Request for City Council Committee Action
From the Department of the City Clerk

Date: May 21, 2009
To: Elections Committee
Subject: Ranked Choice Voting Implementation – Results of Test Election
Recommendation: Motion to receive report for filing
Prepared by: Cindy Reichert, Assistant City Clerk/Director of Elections
Approved by: Steve Ristuben, City Clerk

Test Election Purpose and Scope

Elections staff has completed the test election. The event was an opportunity for staff to put the Ranked Choice Voting (RCV) process to the test on a relatively large scale to learn what processes work and what needs to be changed or refined. The test also provided factual data about the time needed to count each kind of race and the physical set-up needed to conduct the count.

Many members of the public, elections officials from other jurisdictions, election judges and policy makers were present to observe and participate in the test. Observers were offered a presentation on the basics of RCV and facts about its implementation in Minneapolis, and were invited to go through a mock polling place where they were asked to offer feedback on the voting process, ballot design and the counting process itself.

The test consisted of 8 races, in which 600 ballots in total were cast. Some races were counted to see if outcomes matched pre-determined results and other races were counted to test our ability to accurately count randomly marked ballots. Staff began with drafts of procedures, processes and forms which were refined daily throughout the test to ensure accuracy in the manual count and to include measures to mitigate the possibility of human error.

This report includes information on :
- Pre-count Processes
- Staffing and Physical Layout
- Counting Ranked Choice Races
- Input Gathered from Test Attendees and Participants
- Next Steps

A number of attachments are included as background information and to provide context for the historical record.

Pre-Count Processes

After the close of the polls on election day, several steps must be accomplished prior to beginning the actual count. A brief description of these processes follow:

Process Uncounted Absentee Ballots – Any absentee ballots received prior to the deadline for submission, and that remain uncounted must be counted.

Normalization – Ballots that contain voter errors specific to RCV, and which are not recognized or prevented by our precinct equipment, must be "normalized." Using the normalization chart as a guide, election judges will examine all ballots cast in the election for voter errors and undertake a process similar to ballot duplication where two judges of different political parties create a new ballot matching the original ballot except in races where presumed voter error occurred. In those races election judges will modify the new ballot to reflect the presumed voter intent, as per our ordinance.

Write-In Counting – Following normalization, election judges will tally all write-in votes cast in the election. Though many of the write-in candidates will be eliminated early in the count, a record of all write-in votes cast must be created.

For these pre-count duties, multiple teams of judges can perform the actions and physical space is not an issue.

Staffing and Physical Layout

State law requires that any duty performed on voted ballots be undertaken by two election judges of different political parties. Each step will be performed by teams consisting of sorters, counters and stagers and will be directed and observed by a Team Leader who performs the mathematical calculations. Math checks and balancing procedures will be performed at several points in the process by roving Floor Supervisors. Team members will be cross-trained and rotate through duties to mitigate physical demands of the work and keep team members fresh by providing some variety throughout the days. Appropriate breaks will be needed and shifts will be limited to no more than 8 hours[1].

Limitations in space and the need to provide close supervision of all activities affect the number of races that can be counted at any one time. We estimate that given the space in our warehouse, up to three counting stations can be set up. Each station will consist of areas for accumulation, pre-count staging, counting, and post-count staging. Depending on the number of ballots cast for each race, multiple tables will be employed in each area. In our test we found that multiple tables for accumulation and counting were required to count the larger races[2]. At the end of each day all ballots will need to be sealed and secured.

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[1] All calculations assume one day equals eight hours.

[2] Our test election consisted of 600 ballots. In the election of 2005 a total of 70,987 ballots were cast. In 2001 the number of ballots cast was 89,927.

We were able to calculate estimated cost for Election Judge staffing, a summary of which is included in Attachment B. Because many election duties not related to RCV are still required of full time Election Department staff, we may need to supplement with staff from other City departments to assist in various capacities.

Cost projections do not include costs for full time staff of the Election Department or the City and do not contemplate overtime pay.

Counting the Ranked Choice Races

After completing post-election night processes above, the actual counting will proceed beginning with the smallest jurisdictions in single seat races with larger jurisdictions and multiple seat races following. The order of the count will proceed as follows:

- Ward Offices[3] (multiple districts may be counted simultaneously)
- Park District Offices (multiple districts may be counted simultaneously)
- Mayor
- Board of Estimate and Taxation
- Park Board At-Large

The test election provided the opportunity to time our actions. Some counts were performed several times so that calculations could reflect improvements in process and practice made throughout the test. In a real election the time it will take to count will vary depending on the number of ballots cast in each office, the number of candidates who file for each office, and the number of rounds needed to determine a winner.

The table shown in Attachment B illustrates estimated counting time for each type of municipal race. Figures used in our projections were arrived at by calculating the speed at which our staff was able to count races during the test election using vote totals for ballots cast in the 2005 municipal election. Counting speeds used for the projections were increased over our actual experience to reflect anticipated improvement.

Note that races may be won outright with the first count performed in the polls on election night. The figures shown are illustrative only and we do not anticipate that all races will proceed to a ranked choice hand count in a real election. Also note that due to space, staffing and the physical processes required in handling the ballots, only three races can be counted simultaneously, so days shown are cumulative.

Input Gathered from Test Attendees and Participants

Mike Dean and Ona Keller of Tipping Point Strategies were added to our outreach team shortly before the test election. Though time was brief they did an excellent job of lining up targeted focus groups to participate in the test. A summary of comments received from test participants

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[3] Though separate races may be counted simultaneously, the number of teams working at any one time is limited by space and personnel.

will be available at the Elections Committee meeting, and Mike and Ona will be present to provide additional information and answer questions.

All participants (focus groups, staff and general public) were offered an opportunity to go through a "voting experience," and received a power point presentation which provided background information on RCV and its adoption in Minneapolis. Each participant was interviewed by our outreach consultants at the end of their experience.

In addition to the focus groups, members of Citizens for Election Integrity of Minnesota (CEIMN) were present throughout the test. Their experience as non-partisan election observers provided valuable insight to our ballot counting and security procedures.

Members of Fairvote Minnesota were also present and provided comments. Their help in connecting our staff with Dr. James Gilmore of Scotland, a noted scholar on Single Transferable Vote, assisted us with the technical aspects of conducting the election.

We were joined by election officials from the Secretary of State's Office, Hennepin County and other metro area cities.

We used several Minneapolis Election Judges as participants. They staffed the "voting experience" and commented on draft materials that could be used by election judges to instruct voters in how to mark a ranked choice ballot. They also participated as counting officials and contributed by offering advice on the practical application of our procedures.

Next Steps

Procedures and Forms - All procedures and forms developed are still considered to be in draft form as we have not yet had sufficient time to fully evaluate the test. We also recognize the need to format procedures in a manner that is easy to follow for persons performing the count and the need for additional steps to incorporate best practices for ballot handling, security, and cross-checking calculations during the count.

Ordinance Revisions - As we worked through our process a number of inconsistencies in the language of the ordinance were noted. We have been working with our attorney staff to identify areas where the ordinance should be modified and a revised ordinance incorporating all changes necessary will be presented to council later this year.

Development of Outreach Materials – Mike and Ona have prepared a draft plan for outreach activities which is currently being reviewed by Elections, Communications and Community Outreach staff of the city. Their plan incorporates the formation of the Minneapolis Ranked Choice Voting Issues Group to provide public input as we move forward with implementation. Group members will be asked to review and comment on outreach materials, final ballot design and other aspects of the election.

Results Reporting Component – Election staff is working with Doug Sunde of Synergy Graphics on many of the technical aspects of implementation including ballot and equipment

programming and printing, and results reporting procedures and mechanisms. This work will continue throughout the summer.

Other activities to be undertaken in the very near future include:

- Election Judge recruitment and selection (on-going)
- Develop polling place materials to be used on election day
- Develop RCV instructions to absentee voters
- Prepare candidate filing packets and candidate-specific RCV training materials
- Develop EJ training materials (polls, counting center and health care facility teams)

Attachments:

Note: Attachments labeled "draft" require further refinement

A.   Scope of Test Election
B.   Summary of Time and Cost Projections for Future Municipal Elections
C.   DRAFT Ballot Counting Procedures
D.   DRAFT Normalization Procedures and Guide
E.   Sample results of STV-WIGM race showing all types of STV-WIGM vote transfers
     (Compliments of Dr. James Gilmore)
F.   Municipal Elections Ordinance

TEST ELECTION
May 6, 2009
Mini-apple, Minnesota

Office	To be Elected	District	Candidates	Ballots
Mayor	1	City-wide	6	600
Council Member	1	Ward A	3	200
Council Member	1	Ward B	4	200
Council Member	1	Ward C	5	200
Board of Estimate and Taxation	2	City-wide	6	600
Park and Recreation Commissioner - District Y	1	Park Dist Y*	3	300
Park and Recreation Commissioner - District Z	1	Park Dist Z**	3	300
Park and Recreation Commissioner At Large	3	City-wide	12	600

11 offices
600 ballots
4 ballot styles
4 rotations at most
42 candidates

* Park District Y includes Ward A, Precinct 1 and all of Ward B
**Park District Z includes Ward A, Precinct 2 and all of Ward C

Summary of Time and Cost Projections for Future Municipal Election

Note: Races may be won outright with the first count performed in the polls on election night. The figures shown are illustrative only and *we do not anticipate that all races will proceed to a ranked choice hand count in a real election.* Also note that due to space, staffing and the physical processes required in handling the ballots, only three races can be counted simultaneously, so days shown are cumulative.

Cost estimates do not include time of full time election department staff and do not consider overtime pay. If we were to run a primary in 2009, estimated Election Judge expense would be approximately $188,580.

Process	Teams*	8-Hour Days	Cost
AB Unpacking/Processing	N/A	1	N/A
Normalization	13	2.3	$ 4,099.26
Write-In Counting	13	1	$ 1,820.00
Ward Races	3	9.9	$ 14,315.71
P & R Districts	3	6.5	$ 9,407.95
Mayor	1	29.3	$ 42,515.17
Est/Taxation	1	28.8	$ 41,814.88
P & R At-Large	1	26.6	$ 38,687.63
		105.3	**$ 152,660.60**

*   Number of staff members on each team varies with complexity of duty

PROCEDURES FOR CITY OF MINNEAPOLIS MUNICIPAL ELECTIONS

In General

Ranked Choice Voting Tabulation Center - The Elections Warehouse is designated as the Ranked Choice Voting Tabulation Center.

Precinct Tabulation - Precinct Election Judges will record and publicly declare the number of votes at each ranking on the ballot. Vote totals will be reported to Election Headquarters and posted on the City's website as preliminary results.

Return of Precinct Materials – Following close of the polls, these precinct materials must be delivered to the Elections Warehouse and secured:

- Voted Ballots

- Summary tapes

- Memory cards

- Registered Voter Rosters

- Non-Registered Voter Rosters

- Completed Voter Registration Applications

- Absentee Ballot Materials

    o Empty Ballot Return Envelopes

    o Empty Secrecy Envelopes

    o Rejected Absentee Ballots with return envelopes and certificates

    o Uncounted Absentee Ballots with return envelopes and certificates

Notice of Recess - Recess in the count will be called by the Chief Election Official. Notice of recess will include date, time and location at which counting will continue, and will be posted on the door of the Ranked Choice Voting Tabulation Center.

Upon resumption of the count, process will continue in the following order:

NOTE: All processes where voted ballots are handled are performed by two judges of different political parties per MN Statute.

Process Absentee Ballots

- Absentee Ballot materials for each precinct will be reviewed by Election Department Staff

- Errors in processing absentee ballots will be corrected
- Precinct results will be updated to reflect corrections

Perform Normalization

- Inspect all ballots that do not contain write-in votes for voter errors
- Normalize ballots using procedures contained in MN Statutes and Rules, correcting for voter error per normalization chart
- Inspect all ballots that contain write-in votes for voter errors
- Normalize ballots using procedures contain in MN Statutes and Rules, correcting for voter error per normalization chart

Record Write-in Votes

- Tally write-in votes cast and record the names of all candidates who have received valid write-in votes in any column

Perform Count of Ranked Choice Ballots

Counting of races will proceed in the following order:

- Ward Offices (Separate districts may be counted simultaneously)
- Park District Offices (Separate districts may be counted simultaneously)
- Mayor
- Park Board At-Large
- Board of Estimate and Taxation

Set up tables for each race to be counted as follows:

Accumulation Table(s) – Ballots that are not being redistributed in the current round are stacked here. Accommodates stacks of ballot for each candidate and exhausted ballots. A single stack for any candidate may contain multiple parcels of ballot; each parcel must contain ballots of the same value. Each parcel must be labeled with Parcel Detail Cover Sheet.

Pre-Count Staging Table(s) – At the beginning of each round of counting ballot parcels to be redistributed are placed in this area. Ballots are removed, one parcel at a time, and moved to the counting table for redistribution.

Counting Table(s) – Used at each round to re-distribute ballots to parcels. Ballots are sorted into parcels – one for each continuing candidate, one for each non-continuing candidate, one for exhausted ballots.

Post-Count Staging Table(s) – At the end of each sub-round of counting, ballot parcels are placed in this area until all ballots for the round are redistributed and counted. May hold ballots for multiple candidates.

Forms to be used during the Count

Parcel Detail Cover Sheet - Multiple Seat Offices - Identifies characteristics of individual parcels. Shows round of counting, column number currently being counted, candidate name and status (continuing or non-continuing), whether ballot is exhausted, current value, surplus fraction, transfer value, number of ballots in parcel and total value of parcel.

Parcel Detail Cover Sheet - Single Seat Offices - Identifies characteristics of individual parcels. Shows round of counting, column number currently being counted, candidate name and status (continuing or non-continuing), whether ballot is exhausted, and number of ballots in parcel.

Parcel Tracking Worksheet – At each round of counting a parcel Tracking Worksheet is created for each candidate. Worksheet indicates round of counting, candidate name, and lists number of ballots and total value of each parcel created for that candidate in the current round.

Round One Results Log and Threshold Calculation - Used at beginning of first round of counting to record votes from first round of counting and calculate threshold. Indicates any candidates elected in the round and their surplus.

Results Log Worksheet - Shows result of ties broken in current round, vote totals at beginning of each round, votes added or subtracted during each round, vote total at the end of each round. Includes math check to verify number of votes subtracted equals number of votes added. Indicates any candidates elected.

Mathematical Elimination Worksheet – Single Seat Offices – Used at the beginning of each round to determine whether each candidate can be eliminated mathematically. For each candidate, shows candidate's current vote total, the sum of all votes from lower ranked and tied candidates, and the next higher ranked candidate's vote total. Indicates any candidates defeated.

Mathematical Elimination Worksheet – Multiple Seat Offices – Used at the beginning of each round to determine whether each candidate can be eliminated mathematically. For each candidate, shows candidate's current vote total, the sum of all votes from lower ranked and tied candidates, the sum of all surpluses, and the next higher ranked candidate's vote total. Indicates any candidates defeated.

Count Single Seat Offices

1. Fill out top portion of **Round One Results Log & Threshold Calculation** (election, race, # of seats)

2. On counting table, sort all valid ballots into a single pile for each candidate – create **Parcel Detail Cover Sheet** for each parcel

3. Count first choice votes for each candidate – record on **Round One Results Log & Threshold Calculation.**

4. Count aggregate number of first choice write-in votes - record on **Round One Results Log & Threshold Calculation.**

5. Calculate Threshold on **Round One Results Log & Threshold Calculation**:

   [total ballots cast/(seats+1)] + 1 (excluding remainder)

6. Declare any candidate who has met or exceeded threshold elected – record on **Round One Results Log & Threshold Calculation.** If any candidate meets the threshold, the election is complete. If not, continue with steps below.

END OF ROUND

7. Create **Results Log** for round one

8. On counting table, sort all valid ballots into a single pile for each candidate – create **Parcel Detail Cover Sheet** for each parcel

9. Count first choice votes for each candidate – record on **Results Log**

10. Count aggregate number of first choice write-in votes - record on **Results Log**

11. Calculate Threshold: *[total ballots cast/(seats+1)] + 1 (excluding remainder)*

12. Declare any candidate who has met or exceeded threshold elected – record on **Results Log.** If any candidate meets the threshold the election is complete. If not, continue with steps below.

END OF ROUND

13. Create **Results Log** for current round

14. Eliminate any candidate receiving 0 valid votes at any ranking

15. Eliminate any candidate with no mathematical chance of winning

    a. For each candidate add 1st choice total to sum of 1st choice total from all lower and tied ranked candidates.

    (1st choice total) + (sum of 1st choice total from all

    lower ranked and tied candidates) = (Potential Vote Total)

    b. If potential vote total is less than 1st choice total for next highest ranked candidate then defeat candidate

16. Move parcels allocated to defeated candidate(s) to pre-count staging table

17. Redistribute first parcel from pre-count staging table - complete new **Parcel Detail Cover Sheet** for each newly created parcel

Old Parcel Detail Cover Sheet		New Parcel Detail Cover Sheet
Round		From Results Log for current round
Column #	Becomes	Column # + 1

18. Move parcels for continuing candidates to post-count staging table

19. Redistribute parcels for non-continuing candidates – complete new **Parcel Detail Cover Sheet** for each newly created parcel. Exhaust ballots which do not indicate any continuing candidate. Repeat this step until no parcels for non-continuing candidates remain.

20. Repeat steps 11 - 13 with each parcel on pre-count staging table until all parcels are redistributed

21. Record all votes added or removed on **Results Log**

22. Return parcels to continuing candidate and exhausted positions on accumulation table.

23. Declare any candidate who has met or exceeded threshold elected – Record on **Results Log**

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END OF ROUND

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24. If no candidate meets or exceeds threshold repeat steps 9 through 16 until one candidate meets threshold

25. New **Results Log** must be created for each round of counting.

Count Multiple Seat Offices

1) Fill out top portion of **Round One Results Log & Threshold Calculation** (election, race, # of seats)

2) On counting table, sort all valid ballots into a single pile for each candidate, count, and create **Multiple Seat Parcel Detail Cover Sheet** for each parcel.

3) Using **Results Log & Threshold Calculation:**

   a) Record first choice total for each candidate. Sum all first choice totals to determine total number of ballots. Then, sum all the first choice totals except the exhausted ballots to determine the the total number of valid votes cast for the race and record in the section for threshold calculation.

   b) Calculate Threshold:

   $$[total\ ballots\ cast/(seats+1)] + 1\ (excluding\ remainder)$$

   c) Calculate and record the surplus of any candidate who has met or exceeded threshold:

   $$first\ choice\ total - threshold = surplus$$

   d) Sum the surpluses and record.

   e) Record whether any candidate is elected.

4) If all seats for the race are filled, election is complete. If not, continue with below steps.

5) Create **Results Log Worksheet** for new round.

6) Eliminate any candidate receiving 0 valid votes at any ranking

7) Eliminate any candidate with no mathematical chance of winning using **Mathematical Elimination Worksheet**

   a) Record all continuing candidates and their current vote total from **Round One Results Log & Threshold Calculation** sheet in order from lowest to highest current vote total.

   b) For each candidate:

   i) Determine the sum of votes from all lower ranked and tied candidates and record.

   ii) Record the sum of all surplus votes from the **Round One Results Log & Threshold Calculation** sheet

   iii) Calculate the candidate's Potential Vote Total and record

   $(1^{st}\ choice\ total) + (sum\ of\ votes\ from\ all\ lower\ ranked\ and\ tied\ candidates) + (sum\ of\ all\ surpluses) = (Potential\ Vote\ Total)$

   iv) Record the next higher ranked candidate's vote total. If the potential vote total is less than the next higher ranked candidate's vote total, than declare the candidate defeated and record.

   c) Repeat (b) for every candidate.

8) If any candidates were defeated mathematically, skip to step (12). If no candidates were defeated mathematically and there are no surpluses to transfer, skip to step (12). If no

candidates were defeated mathematically and there is a surplus to transfer, proceed to step (9).

9) Perform surplus transfer of largest surplus

   a) On the **Results Log** Worksheet for the current round, circle "Surplus" then calculate and record the surplus fraction of vote

   Surplus/total votes for candidate = surplus fraction (calculate to four decimal points)

   b) Move stack of ballots for candidate whose surplus is to be redistributed from accumulation table to pre-count staging table.

   c) Working through one parcel at a time, redistribute ballots into piles for each candidate, including non-continuing candidates. Take note of the old **Parcel Detail Cover Sheet** to determine which column to count - if cover sheet indicates column # 1 move to column #2.

   d) Create new **Parcel Detail Cover Sheet** for each parcel and fill out:

      i)

Old Parcel Detail Cover Sheet		New Parcel Detail Cover Sheet
	Round = from **Results Log Worksheet** for current round	
Column #	Becomes	Column # + 1
Transfer Value	Becomes	Current Value
	Surplus Fraction = from **Results Log Worksheet** for current round	
	Transfer Value on New Cover Sheet = current value * surplus fraction	

      ii) Count number of ballots in parcel and record

      iii) Calculate Total Value of Parcel

      *Number of Ballots * Transfer Value = Total Value of Parcel*

   e) Place each parcel for continuing candidates (bound with Parcel Detail Cover Sheet attached) on Post-count Staging Table

   f) Redistribute parcels for non-continuing candidates – complete new **Parcel Detail Cover Sheet** for each newly created parcel by exactly copying the data from the old Parcel Detail Cover Sheet for Current Value, Surplus Fraction, and Transfer Value.

Non-continuing Candidate Old Parcel Detail		New Parcel Detail Cover Sheet

Cover Sheet		
	Round = from **Results Log Worksheet** for current round	
Column #		Column # +1
Current Value	Becomes	Current Value
Surplus Fraction	Becomes	Surplus Fraction
Transfer Value	Becomes	Transfer Value

g) Repeat steps (e) through (f) until there are no parcels remaining on the Counting Table.

h) Repeat steps (c) through (g) until there are no parcels remaining on the Pre-Count Staging Table.

i) Record result of redistribution on each Candidate's **Parcel Tracking Worksheet**

j) Complete the **Results Log Worksheet** using the previous round's **Results Log Worksheet** and each candidate's **Parcel Tracking Worksheet.** Determine and record if any candidates have surpassed threshold and are elected. Sum the new vote totals and compare to the total number of votes from the first round to ensure it is the same. Do the same check for the number of ballots.

k) Return newly made parcels from Post-Count Staging Table to corresponding candidate piles on Accumulation Table

10) If all seats for the race are filled, election is complete. If not, continue with below steps.

11) Repeat steps (5) through (10) until there are no surpluses remaining. If no surplus remains to be transferred and the full contingent of candidates remain unelected, eliminate the candidate with the fewest votes and continue with below steps.

12) Redistribute votes for eliminated candidate(s).

a) On the **Results Log** Worksheet for the current round, circle "Elimination". (There is no surplus fraction of vote.)

b) Move stack of ballots for eliminated candidate(s) from accumulation table to pre-count staging table.

c) Working through one parcel at a time, redistribute ballots into piles for each candidate, including non-continuing candidates. Take note of the old **Parcel Detail Cover Sheet** to determine which column to count - if cover sheet indicates column # 1 move to column #2.

d) Create new **Parcel Detail Cover Sheet** for each parcel and fill out:

i)

Old Parcel Detail Cover Sheet		New Parcel Detail Cover Sheet
	Round = from **Results Log Worksheet** for current round	
Column #	Becomes	Column # + 1
Transfer Value	Becomes	Current Value
	Surplus Fraction is N/A	
Transfer Value	Becomes	TransferValue

ii) Count number of ballots in parcel and record

iii) Calculate Total Value of Parcel

*Number of Ballots * Transfer Value = Total Value of Parcel*

e) Place each parcel for continuing candidates (bound with Parcel Detail Cover Sheet attached) on Post-count Staging Table

f) Redistribute parcels for non-continuing candidates – complete new **Parcel Detail Cover Sheet** for each newly created parcel by exactly copying the data from the old Parcel Detail Cover Sheet for Current Value, Surplus Fraction, and Transfer Value.

Non-continuing Candidate Old Parcel Detail Cover Sheet		New Parcel Detail Cover Sheet
	Round = from **Results Log Worksheet** for current round	
Column #		Column # +1
Current Value	Becomes	Current Value
Surplus Fraction	Becomes	Surplus Fraction
Transfer Value	Becomes	Transfer Value

g) Repeat steps (e) through (f) until there are no parcels remaining on the Counting Table.

h) Repeat steps (c) through (g) until there are no parcels remaining on the Pre-Count Staging Table.

i) Record result of redistribution on each Candidate's **Parcel Tracking Worksheet**

j) Complete the **Results Log Worksheet** using the previous round's **Results Log Worksheet** and each candidate's **Parcel Tracking Worksheet.** Determine and record if any candidates have surpassed threshold and are elected. Sum the new vote totals and compare to the total number of votes from the first round to ensure it is the same. Do the same check for the number of ballots.

k) Return newly made parcels from Post-Count Staging Table to corresponding candidate piles on Accumulation Table

13) If all seats for the race are filled, election is complete. If not, return to step (5).

DRAFT

PROCEDURES FOR CITY OF MINNEAPOLIS MUNICIPAL ELECTIONS

-NORMALIZATION OF RCV BALLOTS-

<u>Definitions</u>

Normalization – Process by which ballots are inspected for voter error and corrected by Election Judges.

Original Ballot – Ballot as marked by the voter. Ballots requiring normalization are labeled "Original" and numbered with the corresponding number of its Normalized Ballot so that the two could later be matched up. All Original Ballots will be stored separately from counted ballots in labeled envelopes.

Normalized Ballot – Ballot copied from the original by Election Judges with voter errors corrected. Races where voter error occurred in marking the ballot are adjusted per rules contained in the ordinance and as indicated by the Normalization Chart. All normalized ballots are labeled "Normalized" and numbered with the corresponding number of its Original Ballot so that the two could later be matched up. All Normalized Ballots will be counted instead of their originals and stored with the counted ballots.

<u>Types of problematic votes</u>

Overvote

- More than one candidate selected in any one column for a race.

- **Always** requires normalization.

Repeat Candidate

- The same candidate selected in more than one column in a race.

- **Always** requires normalization.

Skipped Ranking

- Any column left blank in a race.

- **Sometimes** requires normalization.

Undervote

- All columns for a race left blank.

- **Never** requires normalization.

Problem	Problem Columns	Requires Normalization	1st Before	2nd Before	3rd Before	1st After	2nd After	3rd After
Overvote	1	Y	A/B	C	D	Blank	Blank	Blank
Overvote	2	Y	A	B/C	D	A	Blank	Blank
Overvote	3	Y	A	B	C/D	A	B	Blank
Repeat candidate	1 & 2	Y	A	A	B	A	Blank	Blank
Repeat candidate	1 & 3	Y	A	B	A	A	B	Blank
Repeat candidate	2 & 3	Y	A	B	B	A	B	Blank
Repeat candidate	1, 2, & 3	Y	A	A	A	A	Blank	Blank
Skipped ranking	1	Y	Blank	A	B	A	B	Blank
Skipped ranking	2	Y	A	Blank	B	A	B	Blank
Skipped ranking	3	**N**	A	B	Blank	A	B	Blank
Skipped ranking	1 & 2	Y	Blank	Blank	A	Blank	Blank	Blank
Skipped ranking	1 & 3	Y	Blank	A	Blank	A	Blank	Blank
Skipped ranking	2 & 3	**N**	A	Blank	Blank	A	Blank	Blank
Undervote	1, 2, & 3	**N**	Blank	Blank	Blank	Blank	Blank	Blank

Procedures

NOTE: All processes where voted ballots are handled are performed by two judges of different political parties per MN Statute.

Inspect ballots that do not contain write-in votes for voter errors

1. Each team of judges inspecting ballots is assigned only one precinct at a time and receives all the non-write-in ballot envelopes for that precinct.

2. Fill out the top part of the **Normalization Log** (judge names, assigned Ward and Precinct, circle "REGULAR").

3. Inspect each ballot envelope to ensure that all seals are intact and that all envelopes for that precinct are present. Note the condition of the seals on the **Normalization Log.** If any seals are not intact or if any ballot envelopes are missing, contact an election official. Otherwise, continue to next step.

4. Unseal all ballot envelopes and note the time of unsealing on the **Normalization Log**.

5. Sort ballots into two piles –Needs Normalization and Doesn't Need Normalization.

c. A ballot needs normalization if:

   1. There is an overvote in any column. An overvote is when more than one candidate is selected in a given column.

   2. The same candidate is selected in more than one column.

d. A ballot *may* need normalization if there is a skipped ranking in a race. A skipped ranking is when any column in a race is left blank.

   1. If all three columns in the race are blank, it is an undervote and **does not require normalization**.

   2. If every column following the skipped ranking is also a skipped ranking, the race **does not require normalization**. (For example, vote in Column 1 with blank Column 2 & 3 or vote in Columns 1 & 2 with blank Column 3.)

   3. If there are any markings in any column following the skipped ranking, the race **does require normalization**. (For example, blank Column 1 with a vote in Column 2 or 3 or blank Columns 1 & 2 with a vote in Column 3.)

e. Check every race on the ballot, both sides. Even if only one race needs normalization, the ballot should go in the Needs Normalization pile.

f. When all ballots are sorted, set the Doesn't Need Normalization pile aside.

Normalize ballots using procedures contained in MN Statutes and Rules for duplicating ballots, correcting for voter error per normalization chart

6. Work with one ballot from the Needs Normalization pile at a time.

7. Take one ballot from the Needs Normalization pile and pair it with a blank ballot of the same ballot style. At the top of the ballots in the space for judge's initials, write "Original" on the Original Ballot and "Normalized" on the blank ballot. Then, next to those words, number both ballots with the same ordered number. (i.e. the first set you Normalize will be "Original 1" and "Normalized 1", the second set will be "Original 2" and "Normalized 2", etc.)

8. On the Normalized Ballot, fill out any races that didn't need normalization exactly as they appear on the Original Ballot.

9. For races that require normalization, consult the normalization chart to determine how to fill out the Normalized Ballot.

10. If any ballots are found during the normalization process that do not need normalization and were mistakenly placed in the Needs Normalization Pile, ask for assistance from an election official.

11. When all ballots from the Needs Normalization pile have been Normalized, note on the **Normalization Log** the number of ballots that required normalization for the precinct.

12. Place all the Original Ballots in Normalized Ballot Envelopes.

13. Place all the Normalize Ballots, along with the ballots that did not need normalization back in the precinct ballot envelopes.

14. Seal all ballot envelopes and note time of re-sealing on **Normalization Log**.

Inspect ballots that contain write-in votes for voter errors

Normalize ballots using procedures contained in MN Statutes and Rules for duplicating ballots, correcting for voter error per normalization chart

Repeat above steps 1 through 14 with the ballots from the assigned precinct's Write-In Ballots envelope, filling out a new **Normalization Log** and circling WRITE-IN.

The following is a results tablulation provided to us by Dr. James Gilmore, a noted authority on Single Transferable Vote. A number of scholarly papers have been prepared by Dr. Gilmore and can be accessed on the web.

The method used in this example is the Weighted Inclusive Gregory Method of Single Transferable Vote, which is the same method adopted by ordinance of the Minneapolis City Council. These results reflect all types of vote transfers we may experience in our hand count using the method. Transfers illustrated show transfers which result from primary and secondary surplus transfers and candidate exclusion.

Note that Dr. Gilmore has stated the following,

> " …the 'weighted inclusive Gregory method', is, theoretically, the most effective counting method as it ensures that the preferences expressed by all voters are counted; *but notes manual counts using this system would be unrealistically time consuming."*

The first sheet below is a summary of the results, while the following three charts represent the individual calculations and transfers in each round of counting.

SUMMARY OF ALL ROUNDS OF COUNTING

STV WIGM Example Count
  Result Sheet
    Total valid vote: 2397
  Number of be elected: 3
    Threshold: 600

Candidate	**Round 1** First preference votes	Round 2 Transfer of Campbell's surplus Votes transferred	**Round 2** Votes after transfer	Round 3 Transfer of Adams' surplus Votes transferred	**Round 3** Votes after transfer	Round 4 Exclusion of Gray Votes transferred	**Round 4** Votes after transfer	
Jack Adams	550	136.6239	**686.6239**	-86.62390	600.0000		600.0000	**Elected**
Able Baker	310	81.5151	391.5151	4.7509	396.2660	114.2653	510.5313	
Flora Campbell	**972**	-372.0000	600.0000		600.0000		600.0000	**Elected**
Earl Gray	269	43.2451	312.2451	52.8018	365.0469	-365.0469	0.0000	
Windy Miller	296	88.7864	384.7864	22.5124	407.2988	200.2598	**607.5586**	**Elected**
Non-Transferable	-	21.8295	21.8295	6.5588	28.3883	50.5218	78.9101	
Total	2397	=	2397.0000	=	2397.0000	=	2397.0000	

STV WIGM Example Count
  Commentary
  Round 1 Count first preference votes. Threshold = 1 + ([total valid vote] / ([number to be elected] + 1)), ignoring any remainder.
      Campbell's vote exceeds the threshold = elected.
      Campbell's surplus exceeds difference between bottom two candidates, so Round 2 must be transfer of Cambell's surplus.

  Round 2 Calculate surplus fraction = (candidate's surplus) divided by (candidate's total vote).
      Campbell's votes are all first preference votes, so all ballots have same current value = 1.0000.
      Transfer value of all ballots will be (1 x surplus fraction).
      Vote fraction not transferred is determined by difference, but not shown separately on the Result Sheet.
      Adams' vote now exceeds the threshold = elected.
      Adams' surplus exceeds difference between bottom two candidates, so Round 3 must be transfer of Adams' surplus.

  Round 3 Calculate surplus fraction = (candidate's surplus) divided by (candidate's total vote).
      Adams' ballots are of two different values and so these two parcels of ballots must be processed separately.
      Calculate transfer values for the two separate parcels of ballots.
      Vote fraction not transferred is determined by difference, separately for each parcel of ballots.
      Transfer of Adams' surplus has not brought vote of any candidate above the threshold, so Round 4 must be an exclusion.

  Round 4 Gray has fewest votes and transfer of those votes could change the order of the two continuing candidates, so Gray is excluded alone.
      Gray's ballots are of four different values and so these four parcels must be processed separately.
      For each parcel, transfer value = current value.
      There is no Vote fraction not transferred.
      Miller's vote now exceeds the threshold = elected.
      No further ballots or votes are transferred.

ROUND TWO DETAIL

STV WIGM Example Count			
Round 2	**Transfer of Campbell's Surplus**		
Candidate's current vote:	972.0000		
Threshold	600		
Surplus:	372.0000		
Surplus fraction:	0.3827		
	Campbell's FP ballots		
Number of ballots:	972		
Current value:	1.0000		
Transfer value:	0.3827		
	Number	**Votes to be**	
Next available preference	of ballots	**transferred**	
Jack Adams	357	136.6239	
Able Baker	213	81.5151	
-	-	-	
Earl Gray	113	43.2451	
Windy Miller	232	88.7864	
Non-Transferable	57	21.8139	
Vote fraction not transferred	-	0.0156	
Total	972	372.0000	

ROUND THREE DETAIL

STV WIGM Example Count					
Round 3	**Transfer of Adams' Surplus**				
Candidate's current vote:	686.6239				
Threshold	600				
Surplus:	86.6239				
Surplus fraction:	0.1261				
	Adams' FP ballots		Ballots from Campbell		
Number of ballots:	550		357		
Current value:	1.0000		0.3827		
Transfer value:	0.1261		0.0482		
	Number		Number		**Votes to be**
Next available preference	of ballots	Votes	of ballots	Votes	**transferred**
-	-	-	-	-	
Able Baker	35	4.4135	7	0.3374	4.7509
-	-	-	-	-	
Earl Gray	400	50.4400	49	2.3618	52.8018
Windy Miller	78	9.8358	263	12.6766	22.5124
Non-Transferable	37	4.6657	38	1.8316	6.4973
Vote fraction not transferred	-	0.0325	-	0.0290	0.0615
Total	550	69.3875	357	17.2364	86.6239
	CHECK		CHECK		CHECK

ROUND FOUR DETAIL

STV WIGM Example Count									
Round 4	**Exclusion of Gray**								
Candidate's current vote:	365.0469								
	Gray's FP ballots		Ballots from Campbell		Ballots from Adams 1		Ballots from Adams 2		
Number of ballots:	269		113		400		49		
Current value:	1.0000		0.3827		0.1261		0.0482		
Transfer value:	1.0000		0.3827		0.1261		0.0482		
	Number		Number		Number		Number		**Votes to be**
Next available preference	of ballots	Votes	of ballots	Votes	of ballots	Votes	of ballots	Votes	**transferred**
-	-	-	-	-	-	-	-	-	
Able Baker	83	83.0000	43	16.4561	114	14.3754	9	0.4338	114.2653
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
Windy Miller	149	149.0000	49	18.7523	249	31.3989	23	1.1086	200.2598
Non-Transferable	37	37.0000	21	8.0367	37	4.6657	17	0.8194	50.5218
Vote fraction not transferred	-	-	-	-	-	-	-	-	-
Total	269	269.0000	113	43.2451	400	50.4400	49	2.3618	365.0469
	CHECK		CHECK		CHECK		CHECK		CHECK

By Glidden

Amending Title 8.5 of the Minneapolis Code of Ordinances relating to Elections by adding a new Chapter 167 relating to Municipal Elections; Rules of Conduct.

The City Council of The City of Minneapolis do ordain as follows:

Section 1. That the Minneapolis Code of Ordinances be amended by adding thereto a new Chapter 167 to read as follows:

CHAPTER 167. Municipal Elections; Rules of Conduct

167.10. Applicability. This chapter applies to all municipal elections. All provisions of City Charter and Minnesota Statutes pertaining to elections also apply, to the extent they are not inconsistent with this chapter.

167.20. Definitions. The following words and phrases when used in this chapter shall have the meanings respectively ascribed to them in this section:

Batch elimination means a simultaneous defeat of multiple continuing candidates that have no mathematical chance of being elected.

Continuing candidate means a candidate who has been neither elected nor defeated.

Duplicate ranking occurs when a voter ranks the same candidate at multiple rankings for the office being counted.

Exhausted ballot means a ballot that cannot be transferred to a lower ranked candidate because the next ranking is blank or there is more than one (1) candidate given the next ranking for the office being counted.

Highest continuing ranking means the ranking on a voter's ballot with the lowest numerical value for a continuing candidate.

An *overvote* occurs when a voter ranks more than one (1) candidate at the same ranking.

Partially defective ballot means a ballot that is defective to the extent that the election judges are unable to determine the voter's intent with respect to the office being counted.

Ranked-choice voting means an election method in which voters rank candidates for an office in order of their preference and the ballots are counted in rounds that, in the case of a single-seat election, simulate a series of runoffs until one (1) candidate meets the threshold, or until two (2) candidates remain and the candidate with the greatest number of votes is declared elected. In the case of multiple-seat elections, a winning threshold is calculated, and votes, or fractions thereof, are distributed to candidates according to the preferences marked on each ballot as described in section 167.7 of this ordinance.

Ranked-choice voting tabulation center means the place selected for the automatic or manual processing and tabulation of ballots and/or votes.

Ranking means the number assigned by a voter to a candidate to express the voter's preference for that candidate. Ranking number one (1) is the highest ranking. A ranking of lower numerical value indicates a greater preference for a candidate than a ranking of higher numerical value.

Round means an instance of the sequence of voting tabulation steps established in sections 167.60 and 167.70 of this chapter.

Skipped ranking occurs when a voter leaves a ranking blank and ranks a candidate at a subsequent ranking.

Surplus means the total number of votes cast for an elected candidate in excess of the threshold.

Surplus fraction of a vote means the surplus divided by the total votes cast for the elected candidate, calculated to four (4) decimal places. Surplus fraction of a vote = (Surplus)/(Total votes cast for elected candidate).

Threshold means the number of votes sufficient for a candidate to be elected. In any given election, the threshold equals the total votes counted in the first round after removing partially defective ballots, divided by the sum of one (1) plus the number of offices to be filled and adding one (1) to the quotient, disregarding any fractions. Threshold = (Total votes cast)/(Seats to be elected + 1) +1.

Transfer value means the fraction of a vote that a transferred ballot will contribute to the next ranked continuing candidate on that ballot. The transfer value of a vote cast for an elected candidate is calculated by multiplying the surplus fraction of each vote by its current value. The transfer value of a vote cast for a defeated candidate is the same as its current value.

Transferable vote means a vote or a fraction of a vote for a candidate who has been either elected or defeated.

Totally defective ballot means a ballot that is defective to the extent that the election judges are unable to determine the voter's intent for any office on the ballot.

An *undervote* occurs when a voter does not rank any candidates for an office.

167.30. Ballots. (a) *Ballot format.*

(1) When there are three (3) or more qualified candidates, a ballot must allow a voter to rank at least three (3) candidates for each office in order of preference and must also allow the voter to add write-in candidates.

(2) A ballot must include instructions to voters that clearly indicates how to mark the ballot so as to be read by the Election Judges conducting the count, or if voting equipment is to be used, so as to be read by the voting equipment used to tabulate results.

(3) A ballot must include instructions to voters that clearly indicate how to rank candidates in order of the voter's preference.

(4) A ballot must indicate the number of seats to be elected for each office.

(5) A ballot which allows voters to indicate the order of their preference by marking multiple positions for each candidate must include instructions indicating the ranking of each position.

(b) *Mixed-election method ballots.* If elections are held in which ranked-choice voting is used in addition to other methods of voting, the ranked-choice voting and non-ranked-choice voting elections must be on the same ballot card if possible, with ranked-choice voting and non-ranked-choice voting portions clearly separated on the ballot card. If placement of all offices to be elected cannot be placed on a single ballot card, a separate ballot card may be used for those offices to be elected using ranked-choice voting . The City may deviate from the standard ballot order of offices to allow separation of ranked-choice voting and non-ranked-choice voting elections.

(c) *Ballot format rules* The chief election official shall establish administrative rules for ballot format after a voting mechanism has been selected. All rules shall be adopted in accordance with this section.

167.40. Ranked-Choice Voting Tabulation Center. The chief election official shall designate one (1) location to serve as the ranked-choice voting tabulation center. The center must be accessible to the public for the purpose of observing the vote tabulation. Tabulation of votes must be conducted as described in sections 167.60 and 167.70 of this chapter.

167.50. Tabulation of Votes; In General. (a) *Precinct tabulation.* When the hours for voting have ended and all voting has concluded, the election judges in each precinct shall record and publicly declare the number of votes at each ranking on the ballot. The election judges must then securely transfer all electronic voting data and ballots from the precinct to the ranked-choice voting tabulation center designated pursuant to section 167.40 of this chapter. Upon receipt at the ranked-choice voting tabulation center, all electronic voting data and ballots shall be secured.

(b) *Notice of recess in count.* At any time following receipt of materials per 167.50(a) the chief election official may declare a recess. Notice of such recess must include the date, time and location at which the process of recording and tabulating votes will resume and the reason for the recess. Notice shall be posted on the city's official bulletin board and on the door of the ranked-choice voting counting center.

(c) *Recording write-in votes.* At a time set by the Chief Election Official, the Judges of the Election shall convene at the ranked-choice voting tabulation center to examine ballots on which voters have indicated a write-in choice, and record the names and number of votes received by each write-in candidate. In the event that votes cast for the write-in category are not eliminated as provided in section 167.60 (c), or 167.70 (c), the results must be entered into the ranked-choice voting tabulation software.

(d) *Ranked-choice vote tabulation.* After all votes for all candidates have been recorded and at a time set by the chief election official, the process of tabulating votes cast for offices to be elected using the ranked-choice method shall begin. The counting shall continue until preliminary results for all races are determined, subject to provisions contained in 167.50(b).

167.60. Tabulation of Votes; Single-Seat Elections. (a) *Applicability.* This section applies to a ranked-choice voting election in which one (1) seat in an office is to be filled from a single set of candidates on the ballot. The method of tabulating ranked-choice votes for single-seat elections as described in this section must be known as the "single-seat single transferable vote" method of tabulation.

      (1) Tabulation of votes at the ranked-choice voting tabulation center must proceed in rounds for each office to be counted. First the threshold must be calculated and publicly declared. After calculation of the threshold, each round must proceed sequentially as follows:

        a. The number of votes cast for each candidate, as indicated by the highest continuing ranking on each ballot, must be counted. If a candidate's vote total is equal to or greater than the threshold, the tabulation is complete. If no candidate's vote total is equal to or greater than the threshold, the tabulation must continue as described in clause "b".

b. Candidates appearing on the ballot who do not receive any valid rankings are defeated immediately, before any transfers.

c. All candidates are defeated whose vote total, plus all potentially transferable votes from candidates with fewer votes, is less than the vote total of the candidate with the next higher number of votes, such that it is mathematically impossible for that candidate to be elected. All candidates for whom it is mathematically impossible to be elected must be considered defeated simultaneously. Votes for the defeated candidates must be transferred to each ballot's next-ranked continuing candidate.

d. The candidate with the fewest votes is defeated. Votes for the defeated candidate must be transferred to each ballot's next-ranked continuing candidate. Ties between candidates with the fewest votes must immediately and publicly be decided by lot by the chief election official at the tabulation center. The candidate chosen by lot must be defeated. The result of the tie resolution must be recorded and reused in the event of a recount.

e. The procedures in clauses "a" to "d" must be repeated until one (1) candidate reaches the threshold, or until only two (2) continuing candidates remain. If only two (2) candidates remain, the candidate with the most votes must be elected. In the case of a tie between two (2) continuing candidates, the tie must be decided by lot as provided in Minneapolis Charter Chapter 2, Section 12. The result of the tie resolution must be recorded and reused in the event of a recount.

(2) When a single skipped ranking is encountered on a ballot, that ballot shall count towards the next non-skipped ranking. If any ballot cannot be advanced because no further continuing candidates are ranked on that ballot, or because a voter has skipped more than one (1) ranking or has ranked the same candidate in two (2) or more rankings, that ballot shall immediately be declared "exhausted". Any ballot that has been declared an undervote, overvote, or exhausted must not count towards any candidate in that round or in subsequent rounds.

167.70. Tabulation of Votes, Multiple-Seat Elections. (a) *Applicability*. This section applies to a ranked-choice voting election in which more than one (1) seat in office is to be filled from a single set of candidates on the ballot. The method of tabulating ranked-choice votes for multiple-seat elections as described in this section must be known as the "multiple-seat single transferable vote" method of tabulation.

(1) Tabulation of votes at the ranked-choice voting tabulation center must proceed in rounds for each office to be counted. First the threshold must

be calculated and publicly declared. After calculation of the threshold, each round must proceed sequentially as follows:

a. The number of votes cast for each candidate, as indicated by the highest ranked continuing candidate on each ballot, must be counted. If the number of candidates whose vote totals equal or exceed the threshold is equal to the number of seats to be filled, the tabulation is complete. If the number of candidates whose vote total is equal to or greater than the threshold is not equal to the number of seats to be filled, the tabulation must continue as described in clause "b".

b. Surplus votes for any candidates whose vote total is equal to or greater than the threshold must be calculated.

c. Candidates appearing on the ballot who do not receive any valid rankings are defeated immediately, before any transfers.

d. After any surplus votes are calculated but not yet transferred, a candidate is defeated whose vote total, plus all potentially transferable votes from elected candidates and candidates with fewer votes, is less than the vote total of the candidate with the next higher number of votes, such that it is mathematically impossible for that candidate to be elected. All candidates for whom it is mathematically impossible to be elected must be defeated simultaneously. Votes for the defeated candidates must be transferred to each ballot's next-ranked continuing candidate.

e. The transfer value of each vote cast for an elected candidate must be transferred to the next continuing candidate on that ballot. If two (2) or more candidates have vote totals that equal or exceed the threshold, the votes for the candidate with the largest surplus will be transferred first with subsequent transfers proceeding in descending order of surplus size. A tie between two (2) or more candidates must immediately and publicly be resolved by lot by the chief election official at the tabulation center. The surplus of the candidate chosen by lot must be transferred before other transfers are made. The result of the tie resolution must be recorded and reused in the event of a recount.

f. If there are no transferable surplus votes, the candidate with the fewest votes is defeated. Votes for a defeated candidate are transferred at their transfer value to each ballot's next-ranked continuing candidate. Ties between candidates with the fewest votes must be decided by lot, and the candidate chosen by lot must be defeated. The result of the tie resolution must be recorded and reused in the event of a recount.

g. The procedures in clauses "a" to "f" must be repeated until the number of candidates whose vote totals equal or exceed the threshold is equal to the number of seats to be filled, or until the number of continuing candidates is equal to the number of offices yet to be elected. If the number of continuing candidates is equal to the number of offices yet to be elected, the remaining continuing candidate must be declared elected. In the case of a tie between two (2) continuing candidates, the tie must be decided by lot as provided in Minneapolis Charter Chapter 2, Section 12, and the candidate chosen by lot must be defeated. The result of the tie resolution must be recorded and repeated in the event of a recount.

(2) When a single skipped ranking is encountered on a ballot, that ballot shall count towards the next non-skipped ranking. If any ballot cannot be advanced because no further continuing candidates are ranked on that ballot, or because a voter has skipped more than one (1) ranking or has ranked the same candidate in two (2) or more rankings, that ballot shall immediately be declared "exhausted". Any ballot that has been declared an undervote, overvote, or exhausted must remain so and shall not count towards any candidate in that round or in subsequent rounds.

167.80. Reporting Results. (a) *Precinct summary statement.* Each precinct must print a precinct summary statement, which must minimally include the number of votes in the first ranking for each candidate.

(b) *Ranked-choice voting tabulation center summary statement.* The ranked-choice voting tabulation center must print a summary statement, which must include the following information: total votes cast; number of undervotes; number of totally defective and spoiled ballots; threshold calculation; total first choice rankings for all candidates; round-by-round tabulation results, including simultaneous batch eliminations, surplus transfers, and defeated candidate transfers; and exhausted ballots at each round.

(c) *Election abstract.* The election abstract must include the information required in the ranked-choice voting tabulation center summary statement, with the addition of the number of registered voters by precinct, the number of same day voter registrations, and the number of absentee voters.

167.90. Recounts. (a) *Required recounts.* A candidate defeated in the final round of tabulation may request a recount of the votes cast for the nomination or election to that office if the difference between the vote cast for that candidate and for a winning candidate is less than one-half (1/2) of one (1) percent of the total votes counted for that office. In case of offices where two (2) or more seats are being filled from among all the candidates for the office, the one-half (1/2) of one (1) percent difference is between the elected candidate with the fewest votes and the candidate with the most votes from among the candidates who were not elected.

(1) Candidates shall file a written request for the recount with the city clerk. All requests shall be filed during the time for notice of contest of the election for which a recount is sought.

(2) Upon receipt of a request made pursuant to this section, the city shall recount the votes for a municipal office at the expense of the city.

(b) *Discretionary candidate recounts.* Candidates defeated in the final round of tabulation when the vote difference is greater than the difference required by section 167.90(a), and candidates defeated in an earlier round of counting, may request a recount in the manner provided in this section at the candidate's own expense.

(1) The votes shall be recounted as provided in this section if the requesting candidate files with the city clerk a bond, cash, or surety in an amount set by the city for payment of the recount expenses.

(c) *Notice of contest.* Time for notice of contest of election to a municipal office which is recounted pursuant to this section shall begin to run upon certification of the results by the governing body of the municipality.

(d) *Scope of recount.* A recount conducted as provided in this section is limited in scope to the determination of the number of votes validly cast for the office to be recounted. Only the ballots cast in the election and summary statements certified by the election judges may be considered in the recount process.

167.100. Manual Count Procedures. The chief election official shall establish administrative procedures for conduct of a manual count in accordance with rules for counting the votes contained in sections 167.60 and 167.70 of this ordinance.

167.110. Electronic Voting Systems. All provisions of Minnesota Statutes pertaining to electronic voting equipment systems apply, to the extent they are not inconsistent with this chapter. Any voting equipment system used to conduct an election under this section must be authorized for use by the County Auditor pursuant to MN Statute section 206.58.

167.120. Testing of Voting Systems. The chief election official shall have the voting system tested to ascertain that the system will correctly mark ballots using all methods supported by the system, and count the votes cast for all candidates and on all questions per MN Statute Section 206.83. In addition to all requirements of MN Statute Section 206.83, the equipment must be tested to ensure that each ranking for each candidate is recorded properly, and must be tested to ensure the accuracy of software used to perform vote transfers and produce results.

167.130. Post-election Review of Voting System; Ranked-Choice Voting Elections. (a) *Selection of test date; notice.* Thirty (30) days before a ranked-choice election that will be conducted using electronic voting equipment to tabulate results, the

chief election official must set the date, time, and place for conduct of a post-election review, and must also set the date, time and place for the random selection of contests to be reviewed.

(b) *Scope and conduct of test.* The post-election review must be conducted, in public, of a sample of votes cast for at least one (1) single-seat ranked-choice voting election for city council, if applicable, and at least one (1) multiple-seat ranked-choice voting election for either park board or board of estimate and taxation, if applicable. At least one (1) precinct selected in each review must have had at least 1,500 votes cast in the election.

(c) *Single seat test.* No later than two (2) days following completion of the vote tabulation, the chief election official shall select two (2) precincts by lot. Using the actual ballots cast in the two (2) precincts selected, the judges of the election shall conduct a manual count of votes cast for the office of council member using procedures called for in section 167.100 of this ordinance and accompanying rules. The judges shall make a record of the votes cast and vote transfers made. Upon determining the outcome of the manual count, the judges shall perform a second test with the same ballots where votes cast are read and counted by the same voting equipment used in the precincts on election day, and shall determine the outcome of the count using the same software used to perform vote transfers at the ranked-choice counting center.

(d) *Multiple seat test*. No later than 2 days following completion of the vote tabulation, the chief election official shall select, by lot, two (2) precincts in a single ward. Using the actual ballots cast in the two (2) precincts selected, the judges of the election shall conduct a manual count of votes cast for a multiple seat office appearing on the ballot, also to be determined by lot. Using procedures called for in section 167.100 of this ordinance and accompanying rules, the judges shall count the votes cast and perform vote transfers. Upon determining the outcome of the manual count, the judges shall perform a second test with the same ballots where votes cast are read and counted by the same voting equipment used in the precincts on election day, and shall determine the outcome of the count using the same software used to perform vote transfers at the ranked-choice counting center.

(e) *Standard of acceptable performance by voting system*. A comparison of the results compiled by the voting system with the results compiled by the judges of election performing the manual count must show that the results of the electronic voting system differed by no more than one-half (1/2) of one (1) percent from the manual count of the sample tested. Valid votes that have been marked by the voter outside the vote targets or using a manual marking device that cannot be read by the voting system must not be included in making the determination whether the voting system has met the standard of acceptable performance.

(f) *Additional Review*. If the post-election review reveals a difference greater than one-half (1/2) of one (1) percent, in one (1) precinct, the post-election review official must, within two (2) days, conduct an additional review of two (2) more precincts

in the same jurisdiction where the discrepancy was discovered. The chief election official must immediately publicly select by lot additional precincts for review. The additional review must be completed within two (2) days after the precincts are selected and the results immediately reported to the county auditor. If the second review also indicates a difference in the vote totals compiled by the voting system that is greater than one-half (1/2) of one (1) percent, in one (1) precinct, from the result indicated by the post-election review, the chief election official must conduct a review of the ballots from all the remaining precincts in the contest being reviewed. This review must be completed no later than two (2) weeks after the election.

g) *Report of results.* Upon completion of the post-election review, the chief election official must immediately report the results to the county auditor and be made public.

(h) *Update of vote totals.* If the post-election review under this section results in a change in the number of votes counted for any candidate, the revised vote totals must be incorporated in the official result from those precincts.

(i) *Effect on voting systems.* If a voting system is found to have failed to record votes accurately and in the manner provided by this chapter, the voting system may not be used at another election until it has been approved for use by the county auditor, pursuant to MN Statute section 206.58. In addition, the county auditor may order the city to conduct a manual recount of all votes cast in the election.

(j) *Penalties to voting equipment system vendor.* If the voting system failure is attributable to either its design or to actions of the vendor, the vendor is liable for the cost of a manual recount ordered per section 167.130 (g) and is liable for additional penalties imposed per agreement between the city and the vendor.