## Expected Outcome RCV Test Sets Single-Winner

The tabs in the spreadsheet define the Test Conditions and Expected Outcomes for Accuracy Testing or Acceptance Testing for each named Ranked Choice Voting Tabulation Variant.

[^0][^1]Version Date: 4/27/2021

| Test Set 1 | Overvote - Exhaust ballot. 15 ballots listed. 1st choice overvoted (ballot 1). 2nd choice overvoted (ballot 8). Skipped choices are advanced to next highest ranked continuing candidate.* |
| :---: | :---: |
| Description round 0 | Shows what a tabulator tape would report for totals of the 15 ballots. Only 1st choices would be reported thus 2 nd thru 4th choices grayed out. Overvotes and undervotes are shown to account for votes not assigned to candidates. ( 1 overvote and 0 undervotes) |
| Description round 1 | This would match roundo if allballots had valid 1st choice votes. Since 1 st choice on ballot 1 is overvoted, ballot 1 is eliminated and is omitted from further counting. A new count is determined. This round does not produce a winner and candidate D , having the least votes, will be eliminated. |
| Description round 2 | A new count is determined after Candidate D is eliminated. Candidate C is used on ballot 14 being the 2nd choice. There still is no winner and candidate $C$ will now be eliminated having the least votes. |
| Description round 3 | A new count is determined after candidate $C$ is eliminated on ballots 3,8 and 14 . Candidate $B$ is used on ballot 3 .being the 2 nd choice. Ballot 8 is eliminated as the 2 nd choice is overvoted. The 3rd choice in ballot 14 was not voted so candidate B, the 4th choice, is selected. Candidate B is the winner having more than $50 \%$ of the total remaining votes cast. |


| Ballot \# | Ballot advanced to next highest ranked continuing candidate |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Tabulated designated 1st choice-Round 0) |  |  |  | Round 1 |  |  |  | Round 2 |  |  |  | Round 3 |  |  |  |
|  | 1st Choice | 2nd Choice | 3rd Choice | 4th Choice | 1st Choice | 2nd Choice | 3rd Choice | 4th Choice | 1st Choice | 2nd Choice | 3rd Choice | 4th Choice | 1st Choice | 2nd Choice | 3rd Choice | 4th Choice |
| 1 | A, B |  | C | D | A, B |  | C | D | A, B |  | C | D | A, B |  | C | D |
| 2 | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D | C |
| 3 | C | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D |
| 4 | A | C | B | D | A | C | B | D | A | C | B | D | A | C | B | D |
| 5 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 6 | A | C | B | D | A | C | B | D | A | C | B | D | A | C | B | D |
| 7 | B | A | C | D | B | A | C | D | B | A | C | D | B | A | C | D |
| 8 | C | B, D | A |  | C | B, D | A |  | C | B, D | A |  | C | B, D | A |  |
| 9 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 10 | A | B | D | C | A | B | D | C | A | B | D | C | A | B | D | C |
| 11 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 12 | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D | C |
| 13 | A |  |  | C | A |  |  | C | A |  |  | C | A |  |  | C |
| 14 | D | C |  | B | D | C |  | B | D | C |  | B | D | C |  | B |
| 15 | A | B | D | C | A | B | D | C | A | B | D | C | A | B | D | C |
| Cand | Total | \% | Transfer |  | Total | \% | Transfer |  | Total | \% | Transfer |  | Total | \% | Transf er |  |
| A | 5 | 36\% |  |  | 5 | 36\% |  |  | 5 | 36\% | 0 |  | 5 | 38\% | 0 |  |
| B | 6 | 43\% |  |  | 6 | 43\% |  |  | 6 | 43\% | 0 |  | 8 | 62\% | 2 |  |
| C | 2 | 14\% |  |  | 2 | 14\% |  |  | 3 | 21\% | 1 |  | 0 | 0\% | -2 |  |
| D | 1 | 7\% |  |  | 1 | 7\% |  |  | 0 | 0\% | -1 |  | 0 | 0\% | 0 |  |
| Votes Counted | 14 |  |  |  | 14 |  |  |  | 14 |  |  |  | 13 |  |  |  |
| Inactive | 0 |  |  |  | 1 |  |  |  | 1 |  |  |  | 2 |  | 1 |  |
| Total Ballots | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  |
| Overv ote Under vote | $\begin{aligned} & 1 \\ & 0 \end{aligned}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Current Active choice |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| liminated Choice/ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Eliminated Choice/
 that prevents a vote being cast for a voter's last choice when all candidates are allowed to be ranked and a maximum numeric rank is given to a candidate

| Test Set 2 | Overvote - Skip to next continuing candidate. 15 ballots listed. 1st choice overvoted (ballot 1). 2nd choice overvoted (ballot 8). Skipped choices are advanced to next highest ranked continuing <br> candidate.* |
| :--- | :--- |
| Description <br> round <br> 0 | Shows what a tabulator tape would report for totals of the 15 ballots. Only 1st choices would be reported thus 2nd thru 4th choices grayed out. Overvotes and undervotes are shown to account <br> for <br> votes not assigned to candidates. (1 overvote and 0 undervotes) |
| Description <br> round <br> 1 | This would match round 0 if all ballots had valid 1st choice votes. Since 1st choice is overvoted in ballot 1 and a second choice was omitted, both are skipped, and C is selected. A new count is <br> determined. This round does not produce a winner and candidate D, having the least votes, will be eliminated. |
| Description <br> round 2 | A new candidate count is determined after Candidate D is eliminated on ballot 14 and the 2nd choice (candidate C) is selected instead. A new count is then determined. There still is no <br> winner and candidate C will now be eliminated, having the least votes. |
| Description <br> round 3 | A new count is determined after candidate C is eliminated on ballots 1, 3, 8 and 14. Ballot 1 is eliminated as the 4th choice is candidate D, who has already been eliminated, and there are no <br> more choices. Candidate B is selected on ballot 3, being the 2nd choice. Candidate A, the 3rd choice, is selected on Ballot 8 as the 2nd choice is skipped due to being overvoted. The 3rd choice <br> in ballot 14 was not voted so candidate B so the 4th choice, is selected. Candidate B is the winner having more than 50\% of the total remaining votes cast. |


| Ballot \# | Tabulated designated 1st choice-Round 0) |  |  |  | Round 1 |  |  |  | Round 2 |  |  |  | Round 3 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \text { 1st } \\ \text { Choice } \end{gathered}$ | 2nd Choice | 3rd Choice | 4th Choice | $\begin{aligned} & \text { Round } \\ & 1 \end{aligned}$ | 2nd Choice | 3rd Choice | $\begin{gathered} \text { 4th } \\ \text { Choice } \end{gathered}$ | $\begin{gathered} \hline \text { 1st } \\ \text { Choice } \end{gathered}$ | 2nd Choice | 3rd Choice | $\begin{gathered} \text { 4th } \\ \text { Choice } \end{gathered}$ | $\begin{gathered} \text { 1st } \\ \text { Choice } \end{gathered}$ | 2nd Choice | $\begin{array}{r} \text { 3rd } \\ \text { Choice } \end{array}$ | $\begin{gathered} \text { 4th } \\ \text { Choice } \end{gathered}$ |
| 1 | A, D |  | C | D | A, D |  | C | D | A, D |  | C | D | A, D |  | C | D |
| 2 | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D | C |
| 3 | C | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D |
| 4 | A | C | B | D | A | C | B | D | A | C | B | D | A | C | B | D |
| 5 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 6 | A | C | B | D | A | C | B | D | A | C | B | D | A | C | B | D |
| 7 | B | A | C | D | B | A | C | D | B | A | C | D | B | A | C | D |
| 8 | C | B, D | A |  | C | B, D | A |  | C | B, D | A |  | C | B, D | A |  |
| 9 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 10 | A | B | D | C | A | B | D | C | A | B | D | C | A | B | D | C |
| 11 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 12 | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D | C |
| 13 | A |  |  | C | A |  |  | C | A |  |  | C | A |  |  | C |
| 14 | D | C |  | B | D | C |  | B | D | C |  | B | D | C |  | B |
| 15 | A | B | D | C | A | B | D | C | A | B | D | C | A | B | D | C |
| Candidate | Total | \% | Transfe <br> $r$ |  | Total | \% | Transfe <br> r |  | Total | \% | Transf er |  | Total | \% | Transf er |  |
| A | 5 | 36\% |  |  | 5 | 33\% |  |  | 5 | 33\% | 0 |  | 6 | 43\% | 1 |  |
| B | 6 | 43\% |  |  | 6 | 40\% |  |  | 6 | 40\% | 0 |  | 8 | 57\% | 2 |  |
| C | 2 | 14\% |  |  | 3 | 20\% |  |  | 4 | 27\% | 1 |  | 0 | 0\% | -4 |  |
| D | 1 | 7\% |  |  | 1 | 7\% |  |  | 0 | 0\% | -1 |  | 0 | 0\% | 0 |  |
| Votes Counted | 14 |  |  |  | 15 |  |  |  | 15 |  |  |  | 14 |  |  |  |
| Inactive | 0 |  |  |  | 0 |  |  |  | 0 |  |  |  | 1 |  | 1 |  |
| Total Ballots | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  |
| Overv ote Under vote | $\begin{aligned} & 1 \\ & 0 \end{aligned}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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Version Date: 4/27/2021

## Eliminated

Choice/
Skipped
ranking

| Test Set 3 | Skipped choice - Exhaust ballot. 15 ballots listed. 1st choice skipped (ballot 1). 2nd choice skipped (ballot 13). 3rd choice skipped (ballot 14). |
| :--- | :--- |
| Description <br> round <br> 0 | Shows what a tabulator tape would report for totals of the 15 ballots. Only 1st choices would be reported thus 2nd thru 4th choices grayed out. Overvotes and undervotes are shown to account <br> for <br> votes not assigned to candidates. (0 overvote and 1 undervotes) |
| Description <br> round <br> 1 | This would match round if allballots had valid 1st choice votes. Since 1st choice on ballot 1 is skipped, ballot 1 is eliminated and is omitted from further counting. A new count is determined. <br> This <br> round does not produce a winner and candidate D, having the least votes, will be eliminated. |
| Description <br> round 2 | A new count is determined after Candidate D is eliminated on ballot 14 and the 2nd choice, candidate C, is selected. There still is no winner and candidate C will now be eliminated, having <br> the least votes. |
| Description <br> round 3 | A new count is determined after candidate C is eliminated on ballots 3, 13 and 14. Candidate B is selected on ballot 3, being the 2nd choice. Ballot 13 is eliminated as the 2nd choice is not <br> voted. Ballot 14 is eliminated as the 3rd choice is not voted. Candidate B is the winner having more than 50\% of the total remaining votes cast. |


| Ballot \# | Tabulated designated 1st choice-Round 0) |  |  |  | Round 1 |  |  |  | Round 2 |  |  |  | Round 3 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \text { 1st } \\ \text { Choice } \end{gathered}$ | 2nd Choice | 3rd Choice | $\begin{gathered} \text { 4th } \\ \text { Choice } \end{gathered}$ | $\begin{gathered} \text { 1st } \\ \text { Choice } \end{gathered}$ | 2nd Choice | 3rd Choice | $\begin{gathered} \text { 4th } \\ \text { Choice } \end{gathered}$ | $\begin{gathered} \hline \text { 1st } \\ \text { Choice } \end{gathered}$ | 2nd | 3rd Choice | 4th Choice | $\begin{gathered} \hline \text { 1st } \\ \text { Choice } \end{gathered}$ | 2nd Choice | $\begin{array}{r} \text { 3rd } \\ \text { Choice } \end{array}$ | $\begin{gathered} \text { 4th } \\ \text { Choice } \end{gathered}$ |
| 1 |  | B | C |  |  | B | C |  |  | B | C |  |  | B | C |  |
| 2 | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D | C |
| 3 | C | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D |
| 4 | A | C | B | D | A | C | B | D | A | C | B | D | A | C | B | D |
| 5 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 6 | A | C | B | D | A | C | B | D | A | C | B | D | A | C | B | D |
| 7 | B | A | C | D | B | A | C | D | B | A | C | D | B | A | C | D |
| 8 | A | B | C |  | A | B | C |  | A | B | C |  | A | B | C |  |
| 9 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 10 | A | B | D | C | A | B | D | C | A | B | D | C | A | B | D | C |
| 11 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 12 | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D | C |
| 13 | C |  |  | B | C |  |  | B | C |  |  | B | C |  |  | B |
| 14 | D | C |  | B | D | C |  | B | D | C |  | B | D | C |  | B |
| 15 | A | B | D | C | A | B | D | C | A | B | D | C | A | B | D | C |
| Candidate | Total | \% | Transfe r |  | Total | \% | Transfe <br> r |  | Total | \% | Transf er |  | Total | \% | Transf er |  |
| A | 5 | 36\% |  |  | 5 | 36\% |  |  | 5 | 36\% | 0 |  | 5 | 42\% | 0 |  |
| B | 6 | 43\% |  |  | 6 | 43\% |  |  | 6 | 43\% | 0 |  | 7 | 58\% | 1 |  |
| C | 2 | 14\% |  |  | 2 | 14\% |  |  | 3 | 21\% | 1 |  | 0 | 0\% | -3 |  |
| D | 1 | 7\% |  |  | 1 | 7\% |  |  | 0 | 0\% | -1 |  | 0 | 0\% | 0 |  |
| Votes Counted | 14 |  |  |  | 14 |  |  |  | 14 |  |  |  | 12 |  |  |  |
| Inactive | 0 |  |  |  | 1 |  |  |  | 1 |  | 0 |  | 3 |  | 2 |  |
| Total Ballots | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  |
| Overv ote Under vote | $\begin{aligned} & 0 \\ & 1 \end{aligned}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

## Eliminated

Choice/
Skipped
ranking

| Test Set 4 | Skipped choice - Skip to next continuing candidate. 15 ballots listed. No 3rd or 4th choice on ballot 1. No 4th choice ballot 8. No 2nd or 3rd choice ballot 13. No 3rd choice ballot 14. |
| :---: | :---: |
| Description round $0$ | Shows what a tabulator tape would report for totals of the 15 ballots. Only 1st choices would be reported thus 2 nd thru 4 th choices grayed out. Overvotes and undervotes are shown to account for votes not assigned to candidates. (0 overvotes and 0 undervotes) |
| Description round 1 | This matches round 0 since all ballots have valid 1st choice votes. This round does not produce a winner and candidate $D$, having the least votes, will be eliminated. |
| Description round 2 | A new candidate count is determined after Candidate $D$ is eliminated on ballot 14 and the 2 nd choice, candidate $C$, is selected. There still is no winner and candidate $C$ will now be eliminated, having the least votes. Skipped choices are advanced to next highest ranked continuing candidate.* |
| Description round 3 | A new count is determined after candidate $C$ is eliminated on ballots 3,13 and 14 . Candidate $B$ is selected on ballot 3 , being the 2 nd choice. Candidate $B$, the 4 th choice on ballot 13 , is selected since the 2 nd and 3rd choices are omitted. The 3rd choice in ballot 14 was not voted so candidate B, the 4th choice, is selected. Candidate B is the winner having more than $50 \%$ of the total remaining votes cast. |


| Ballot \# | Ballot advanced to next highest ranked continuing candidate |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Tabulated designated 1st choice-Round 0) |  |  |  | Round 1 |  |  |  | Round 2 |  |  |  | Round 3 |  |  |  |
|  | 1st Choice | 2nd Choice | 3rd Choice | 4th Choice | 1st Choice | 2nd Choice | 3rd Choice | 4th Choice | 1st Choice | 2nd Choice | 3rd Choice | 4th Choice | 1st Choice | 2nd Choice | 3rd Choice | 4th Choice |
| 1 | B | C |  |  | B | C |  |  | B | C |  |  | B | C |  |  |
| 2 | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D | C |
| 3 | C | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D |
| 4 | A | C | B | D | A | C | B | D | A | C | B | D | A | C | B | D |
| 5 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 6 | A | C | B | D | A | C | B | D | A | C | B | D | A | C | B | D |
| 7 | B | A | C | D | B | A | C | D | B | A | C | D | B | A | C | D |
| 8 | A | B | C |  | A | B | C |  | A | B | C |  | A | B | C |  |
| 9 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 10 | A | B | D | C | A | B | D | C | A | B | D | C | A | B | D | C |
| 11 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 12 | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D | C |
| 13 | C |  |  | B | C |  |  | B | C |  |  | B | C |  |  | B |
| 14 | D | C |  | B | D | C |  | B | D | C |  | B | D | C |  | B |
| 15 | A | B | D | C | A | B | D | C | A | B | D | C | A | B | D | C |
| Candidate | Total | \% | Transfer |  | Total | \% | Transf er |  | Total | \% | Transfer |  | Total | \% | Transfer |  |
| A | 5 | 33\% |  |  | 5 | 33\% |  |  | 5 | 33\% | 0 |  | 5 | 33\% | 0 |  |
| B | 7 | 47\% |  |  | 7 | 47\% |  |  | 7 | 47\% | 0 |  | 10 | 67\% | 3 |  |
| C | 2 | 13\% |  |  | 2 | 13\% |  |  | 3 | 20\% | 1 |  | 0 | 0\% | -3 |  |
| D | 1 | 7\% |  |  | 1 | 7\% |  |  | 0 | 0\% | -1 |  | 0 | 0\% | 0 |  |
| Votes Counted | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  |
| Inactive | 0 |  |  |  | 0 |  |  |  | 0 |  |  |  | 0 |  |  |  |
| Total Ballots | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  |
| Overv ote Under vote | $\begin{aligned} & 0 \\ & 0 \end{aligned}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

URCVT v.1.2.0, 130-NY Expected Outcome RCV Test Sets Single-Winner v.1.0.0. Document is created solely for the New York State Board of Elections and is considered v.1.0.0 because the document is new for this system.
Version Date: 4/27/2021

```
Eliminated
Choice/
Skipped
ranking
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| Test Set 5 | Skipped choice - Exhaust if 2 successive skipped choices. Otherwise skip to next continuing candidate. 15 ballots listed. No 1st choice on ballot 1. No 4th choice ballot 8. No 2nd or 3rd choice ballot 13 . No 3rd choice ballot 14. Single skipped choices are advanced to next highest ranked continuingcandidate.* |
| :---: | :---: |
| Description round 0 | Shows what a tabulator tape would report for totals of the 15 ballots. Only 1st choices would be reported thus 2 nd thru 4th choices grayed out. Overvotes and undervotes are shown to account for votes not assigned to candidates. ( 0 overvotes and 1 undervote) |
| Description round <br> 1 | This would match round 0 if all ballots had valid 1st choice votes. Since 1 st choice on ballot 1 is skipped, candidate $B$ the 2 nd choice is selected, and a new count determined. This round does not produce a winner and candidate D , having the least votes, will be eliminated. |
| Description round 2 | A new candidate count is determined after Candidate $D$ is eliminated on ballot 14 and the 2 nd choice, candidate $C$, is selected. There still is no winner and candidate $C$ will now be eliminated, having the least votes. |
| Description round 3 | A new count is determined after candidate C is eliminated on ballots 3,13 and 14 . Ballot 13 is eliminated since the 2 nd and 3rd choices are consecutive omissions. The 3 rd choice in ballot 14 was not voted so candidate B, the 4th choice, is selected. Candidate B is the winner having more than $50 \%$ of the total remaining votes cast. |


| Skipped choice Exhaust if consecutive skips |  |  |  |  | Ballot advanced to next highest ranked continuing candidate |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Ballot \# | Tabulated designated 1st choice-Round 0) |  |  |  | Round 1 |  |  |  | Round 2 |  |  |  | Round 3 |  |  |  |
|  | $\begin{aligned} & \text { 1st } \\ & \text { Choice } \end{aligned}$ | $\begin{gathered} \text { 2nd } \\ \text { Choice } \end{gathered}$ | 3rd Choice | 4th Choice | $\begin{gathered} \text { 1st } \\ \text { Choice } \end{gathered}$ | 2nd Choice | 3rd Choice | 4th Choice | $\begin{gathered} \text { 1st } \\ \text { Choice } \end{gathered}$ | 2nd Choice | $\begin{array}{r} 3 \mathrm{rd} \\ \text { Choice } \end{array}$ | 4th Choice | $\begin{gathered} \text { 1st } \\ \text { Choice } \end{gathered}$ | 2nd Choice | 3rd Choice | $\begin{gathered} \text { 4th } \\ \text { Choice } \end{gathered}$ |
| 1 |  | B | C |  |  | B | C |  |  | B | C |  |  | B | C |  |
| 2 | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D | C |
| 3 | C | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D |
| 4 | A | C | B | D | A | C | B | D | A | C | B | D | A | C | B | D |
| 5 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 6 | A | C | B | D | A | C | B | D | A | C | B | D | A | C | B | D |
| 7 | B | A | C | D | B | A | C | D | B | A | C | D | B | A | C | D |
| 8 | A | B | C |  | A | B | C |  | A | B | C |  | A | B | C |  |
| 9 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 10 | A | B | D | C | A | B | D | C | A | B | D | C | A | B | D | C |
| 11 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 12 | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D | C |
| 13 | C |  |  | B | C |  |  | B | C |  |  | B | C |  |  | B |
| 14 | D | C |  | B | D | C |  | B | D | C |  | B | D | C |  | B |
| 15 | A | B | D | C | A | B | D | C | A | B | D | C | A | B | D | C |
| Candidate | Total | \% | Transfer |  | Total | \% | Transf er |  | Total | \% | Transf er |  | Total | \% | Transfer |  |
| A | 5 | 36\% |  |  | 5 | 33\% |  |  | 5 | 33\% | 0 |  | 5 | 36\% | 0 |  |
| B | 6 | 43\% |  |  | 7 | 47\% |  |  | 7 | 47\% | 0 |  | 9 | 64\% | 2 |  |
| C | 2 | 14\% |  |  | 2 | 13\% |  |  | 3 | 20\% | 1 |  | 0 | 0\% | -3 |  |
| D | 1 | 7\% |  |  | 1 | 7\% |  |  | 0 | 0\% | -1 |  | 0 | 0\% | 0 |  |
| Votes Counted | 14 |  |  |  | 15 |  |  |  | 15 |  |  |  | 14 |  |  |  |
| Inactive | 0 |  |  |  | 0 |  |  |  | 0 |  | 0 |  | 1 |  | 1 |  |
| Total Ballots | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  |
| Overv ote Under vote | $0$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Current <br> Active |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Eliminated
Choice/
Skipped
ranking
 that prevents a vote being cast for a voter's last choice when all candidates are allowed to be ranked and a maximum numeric rank is given to a candidate?

| Test Set 6 | Duplicate choice - Exhaust ballot. 15 ballots listed. 2nd choice a duplicate of 1st choice on ballot 1. |
| :---: | :---: |
| Description round 0 | Shows what a tabulator tape would report for totals of the 15 ballots. Only 1st choices would be reported thus 2 nd thru 4 th choices grayed out. Overvotes and undervotes are shown to account for votes not assigned to candidates. (0 overvotes and 0 undervotes) |
| Descript ion <br> round 1 | This matches round 0 since all ballots have valid 1st choice votes. This round does not produce a winner and candidate D , having the least votes, will be eliminated. |
| Descrip <br> tion <br> round $2$ | A new count is determined after Candidate $D$ is eliminated on ballots 1 and 14 . Ballot 1 is eliminated as the 2 nd choice is a duplicate of the 1 st choice. On ballot 14 the 2 nd choice, candidate $B$, is selected. There still is no winner and candidate C will now be eliminated, having the least votes. |
| Descrip <br> tion <br> round <br> 3 | A new count is determined after candidate $C$ is eliminated on ballots $2,3,13$ and 14 . Ballot 2 is eliminated as the 2 nd choice is skipped having previously been eliminated and the 3 rd choice being a duplicated of the 1st choice.. Candidate $B$ is selected on ballots 3 and 13 , being the 2nd choice on both. Candidate $B$ is also selected on ballot 14 , being the 3rd choice. Ballot 11 is also eliminated due to 2 nd choice being skipped since it was previously eliminated, and the 3rd choice is a duplicate of the 2nd choice. $B$ is the winner having more than $50 \%$ of the total remaining votes cast. |


|  | Tabulated designated 1stchoice-Round 0) |  |  |  | Round 1 |  |  |  | Round 2 |  |  |  | Round 3 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Ballot \# 1 | $\begin{gathered} \text { 1st } \\ \text { Choice } \end{gathered}$ | $\begin{gathered} \text { 2ndChoi } \\ \text { ce } \end{gathered}$ | 3rd Choice | 4th Choice | $\begin{gathered} \text { 1st } \\ \text { Choice } \end{gathered}$ | $\begin{gathered} \text { 2ndChoi } \\ \text { ce } \\ \hline \end{gathered}$ | 3rd Choice | 4th Choice | $\begin{gathered} \text { 1st } \\ \text { Choice } \end{gathered}$ | $\begin{gathered} \text { 2ndChoi } \\ \text { ce } \\ \hline \end{gathered}$ | 3rd Choice | 4th Choice | $\begin{gathered} \text { 1st } \\ \text { Choice } \end{gathered}$ | $\begin{gathered} \text { 2ndChoi } \\ \text { ce } \\ \hline \end{gathered}$ | 3rd Choice | 4th Choice |
|  | D | D | A |  | D | D | A |  | D | D | A |  | D | D | A |  |
| 2 | C | D | C | A | C | D | C | A | C | D | C | A | C | D | C | A |
| 3 | C | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D |
| 4 | A | C | B | D | A | C | B | D | A | C | B | D | A | C | B | D |
| 5 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 6 | A | C | B | D | A | C | B | D | A | C | B | D | A | C | B | D |
| 7 | B | A | C | D | B | A | C | D | B | A | C | D | B | A | C | D |
| 8 | A | B | C |  | A | B | C |  | A | B | C |  | A | B | C |  |
| 9 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 10 | A | B | D | C | A | B | D | C | A | B | D | C | A | B | D | C |
| 11 | C | D | D | A | C | D | D | A | C | D | D | A | C | D | D | A |
| 12 | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D | C |
| 13 | C | B |  |  | C | B |  |  | C | B |  |  | C | B |  |  |
| 14 | D | B | A |  | D | B | A |  | D | B | A |  | D | B | A |  |
| 15 | A | B | D | C | A | B | D | C | A | B | D | C | A | B | D | C |
| Candidate | Total | \% | Transfer |  | Total | \% | Transfer |  | Total | \% | Transf <br> er |  | Total | \% | Transfer |  |
| A | 5 | 33\% |  |  | 5 | 33\% |  |  | 5 | 36\% | 0 |  | 5 | 42\% | 0 |  |
| B | 4 | 27\% |  |  | 4 | 27\% |  |  | 5 | 36\% | 1 |  | 7 | 58\% | 2 |  |
| C | 4 | 27\% |  |  | 4 | 27\% |  |  | 4 | 29\% | 0 |  | 0 | 0\% | -4 |  |
| D | 2 | 13\% |  |  | 2 | 13\% |  |  | 0 | 0\% | -2 |  | 0 | 0\% | 0 |  |
| Votes Counted | 15 |  |  |  | 15 |  |  |  | 14 |  |  |  | 12 |  |  |  |
| Inactive |  |  |  |  |  |  |  |  | 1 |  | 1 |  | 3 |  | 2 |  |
| Total Ballots | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  |

[^2]RCV V.1.2.0, 130-NY Expected Outcome RCV Test Sets Single-Winner v.1.0.0. Document is created solely for the New York State Board of Elections and is considered v.1.0.0 because the document is new for this system.

| Test Set 7 | Duplicate choice - Skip to next continuing candidate. 15 ballots listed. 2nd choice a duplicate of 1st choice on ballot 1. |
| :---: | :---: |
| Description round 0 | Shows what a tabulator tape would report for totals of the 15 ballots. Only 1st choices would be reported thus 2 nd thru 4th choices grayed out. Overvotes and undervotes are shown to account for votes not assigned to candidates. ( 0 overvotes and 0 undervotes) |
| Description round $1$ | This matches round 0 since all ballots have valid 1st choice votes. This round does not produce a winner and candidate D , having the least votes, will be eliminated. |
| Description round 2 | A new count is determined after Candidate $D$ is eliminated on ballots 1 and 14 . Candidate $A$, the 3rd choice, is selected on ballot 1 as the 2 nd choice is skipped being a duplicate of the eliminated 1 st choice. On ballot 14 the 2 nd choice, candidate C , is selected. There still is no winner and candidate C will now be eliminated, having the least votes. |
| Description round 3 | A new count is determined after candidate $C$ is eliminated on ballots $2,3,13$ and 14 . Candidate $A$ is selected on ballot 2 , being the second choice. Candidate $B$ is selected on ballots 3 and 13 , being the 2 nd choice on both. Candidate $B$ is also selected on ballot 14 , being the 3rd choice. Candidate $B$ is the winner having more than $50 \%$ of the total remaining votes cast. |

Duplicate Skip to Next
Ballot advanced to next highest ranked continuing candidate

| Ballot \# | Tabulated designated 1st choice-Round 0) |  |  |  | Round 1 |  |  |  | Round 2 |  |  |  | Round 3 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1st Choice | 2nd Choice | $\begin{array}{r} \text { 3rd } \\ \text { Choice } \end{array}$ | 4th Choice | 1st Choice | 2nd Choice | 3rd Choice | 4th Choice | 1st Choice | 2nd Choice | 3rd Choice | 4th Choice | 1st Choice | 2nd Choice | 3rd Choice | 4th Choice |
| 1 | D | D | A |  | D | D | A |  | D | D | A |  | D | D | A |  |
| 2 | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D | B |
| 3 | C | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D |
| 4 | A | C | B | D | A | C | B | D | A | C | B | D | A | C | B | D |
| 5 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 6 | A | C | B | D | A | C | B | D | A | C | B | D | A | C | B | D |
| 7 | B | A | C | D | B | A | C | D | B | A | C | D | B | A | C | D |
| 8 | A | B | C |  | A | B | C |  | A | B | C |  | A | B | C |  |
| 9 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 10 | A | B | D | C | A | B | D | C | A | B | D | C | A | B | D | C |
| 11 | B | C | A | D | B | C | A | D | B | C | A | D | B | C | A | D |
| 12 | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D | C |
| 13 | C | B |  |  | C | B |  |  | C | B |  |  | C | B |  |  |
| 14 | D | C | A |  | D | C | A |  | D | C | A |  | D | C | A |  |
| 15 | A | B | D | C | A | B | D | C | A | B | D | C | A | B | D | C |
| Cand | Total | \% | Transf er |  | Total | \% | Transfer |  | Total | \% | Transfer |  | Total | \% | Transfer |  |
| A | 5 | 33\% |  |  | 5 | 33\% |  |  | 6 | 40\% | 1 |  | 8 | 53\% | 2 |  |
| B | 5 | 33\% |  |  | 5 | 33\% |  |  | 5 | 33\% | 0 |  | 7 | 47\% | 2 |  |
| C | 3 | 20\% |  |  | 3 | 20\% |  |  | 4 | 27\% | 1 |  | 0 | 0\% | -4 |  |
| D | 2 | 13\% |  |  | 2 | 13\% |  |  | 0 | 0\% | -2 |  | 0 | 0\% | 0 |  |
| Votes Counted | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  |
| Inactive | 0 |  |  |  |  |  |  |  | 0 |  | 0 |  | 0 |  | 0 |  |
| Total Ballots | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  | 15 |  |  |  |
| Overv ote Under vote | $\begin{aligned} & 0 \\ & 0 \end{aligned}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Current <br> Active <br> choice |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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Version Date: 4/27/2021

## Document Revision History

| Date | Version | Description | Author |
| :---: | :--- | :--- | :---: |
| $04 / 27 / 2021$ | 1.0 .0 | Expected Outcomes RCV Test Sets Single-Winner | Chris Hughes |


[^0]:    URCVT v1.2.0 130-NY Expected Outcome RCV Test Sets Single-Winner v.1.0.0 document is solely for use in the State of New York. This document can be expanded or updated as is necessary or required. Any recommendations listed in this document should not supersede user jurisdiction procedures or other controlling governance entities.

    URCVT v1.2.0 130-NY Expected Outcome RCV Test Sets Single-Winner v.1.0.0

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    Version Date: 4/27/2021

