspace so placards of Team 1 & Team 2 line up across the tables.
- 1st choice column**
2. Sort the pile of errorless ballots by 1st choice candidate. If there is no 1st choice, sort to the Blank pile. If the 1st choice is a write-in, sort to the Write-in pile.
 3. When the pile is sorted, get any **VEA-A ballots** from Team 3 and sort as in step (2).
 4. When all errorless ballots and VEA-A ballots have been sorted, combine all the pod's piles for the same candidate and place in center area, except for the Write-in pile, which goes to Team 3.

5. For each pile begin color-coded Ballot Summary form with precinct number and first three letters of candidate name in first box.

2nd choice column

6. Select a 1st choice pile and, with partner, sort all ballots by 2nd choice candidate. If there is no 2nd choice, sort to the Blank pile. If the 2nd choice is a write-in, sort to the Write-in pile.
7. Move piles to the area above the workspace, except for the Write-in pile, which goes to Team 3.
8. For each pile, begin color-coded Ballot Summary form with precinct number and first three letters of candidate names in first and second boxes.

3rd choice column

9. Select a 2nd choice pile and, with partner, sort all ballots by 3rd choice candidate. If there is no 3rd choice, sort to the Blank pile. If the 3rd choice is a write-in, sort to the Write-in pile, which goes to Team 3.
10. For each pile, begin color-coded summary form with precinct number and first three letters of candidate names in first, second, and third boxes.
11. Count each 3rd choice pile (staggering stacks of 25 within the pile) and write the count on the Ballot Summary form for that pile.
12. Place all the completed 3rd choice pile Ballot Summary forms in the Summary box and the ballots from those piles in the In Process Box.
13. Repeat steps (9) through (12) for all 2nd choice piles.
14. Repeat steps (6) through (13) for all 1st choice piles.
15. Put all completed Ballot Summaries for this race into the color-coded envelope.
16. When all ballots for the race have been sorted, repeat steps (1) through (15) for next race to be counted.
17. When all offices on the ballot have been sorted and counted, pack up the precinct ballots and place them into the precinct ballot envelopes. The empty write-in ballot envelope may be folded and inserted into one of the regular ballot envelopes for the precinct. The envelope(s) will be sealed and logged by the Supply & Transport Team.

Job Duties: All duties to be done with a party-balance partner

Minneapolis Method for Hand-Counting RCV Voter Error Accountant & Write-in Ballot Sorter & Counter

- **Correctly transfer votes from ballots with voter errors to ballots that can be sorted and counted**
 1. Remove pile of ballots with errors from VEA Inbox.
 2. Inspect each ballot to ensure each has an error. If any does not, return it to the errorless pile for sorting.
 3. In the upper right corner of each ballot, number all of these VEA original ballots consecutively beginning with VEA-O-#1. (Example: For eight ballots, number consecutively VEA-O-#1 through VEA-O-#8)
 4. Pull the required number of (in this example 8) blank ballots for this precinct from the pod supplies.
 5. In the upper right corner of each ballot, number these blank VEA-A ballots consecutively beginning with VEA-A-#1 through 8 (in this example).
 6. Pair a voter error ballot (aka VEA Original ballot) with a blank ballot(aka VEA Accounted ballot) by matching the number on each ballot.
 7. Use the VEA-O ballot to fill out the VEA-A ballot:
 - a. For the offices without errors, copy the exact votes from the Original ballot onto the Accounted ballot
 - b. For offices with errors (indicated by the flag), fill out the Accounted ballot according to the VEA chart instructions for the error. Leave the flag(s) on the ballot at the office & column labeled.
 - c. If, aside from the voter error, there is a non-standard mark (e.g. a filled-in oval that has been crossed out) elsewhere on the ballot, the two-judge team makes a voter intent determination and fills out the Accounted ballot accordingly. (i.e. do not attempt to recreate "artwork" on the original ballot)
 8. Double-check each VEA-A ballot & both judges initial the VEA-A ballot on the "Judge" lines at the top front center of the ballot.

9. Repeat steps (5) through (7) for every VEA–Original ballot.
10. Check the VEA In Box for newly sorted VEA Original Ballots. Check each to ensure it has an error. If any does not, return to the errorless pile for sorting Beginnumbering VEA Original Ballots with the next consecutive number - in this example VEA-O-#9.
11. Write the last VEA O number on the VEA Original envelope
12. Place Originals in VEA Original envelope. This envelope will be sealed and logged by the supply & Transport Team.
13. Give Accounted ballots to the team to be included in the sort with the errorless ballots.

- **Sort ballots with write-ins by candidate combination and create Ballot Summary forms with specific write-in candidate name**

1. Receive ballots with write-in votes from other teams in pod
2. Consulting the Write-In Votes chart, complete a triple sort on all ballots with write-ins as described on the Ballot Sorter & Counter duty card. Only ballots with the exact same write-in choice may be sorted to the same pile.
3. When a write-in choice appears on the ballot, **legibly print the exact** write-in from the ballot onto the Ballot Summary form for that ballot or pile of ballots.
4. If a ballot has the write-in oval filled in, but nothing written on the write-in line, treat that as you would if the write-in oval had not been filled in at all. If a ballot has anything written on the write-in line, regardless of whether the write-in oval was filled, treat that as a write-in vote for whatever is written on the line. For example, if the word “none” is written, treat that as a write-in vote for a candidate named “none”.
5. Count each pile (staggering stacks of 25 within the pile) and write the count on the Ballot Summary form for that pile.
6. Place all the completed Ballot Summary forms in the Ballot Summary box and the ballots from those piles in the In Process Box.

- **When there are no VEA ballots to process or Write-In ballots to sort, help other teams in pod with regular ballot sorting and counting.**

Ranked Choice Voting - Minneapolis Method

Voter Error Accounting Chart

Problem	Problem Columns	Requires Duplication	Original ballot			Voter error accounting		
			1st Before	2nd Before	3rd Before	1st After	2nd After	3rd After
Overvote	1	Y	A/B	C	D	Blank	Blank	Blank
	2	Y	A	B/C	D	A	Blank	Blank
	3	Y	A	B	C/D	A	B	Blank
Repeat candidate	1 & 2	Y	A	A	B	A	Blank	Blank
	1 & 3	Y	A	B	A	A	B	Blank
	2 & 3	Y	A	B	B	A	B	Blank
	1, 2, & 3	Y	A	A	A	A	Blank	Blank
Skipped ranking	1	Y	Blank	A	B	A	B	Blank
	2	Y	A	Blank	B	A	B	Blank
	3	N	A	B	Blank	A	B	Blank
	1 & 2	Y	Blank	Blank	A	Blank	Blank	Blank
	1 & 3	Y	Blank	A	Blank	A	Blank	Blank
	2 & 3	N	A	Blank	Blank	A	Blank	Blank
Undervote	1, 2, & 3	N	Blank	Blank	Blank	Blank	Blank	Blank

Write-In Votes

MS 204C.22 & Minneapolis Ordinance Title 8.5 Chapter 167

Votes for more than one candidate/column:	See Voter Error Accounting Chart for overvote
Name filled in but WI oval not filled in:	Count the vote - unless it is an overvote
Mark out of place/different marks:	Determine voter intent
Misspelling or abbreviations:	Determine voter intent – count as written
Voter already voted for that candidate in column at left:	See Voter Error Accounting Chart for repeat candidate
Filled in oval but no name:	Count as blank

Defective Ballots

Partially defective ballot: voter intent undeterminable with respect to the office being counted

Totally defective ballot: voter intent undeterminable for any office on the ballot

- During Voter Error Accounting sort
 - Set all totally defective ballots aside with Team 3, getting manager's confirmation on each
 - Count and record number (or 0) on Defective Ballot Form; ballots go back in ballot envelope
- During the first sort for a race
 - Set all partially defective ballots aside with Team 3, getting manager's confirmation on each
 - Count and record number for race (or 0) on Defective Ballot Form; ballots go in the In Box
- When Defective Ballot Form is complete, place in Summary Form envelope for final race counted

OFFICIAL BALLOT
CITY GENERAL ELECTION BALLOT

dey
Judge

NMC
Judge

A STATE OF MINNESOTA B NOVEMBER 3, 2009 C CITY OF MINNEAPOLIS

Ranked Choice Voting

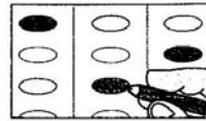
VEA-0-1

Instructions

How to make your candidate choice

1. Pick your first choice candidate and completely fill in the oval next to that candidate under First Choice, like this:

● CANDIDATE NAME



Correct: Choose different candidates in different columns.

Write this on original ballot, increasing the numbering as you go

Original Ballot Example

When completed, this ballot goes in the VEA Original Ballot Envelope

Both Election Judges Initial Accounted Ballot

OFFICIAL BALLOT
CITY GENERAL ELECTION BALLOT

Judge

Judge

A STATE OF MINNESOTA B NOVEMBER 3, 2009 C CITY OF MINNEAPOLIS

Ranked Choice Voting

VEA-A-1

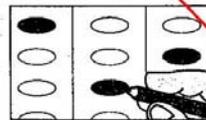
Instructions

How to make your candidate choice

1. Pick your first choice candidate and completely fill in the oval next to that candidate under First Choice, like this:

● CANDIDATE NAME

2. If you have a second choice candidate, completely fill in the oval next to that candidate under Second Choice.



Wrong: Vote for the same candidate in different columns.

Write this on accounted ballot, matching the numbering above

Accounted Ballot Example

When completed, this ballot goes into the sort & count process

Minneapolis Method for Hand-Counting RCV Data Entry

Job Duties: (All duties to be done with a party-balance partner)

- Enter summary ballot form information into data entry spreadsheets and store in Stellent
- 1. Decide which partner will be the typist and which will be the reader.
- 2. Reader removes the summaries from the Summary envelope and confirms they are all the correct color for the office.
- 3. Typist logs in to the computer and then Stellent.
- 4. Check the data entry spreadsheet for the assigned Ward-Precinct-Race out of Stellent.
- 5. Reader reads off the summary the three choices in order and count, while typist watches and confirms.
- 6. Typist enters the choices and count into the spreadsheet, while reader watches and confirms.
 - If a choice is a standard candidate, typist can either type the three letters or select from a drop-down.
 - If a choice is a write-in, typist types the exact name as written on the summary form. The system will ask if this is a write-in. Select YES and continue.
 - If the typist makes a mistake and tries to enter a name not on the ballot, the system will ask if this is a write-in. If it was a mistake, select NO and correct.
 - The system will only allow positive whole numbers between 1 and 100,000 in the count column.
- 7. Reader sets the summary form in the done pile and process repeats for every summary form.
- 8. Typist periodically saves the work in Excel.
- 9. To combat fatigue, typist and reader periodically trade places. Before trading, typist saves in Excel, checks the file back in to Stellent, and logs completely off the computer. Then the NEW typist logs in and checks out the file again.
- 10. When all summaries from the envelope have been entered, save the spreadsheet and check it back in to Stellent. Place summary forms back in the envelope and place the envelope in the outbox.
- 11. Before either partner leaves the station for any reason during or after entering a precinct, the file must be saved, checked in to Stellent and the computer logged off.

Minneapolis Method for Hand-Counting RCV Reconciliation and Verification

Job Duties: (Performed by the Data Entry and Analysis Manager)

- Reconcile the number of ballots counted in the hand count with the number of ballots run through the machine on Election Day.
 1. When data entry for all five races in a precinct is complete, open a view only version of each data entry file for the precinct from Stellent.
 2. Enter a sum formula in each file to sum up the total number of ballots counted in that race.
 3. Enter the sums for each race and precinct into the Total Ballot Reconciliation spreadsheet.
 4. If any of the five counts in a precinct do not match, the reason for the discrepancy must be determined. If necessary, the entire precinct or particular races in the precinct may have a verification count performed. Update the Total Ballot Reconciliation spreadsheet to reflect the correct count.
 5. If the hand counts do not match the machine count, note possible reasons for the discrepancy, including issues noted in the precinct logs or results tapes envelopes, in the Total Ballot Reconciliation spreadsheet.

Minneapolis Method for Hand-Counting RCV Data Analysis: Single Seat Elections

In all the following, two independent teams of two people each (Regular team and Control team) will perform all steps for Analysis independently. At various points through the procedure, a consistency check between the Regular and Control teams is called for. At these points the two teams will verify each team has reached the same data and check the file in to Stellent. Any discrepancy found must be resolved before checking the file in and continuing the analysis.

Both Regular and Control teams will use an identical Excel file (a workbook consisting of multiple single-purpose spreadsheets) to work with the data previously entered by the data entry teams from the ballot summary sheets. As with data entry spreadsheets, the analysis filed for both the Regular and Control teams is stored in Stellent. The files must be checked in to Stellent after every consistency check.

1. Teams enter the numbers of totally defective, partially defective, and spoiled ballots in the race/precincts into the analysis file using Results Tapes Envelopes from the precincts and Defective ballot forms from the hand counting stations. Teams then perform a consistency check.
2. Teams enter all the ballot summary data for the race into the analysis file.
 - a. Teams open view-only versions of the data entry files pertinent to the race.
 - b. Teams then copy all ballot summary data from those files and paste in the analysis file.
 - c. This data consists of: Ward and Precinct, First Choice, Second Choice, Third Choice, and Count for each ballot summary. (The complete list of all ballot summaries for the race before it has been sorted to tabulate results is known as the “raw data”.)
3. Both analysis teams enter a sum formula that adds up the count of every ballot summary for the race and perform a consistency check. The Regular team saves off a copy of the raw data and checks in to Stellent. This report is separate from results analysis and so the Control team does not need to perform this step.
4. The Regular team produces the “write-in tally”, a report of the number of first, second, and third choices received by every write-in in every precinct.
 - a. This report is separate from results analysis and so the Control team does not need to perform this step.
 - b. The Regular team produces the write-in tally by saving off a copy of the raw data spreadsheet.

- c. The team then copies the raw data spreadsheet three times so that a separate spreadsheet can be produced for first, second, and third choice write-ins.
 - d. The team uses Excel's sort function to sort each of the three lists by the appropriate choice (first, second, or third).
 - e. The team removes ballot summary data for summaries with non-write-in candidates and the choices not relevant to the list. The final workbook is checked in to Stellent.
5. Each team modifies the analysis file to accommodate write-in candidates who received first choice votes.
 - a. Teams determine the names of write-in candidates who received first choice votes by using Excel's sort function to sort the data by first choice.
 - b. Teams then find write-in candidates in the list and add the names of these candidates into the Round Results Summary report.
 - c. Teams create a new ballot summary spreadsheet for each of the write-in candidates with first choice votes. (Candidates on the ballots already have ballot summary spreadsheets in the file.)
 - d. Teams perform a consistency check.
6. Teams run the first "round".
 - a. Teams use Excel's sort function to sort the raw data by first, second, and third choices.
 - b. Then teams select all ballot summaries that have the same first choice, cut these items, and paste them into that candidate's ballot summary spreadsheet. Ballot summaries for ballots with no first choice are pasted into the "Undervotes" spreadsheet. There is a sum formula in each spreadsheet to sum the total number of votes for the candidate.
 - c. Teams copy the sum of votes for each candidate and paste into the Round Results Summary spreadsheet.
7. Teams determine whether another round is required.
 - a. When all first choice votes have been entered in the Round Results Summary spreadsheet, a formula calculates the threshold for the race. The threshold for single seat races is one greater than the total number of first choice votes (which corresponds to the number of total votes cast in the race) divided by two, disregarding fractions.
 - b. The threshold is publicly declared.
 - c. Teams look for a candidate whose first choice votes total is equal to or greater than the threshold. If they find one, that candidate is the unofficial winner and analysis is complete. If there is no unofficial winner, the analysis continues to the next round (step 8). Either way, teams perform a consistency check.
8. Teams determine which candidates are defeated using the Mathematical Elimination spreadsheet.

- a. Teams enter the current vote total for each candidate into the Mathematical Elimination spreadsheet.
 - b. For each candidate, teams enter a sum formula that sums the current total of every candidate with fewer votes than the candidate in question and every candidate tied with the candidate in question. A formula adds that sum to the current vote total for the candidate in question to calculate that candidate's potential vote total. (This represents the highest vote total the candidate in question could ever have in a future round.)
 - c. Teams compare each candidate's potential vote total to the current vote total of the candidate with the next higher current vote total. If the candidate's potential vote total is lower, the candidate is marked as defeated in this round (because the candidate has no mathematical possibility of going on to win.)
 - d. Teams then also mark as defeated any candidates with a lower current vote total than a candidate who is defeated in this round (because those candidates have no mathematical possibility of going on to win.)
 - e. If no candidate can be defeated because of a tie, refer to tie-breaking procedures below to defeat a candidate.
9. Ballot summaries for defeated candidates are moved to the ballot summary spreadsheets for the next continuing choices on those ballots.
- a. Teams copy all ballot summaries for candidates defeated in the current round and paste them in a workspace spreadsheet.
 - b. Teams then use Excel's sort function to sort the ballot summaries into groups by the next continuing choice on the ballots.
 - c. Teams cut and paste the groups into the appropriate candidate's ballot summary spreadsheet for the current round. Ballot summaries for ballots with no continuing choices are pasted in to the "Exhausted" spreadsheet. There is a sum formula in each spreadsheet to sum the total number of votes for the candidate. A negative number is entered for defeated candidates (equal and opposite to the total number of votes the candidate had in the previous round.)
 - d. Teams copy the sum of votes for each candidate and paste into the Round Results Summary spreadsheet.
 - e. Teams check to make sure the total number of votes has neither increased nor decreased since the previous round and that the number of votes added to continuing candidates is equal to the number of votes removed from defeated candidates.
10. The teams determine whether another round is required.
- a. Another round is not required if
 - i. After all of the current round votes have been entered in the Round Results Summary spreadsheet, there is a candidate whose vote total is equal to or greater than the threshold, (which means that candidate is the unofficial winner, OR

- ii. After all of the current round votes have been entered in the Round Results Summary spreadsheet, there are only two remaining continuing candidates. In this case, the candidate with the most votes is the unofficial winner (regardless of whether that candidate has surpassed the threshold).
- b. Otherwise, there is no unofficial winner yet and another round is required.
- c. Teams perform a consistency check.
- d. The files are saved and checked back in to Stellent.
- e. If there is no unofficial winner, the analysis continues on to the next round (looping back to repeat procedures beginning with step 8). If there is an unofficial winner, analysis is complete.

Tie-breaking procedures:

1. The chief Election Official or designee will prepare one slip of paper with a candidate's name for each tied candidate.
2. The Chief Election Official or designee will then publicly draw lots. The candidate chosen will be defeated and the teams will mark that candidate as defeated in the analysis file.

Minneapolis Method for Hand-Counting RCV Data Analysis: Multiple Seat Elections

In all the following, two independent teams of two people each (Regular team and Control team) will perform all steps for Analysis independently. At various points through the procedure, a consistency check between the Regular and Control teams is called for. At these points the two teams will verify each team has reached the same data and check the file in to Stellent. Any discrepancy found must be resolved before checking the file in and continuing the analysis.

Both Regular and Control teams will use an identical Excel file (a workbook consisting of multiple single-purpose spreadsheets) to work with the data previously entered by the data entry teams from the ballot summary sheets. As with data entry spreadsheets, the analysis files for both the Regular and Control teams is stored in Stellent. The files must be checked in to Stellent after every consistency check.

1. Teams enter the numbers of totally defective, partially defective, and spoiled ballots in the race/precincts into the analysis file using Results Tapes Envelopes from the precincts and Defective ballot forms from the hand counting stations. Teams then perform a consistency check.
2. Teams enter all the ballot summary data for the race into the analysis file.
 - f. Teams open view-only versions of the data entry files pertinent to the race.
 - g. Teams then copy all ballot summary data from those files and paste in the analysis file.
 - h. This data consists of: Ward and Precinct, First Choice, Second Choice, Third Choice, and Count for each ballot summary. (The complete list of all ballot summaries for the race before it has been sorted to tabulate results is known as the “raw data”.)
3. Both analysis teams enter a sum formula that adds up the count of every ballot summary for the race and perform a consistency check. The Regular team saves off a copy of the raw data and checks in to Stellent. This report is separate from results analysis and so the Control team does not need to perform this step.
4. The Regular team produces the “write-in tally”, a report of the number of first, second, and third choices received by every write-in in every precinct.
 - a. This report is separate from results analysis and so the Control team does not need to perform this step.
 - b. The Regular team produces the write-in tally by saving off a copy of the raw data spreadsheet.

- c. The team then copies the raw data spreadsheet three times so that a separate spreadsheet can be produced for first, second, and third choice write-ins.
 - d. The team uses Excel's sort function to sort each of the three lists by the appropriate choice (first, second, or third).
 - e. The team removes ballot summary data for summaries with non-write-in candidates and the choices not relevant to the list. The final workbook is checked in to Stellent.
5. Each team modifies the analysis file to accommodate write-in candidates who received first choice votes.
 - a. Teams determine the names of write-in candidates who received first choice votes by using Excel's sort function to sort the data by first choice.
 - b. Teams then find write-in candidates in the list and add the names of these candidates into the Round Results Summary report.
 - c. Teams create a new ballot summary spreadsheet for each of the write-in candidates with first choice votes. (Candidates on the ballots already have ballot summary spreadsheets in the file.)
 - d. Teams perform a consistency check.
 6. Teams run the first "round".
 - a. Teams use Excel's sort function to sort the raw data by first, second, and third choices.
 - b. Then teams select all ballot summaries that have the same first choice, cut these items, and paste them into that candidate's ballot summary spreadsheet. Ballot summaries for ballots with no first choice are pasted into the "Undervotes" spreadsheet.
 - c. Teams update the Previous Transfer Value, Surplus fraction, and Transfer Value for each summary. (In the first round, the value for each of these is 1). There is a formula that calculates the Total Transfer Value of the Ballot Summary and a sum formula in each spreadsheet to sum the total number of votes for the candidate.
 - d. Teams copy the sum of votes for each candidate and paste into the Round Results Summary spreadsheet.
 7. Teams determine whether another round is required.
 - a. When all first choice votes have been entered in the Round Results Summary spreadsheet, a formula calculates the threshold for the race. The threshold for multiple seat races is one greater than the total number of first choice votes (which corresponds to the number of total votes cast in the race) divided by one greater than the number of seats, disregarding fractions.
 - b. The threshold is publicly declared.
 - c. Teams look for candidates whose first choice votes total is equal to or greater than the threshold. If they find as many as there are seats to fill, those candidates are the unofficial winners and analysis is complete. If there are no unofficial winners, the analysis

- continues to the next round (step 8). Either way, teams perform a consistency check.
8. Teams determine if any candidate can be defeated using the Mathematical Elimination spreadsheet and the Surplus Fraction Calculation spreadsheet.
 - a. Teams calculate any existing surplus using the Surplus Fraction Calculation spreadsheet. Teams copy and paste the name and current vote total of any continuing candidate who has surpassed the threshold onto this spreadsheet, which calculates the sum of all surpluses. Teams then copy this sum and paste into the Mathematical Elimination spreadsheet for the current round.
 - b. Teams enter the current vote total for each candidate into the Mathematical Elimination spreadsheet.
 - c. For each candidate, teams enter a sum formula that sums the current total of every candidate with fewer votes than the candidate in question and every candidate tied with the candidate in question. A formula adds that sum to the current vote total for the candidate in question and the sum of all surpluses in the round to calculate that candidate's potential vote total. (This represents the highest vote total the candidate in question could ever have in a future round.)
 - d. Teams compare each candidate's potential vote total to the current vote total of the candidate with the next higher current vote total. If the candidate's potential vote total is lower, the candidate is marked as defeated in this round (because the candidate has no mathematical possibility of going on to win.)
 - e. Teams then also mark as defeated any candidates with a lower current vote total than a candidate who is defeated in this round (because those candidates have no mathematical possibility of going on to win.)
 9. Teams determine if the round must continue.
 - a. If all candidates have been defeated except the number needed to fill all the seats, those candidates are the unofficial winners and analysis is complete. If any seat remains unfilled, the analysis continues to the next step (step 10). Either way, teams perform a consistency check.
 10. Ballot summaries for defeated candidates are moved to the ballot summary spreadsheets for the next continuing choices on those ballots. If there are no defeated candidates in the current round and there is a surplus, the analysis continues in step 11. If there is not a surplus and there are still no defeated candidates in the current round due to a tie among the lowest ranked candidates, refer to tie-breaking procedures below to defeat a candidate.
 - a. Teams copy all ballot summaries for candidates defeated in the current round and paste them in a workspace spreadsheet.

- b. Teams update the Previous Transfer Value for each summary by copying the Transfer Value column and pasting it over the Previous Transfer Value column. Teams update the Surplus fraction column with the value 1 for each ballot summary. Teams delete the Transfer Value and Total Transfer Value of Ballot Summary columns. These will be calculated in the individual candidate spreadsheets.
 - c. Teams then use Excel's sort function to sort the ballot summaries into groups by the next continuing choice on the ballots.
 - d. Teams cut and paste the groups into the appropriate candidate's ballot summary spreadsheet for the current round. Ballot summaries for ballots with no continuing choices are pasted in to the "Exhausted" spreadsheet. There is a formula in each spreadsheet to calculate the Transfer Value and total Transfer Value of Ballot Summary for each ballot summary that the teams copy to each line. There is a sum formula in each spreadsheet to sum the total number of votes for the candidate. A negative number is entered for defeated candidates (equal and opposite to the total number of votes the candidate had in the previous round.)
 - e. Teams copy the sum of votes for each candidate and paste into the Round Results Summary spreadsheet.
 - f. Teams check to make sure the total number of votes has neither increased nor decreased since the previous round and that the number of votes added to continuing candidates is equal to the number of votes removed from defeated candidates. The analysis continues in step 12.
11. The candidate with the largest surplus is marked as Elected in the Mathematical Elimination spreadsheet and ballot summaries for that candidate are moved to the ballot summary spreadsheets for the next continuing choices on those ballots. If two candidates are tied for largest surplus, refer to tie-breaking procedures below to declare a candidate Elected.
- a. Teams copy all ballot summaries for the candidate elected in the current round and paste them in a workspace spreadsheet.
 - b. Teams update the Previous Transfer Value for each summary by copying the Transfer Value column and pasting it over the Previous Transfer Value column. Teams update the Surplus fraction column by copying surplus fraction calculated in the Surplus Fraction Calculation spreadsheet for the elected candidate and pasting the value for every cell in the column. Teams delete the Transfer Value and Total Transfer Value of Ballot Summary columns. These will be calculated in the individual candidate spreadsheets.
 - c. Teams then use Excel's sort function to sort the ballot summaries into groups by the next continuing choice on the ballots.
 - d. Teams cut and paste the groups into the appropriate candidate's ballot summary spreadsheet for the current round. Ballot

summaries for ballots with no continuing choices are pasted in to the “Exhausted” spreadsheet. There is a sum formula in each spreadsheet to sum the total number of votes for the candidate. A negative number is entered for the elected candidate (equal and opposite to the total number of votes transferred to continuing candidates in this round.)

- e. Teams copy the sum of votes for each candidate and paste into the Round Results Summary spreadsheet.
 - f. Teams check to make sure the total number of votes has neither increased nor decreased since the previous round and that the number of votes added to continuing candidates is equal to the number of votes removed from the elected candidate. The analysis continues in step 12.
12. The teams determine whether another round is required.
- a. When all of the current round votes have been entered in the Round Results Summary spreadsheet, teams look for candidates whose vote totals are equal to or greater than the threshold. If they find as many as there are seats to fill, those candidates are the unofficial winners and analysis is complete. If any seats remain unfilled, the analysis continues on to the next round (looping back to repeat procedures beginning in step 8). Either way, teams perform a consistency check.

Tie-breaking procedures:

1. The chief Election Official or designee will prepare one slip of paper with a candidate’s name for each tied candidate.
2. The Chief Election Official or designee will then publicly draw lots.
3. If the tie is between low-ranking candidates, the candidate chosen will be defeated and the teams will mark that candidate as defeated in the analysis file. If the tie is between candidates with the largest surpluses, the candidate chosen will be declared elected and the teams will mark that candidate as elected in the analysis file.