



Proportional
**RANKED
CHOICE
VOTING
STUDY**

STUDY GUIDE

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<i>*Publishing at a later date.</i>	

INTRODUCTION

In this Introduction, readers will learn:

- Why the League of Women Voters Maine is considering the issue of Proportional Ranked Choice Voting (pRCV) now.
- What the study materials cover, what they don't, and how they are different from previous studies.
- What happens after League members read and respond to the study materials.

The League of Women Voters of Maine is a leading voice in advocacy for more representative voting methods. For more than a decade, the League has been providing education and advocacy in support of Ranked Choice Voting (RCV) to ensure that the individuals elected in single-winner races are supported by the majority of voters they are to represent. The League recognizes that its work on this front is not yet complete and continues to advocate for full implementation of Ranked Choice Voting in single-winner elections. [See the LWVME position on single-winner RCV.](#)

However, the LWVME Advocacy Committee has become increasingly concerned that election methods common in Maine (such as Vote-for-N¹ elections, widely used in municipal elections) may not reliably deliver proportional representation.

¹ In a Vote-for-N election (where “N” is the number of seats to be filled), each voter may cast as many votes as there are seats to be filled. The candidates with the most votes win.

Proportional Ranked Choice Voting Study

Proportional Representation is a founding value of representative democracy, with one of the earliest written references found in a 1776 letter from John Adams to John Penn:

“. . . the Representative Assembly, should be an exact Portrait, in Miniature, of the People at large, as it should think, feel, reason and act like them. . .”

In 2021, the Advocacy Committee requested authorization to launch a League study of Proportional Ranked Choice Voting (pRCV), an election method designed to better achieve proportional representation on multi-seat councils, boards, and legislatures. (For a quick introduction to pRCV, we recommend [this three-minute](#) post-it note demonstration.) With Board support, the pRCV Study Committee was convened in early 2022 and now presents this study guide to League members and supporters. [Read more about League Studies here.](#)

WHY NOW?

While League members have been discussing pRCV for years, several threads recently converged to broaden interest in this conversation.

1. At the 2020 National Convention, LWVUS adopted a [Voter Representation/Electoral Systems Position](#), which includes explicit support for “electoral systems that elect policy-making bodies — legislatures, councils, commissions, and boards — that proportionally reflect the people they represent.” The national position stopped short of endorsing any specific election method, leaving that decision in the hands of local and State Leagues. In advance of that 2020 Convention, the LWVME board voted unanimous support for this position.
2. In Portland, controversy erupted over a demonstrably non-proportional [2021 Charter Commission election](#) and led League members to a deep dive into municipal elections. In doing so, League members became better informed about proportional representation and more aware of how common election methods can exclude minority voices. As the Portland Charter Commission began its own exploration of municipal elections, the League found it difficult to advocate for proportional representation without a consensus position endorsing a specific proportional election method. See [LWVME memo to the Charter Commission](#).

Proportional Ranked Choice Voting Study

3. While the national position gives Leagues in Maine and around the country a firm basis for endorsing pRCV campaigns when they emerge, the LWVME board determined that efforts to initiate pRCV campaigns in Maine (or to specifically recommend pRCV over other methods) required a stronger foundation in member understanding and agreement on multi-winner pRCV. For that reason, the LWVME state board approved this study, seeking a position on multi-winner pRCV to complement our existing position on single-winner RCV.

At the national level, the 2020 Census and 2021 redistricting led to renewed interest in establishing proportional elections for the U.S. House of Representatives. It has been suggested that multi-member districts — when combined with a proportional election method — might weaken extreme partisanship and promote the emergence of additional political parties. While federal reforms are beyond the scope of this study, this national conversation did persuade some League members that proportional elections could be an important reform.²

4. In Maine, gerrymandering is not an urgent concern because redistricting is in the hands of a bipartisan commission, and maps must be approved by super-majorities in both legislative chambers. Even so, the imperfect redistricting outcome in 2021 illuminated the difficulties inherent in drawing fair single-member districts and stimulated some thinking about proportional representation in the context of the Maine State Legislature and County Commission boards. See [“Anna Kellar: Lessons Learned From Maine’s Redistricting Process,”](#) *Lewiston Sun Journal*.

² Read more about this proposal at [Proportional Representation: Reimagining American Elections to Combat Gerrymandering](#), Mac Brower, Democracy Docket, 2021; [The Case for Proportional Voting](#), Lee Drutman, National Affairs, Fall, 2021, and [Towards Proportional Representation for the U.S. House](#), Grant Tudor and Beau Tremiere, March, 2023 .

SCOPE OF THE STUDY

The pRCV Study Committee was tasked by the LWVME State Board with an exploration of two key questions:

1. What is our position on using RCV in multi-seat elections? Our current RCV position only covers single-winner elections.
2. What is our position on creating more multi-member districts in order to optimize proportional representation:
 - At the municipal level?
 - At the state legislative level?

LWVUS has already endorsed the concept of proportional representation in multi-member bodies. In addition, LWVME has already endorsed the use of ranked choice ballots to capture a sincere and robust picture of each voter's preferences. The question addressed in this study is: Do multi-winner pRCV elections more reliably achieve proportional representation than our current election methods? And if so, are the benefits sufficient to justify advocating for change?

It is important to note that any consensus position developed as a result of the current study would NOT affect our advocacy on:

- Elections for single-seat offices (like Governor or Mayor). LWVME will continue to advocate for the use of single-winner RCV for these elections under our existing position supporting the use of RCV in single-seat elections.
- Elections for the US House of Representatives or the US Senate. The [Fair Representation Act](#) (FRA)³ is federal legislation that would require states to implement pRCV in multi-seat House elections. LWVUS has not endorsed the FRA. State and local Leagues may not take a position on federal legislation without the approval of the National Board.

³ See more about the Fair Representation Act here:
<https://www.congress.gov/bill/117th-congress/house-bill/3863/text>

Key Terms



Single-seat office:

An elected position for which there is only one office holder, such as mayor or governor.



Single-member district:

A geographic area that elects only one representative to a council, board, or legislature.



Single-seat (or single-winner) elections:

Elections that fill only one seat at a time. These can be for either single-seat offices or multi-member bodies.



Multi-member body:

A council, board or legislature with multiple elected members.



Multi-member district:

A geographic area that elects two or more representatives to a council, board or legislature.



Multi-seat (or multi-winner) elections:

Elections that fill two or more seats at once from a single list of candidates.

STUDY PROCESS

The briefing papers that follow provide definition, structure, and analysis designed to help League members and the public better understand this issue and to explore whether, as an organization, LWVME can develop a consensus position to guide our advocacy work in this area. To the League, consensus means member understanding and agreement. The briefing papers that follow are intended to enable our members to arrive at consensus.

Members who have participated in previous League studies may find this one a little different. The Study Committee is not asking the typical open-ended consensus questions. Instead, the Study Committee is presenting its analysis and conclusions with “guided” consensus questions that present a proposed position and ask whether members agree.

Local Leagues and individual members are invited to review the briefing papers that follow and discuss them. The Study Committee will provide a resource person on request to any discussion group to answer questions and assist with additional material. At the conclusion of the discussion, Leagues will be asked whether they agree with our conclusions and proposed positions. Some may find that they do not agree with our conclusions, and they may dissent from our proposed positions. Everyone will have an opportunity to register concerns and report dissent through the “guided” consensus questions.

BRIEFING PAPERS AND FINDING CONSENSUS

The study is divided into two broad phases. This first phase will be limited to a consideration of pRCV in municipal elections. Feedback from the consensus meetings during Phase 1 will guide the presentation of Phase 2, which will evaluate pRCV in the context of State and County elections.

Phase 1: Municipal Elections

Phase 1 asks about using pRCV in municipal elections. Participants are asked to read the associated papers in advance of each discussion and to participate in a discussion before responding to consensus questions.

Part 1: What is proportional RCV (pRCV) and how does it work?

This section defines the concept of proportional representation and lays out the rationale for why pRCV is the most appropriate proportional election method to consider here in Maine. This section also provides an introduction to the mechanics of pRCV, with links to several example tabulations that members may choose to explore. The discussion topics for this section focus on answering questions about the basics of pRCV.

Part 2: Comparing pRCV to common municipal election methods

This section compares pRCV to other election methods that are used in Maine municipalities that have multi-member councils and boards. The discussion topics focus on the pros and cons of each method, including the extent to which they yield proportional outcomes.

A series of remote sessions will be convened for at-large members or for others who can't make the discussions in their local League.

After these discussions, members will be asked whether they agree that pRCV more reliably achieves proportional representation. Participants who do agree will then indicate whether they believe that the benefits are sufficient to justify League advocacy in favor of pRCV in municipalities.

Phase 2: State and County Elections

**Publishing at a later date*

Phase 2 will examine using pRCV in county and state elections.

Part 3: Considering pRCV for the Maine State Legislature

This section evaluates the prospective benefits and drawbacks of a transition to multi-member districts (MMDs) for the Legislature. The evaluation is based on a comparison of the results of recent elections to the Maine State Legislature, conducted in single-member districts, to the predicted outcomes of pRCV elections in simulated multi-member districts (MMDs). Discussion of Part 3 will occur after an evaluation of any consensus related to Part 2.

In Phase 2, members will be asked if they believe that the benefits of pRCV are sufficient to justify advocating for a transition from single-member districts to multi-member districts with pRCV at the county and/or the state level.

After members have had an opportunity to submit their responses, first for Phase 1 and then for Phase 2, the Study Committee will report any areas of consensus to the LWVME board, along with a draft position statement for action. In League studies, “consensus” means the preponderance of agreement among members reached after study and discussion. The process is not a simple majority, nor is it complete agreement; rather it is the overall “sense of the group” as expressed through the exchange of ideas and opinions.

Study Committee Members and Support Team

Co-Chairs of the study: Ann Luther and Deb McDonough

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Editing and publishing assistance: Valerie Kelly, Jen Lancaster

Phase
ONE

Municipal Elections

Part 1

What is Proportional RCV (pRCV) and How Does It Work?

In this section, readers will learn:

- The history of proportional representation as a foundational value in representative democracy.
- The history of pRCV as an established election method designed to achieve proportional representation.
- How pRCV works.
- A bit about other election methods that might be used in multi-winner elections.

Proportional Representation is a founding value of representative democracy, with one of the earliest written references found in a 1776 letter from John Adams to John Penn:

“. . . the Representative Assembly, should be an exact Portrait, in Miniature, of the People at large, as it should think, feel, reason and act like them. . .”

In England, John Stuart Mill, one of the most influential thinkers in the history of classical liberalism¹, elaborated on the concept in his 1861 essay, *Considerations on Representative Government*:

In a representative body actually deliberating, the minority must of course be overruled; and in an equal democracy, the majority of the people, through their representatives, will outvote and prevail over the minority and their representatives. But does it follow that the minority should have no representatives at all? ... Is it necessary that the minority should not even be heard? In a really equal democracy, every or any section would be represented, not disproportionately, but proportionately. A majority of the electors would always have a majority of the representatives, but a minority of the electors would always have a minority of the representatives. Man for man, they would be as fully represented as the majority. Unless they are, there is not equal government ... there is a part whose fair share of influence in the representation is withheld from them, contrary to the principle of democracy, which professes equality as its very root and foundation.²

Over the next century, as representative democracies were established across much of Europe, numerous individuals turned their attention to the design of election methods specifically for this purpose, and by the late 1800s, two leading approaches had emerged: Proportional Ranked Choice Voting (pRCV, the focus of this study) and Party List Elections (briefly described in [Appendix A](#)). Ironically, the United States, the country where the concept of proportional representation was first articulated, and England, where pRCV was invented nearly a century later, are among just a handful of modern democracies that continue to rely on plurality elections, which do not reliably return proportionally representative assemblies.

¹ As used here, the term “liberalism” means a political and moral philosophy based on the rights of the individual, liberty, consent of the governed, political equality, right to private property and equality before the law. <https://en.wikipedia.org/wiki/Liberalism>. Not to be confused with the modern usage that equates “liberal” with progressive, as advocating for social justice reforms.

² Mill was also an MP in the House of Commons. In 1867 he proposed that pRCV be used to elect the members of that body, but his proposal was rejected.

Proportional Ranked Choice Voting Study

Proportional representation means that ratios in the legislative body should reflect ratios in the electorate — as best they can. Proportional election outcomes reflect the preferences of participating voters. Variations in turnout, barriers to voting, voter eligibility, and other factors can affect whether election outcomes really represent the full electorate, much less the full population.

Proportionality can be evaluated across whichever dimensions are important to the electorate, as expressed by those who turn out to vote; but the ones that tend to get the most attention are political party, race, and gender. Ideally, in a fully proportional system, in a multi-member body:

- If 60% of the voters choose Democratic candidates,
↳ then ~60% of the representatives should be Democrats.
- If 20% of the voters choose Black candidates,
↳ then ~20% of the representatives should be Black.
- If 50% of the voters choose women,
↳ then ~50% of the representatives should be female.

The League of Women Voters has advocated for female representation since its founding days during the Suffrage Movement, and to this end proportional representation was considered a “continuing responsibility” of the early League. In a report to the second annual convention of the National League of Women Voters in 1921, Carrie Chapman Catt, Chair of the Committee on Election Laws and Methods, called for a study of proportional representation, noting that (in her words): “on the other side of the Atlantic, there are no Parliaments in which there are not women.... In Germany there are thirty-eight. In Finland, which was the first of those countries, there have always been somewhere between twenty-five and forty women. If you ask any of those women why...(this) is, they will say ‘proportional representation.’ They will say that you will never get women in until you get it.”³ A century later, while we have managed to elect some women to our representative assemblies without a proportional election method, our progress has been slow, and we still have a ways to go to ensure fair and adequate representation for all portions of the American electorate.

³ https://drive.google.com/file/d/1GgzQm0Qru0_wlnl8JIPafqQfaZb1V9Dz/view?usp=sharing

Proportional Ranked Choice Voting Study

Proportional representation was considered a “continuing responsibility” of the League from 1936 to 1942.⁴ This emphasis was reestablished at Convention in 2020, when a new League position on voter representation and electoral systems was adopted.⁵

Widespread frustration over partisan gerrymandering speaks to our ongoing expectation that legislative bodies should proportionally reflect the people they are intended to serve. It feels intuitively unfair when North Carolina’s Republicans draw a map that lets their party capture 10 of 13 House seats with just 55.4% of the statewide votes.⁶ It feels equally unfair when Democrats turn the tables in New York or Illinois. Racial and ethnic minorities rightly expect representation that can speak to their particular concerns, and the Voting Rights Act of 1965, enacted under Congressional authority to enforce the 15th amendment, has enabled courts to intervene when the ballots of minority voters don’t translate into equitable representation.

How close we can get to a truly proportional outcome depends on the size of the legislative body relative to the size of the electorate and on decisions about election methods. While perfect proportionality across all possible dimensions is not achievable in a representative system, it remains an ideal worthy of our aspirations.

⁴ <https://drive.google.com/file/d/1fpZ6ERtpuGxSb98xgP7CJCPbgWq92WhM/view?usp=sharing>

⁵ [Voter Representation/Electoral Systems Position](#), pp. 47-48

⁶ <https://www.citizen-times.com/story/news/local/2014/12/01/picks-winners-party-people/19749891/>

THE HISTORY OF PROPORTIONAL RANKED CHOICE VOTING

Proportional Ranked Choice Voting (pRCV) is a multi-winner election method designed to maximize the number of voters who are satisfied with the election results by electing a policy-making body that proportionally reflects the population it is intended to serve. Each voter completes a ranked choice ballot, a process already familiar to Maine voters, which provides a full expression of their preferences. Votes are tabulated in successive rounds until all seats are filled. Each round results in either the election of any candidate who has met the election threshold or the elimination of the candidate with the lowest vote total. (A more detailed description of the tabulation algorithm is included below under “The Mechanics of pRCV.”) pRCV is also known as STV (Single Transferable Vote, a description of the tabulation process) or in some jurisdictions simply as PR (Proportional Representation).

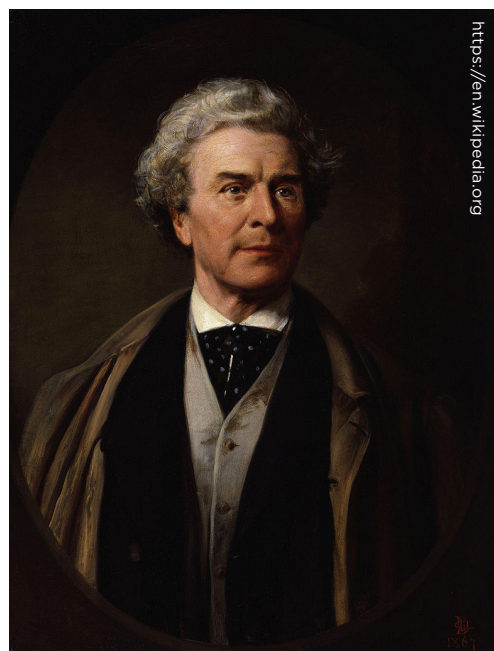
This election method was invented independently in 1855 by the Danish mathematician, Carl Andrae, and in 1857 by the London barrister, Thomas Hare.

Consistent with its English history, pRCV has been adopted in several parts of the former British empire. It has been used to elect members of the lower house of the Legislature in Ireland and Malta since 1921, the upper house of the Australian Legislature since 1948, the Assembly in Northern Ireland since 1998, and the Scottish Parliament since 2007.

Danish mathematician, Carl Andrae



London barrister, Thomas Hare



Proportional Ranked Choice Voting Study

In the United States, the Proportional Representation League was founded at the Chicago's World Fair in 1893, and through its efforts, Ashtabula, OH, conducted its first pRCV election in 1915. By 1962, twenty-four US cities had used pRCV for at least one election. In many of those, minority parties and other groups were able to break up single-party monopolies in elective office. One of the most famous cases is New York City, where in 1936 a coalition of Republicans and others pursued the adoption of pRCV as part of an effort to free the city from control by the Tammany Hall machine. NYC conducted five pRCV elections between 1937 and 1945, resulting in the most ideologically diverse councils in the city's history, with Republicans, as well as candidates representing a wide variety of smaller parties, winning seats in each election. Beginning in 1941 several Communists were elected to the New York City Council; by 1947, New York voters responded to the "red scare" by repealing pRCV.

In Cincinnati, Ohio, Democrats and Progressive-wing Republicans secured the adoption of a council-manager charter with pRCV elections in order to dislodge the Republican machine of Rudolph K. Hynicka. The 1924 introduction of pRCV led to the election of several Black counselors, allowing a bipartisan coalition of racists and displaced Republicans to repeal pRCV in 1957, reestablishing multi-winner Vote-for-N elections.⁷

In city after city, the major political parties found that pRCV elections made it more difficult to control their candidates, their voters, and the outcome of elections, and they initiated repeal efforts — sometimes using racism and anti-communist hysteria to degrade public support for proportional elections. By 1962, pRCV had been repealed in all but Cambridge, MA, which has been electing its city council and school board this way for over 80 years, and Arden, DE, which continues to use pRCV to elect a seven-seat Board of Assessors. This history of repeal can be contrasted with the experience in Australia and Ireland, where pRCV remains in widespread use for both legislative and municipal elections.

⁷ In a Vote-for-N election (where N is the number of seats to be filled), each voter may cast as many votes as there are seats to be filled. The candidates with the most votes win.

Proportional Ranked Choice Voting Study

It is not clear whether the instability of reform in mid-century U.S. municipalities centers on the tenacity of two-party politics in the U.S.⁸ or on the cultural considerations of that time period.⁹ In either case, advocates and election officials considering a transition to pRCV should be prepared for opposition from one or both of the major political parties.

The first two decades of this new century have brought renewed interest in pRCV, with adoptions in Minneapolis, St. Paul, and St. Louis Park, MN, as well as Eastpointe, MI, in the latter case to settle minority voting-rights litigation. The towns of Palm Desert and Albany, CA used pRCV for the very first time to elect city councils in November, 2022. pRCV has also been adopted for student government elections at several American universities, including Carnegie Mellon, MIT, UC Berkeley, UC Davis, Vassar, UCLA, Princeton, and UT Austin. Here in Maine, Portland and Westbrook recently adopted charter amendments specifying the use of pRCV in any multi-seat elections.¹⁰

⁸ Santucci, Jack. 2017. "[Party Splits, not Progressives](#): The Origins of Proportional Representation in American Local Government." *American Politics Research* 45 (3): 494-526.

⁹ Historical Uses of Proportional Ranked Choice Voting at <https://fairvote.org/our-reforms/proportional-ranked-choice-voting-information>.

¹⁰ Portland Voters approved pRCV by a vote of 63.6%. <https://www.newscentermaine.com/article/news/politics/maine-politics/election-results-for-portland-referendum-questions-portland-maine-election-results-2022/97-7e74877e-a60e-4ac2-9770-1f6d52e72c07>

Westbrook included pRCV for multi-seat elections in a charter amendment adopting RCV for municipal elections, which passed with 63% of the vote. <https://www.pressherald.com/2021/11/03/westbrook-residents-approve-local-ranked-choice-voting/>

MULTI-WINNER ELECTIONS AND RACIAL EXCLUSION

Multi-seat elections using a proportional election method can elect a variety of candidates, each appealing to different constituencies. Unfortunately, in the US this multi-seat aspect of proportional election methods has become entangled with a long history of conducting multi-seat elections using an election method that enables racial exclusion. With the few pRCV exceptions noted above, our multi-seat elections have generally featured a ‘Vote-for-N’ ballot, where each voter chooses as many candidates as there are open seats, and those seats go to the candidates with the most votes. This approach is decidedly non-proportional and allows an organized and motivated majority to capture all of the open seats, thus preventing minority representation. (The shortcomings of these Vote-for-N elections are discussed more fully in [Part 2](#) of this study, with this “majority capture” aspect chief among them.)

The Voting Rights Act (VRA) of 1965 was a Congressional effort to enforce the provisions of the 14th and 15th amendments¹¹ and prevent the use of poll taxes, literacy tests and other barriers which suppressed the Black vote. While Vote-for-N elections go back to the earliest days of our republic,¹² in reaction to the VRA, numerous additional jurisdictions adopted multi-seat, Vote-for-N elections, specifically to allow motivated and cohesive White majorities to effectively block Black representation. It worked, and Congress again responded. Having attributed the resulting injustice to the multi-seat aspect of this approach, rather than to the majority-capture nature of the Vote-for-N election method, Congress responded with the Uniform Congressional District Act (UCDA), requiring each state to elect their Congressional delegation in single-member districts. Many voting rights advocates continue to associate both multi-member districts and at-large municipal elections with efforts to deny Black representation, even though the Vote-for-N election method is the primary problem. This can complicate discussions of proportional election methods, which rely on multi-winner elections to provide a diversity of representation.

¹¹ https://en.wikipedia.org/wiki/Reconstruction_Amendments

¹² https://en.wikipedia.org/wiki/Proportional_representation#History

Following passage of the Uniform Congressional District Act, many states and municipalities followed suit, establishing single-winner districts for the election of their legislatures, councils, and boards. For example, Maine cities large enough to justify more than one representative to the State House of Representatives used at-large, Vote-for-N elections until a 1975 constitutional amendment established single-winner districts state-wide. [Contemporary news articles](#) provide a variety of reasons to support the transition to single-member districts. Republicans had been supporting this reform for years, having been effectively locked out of the urban, Vote-for-N elections. Democratic supporters described concerns related to equal representation or violations of the principle of “one man, one vote.”

The courts have intervened on behalf of underrepresented minority voters in jurisdictions that did not voluntarily discontinue discriminatory election methods. In this context as well, the injustice stemming from these Vote-for-N elections was misattributed to the multi-seat election method. In fact, the “Gingles Test,”¹³ established by the Supreme Court to determine when an election constitutes a Constitutional violation assumes that such cases will be resolved by a transition to single-member districts, with one or more drawn as majority-minority districts. Plaintiffs must prove that the racial, ethnic, or language minority group is “sufficiently large and geographically compact to constitute a majority in a single-member district,”¹⁴ leaving dispersed minority populations without legal recourse.

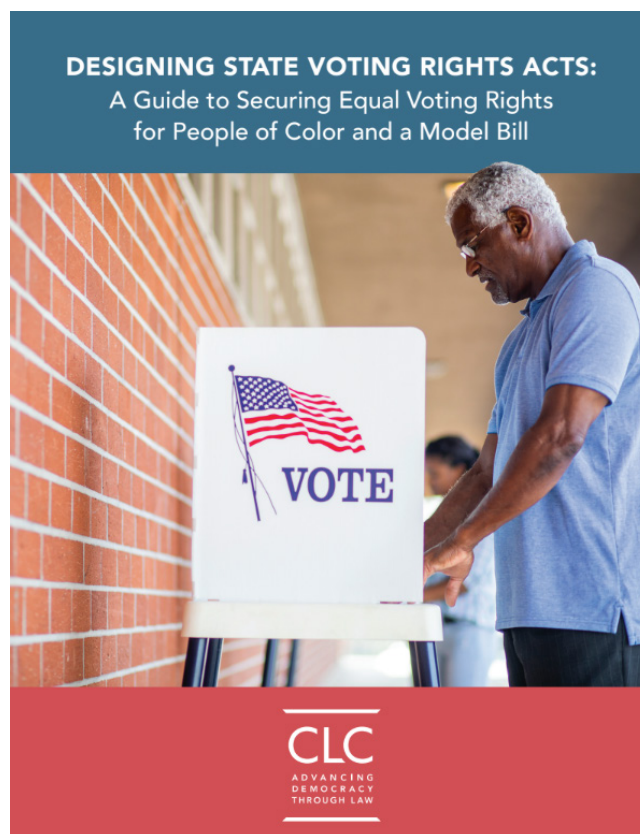
A multi-winner pRCV election allows minority voters to elect representation of their choosing, even when they are not “geographically compact” enough to draw a majority-minority district. In 2019, after plaintiffs first demonstrated sufficient geographic compactness under the Gingles Test, the U.S. Department of Justice (DOJ) allowed the City of Eastpointe, MI, to resolve a Voting Rights case through multi-winner pRCV, rather than single-member districts, making Eastpointe the first city to adopt pRCV through this mechanism. While Eastpointe’s first pRCV election did not elect a Black candidate, post-election analysis indicates that the preferences of Black voters did influence the outcome of the election.

¹³ https://en.wikipedia.org/wiki/Thornburg_v._Gingles

¹⁴ https://en.wikipedia.org/wiki/List_of_majority-minority_United_States_congressional_districts#:~:text=A%20majority%2Dminority%20district%20is,the%20decennial%20United%20States%20census.

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In a [2020 whitepaper](#), the Campaign Legal Center reviewed the legal history and limitations of federal voting rights cases and encouraged the development of Voting Rights Acts at the state level. They provided model legislation that would explicitly permit “alternative voting methods,” like pRCV, so that minority groups that are not sufficiently geographically compact to file a case under the federal VRA would be able to access legal relief through their state courts. Some states are indeed moving forward with this strategy.¹⁵



¹⁵ <https://www.google.com/url?q=https://www.democracydocket.com/news-alerts/washington-supreme-court-upholds-the-states-voting-rights-act/&sa=D&source=docs&ust=1704300297012994&usg=AOvVaw2IU7ShIL4rE4FSZ3cT9T6N>





THE MECHANICS OF PRCV

This section provides a brief overview of the pRCV tabulation process. An excellent, [three-minute post-it note demonstration](#) from Minnesota Public Radio presents an effective and intuitive demonstration of how pRCV works. Readers may find it helpful to explore one or more of the other sample tabulations in [Appendix B](#):

- Tabulation example in a partisan race, [Appendix B.1](#)
- Rigorous tabulation example in a nonpartisan race, [Appendix B.2](#)

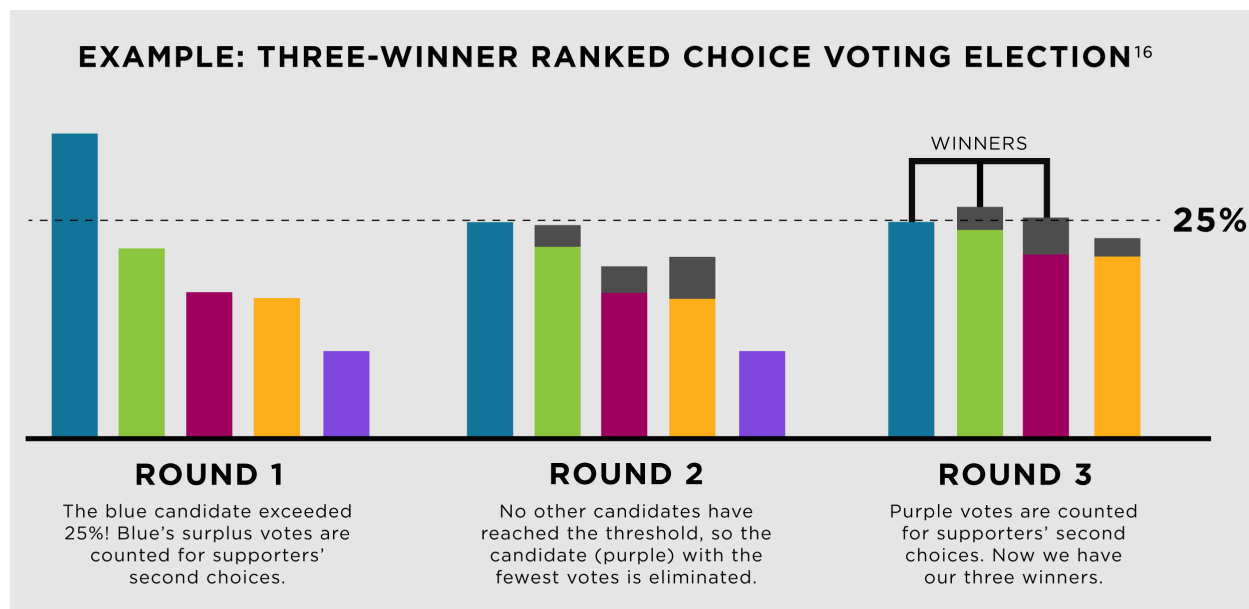
Additionally, you may want to explore an [Annotated pRCV Tabulation](#) of Portland's 2021 Charter Commission Race. This is a slide deck with speaker notes that will be presented as a webinar during the study process.

The mechanics of pRCV elections are quite similar to the mechanics of single-seat RCV elections, which are already familiar in Maine. As seen in the table below, two modifications (**in red**) to the RCV counting rules allow pRCV to elect a set of representatives that proportionally reflect the priorities of the participating voters.

 Single-Winner RCV (Majority)	 Multi-Winner pRCV (Proportional)
Step 1. Determine "election threshold" <i>Always 50% (+1 vote)</i>	Step 1. Determine "election threshold" <i>Depends on the number of seats</i>
Step 2. Run-off Rounds	Step 2. Run-off Rounds
a. Cross threshold? → Elected <i>Tabulation complete</i>	a. Cross threshold? → Elected <i>Surplus transfer</i>
b. No winner? → Eliminate lowest <i>Transfer to next choice</i>	b. No winner? → Eliminate lowest <i>Transfer to next choice</i>
 (Repeat as needed.)	 (Repeat as needed.)

- The election threshold, the percent of votes that guarantees a candidate a seat, varies depending on the number of open seats.
- When a candidate is elected, any surplus votes for that candidate are transferred to continuing candidates.

HOW ARE PRCV VOTES TALLIED



Ballots: pRCV ballots and the associated voter instructions are identical to ballots used in single-seat RCV elections. Voters rank candidates by preference from first to last, with each voter being able to stop ranking candidates at any time.

Determine the Election Threshold: (See [Appendix B](#) for sample tabulations.) The election threshold is the minimum number of votes a candidate needs to be elected, and any candidate who reaches the threshold cannot lose. In a pRCV election, the threshold depends on the number of seats to be filled and on the number of votes. For example, in an election to fill **two seats**, the election threshold is just over one third of the votes. If there are 100 votes, any candidate with 34 votes is assured election, since no more than two candidates can receive that many. Similarly, in an election to fill **three seats**, the election threshold is just over a quarter of the votes,¹⁷ so with 100 votes, any candidate with 26 votes is assured election.

¹⁶ Designing State Voting Rights Acts: A Guide to Securing Equal Voting Rights for People Of Color and a Model Bill, Campaign Legal Center, July, 2020 https://drive.google.com/file/d/1tzn6Ms50FD9dLemvFjkTXUjQ8IH5_vmt/view

¹⁷ This is the Droop Threshold, as employed in modern proportional elections. Technically, in an election with P votes and N seats to be filled, the election threshold is $[P/(N+1)] + 1$ vote, rounded down to the nearest whole vote.

Determining an Election Threshold

Number of seats	$\frac{1}{(N+1)} + 1 \text{ vote}$ Election Threshold
1	50.0% + 1 vote
2	33.3% + 1 vote
3	25.0% + 1 vote
4	20.0% + 1 vote
5	16.7% + 1 vote

MATH BREAKDOWN

$N = \text{number of seats}$

Example: $N=3$

$$\begin{aligned} \text{Threshold} &= \frac{1}{(N+1)} + 1 \text{ vote} \\ &= \frac{1}{(3+1)} + 1 \text{ vote} \\ &= \frac{1}{4} + 1 \text{ vote} \\ &= 25\% + 1 \text{ vote} \end{aligned}$$

Run-off Rounds: (See [Appendix B](#) for sample tabulations.) Once the threshold has been determined, votes are tabulated in successive rounds. Each round results in either the **election** of any candidate who has met the election threshold or the **elimination** of the candidate in last place. Run-off rounds continue until all seats have been filled.

- Election round: A candidate who reaches the election threshold is **elected**. If there are surplus votes for that candidate (votes in excess of the threshold), the surplus portion of every vote for the elected candidate is transferred to the next active candidate on the voter’s ballot. In a pRCV election, each person has one vote to “spend.” If the elected candidate doesn’t need the full vote, the “change” (as a fractional vote) is “spent” on the voter’s next choice. Surplus transfer is essential to a proportional outcome, capturing the “excess voting power” when the group voting for a candidate is large enough to justify more than one seat.
- Elimination round: If no candidate reaches the threshold, the candidate with the fewest votes is **eliminated** from further contention. All votes for a candidate who is eliminated are transferred to the next active candidate on each ballot, just as in single-winner ranked choice voting. Transferring votes cast for losing candidates increases each voter’s opportunity to elect a preferred candidate.

STRUCTURING A PRCV ELECTION

Experts¹⁸ recommend filling three to seven seats in each pRCV election. Larger election cohorts decrease the threshold for election, which in turn increases elected diversity and improves proportionality. However, it takes a lot of candidates to fill a large number of seats, which can result in long ballots that voters may find unwieldy. Filling five seats seems to strike a good balance between proportionality and manageability.

Some municipalities choose to fill all seats in a single, at-large pRCV election. For example, Cambridge, MA, conducts a 9-seat pRCV City Council election every other year, with councilors serving two-year terms. Recent ballots have listed as many as 25 candidates. While Cambridge's large election cohorts may increase diversity and proportionality, these large ballots can be deemed by voters to be overwhelming. On the other hand, Albany, CA, with a council of five, chooses to elect alternating cohorts to staggered four-year terms, with a two-seat election one cycle followed by a three-seat election in the next cycle. While there may be continuity benefits to staggered elections with overlapping terms, the use of small election cohorts limits diversity and proportionality.

When using pRCV to fill seats on a large body like a legislature, it is common to draw multi-member districts with each district electing a portion of the representatives. For example, the 151 members of the Maine State House of Representatives are currently elected in 151 single-member districts. Groups of approximately five districts could be merged, with each 5-seat "super district" using pRCV to collectively elect their representatives. This approach will be discussed further in Phase 2.

¹⁸ <https://fairvote.org/> and <https://www.rcvresources.org/>

OTHER APPROACHES

While the charge to the pRCV Study Committee focused on pRCV, there are other election methods in use or under consideration in other jurisdictions to fill the seats on legislatures and councils.¹⁹ [Appendix A](#) explains why these alternative methods are not considered further. In short, pRCV is deemed more appropriate for use in Maine than these other election methods because it is reliably proportional, accommodates both independent candidates and nonpartisan elections, and it uses a familiar ranked choice ballot.

Separately, some pundits have suggested that the diversity — and perhaps the proportionality — of the U.S. Congress (and perhaps by extension, state and municipal legislative bodies currently elected in single-member districts) can be improved simply by increasing the size of the body, which in turn reduces the size of the single-member districts. While the appropriate size for legislative bodies is beyond the scope of this study, smaller districts may contribute to the following:

- Making it easier for redistricting commissions to draw preference districts for targeted minority populations.
- Improving the probability of electing a more diverse body.
- Making gerrymandering more difficult.

Some municipalities may find that their current Select Board or Council is not large enough to adequately reflect the diversity of their electorate. This is discussed further in Part 2, Comparing pRCV to Common Municipal Election Methods. On the other hand, an increase in the size of the state legislature is unlikely to provide these benefits, as the State of Maine already has the fourth smallest House districts by population in

¹⁹ This list is in no way exhaustive, addressing only established proportional election methods as well as some that may feel similar to pRCV. The Study Committee did not seriously consider any novel, untested election methods. The final slides of the [Annotated pRCV Tabulation](#) of Portland's 2021 Charter Commission Race compare the outcome of a pRCV tabulation to the Single Non-Transferable Vote, Bottoms-Up and Sequential IRV — as well as the more common Vote-for-N approach, which is addressed more fully in [Part 2](#) of these study materials.

the country, and the eighth smallest Senate districts.²⁰ There have been dozens of proposals over the years to reduce the size of the Maine House of Representatives (largely for cost reduction purposes), but there have been none to increase its size. Other limitations of single-member districts for the Maine Legislature will be discussed more fully during Phase 2.

SUMMARY

Proportional representation is a foundational value in representative democracy, first articulated by the founding fathers of the United States, and it is an established priority for the League of Women Voters. While not yet common in the U.S., pRCV is an established election method designed to achieve proportional representation, avoiding the problems of majority capture and other problems that can occur with common multi-winner election methods, like Vote-for-N, that are used in Maine. pRCV may be more appropriate for use in Maine than these other election methods because it is reliably proportional, accommodates both independent candidates and nonpartisan elections, and it uses a familiar ranked choice ballot.

²⁰ https://ballotpedia.org/Population_represented_by_state_legislators

Part 2

Comparing pRCV to Common Municipal Election Methods

Part 2 addresses the Study Questions in the context of municipal elections.

- What is our position on using RCV in multi-seat elections?
- What is our position on creating more multi-member districts at the municipal level in order to optimize proportional representation?

Feedback from the consensus meetings on Part 2 will guide the presentation of Part 3, which will evaluate pRCV in the context of the Maine State Legislature and the County Commissions.

In this section, readers will learn:

- How pRCV compares to Vote-for-N, the most common election method used in Maine for multi-winner municipal elections.
- How pRCV compares to single-winner elections, conducted at large.
- How pRCV compares to municipal elections conducted in single member districts (SMDs).
- What might be involved in implementing pRCV in municipal elections in Maine.

Proportional Ranked Choice Voting Study

Municipalities in Maine have a great deal of latitude in designing elections to fill the seats on their select boards, town and city councils, school boards, and other policy making bodies. While most seats are filled using one of the three election methods addressed in this paper, the details vary widely. The [Maine State Constitution](#) includes a strong Home Rule provision. For cities and towns that have adopted a charter, Home Rule allows “the inhabitants of any municipality. . . to alter and amend their charters on all matters. . . which are local and municipal in character,” including the election of municipal officers. Municipalities have used charter amendments to establish single-member districts or to adopt Ranked Choice Voting.

Elections in municipalities without a charter are governed under state law,¹ which allows towns to adjust the number of elected representatives, the term length, and whether the terms overlap or expire concurrently. By default under state law, municipal elections are decided by plurality, but in 2021, the Maine Legislature passed [LD 859](#) - An Act To Give Municipalities More Options in Municipal Elections, which provides a path for any municipality to adopt an alternative election method, including either single-winner RCV or pRCV.

Many municipalities fill at-large seats (representing the entire municipality) in multi-winner elections, with multiple seats filled at once from a single candidate list. Although Westbrook and Portland have recently adopted pRCV for these multi-seat elections, most municipalities with multi-winner elections currently use the Vote-for-N election method, where ‘N’ represents the number of open seats. For example, in a three-seat race, the ballot instructions might read, “Vote for three.” Election officials tally all votes for each candidate, and the three candidates with the most votes are elected. The first section of this Part compares pRCV to Vote-for-N, assessing a number of factors, including the degree to which each method is able to achieve proportional representation under a variety of conditions, as well as the relative rates at which voters succeed in electing a preferred candidate.

In other municipalities, at-large seats are filled in a series of single-winner elections. For example, many communities with a three-seat select board elect one member each year to staggered, overlapping three-year terms. Others elect members to concurrent terms in single-winner elections, with a separate list of candidates for each seat. For example, Warren, elects five

¹ [Title 30-A, Chapter 121](#)

Proportional Ranked Choice Voting Study

select board members to three-year terms, all in single-winner elections: two seats in one year (with separate candidate lists for each seat), two other seats the following year, and the last seat in the third year. In South Portland, the candidates for a particular seat must reside in a specific geographic district, but voters from the entire municipality vote on all the district seats, regardless of where they live. The second section of this Part compares these at-large, single-winner elections to a pRCV election to fill several seats at once, again assessing various factors, including the degree to which each method is able to achieve proportional representation and voter success.

Finally, at least 16 Maine municipalities have a municipal charter specifying the use of single-member districts (SMDs) to fill some or all of the seats on their councils and boards.² A municipality using SMD elections is divided into a specified number of districts, with each district electing a single representative. The third section of this Part compares pRCV to SMDs and explores several of the factors that can affect the proportionality of councils and boards elected in SMDs, as well as additional considerations related to a transition from SMDs to pRCV.

While some municipalities use a mixed approach, the study materials address each election method separately. For example, a municipality with a five-seat Select Board might conduct a single-winner election every third year and in the other years use Vote-for-N to fill two seats. A few of the largest cities fill some seats in single-member districts and supplement their council and/or board with a set of staggered at-large elections.

² Maine municipalities electing at least some seats in SMDs include Auburn, Augusta, Bath, Biddeford, Freeport, Hallowell, Hampden, Lewiston, Pittsfield, Portland, Saco, Standish, Waterville, Westbrook, Windham, and Winslow.

COMPARING PRCV TO VOTE-FOR-N

In the context of the two study questions, this section addresses the first Question:

What is our position on using RCV in multi-seat elections?

This section explores the trade-offs in moving to pRCV for multi-seat elections currently conducted under Vote-for-N.

Proportionality

Vote-for-N elections can deliver all open seats (100%) to candidates representing the majority, effectively shutting out all other voters. When the excluded minority is a racial, language, or ethnic group covered under the Voting Rights Act of 1965, the courts have required both states and municipalities to discontinue the use of this election method on the grounds that it dilutes the voting power of minority voters.³ When the excluded minority group is instead defined by policy preferences, rather than race, language, or ethnicity, excluded voters do not have legal recourse.

While most Maine municipalities conduct nonpartisan elections, proportionality is more easily assessed and understood when party affiliation is printed on the ballot. New Hampshire is one of a handful of states that continues to permit municipalities to use Vote-for-N in the election of its state legislature, and in each election cycle, 80% or more of the Vote-for-N jurisdictions fill every seat with members of the majority political party, even though candidates for the other party receive a substantial number of votes.

³ [Designing State Voting Rights Acts](#), Campaign Legal Center, July, 2020. Historically, most VRA cases have been resolved through a transition to single-member districts, with one or more majority-minority districts. Recently, pRCV has been endorsed by the DOJ as an alternative.

Consider two examples from the 2022 election in New Hampshire:

- Residents of Nashua elect 27 representatives to the NH House in nine three-seat districts using Vote-for-N. Across Nashua, 44% of the votes went to Republican candidates, but not a single Republican was elected to represent the city in the state legislature. All nine districts elected three Democrats each. In contrast, modeling indicates that three-seat pRCV races would have elected two Democrats and one Republican in each of Nashua's existing 3-seat districts.
- Residents of Derry elect 10 representatives in a single, 10-seat Vote-for-N election. Democratic candidates received 45% of the votes, yet all 10 of those elected were Republican. Modeling indicates that a 10-seat pRCV race would have elected 5 or 6 Republicans, with the remaining seats going to Democrats.

With proportional representation, changes in the electorate's political preferences and/or changes in voter turnout shift electoral outcomes in ways that reflect those changes in voting behavior, both in direction and magnitude. For example, a slight shift in party support should result in a slight change in the composition of the elected body, while a more significant change in voter preferences should result in a larger change in the composition of the elected body.

In a closely divided electorate, small shifts in voter behavior can change the voting majority — perhaps from 51/49 to 49/51 — and when that happens, the Vote-for-N election method can flip ALL of the elected representation. The losing faction may be highly motivated in the next election, shifting the balance yet again. These see-saw shifts in the balance of power could lead to the inefficient expenditure of public funds on the starting and stopping of government programs.

pRCV elections reflect changes in voter behavior more proportionally. For example, in the 10-seat pRCV race modeled for Derry, NH, each seat 'costs' 9.1% of the vote.⁴ In 2022, Derry Democrats received 45% of the total vote, enough to win four seats but not quite enough for five. (They would have needed 9.1×5 or 45.5% of the vote to get five seats.) A slight increase from

⁴ In a 10-seat pRCV race, the election threshold is $1/(10+1)$ or 9.1%.

45% to 45.5% of the total vote would bring them a fifth seat. To pick up a sixth seat, they'd need 54.6% of the vote, leaving Republicans with four. In a Vote-for-N system, 54.6% would be enough to flip all 10 seats to the Democrats.

While a partisan example is presented here to illustrate the concept of "majority capture," in fact, almost all Maine municipal elections are nonpartisan. There is not enough hard data to know how often one faction captures all of the seats in a local election, but there is anecdotal evidence to suggest that it does happen.

Voter Success, Voter Turnout, and Voter Satisfaction

In every contested multi-winner election there will be some voters who vote for one or more winning candidates and others who do not. In comparing electoral systems, political scientists have devised a number of different ways to measure voter success, defined here as the percentage of voters whose cast ballot helps to elect at least one of their preferred candidates.⁵

Multi-winner elections using proportional voting systems like pRCV reliably produce higher voter success rates than plurality voting systems like Vote-for-N.⁶ Readers can see this point illustrated in the tabulation example provided in [Appendix B](#), and the logic for this is inescapable: whereas vote-for-N elections often result in voters who form the majority block of the electorate being able to elect all the winners, pRCV elections enable voters from both the majority and any sizeable⁷ minority block to elect candidates of their own choosing.

⁵ In a complex oddity of the political science profession, election theorists normally compare elections in terms of voter futility rather than voter success. In the political science lexicon, a "wasted vote" is one that does not receive representation in the final election outcome. There are two different types of wasted votes: a) Excess votes are votes that a candidate receives above and beyond what was needed; and b) Lost votes are votes that were not enough to make an impact by winning a seat. To make matters even more confusing, sometimes the term "wasted vote" is used by those referring only to "lost votes," while others use the term to refer to the sum of the lost votes and the excess votes.

⁶ Indeed, pRCV has been specifically designed to both minimize "wasted votes" and maximize the voter success rate, given the number of candidates to be elected and the preferences of all the individual voters in the electorate.

⁷ Any minority group at or above the election threshold will be able to win a seat. The election threshold is determined by the number of seats to be filled.

Because more voters can be more confident that the ballot they cast will help elect a preferred candidate, one might expect that voter participation rates would be higher in proportional election systems like pRCV than in plurality election systems like Vote-for-N. Not surprisingly, there is a good deal of academic research which bears this out.

For example, a 2012 book by political scientist Arend Lijphart compared various features of political life in 36 different democracies covering a period of 55 years.⁸ Among Lijphart's findings was that voter turnout was 7.5% higher in the countries with proportional voting systems. Another important finding, gleaned from survey data, was that citizens in countries with proportional voting systems were more satisfied with the performance of their countries' democratic institutions, even when the party they voted for was not in power. Several other researchers have corroborated Lijphart's findings.⁹

Candidate List Effects and Strategic Voting

As described above, a Vote-for-N election can enable the majority group to capture all of the open seats. However, when there is a mismatch between the number of open seats and the number of candidates aligned with each voting bloc, the candidate list can have a larger effect on the outcome than the preferences of voters.

For example, if majority candidates outnumber the available seats, voters who support the majority may risk splitting their votes among those

⁸ Lijphart, Arend (2012). *Patterns of Democracy. Government Forms and Performance in 36 Countries*. New Haven, CT: Yale Press.

⁹ See Frank, Richard W. and Ferran Martínez i Coma, "Correlates of Voter Turnout", *Political Behavior*, May 11, 2021. The authors perform a deep dive into turnout data from 579 elections in 80 democracies from 1945 to 2014 to determine the impact of 70 different independent variables. They found proportional voting systems to be a robust predictor of high turnout, accounting for a 5.2 percentage point boost in voter participation as compared to plurality systems. See also Karp, Jeffrey A.; Banducci, Susan A. (2008), "Political Efficacy and Participation in Twenty-Seven Democracies: How Electoral Systems Shape Political Behavior". *British Journal of Political Science*. 38 (2): 311-334. These authors demonstrate that proportional voting systems show higher political efficacy — defined as citizens' trust in their ability to change their government and belief that they can influence political affairs - as compared with plurality and majoritarian systems.

candidates, perhaps allowing minority candidates to win one or more seats.¹⁰ (See [Appendix C.](#)) In this situation, a majority voter might be better off voting strategically, casting a vote for a candidate more likely to win, in place of a candidate they genuinely favor.

Candidate list anomalies may engender “strategic voting.” “Strategic voting” is often discussed in contrast to “sincere voting.” With sincere voting, voters can transparently use their full ballot to support the candidate(s) they genuinely prefer without fear of accidentally electing a candidate they oppose. In single-winner plurality elections, strategic voting is often discussed in the context of the spoiler effect, where a vote for one’s preferred candidate helps elect the candidate one most opposes.

In a Vote-for-N election, the minority voting bloc may also benefit from strategic voting, choosing to run a single candidate and asking their supporters to “bullet vote” for only this candidate in order to avoid adding to the vote totals of majority candidates.

Whether deployed by the majority or the minority, strategic voting favors voters and voting blocs with a deep understanding of the voting method, the candidates, and the electorate.

In a pRCV election, each voter can record their sincere preferences without concern that their vote might inadvertently contribute to the election of a candidate they do not prefer. Strategic voting isn’t necessary, because the outcome is not affected by the number of candidates affiliated with each voting bloc. Minority candidates can win seats in proportion to their supporters’ strength in the electorate, whether or not the majority splits their votes over extra candidates. Through elimination rounds, votes that are initially split across many candidates will consolidate around the individual(s) with the most support.

¹⁰ Minority representation is a critical component of proportional representation, but it should not require accidental conditions to be realized.

Candidates and Campaigning

In nonpartisan municipal elections, voting blocs may be poorly defined, and the relevant issues may shift from one election to the next. Without knowing how many votes each voter will use, and often without knowing how large each voting bloc may be, it can be difficult to predict how many votes will be needed to win a Vote-for-N election. In this environment, candidates have a strong incentive to reduce negative reactions to their platform, leading some candidates to make only vague statements about their priorities in order to avoid alienating any voters. This can leave voters with little information on which to base their decisions, adding to the unpredictability of the election outcome.

In a pRCV election, the election threshold is predictable and typically lower than the winning percentage in a comparable Vote-for-N election. This allows candidates with minority views to win a seat with votes from like-minded voters, which may reduce incentives for hiding one's true views.

For example, imagine an environmentalist running in a community where the majority opposes environmental action. In a Vote-for-N race, campaigning on their environmental priorities will almost certainly cause them to lose. But in a pRCV race with a known election threshold, they may find that campaigning on their environmental priorities engages a sufficient number of like-minded voters to vote for and elect them.

There is a trade-off here, however. pRCV elections may provide incentives for narrowly focused candidates to run because the percentage of votes necessary to win is known in advance, and that threshold may be low enough for even a "one-issue" candidate to get elected.¹¹ In effect, pRCV may achieve better proportionality in elections to multi-member boards, councils, and committees with the trade-off being fewer elected officials with an electorate-wide focus.

¹¹ Alistair Clark (2021) "The effects of electoral reform on party campaigns, voters and party systems at the local level: from single member plurality to the single transferable vote in Scotland, *Local Government Studies*, 47:1, 79-99

Geographic Diversity

Geographic diversity may be of some value in municipal government, assuring voters that the council or board is familiar with the issues facing neighborhoods across the jurisdiction, including such issues as infrastructure, schools, economic class, or zoning. Vote-for-N elections do not guarantee geographic diversity in the elected body. In fact, the majority capture aspects of Vote-for-N may work counter to this kind of diversity.

While pRCV elections do not guarantee geographic diversity, if geography is an important dimension for voters, they may use it in ranking candidates, so that pRCV may increase the odds of a geographically diverse outcome, especially if that is important to voters. The 9-seat pRCV elections in Cambridge, MA, demonstrate this effect, regularly returning a geographically diverse council.¹²

¹² Personal communication, Deb Otis at Fairvote.

Constituent Relations

When representatives in a Vote-for-N jurisdiction share the same perspectives and policy preferences, as could happen in a majority capture situation, the gap between well-served constituents and those under-served could be significant. Research indicates that there may be biases in constituent relations,¹³ with poor and minority constituents receiving less attention from their representatives, while affluent constituents, or those who live nearby, may receive more. Responsiveness to policy advocacy may skew toward the donor class and constituents who are politically aligned with the majority.

However, this risk is mitigated in multi-member districts (MMDs) with proportional representation. With pRCV, constituent relations may improve in under-served, poor, and minority communities if those constituents can choose representatives who are more likely to respond to their requests and advocate for their policy preferences.

¹³ "Members of Congress favor the interests of high-income constituents over those of low-income constituents in policymaking (Ellis, 2012, 2013; Hayes, 2013), and legislators take the opinions of low-income constituents who contact them less seriously (Butler, 2014). In general, legislators dismiss the opinions of constituents who disagree with them (Butler and Dynes, 2016). Research on constituent service finds that legislators are more likely to advocate on behalf of constituents with whom they share descriptive characteristics (Lowande, Ritchie and Lauterbach, 2019). . . Gell-Redman et al. (2018) find that minority constituents are less likely to receive responses from legislators, particularly Republican legislators, which they attribute to Republicans partisan interests, as minority constituents are less likely to support the Republican Party. . . In a meta-analysis of these audit studies, Costa (2017) shows that political elites are less likely to respond to requests from minority constituents, particularly Latinos. . . Research shows that white legislators respond less frequently to requests from Black constituents, regardless of partisanship, while minority legislators are more likely to respond to requests from Black constituents (Butler and Broockman, 2011)." (cr.pdf (womeninlegislativestudies.org))

Complexity

Compared with Vote-for-N, pRCV involves a more complicated way of counting votes and determining election winners that many voters will find difficult to understand. At a time when election results and procedures are being questioned as never before, additional complexity may reduce the confidence that Maine’s voters have in the election system as a whole. Complexity and voters’ misplaced expectations can fuel repeal efforts, as happened recently in Arlington, VA.¹⁴ The added complexity of pRCV calls for up-front investments and attention to be paid to engaging and informing voters and the press about how pRCV works and what to expect.

As discussed in Part 1, reform isn’t easy; both advocates and election officials should be prepared for sustained opposition and repeal efforts.

Transition Issues

Both Vote-for-N and pRCV are multi-winner election methods, so jurisdictions currently conducting Vote-for-N elections can transition to pRCV without any change to election schedules, term lengths, or geographic boundaries, unless they choose to make more sweeping changes. Municipalities with charters can adopt pRCV through a charter amendment (which can be proposed by a charter commission, elected officials, or voters, but which must be approved by voters). Municipalities without charters can adopt pRCV by a town meeting at least 180 days before the election.

¹⁴ <https://www.washingtonpost.com/dc-md-va/2023/07/15/ranked-choice-voting-cancelled-arlington/>

COMPARING PRCV TO SINGLE-WINNER ELECTIONS, CONDUCTED AT LARGE

Elections conducted at large are those that cover the whole jurisdiction – town, city, or state. This section does not address the election of mayors and governors, which are always elected at large in single-winner elections. But in many Maine municipalities, seats on councils and boards are also filled in single-winner elections, conducted at large, and these are addressed here.

In the context of the two study questions, this section also addresses Question 1:

What is our position on using RCV in multi-seat elections?

The at-large jurisdictions in this case are, in fact, multi-member districts, with multiple members representing the same geographic area, but each representative is elected in a single-winner election. A transition from single-winner elections conducted at large to multi-winner elections conducted with pRCV would require consolidating several single-winner elections into one multi-seat election. The section explores the trade-offs in doing so.

Proportionality

Filling at-large seats on multi-member bodies with a set of single-winner elections tends to exclude minority voices, and like Vote-for-N, this approach has been found to violate the Voting Rights Act by diluting minority voting power. This makes sense because the underlying logic is the same. If 55% of voters are aligned, the 55% majority would be expected to prevail in each single-winner election, as long as voters can identify the like-minded candidates and there's no vote splitting.

If the political winds or salient issues shift from year to year, **staggered** single-winner elections, in which one seat is filled each year on a rotating schedule, may generate some diversity on a representative body, but in the presence of a relatively stable majority (whether ideological, racial, class, or ethnic), single-winner elections will tend to allow the same majority to elect its candidates year after year and thereby exclude minority voices.

Concurrent single-winner elections¹⁵ are even more likely to deliver all the available seats to the same majority group of voters. Ironically, in the context of electing a council or board, adopting single-winner RCV for these races would further ensure a majority winner in each race, essentially eliminating opportunities for minority representation.

On the other hand, a multi-winner pRCV election reliably elects a diverse set of winning candidates, reflecting an array of voter preferences. As described in Part 1, the election threshold of a pRCV race depends on the number of seats to be filled. If the example community, split 55/45, were to replace two single-winner elections with a two-seat pRCV election (threshold = 33.3%), they would be expected to elect one representative for each group. If they instead consolidate three single-winner elections into one three-seat pRCV election, the expected result would be to deliver two seats to the majority and one to the minority.

Because the dynamics of majority capture are similar between Vote-for-N elections and single-winner elections conducted at large, several of the other considerations outlined in the prior section (Comparing pRCV to Vote-for N) are also relevant here, namely Voter Success, Geographic Diversity, and Constituent Relations.

¹⁵ These concurrent, at-large elections differ from Vote-for-N elections in that voters chose only one candidate for each seat, even if there are a number of seats being contested.

Complexity

Similar to the complexity issues identified above in comparing pRCV to Vote-for-N, pRCV involves a more complicated way of counting votes and determining election winners than single-winner elections, whether conducted using RCV or plurality voting.

Furthermore, introducing pRCV to replace single-winner at-large elections may also introduce an element of ballot complexity: a longer list of candidates and (if the jurisdiction is using a plurality, vote-for-one ballot) perhaps an RCV ballot, as well. While Maine voters are familiar with RCV ballots, the wider array of candidate choices and a more complex ballot may place a higher burden on disadvantaged voters.¹⁶

The added complexity of pRCV calls for up-front investments and attention to be paid to engaging and informing voters and the press about how pRCV works and what to expect. Municipalities currently conducting only single-winner elections may want to consider additional educational efforts focused on the concept of a multi-winner election. As discussed in Part 1, reform isn't easy; both advocates and election officials should be prepared for sustained opposition and repeal efforts.

Transition Issues

A transition from single-winner elections to multi-winner pRCV will require consolidating a set of single-winner elections. Seats elected concurrently could be elected together in a multi-seat pRCV election without changes to election schedules or term lengths, but seats that are currently elected to staggered, overlapping terms would need to be rescheduled so that they could be filled in a single election. Municipalities will want to weigh the benefits associated with overlapping terms against the benefits of a more representative body. For example, staggered terms allow voters to weigh in more frequently on an evolving set of issues, and they ensure that there is continuity of experience on the board. Municipalities might consider shorter terms to ameliorate some of the responsiveness lost to the consolidation of election cycles, and some municipalities will find that the reelection of incumbents provides sufficient continuity of experience.

¹⁶ Nolan McCarty, [Minority Electorates and Ranked Choice Voting](#)

COMPARING PRCV TO SINGLE-MEMBER DISTRICTS

In the context of the two study questions posed, this section addresses Question 2:

What is our position on creating more multi-member districts at the municipal level in order to optimize proportional representation?

This section explores the trade-offs in moving from single-member districts (SMD) to larger, multi-member districts with pRCV.

Proportionality

Dividing a municipality into SMDs allows each district to elect their own representative. When neighborhoods have differing political priorities, this approach may improve the diversity of the elected body and may help achieve proportionality. In general, it is easier to achieve a proportional result when districts are small.¹⁷

When discriminatory election methods have been challenged under the Voting Rights Act, the common remedy has been a requirement to abandon at-large elections and establish SMDs, with one or more districts specifically drawn to ensure that minority voters can elect representation of their own choosing. While this approach has successfully improved the proportionality of representation for racial and ethnic minority voters, some voting rights advocates have become concerned that majority-minority SMDs can have unintended consequences. For example, the plaintiffs in a Voting Rights case in Eastpoint, MI, were uneasy about formally identifying particular areas of the city as “the minority neighborhoods,” while also preventing minority voters in other parts of the city from participating in the election of minority representation.¹⁸ In response to these concerns, the U.S. Department of Justice allowed Eastpointe to replace the Vote-for-N election method with pRCV, while retaining at large elections.

¹⁷ In an SMD jurisdiction, increasing the number of districts reduces the size of each district and increases the size of the council or board. This can make it easier to achieve a proportional outcome, but a larger body may be more expensive and more unwieldy.

¹⁸ <https://equitabledemocracy.org/eastpointe/>

In addition, single-member districts (SMD) elections do not necessarily deliver proportionality. For example, SMD elections for the Waterville City Council and Board of Education have not delivered proportional representation with respect to political party.¹⁹ While Waterville is heavily Democratic, in the 2022 general election, a sizable minority of Waterville residents voted Republican for governor (30.4%), state senate (35.7%), and state representative (30.7%). In contrast, as of 2023, the Waterville Board of Education consists entirely of Democrats, and the City Council has six Democrats and one independent, an incumbent who recently lost to a Democrat in 2024. Waterville Republicans appear to have given up and have not fielded a single candidate in the three election cycles that filled the current City Council or Board of Education.

There are several factors that can make it difficult to achieve proportionality through the use of SMDs:

- **Redistricting.** Drawing representative districts requires data and technical expertise that may not be available to municipal redistricting commissions. Proportionality in SMDs can also be disrupted by gerrymandering, with redistricting commissions using their power to intentionally draw district maps to favor one voting bloc at the expense of another. Maine municipalities that choose to elect council and board members in SMDs should ensure that their redistricting rules effectively protect the interests of all voters.

Multi-winner pRCV can reduce — or even eliminate — the effect of district lines on the proportionality of election outcomes. Some pRCV jurisdictions draw a few large, multi-member districts. For example, Portland, OR, has established four multi-member districts that each elect three representatives in a pRCV election. Efforts to increase the seat share for a favored group in one district will tend to decrease the seat share in a neighboring district, which limits the power of a redistricting commission to affect election outcomes. Research indicates that when multi-member districts elect at least three members, the opportunity to gerrymander is significantly curtailed, and with five member districts, is essentially eliminated.²⁰

¹⁹ Most Maine municipalities conduct nonpartisan elections. Candidates in Waterville can indicate a party affiliation on municipal ballots.

²⁰ <https://arxiv.org/abs/2107.07083>

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Other pRCV jurisdictions dispense with redistricting entirely and conduct pRCV elections at large. For example, Albany, CA, uses pRCV to elect half of the council members at a time to overlapping two-year terms; while Cambridge, MA, elects the entire council in a single, 9-seat pRCV election.

- **Demographic distribution.** A redistricting commission can only draw a favorable district for a minority voting bloc (whether defined by race, ethnicity, class, ideology, or some other dimension) if those voters are geographically clustered. In jurisdictions where the minority voting bloc is evenly distributed throughout the jurisdiction, SMD elections will generally deliver each seat to the majority voting bloc, resulting in majority capture.

Each multi-winner pRCV election distributes the seats proportionally, allowing a minority voting bloc to elect representation commensurate with their strength,²¹ even when dispersed across the municipality. This concept is demonstrated in a [six-minute video](#), produced for Portland, OR.

- **Stability of voting blocs.** In Maine's nonpartisan municipal elections, the relevant dimensions that divide one voting bloc from another may not be easy to identify, may not be tied to specific neighborhoods, and may change from year-to-year, compounding the challenge of drawing representative districts.

A multi-winner pRCV tabulation relies only on the ballots submitted in the current election, providing a flexible response to shifting priorities and alliances.

- **Stability of demographics.** In many jurisdictions, redistricting is triggered by the federal census, and proportionality can be disrupted by changes in demographics that occur between redistricting cycles. A new upscale housing development, an urban renewal project, or a shift in immigration patterns can dramatically change the make-up of one or more districts.

²¹ In a pRCV election, the election threshold is determined by the number of seats up for election. [Threshold = 1/(seats + 1)] Any minority bloc large enough to meet the threshold can succeed in electing a representative.

Demographic changes are less disruptive to multi-winner pRCV elections. When pRCV elections are conducted in multi-member districts, representation in each district can shift in response to demographic changes within the district. When pRCV elections are conducted at large, there are no district lines and any demographic changes within the municipality can be reflected in the following election.

Voter Success and Representation

The choice of election method affects the way votes are cast and counted, which has an impact on the rate of voter success, defined here as the percentage of voters who elect a representative of their choice. As discussed previously, individuals who vote for a winning candidate are more likely to have confidence in the election process and may be more likely to vote in future elections.

When elections are conducted in single-member districts (SMD), a single individual is elected to represent all of the residents in a particular geographic district; voters who prefer the opposition simply lose and are then represented by an individual who does not share their political priorities. While this is the only way to achieve majority rule when electing a single-seat executive like a mayor, the seats on a council or board can be filled by a diverse set of representatives, reflecting the political priorities of a variety of voters. A pRCV election maintains majority rule at the level of the council or board by proportionally delivering the majority of the seats to candidates selected by a majority of the voters — while also increasing the rate of voter success.

For example, five seats on the Portland, ME City Council are filled in SMD elections (with three additional members elected at large). Portland elections are nonpartisan, which makes it difficult to evaluate proportionality, but the sitting City Councilors, as assessed in 2023, representing each of the five districts were elected in contested races that can be evaluated for voter success. Across Portland, 60.1% voted for the Councilor currently representing their district, while the remaining 39.9% voted for the opposing candidate.²² In other words, elections in Portland's existing SMDs had a voter success rate of just over 60%.

²² During this same time period, four of the five SMD school board elections were uncontested, and so can not be analyzed in this way. The District 3 seat was won in an RCV tabulation, with 54.7% of the vote.

Multi-winner, proportional elections allow more voters to elect a candidate of their choosing. Across the pRCV elections analyzed by FairVote, 93% of voters see one of their top-3 choices elected.²³ The ballots from Portland's first multi-winner RCV contest, in which ten candidates ran for four at large seats on a 2021 Charter Commission, support this observation. While the official tabulation used an unusual, majoritarian process (in which only 54.6% of voters saw their first choice elected),²⁴ the cast vote record (a spreadsheet which records the rankings on each RCV ballot) can be tabulated using pRCV. A pRCV tabulation of these ballots would have allowed 70.1% of voters to elect their first choice, and 95.1% would have elected one of their top-3 candidates.

Electoral Competition and Participation

When a single-member district (SMD) is seen as 'safe' for a political party or a particular viewpoint, individuals representing the opposition may not bother to run. As seen in the Waterville example above, no Republican candidates have run in any of the recent SMD elections. By contrast, each pRCV contest elects several winners, proportionally reflecting the diversity of the electorate, which can encourage a broad array of candidates to enter the race. Over four pRCV election cycles, Cambridge, MA, has averaged 2.5 candidates per Council seat and 1.8 candidates per School Board seat.

In addition, voters who believe that their vote matters are more likely to engage in the political process — and clearly, votes don't matter at all in uncontested elections. Eleven of fourteen elections to fill seats on the current Waterville City Council and Board of Education went uncontested. In the uncontested races, 15-20% of participating voters skipped the contest — why bother? — compared to just 2% who skipped the race in a contested — and competitive — race for the Ward 7 Council seat.²⁵

²³ This rate is higher for elections that elect more seats (95% of voters in races electing six or more seats) than in races with fewer winners (89% in races electing 2-3 winners). <https://fairvote.org/resources/data-on-rcv/#consensus-value>

²⁴ Due to charter details since modified, Portland officials were not able to tabulate this race proportionally. For details, see [An Annotated pRCV Tabulation](#).

²⁵ In a 2021 off year election, Thomas McCormick (I) beat incumbent Council Chair Erik Thomas (D) by 8 votes. <https://www.centralmaine.com/2021/11/02/waterville-council-chairman-thomas-loses-seat-by-eight-votes-to-newcomer-mccormick/>

While competitive elections and high rates of voter success are both valuable, it is not possible to optimize for both in single-member district (SMD) elections. By definition, the elections with the safest seats will have the highest rates of voter success, while competitive elections feature a smaller share of the voters who prefer the winning candidate.

pRCV elections can deliver high rates of voter success in elections that are also competitive.

Geographic Diversity

SMD elections guarantee a level of geographic diversity in the elected body, which may be of value in municipal governance. While pRCV elections do not guarantee the same degree of geographic diversity, election results from Cambridge, MA indicate that geography is one of the dimensions that voters often use in ranking the candidates, such that pRCV elections — even if conducted at large — can deliver geographic diversity comparable to SMD elections.²⁶

Constituent Relations

Many voters instinctively feel that SMDs provide an incentive for strong constituent services, with representatives living in close proximity to the residents they're elected to represent, and each constituent unambiguously assigned to a specific representative. Indeed, this kind of constituent relationship may be easy for voters to understand and navigate. Such voters may be concerned that a transition to pRCV elections in larger, multi-member districts would disrupt constituent relations.

Other voters, particularly those living in SMDs where their favored candidates routinely lose, may find that the representatives elected in their district do not reliably engage with them or with their concerns. These voters might reasonably expect to more easily develop a relationship with a representative who shares their views, even if that person lives outside of their current SMD. Such voters might feel that pRCV elections in multi-member districts (MMD) would provide stronger constituent services.

²⁶ Personal communication, Deb Otis at Fairvote.

At first glance, it seems reasonable to expect that the more constituents an individual representative has, the less likely it is that any one constituent will have an interaction with that representative. However, there is very little research on this dynamic in local jurisdictions, and the studies of constituent relations in national contexts are not conclusive. For example, one study measured constituent relations by the number of constituents who reported recent contact with their representative and found that multi-member districts (MMD) did not affect the number of contacts, as long as the overall population/representative ratio remained the same.²⁷ Other studies found more ambiguous results in other contexts.²⁸

By way of illustration, it's true that the more constituents an individual representative has, the less likely it is that any one constituent will have an interaction with that representative. However, in a multi-member district, when multiple representatives are serving constituents in the same district, any one constituent may have the same chance overall of hearing from at least one of their representatives as they would in a smaller, single-member district. In this respect, a ratio of 5,000/1 in a single-member district (SMD) is the same as a ratio of 25,000/5 in a five-seat MMD. Assuming representatives work just as hard at constituent contacts in MMDs as in SMDs,²⁹ each one reaching out to just as many constituents, the overall number of constituent interactions would remain the same.

²⁷ John Curtice and W. Phillips Shively, "Who Represents Us Best? One Member or Many?" in *The Comparative Study of Electoral Systems*, Oxford University Press (Hans-Dieter Klingemann, ed., 2009)

²⁸ Heitshusen, V., Young, G., and Wood, DM. 2005. "Electoral Context and MP Constituency Focus in Australia, Canada, Ireland, New Zealand, and the United Kingdom" *American Journal of Political Science*, 49(1):32-45

²⁹ This assumption does not hold true in all manner of MMDs, but limited data indicates that representatives elected in MMDs with pRCV (in which voters rank individual candidates) prioritize constituency activities at a rate comparable to those elected in SMDs. Heitshusen, V., Young, G., and Wood, DM. 2005. "Electoral Context and MP Constituency Focus in Australia, Canada, Ireland, New Zealand, and the United Kingdom" *American Journal of Political Science*, 49(1):32-45

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Separately, other research indicates that there may be biases in constituent relations,³⁰ with poor and minority constituents receiving fewer contacts, while affluent constituents, or those who live nearby, may receive more. Responsiveness to policy advocacy may skew toward the donor class and constituents who are politically aligned with the representative. Responsiveness to requests for help or intermediation with government services may skew in favor of sympathetic constituents, toward veterans and the elderly, for example.

When representatives in an multi-member district (MMD) share the same biases, as could happen in a Vote-for-N election, a transition to MMDs could indeed widen the gap between those well served and those under-served. Representatives in larger districts, with the same limited resources and a heavier constituent load, may prioritize more aggressively, responding to voters based on their affinity with the representative, or their geographical proximity.

However, this risk is mitigated in MMDs with proportional representation. With pRCV, constituent relations may improve in under-served, poor, and minority communities if those constituents can choose representatives who are more likely to respond to their requests and advocate for their policy preferences. Whether constituent relations improve or decline in moving from single-winner elections in single-member districts (SMD) to pRCV in MMDs may be a function of the extent to which a certain population was previously excluded or under-served.

In summary, it's not clear whether there is a significant difference in constituent relations based on district configuration, SMDs or MMDs with pRCV. In moving to MMDs with pRCV, municipalities will want to avoid increasing the population/representative ratio, for example by decreasing the size of their council or board.

³⁰ Ibid. cr.pdf (womeninlegislativestudies.org)

Candidates and Campaigns

A transition from single-member districts (SMD) to pRCV would change some aspects of the campaign process for both candidates and voters. In an SMD election, candidates can restrict their campaign activity to the voters living within their geographic district.

Candidates in multi-winner pRCV elections may find that they need to campaign across a larger geographic area, which may entail additional costs and effort. Other candidates may choose to target their campaign activities in locations frequented by voters who share their priorities. For example, a candidate running on an environmental platform might choose to focus their campaign activities on the local farmers market and access points to hiking trails on conservation properties. They might also participate in environmental clubs and advocacy groups, or have contacts in these groups who can act as surrogates, bringing their campaign to these spaces.

Candidates with similar priorities may choose to work together, dividing the work of making personal contact with voters. Candidates participating in coalition campaigning will ask voters to rank themselves first, followed by others in their coalition. Such efforts are often coordinated by political parties when pRCV is used in partisan elections,³¹ but coalitions of candidates can also form in multi-winner nonpartisan elections, regardless of the election method in use.

³¹ Alistair Clark (2021) *The effects of electoral reform on party campaigns, voters and party systems at the local level: from single member plurality to the single transferable vote in Scotland*, *Local Government Studies*, 47:1, 79-99

Complexity

Issues of complexity are similar in comparing pRCV to single-member districts (SMD) as they are in comparing pRCV to single-winner elections conducted at large, as outlined above. pRCV involves a more complicated way of counting votes and determining election winners than single-winner elections, and a transition from SMDs to multi-member districts (MMD) with pRCV may also introduce an element of ballot complexity: a longer list of candidates and perhaps an RCV ballot, in communities currently conducting plurality elections. While Maine voters are familiar with RCV ballots, the wider array of candidate choices and a more complex ballot may place a higher burden on disadvantaged voters.³²

The added complexity of pRCV calls for up-front investments and attention to be paid to engaging and informing voters and the press about how pRCV works and what to expect.

Transition Issues

A transition from single-winner elections, conducted in SMDs, to multi-winner pRCV requires the consolidation of districts, which may affect the geographic diversity of the council or board, the relationship between constituents and their representatives, and the nature of campaigns. Each SMD municipality considering a transition to pRCV would need to independently consider these issues, as the relative impacts will depend on the current election structure (How many districts? Are there additional at-large seats?) as well as the proposed structure of pRCV elections (Several MMDs? A single at-large election?). FairVote can assist individual municipalities with this analysis. If, in the course of weighing these options, the municipality considers changing the size of the elected body, it should be mindful that the population/representative ratio can have an effect on constituent relations.

³² Ibid. Nolan McCarty, [Minority Electorates and Ranked Choice Voting](#).

IMPLEMENTATION ISSUES

The implementation issues associated with pRCV are similar, regardless of whether the municipality started with Vote-for-N, single-winner elections conducted at large, or SMDs.

Voter education. Successful implementation will require investments in press and voter education, particularly at the time of transition to pRCV. While the ranked choice ballot is familiar, some voters may incorrectly expect that they need to mark it differently in a multi-winner contest. Voter education should also include a simple description of the tabulation process, with more detailed descriptions available for voters who want a deeper understanding. It will also be worth considering how results will be presented to help voters understand how the vote transfer process worked to capture voter preferences in each specific election in order to establish confidence in the results.³³

Ballots and Tabulation. While the earliest pRCV contests were counted by hand (which remains an option for recounts of close races), computer software significantly improves the speed and accuracy of a pRCV tabulation. The pRCV ballot format is identical to the ballot format used in single-winner RCV races, so the precinct scanners currently used in Maine can be used in pRCV contests. Municipalities choosing to implement pRCV (and/or single-winner RCV) will need a process to generate a spreadsheet of the cast vote record, either through hand entry, purchase or lease of proprietary software from the election hardware vendor,³⁴ or contracting with a private entity for this work. They will also need a process to tabulate the votes and identify the winners. RCTab, an open source software package for the tabulation of ranked choice contests (both single-winner and pRCV), is available at no charge from the Ranked Choice Voting Resource Center. Some jurisdictions may choose to contract with a private entity for tabulation services.

Election officials should also ensure that they are prepared for any necessary recounts in advance of implementation. Several jurisdictions have developed recount procedures for pRCV contests, which can be adapted for use in Maine.

³³ A variety of data visualization tools for RCV elections are available at <https://www.rcvis.com/>

³⁴ LWVME is exploring cost sharing options in the context of advocacy work on single-winner RCV.

SUMMARY

pRCV delivers proportional representation more reliably than the common election methods used in Maine municipalities — Vote-for-N, single-winner at-large, and single-member districts (SMD). Vote-for-N and single-winner at-large are both non-proportional election methods, prone to majority capture. While SMDs may deliver a proportional outcome, especially when the districts are small, pRCV does so more reliably — and without the requirement to conduct a detailed analysis of the geographic distribution of different groups of voters during each round of redistricting.

pRCV increases the rate of voter success and, for all practical purposes, eliminates the need for strategic voting. In a pRCV election, candidates may be more willing to be clear about their positions on important issues. Unlike single-member districts, multi-member districts (MMD) with pRCV do not guarantee but may nonetheless deliver geographic diversity in the elected body when it's important to voters.

pRCV does involve a more complex tabulation method and (with the exception of municipalities currently using single-winner RCV) a more complex ballot, pointing to the need for upfront investments in voter and press education. Implementation costs and other issues will vary by town.

Appendix A

Election Methods

This study asks readers to consider several election methods and may raise questions about additional election methods that are not formally addressed in the study materials. This appendix provides a brief description of some of those methods.

The charge to the study committee is focused on pRCV. The history and mechanics of pRCV are detailed in Part 1.

- **pRCV (Proportional)** Proportional Ranked Choice Voting (pRCV) is a multi-winner election method designed to return a set of elected officials that proportionally reflect the priorities of participating voters. pRCV uses a Ranked Choice ballot, which is already familiar to Maine voters. pRCV contests can be tabulated with the software package that the City of Portland has used to tabulate single-winner RCV contests. Portland and Westbrook have recently adopted pRCV for any multi-winner contests.

Common election methods. In Part 2 of the study materials, pRCV is compared to each of the election methods commonly used in municipal elections in Maine. (Legislative elections will be addressed in a second phase of the study.)

- **Vote-for-N (Non-proportional).** Vote-for-N (where ‘N’ represents the number of open seats) is a multi-winner election method that is common in municipal elections across Maine. For example, in a three-seat race, the ballot instructions might read, “Vote for three.” Election officials tally all votes for each candidate, and the three candidates with the most votes are elected. Vote-for-N elections are typically used to fill at-large seats (representing the entire municipality).
- **Single-winner elections, conducted at large (Non-proportional).** At-large seats on a multi-member council or board can be filled in a series of single-winner elections. Many communities with a three-seat Select Board elect one member each year to staggered, overlapping three-year terms. Some communities elect members to concurrent terms in single-winner elections, with a separate list of candidates for each seat. While LWVME supports the use of RCV in single-winner elections, most municipalities currently use single-winner plurality (each voter marks a single candidate and the candidate with the most votes wins) for these elections.
- **Single Member Districts (Proportionality varies).** Some of the larger municipalities fill seats on a council and/or board in Single Member Districts (SMDs), with each district electing a single representative. Portland and Westbrook have adopted RCV for single-winner elections. All other SMD municipalities currently use single-winner plurality elections. (Representatives to the Maine Legislature are also elected in SMDs. Maine has adopted RCV for legislative primaries, but continues to use single-winner plurality in the general election.)

Other multi-winner election methods. The study committee was charged with an assessment of pRCV. A number of other election methods have been developed for multi-winner contests. The study committee evaluated an additional six that often come up in discussions of pRCV and here explains why each method is not explored further. When available, a link is provided to a more detailed description of the method for readers who may have additional questions. In short, the committee determined that pRCV would be more appropriate for use in Maine because it delivers a proportional outcome, accommodates both independent candidates and nonpartisan elections, and it uses a familiar ranked choice ballot. The study committee found no basis for expanding the scope of this study.

A summary table comparing the key features of these multi-winner election methods is provided following the descriptions.

- **Party List Elections¹ (Proportional).** The Party List approach to multi-winner elections is currently in use across much of continental Europe, as well as in a number of other democracies around the globe, most often in parliamentary systems. A Party List election requires each candidate to identify with a political party. This means that only party affiliated candidates can win, which is discordant with Maine’s long history of voting for and electing independent candidates, making this approach ill suited to Maine. Also, party list elections would not work in most municipal elections in Maine, which are nonpartisan.
- **Single Non-Transferable Vote² (SNTV) (Semi-proportional).** This multi-winner election method is used in the U.S. for some “jungle primaries” — similar to an open primary, where all candidates are on the same ballot regardless of their political party. Each individual votes for a single candidate, and candidates with the most votes will advance to the general election. SNTV will often elect the same set of candidates as pRCV, but without a ranked choice ballot or a vote transfer mechanism, strong candidates can capture the first seats, leaving very few votes to determine the remaining seats. In addition, SNTV elections are prone to the spoiler effect, in which votes are split across similar candidates such that none of them have enough

¹ https://en.wikipedia.org/wiki/Party-list_proportional_representation

² https://en.wikipedia.org/wiki/Single_non-transferable_vote

votes to win. By contrast, in a pRCV tabulation, vote transfers consolidate voter preferences and ensure that all winning candidates receive threshold support.

- **Last-N-Standing (Semi-proportional)**. This multi-winner ranked choice election method features a truncated, single-winner RCV tabulation, eliminating the bottom candidates until the number of remaining candidates equals the number of seats to be filled. This method is sometimes used in winnowing contests. For example, a variation on this method was used in Maine for the 2020 Presidential Primary. Voters used a ranked choice ballot, and the tabulation rounds continued until each remaining candidate had sufficient support under party rules to be awarded Convention delegates. Last-N-Standing and pRCV will often elect the same set of candidates, but without the surplus transfer feature of pRCV, strong candidates may hold enough votes that relatively few ballots remain to determine the other winners, potentially electing candidates with very little support. A pRCV election ensures that winners receive adequate support.³
- **Proportional Approval Voting (Untested)**.⁴ Proportional Approval Voting is a newly developed multi-winner election method using approval ballots. Voters mark their ballot for as many candidates as they approve, without restrictions related to the number of open seats. Approval voting has an inherent negative feature: in approval voting, unlike in ranked choice voting, voting for candidates beyond one's favorite candidate can dilute votes for the favorite candidate. For this reason, effective use of an approval ballot requires strategic voting. In the League's 2008 study of single-winner election methods, approval voting was rejected for this reason. Furthermore, in single-winner approval voting, the candidate with the most votes wins, which is easy for voters to understand, but multi-winner approval voting requires a complex scoring process to evaluate all possible winning combinations. While single-winner approval voting has been introduced in several U.S. cities, we are not aware of any public implementation of multi-winner Proportional Approval Voting.

³ In the concluding rounds of a pRCV tabulation, after some ballots have been exhausted, if there are only 2 candidates remaining, then the one with the most votes wins, whether or not they reached the threshold.

⁴ https://en.wikipedia.org/wiki/Proportional_approval_voting

- **Proportional STAR Voting⁵ (Untested).** STAR (Score Then Automatic Runoff) Voting is a new single-winner election method. It was developed after the League’s 2008 study of single-winner election methods, and so was not considered by the League at that time.⁶ STAR ballots feature a scoring grid that looks similar to the ranking grid on an RCV ballot, with two important differences: on a STAR ballot, voters give each candidate a score rather than a ranking (where ‘0’ is worst and ‘5’ is best, rather than ranking the favorite candidate first), and multiple candidates can be given the same score. Proponents of single-winner STAR voting have developed several multi-winner tabulations, some of which have been designed for proportional representation, but we are not aware of any public implementation of this new method. While Proportional STAR Voting may ultimately prove useful in jurisdictions that also adopt the single-winner version, it may be too complicated and confusing to introduce multi-winner STAR ballots in an RCV jurisdiction like Maine.
- **Sequential RCV (Non-proportional).** In Maine, this unusual approach to multi-winner RCV was used in a 2021 election to fill four at-large seats on the Portland Charter Commission, and the result was not proportional.⁷ In Sequential RCV, voters use a standard RCV ballot, and the first seat is filled using a standard, single-winner tabulation. To fill the second seat, election officials run the tabulation a second time, instructing the software to skip over rankings for the winner of the first seat. This process is repeated until all seats are filled. This process is equivalent to running a series of single-winner RCV elections. Since single-winner RCV is designed to find a candidate

⁵ https://en.wikipedia.org/wiki/STAR_voting

⁶ An evaluation of single-winner election methods is beyond the scope of this study.

⁷ Portland adopted RCV for Mayor in 2010; and in 2020, voters approved a charter amendment extending the use of RCV to all other municipal elections. Unfortunately, the amendment did not specifically address the infrequent multi-seat elections, and the four-seat Charter Commission election in 2021 was governed by a charter with only single-winner RCV rules. After consulting with FairVote and city attorneys, city officials determined that the only option was a “Sequential Single-winner RCV” election. A detailed analysis of this election, including a comparison of pRCV and Sequential RCV is available here: [Annotated pRCV Tabulation](#).

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with majority support, repeated application of this approach will elect a series of similar candidates, each preferred by the majority voting bloc, at the expense of candidates preferred by other groups of voters — much in the same way that Vote-for-N can allow the majority to capture all the seats. This method requires the complications of an RCV tabulation without addressing the adverse, majority capture feature of a Vote-for-N election.

Multi-Winner Election Methods

Summary of Features

	Use Frequency	Proportional	Captures Voter Preferences	Disincentivizes Strategic Voting	Allows for Independent Candidates	Works in Nonpartisan Elections	Predictable Election Threshold
pRCV	widespread in Australia, Ireland, Scotland	yes	yes (Ranked Choice Ballot)	yes	yes	yes	yes
Vote-for-N	widespread in US municipal elections	no	no (Choose N Ballot)	no	yes	yes	no
Party List	widespread in Europe	yes	no (Choose 1 Ballot)	depends on variant	no	no	depends on variant
SNTV	U.S. jungle primaries	semi	no (Choose 1 Ballot)	no	yes	yes	no
Last-N-Standing	rare	semi	yes (Ranked Choice Ballot)	no	yes	yes	no
Proportional Approval Voting	new	untested	no (Approval Ballot)	no	yes	yes	no
Proportional Star Voting	new	untested	yes (Score Ballot)	no	yes	yes	no
Sequential RCV	rare	no	yes (Ranked Choice Ballot)	yes	yes	yes	yes

Appendix B

Appendix B is intended to accompany Part 1: What is Proportional RCV (pRCV) and How Does It Work. Appendix B presents these illustrations and examples to demonstrate the mechanics of pRCV. Different readers may find different examples helpful:

- [Appendix B.1](#) offers another simple tabulation example in a hypothetical partisan general election for school board using just 100 votes. It illustrates how the candidates who get the most Round 1 votes might not ultimately prevail in the final round.
- [Appendix B.2](#) is a tabulation example in a nonpartisan race. There is an additional description of the computerized tabulation process and a discussion of proportionality and voter satisfaction. In [Appendix C](#), these same voters participate in a vote-for-N race.

Other helpful links:

- This [three minute post-it note demonstration](#) from Minnesota Public Radio presents an example of single vote and fractional vote transfers.
- [Annotated pRCV Tabulation](#) using the cast vote record from Portland's 2021 Charter Commission Race.

Appendix B.1

Simple pRCV Tabulation

Example in a Partisan Election

Scenario

This hypothetical town conducts partisan elections for local offices. There are six candidates running for three open school board seats in the general election. This is not a primary election: all voters get ballots with all six candidates. Voters are permitted to vote for any of the six — they need not adhere to their party registration. But in this simplified example, voters are sticking with a single party. Three of the candidates (R-1, R-2, and R-3) are Republican. Three of them (D-1, D-2, and D-3) are Democratic.

Calculate the election threshold

In an election in which 100 residents cast votes for 3 open seats, the winning threshold is 25% + 1 vote. That totals 26 votes.

Election Threshold

In this example, there are 3 seats, so N=3.	If there are 100 residents, and we know 25% + 1 vote determines the winning threshold, how many votes does that equal?
Threshold = $\frac{1}{(N+1)} + 1 \text{ vote}$	
= $\frac{1}{(3+1)} + 1 \text{ vote}$	= (25% x 100) + 1 vote
= $\frac{1}{4} + 1 \text{ vote}$	= 25 + 1 vote
= 25% + 1 vote	= 26 votes


Proportional Ranked Choice Voting Study

Round 1: Election Round

Below is a round-by-round demonstration of how pRCV would work in this hypothetical election. Counting all the first-choice votes, one candidate (R-1) meets the threshold and is elected.

R-1 received 34 votes but only needed 26 votes to be elected. The 8 surplus votes for R-1 get transferred to the second choice candidate of voters who chose R-1 first. Each of those 34 voters offered their entire vote to elect R-1, but only 26 votes were needed. It “costs” 26 votes to elect a candidate, so each R-1 voter will “spend” $26/34 = 76.5\%$ of their vote electing R-1. Each R-1 voter will get “change” equal to 23.5% of their vote, which is automatically transferred to the next active candidate on those voters’ ballots.

In this example 17 of R-1’s voters ranked R-2 as their second choice, so 23.5% of 17 = 4 votes are transferred from R-1 to R-2. The other 17 of R-1’s first choice voters ranked R-3 as their second choice, so 4 votes are also transferred from R-1 to R-3.



CANDIDATES	ROUND 1	(Transfer)	VOTES GOING INTO ROUND 2
R-1	34 <i>Declared winner</i>	-8 (i.e. 76.5% of 34 =26)	26
R-2	23	+4 [23.5% of 17 = +4]	27
R-3	13	+4 [23.5% of 17 = +4]	17
D-1	12		12
D-2	10		10
D-3	8		8
<i>Total</i>	100	0	100

Proportional Ranked Choice Voting Study

Round 2: Election Round

Two seats and five candidates remain. After the Round 1 vote transfers, R-2 has also met the threshold and is declared a winner.

Because R-2 won with 27 votes, one more than the 26 votes needed, the surplus vote for R-2 gets transferred to the next preferred candidate of voters who preferred R-2. None of the R-2 voters ranked any D candidates at all. All of the R-2 voters either choose R-1 second and R-3 third, or they choose R-3 second. R-1 doesn't need any more votes, so the entire extra vote goes to R-3.

CANDIDATES	ROUND 1	ROUND 2	(Transfer)	VOTES GOING INTO ROUND 3
R-1	34 <i>Declared winner</i>	26		26
R-2	23	27 <i>Declared winner</i>	-1	26
R-3	13	17	+1	18
D-1	12	12		12
D-2	10	10		10
D-3	8	8		8
<i>Total</i>	100	100		100

Proportional Ranked Choice Voting Study

Round 3: Elimination Round

Now there is one seat and 4 candidates remaining.

None of the remaining candidates has enough votes to be elected, so the candidate with the fewest votes is eliminated. That's D-3. With D-3 eliminated, their 8 votes are transferred to the candidates those D-3 voters ranked second on their ballots. Six (6) of those voters ranked D-1 second, and 2 of those voters ranked D-2 second.

CANDIDATES	ROUND 1	ROUND 2	ROUND 3	(Transfer)	VOTES GOING INTO ROUND 4
R-1	34 <i>Declared winner</i>	26	26		26
R-2	23	27 <i>Declared winner</i>	26		26
R-3	13	17	18		18
D-1	12	12	12	+6	18
D-2	10	10	10	+2	12
D-3	8	8	8 <i>Eliminated</i>	-8	0
<i>Total</i>	100	100	100	0	100

Proportional Ranked Choice Voting Study

Round 4: Elimination Round

There is one seat and 3 candidates remaining.

Again, no additional candidate meets the threshold, so the candidate with the fewest votes is eliminated. This is now candidate D-2. D-2 is eliminated with 12 votes. All of D-2's voters, preferring a Democrat over any of the Republicans, chose D-1 as their next choice. D-1 gets an additional 12 votes.

CANDIDATES	ROUND 1	ROUND 2	ROUND 3	ROUND 4	(Transfer)	VOTES GOING INTO ROUND 5
R-1	34 <i>Winner</i>	26	26	26		26
R-2	23	27 <i>Winner</i>	26	26		26
R-3	13	17	18	18		18
D-1	12	12	12	18	+12	30
D-2	10	10	10	12 <i>Eliminated</i>	-12	0
D-3	8	8	8 <i>Eliminated</i>			0
<i>Total</i>	100	100	100	100	0	100

Proportional Ranked Choice Voting Study

Round 5: Final Round

There are only two candidates left, and the one with the most votes wins. That is D-1.

In this example, there were 70 Republicans and 30 Democrats. Republicans won two seats; Democrats won one, which is as proportional as we can get in a three-seat election.

CANDIDATES	ROUND 1	ROUND 2	ROUND 3	ROUND 4	ROUND 5
✓ R-1	34 <i>Winner</i>	26	26	26	26
✓ R-2	23	27 <i>Winner</i>	26	26	26
R-3	13	17	18	18	18 <i>Defeated</i>
✓ D-1	12	12	12	18	30 <i>Declared Winner</i>
D-2	10	10	10	12 <i>Eliminated</i>	0
D-3	8	8	8 <i>Eliminated</i>		0
<i>Total</i>	100	100	100	100	100

Appendix B.2

A pRCV Tabulation of a Hypothetical Nonpartisan Election in ‘Bookfield’

The little town of ‘Bookfield’ conducts nonpartisan pRCV elections for local offices. One particular issue is dominating the upcoming Town Council election: the question of whether to defund and close the library.

There are six candidates running for three open seats:

- **L**ouise, **L**arry and **L**ogan support continued funding the library. “Vote ‘**L**’ if you **L**ove the **L**ibrary!”
- **D**avid, **D**iane and **D**anielle are campaigning to defund the library. “**D**-fund the library! **D**-fund!”

pRCV can be used in both partisan and nonpartisan races. The tabulation process never uses any data on party affiliation, relying only on candidate rankings provided by voters. In this hypothetical scenario, each candidate fits cleanly into one of two groups (the **L**ibrary **L**overs and the **D**-funders), and candidate names have been chosen to match the letter associated with each group as a service to the reader.

Imagine that each ‘Bookfield’ voter has completed a standard ranked choice ballot and that the ballots have been scanned, either by the voter on election day or by election staff during absentee ballot processing. Election management software has produced a Cast Vote Record (a spreadsheet of voter rankings, with one line for each ballot)¹, which has been transferred to a computer running ranked choice tabulation software.² This document describes each step in the pRCV tabulation

process, but in a real election, the software produces a results spreadsheet indicating which candidates have won without further intervention.

[Appendix C](#) imagines a Vote-for-3 election in this same community.

Calculate the election threshold

In a three-seat election, the threshold is just over a quarter of the votes. In this election, we have 500 votes, so candidates need 126 votes to win.

<i>Election Threshold</i>	In this example, there are 3 seats, so N=3.	If there are 500 residents, and we know 25% + 1 vote determines the winning threshold, how many votes does that equal?
Threshold = $\frac{1}{(N+1)} + 1 \text{ vote}$		
= $\frac{1}{(3+1)} + 1 \text{ vote}$		= (25% x 500) + 1 vote
= $\frac{1}{4} + 1 \text{ vote}$		= 125 + 1 vote
= 25% + 1 vote		= 126 votes

Round-by-Round tabulation

Each round begins with a question: Has anyone been elected? If the answer is "yes," we'll conduct an election round and transfer any surplus votes. This ensures that a popular winning candidate's voters will be fairly represented. If the answer is "no," we'll conduct an elimination round and transfer all votes held by the eliminated candidate. This ensures that votes that may have been split across a number of similar candidates can coalesce on the candidate who can best represent the voters.

In either case, we're transferring votes that would otherwise be wasted in order to maximize the utility of each vote.

¹ In a community small enough to hand count ballots, election workers could have entered each ballot into the CVR by hand.

² RCTab, ranked choice tabulating software with settings for both single-winner and multi-winner RCV contests, is available at no charge from the [Ranked Choice Voting Resource Center](#).

Proportional Ranked Choice Voting Study

Round 1: Election Round

Louise is elected with 150 first choice votes, which is 24 votes over the threshold. Her voters need to ‘spend’ 84% of their vote ($126/150 = 84\%$) on her election, so the software automatically transfers the ‘change’ (in this case the remaining 16% of each vote) to the second choice. Louise’s voters “Love the Library”, so they chose another Library Lover as their second choice. Perhaps 100 of Louise’s voters ranked Larry second, while the other 50 ranked Logan second.³

CANDIDATES	ROUND 1	(Transfer)	VOTES GOING INTO ROUND 2
Louise	150 <i>Elected</i>	x 84% =	126
David	110	+0 =	110
Diane	80	+0 =	80
Larry	75	+16% x 100 =	91
Logan	50	+16% x 50 =	58
Danielle	35	+0 =	35
Total	500		500

³ Real voters aren’t this orderly, but it does make the tabulation a little easier to follow! To explore a tabulation of real ballots cast by real voters, see an [Annotated pRCV Tabulation](#), using the cast vote record from Portland’s 2021 Charter Commission Race.

Proportional Ranked Choice Voting Study

Round 2: Danielle eliminated

No active candidate has 126 votes, so Danielle is eliminated and the software transfers each of her votes to the second choice on the ballot. Danielle’s voters want to “D-fund the library!” so they all rank David and Diane ahead of the Library Lovers. Perhaps 30 rank David second and the other 5 rank Diane second.

CANDIDATES	ROUND 1	ROUND 2	(Transfer)	VOTES GOING INTO ROUND 3
Louise	150 <i>Elected</i>	126		126
David	110	110	+30 =	140
Diane	80	80	+5 =	85
Larry	75	91	+0 =	91
Logan	50	58	+0 =	58
Danielle	35	35 <i>Eliminated</i>	-35 =	0
Total	500	500		500

Proportional Ranked Choice Voting Study

Round 3: David elected

David is elected with 140 votes. His voters (including the 30 he picked up when Danielle was eliminated) ‘spend’ 90% of their vote ($126/140 = 90\%$) electing David. The software transfers the remaining 10% of each vote to the next active candidate on the associated ballot. Most of the David voting “D-funders” rank Diane over Larry and Logan, but some voters remember that Diane missed more than half of the meetings back when she was on the school board. Five of them consider that important enough to rank the Library Lovers ahead of her. Another 9 choose not to rank any additional candidates. The ‘change’ from these ballots becomes inactive.

CANDIDATES	ROUND 1	ROUND 2	ROUND 3	(Transfer)	VOTES GOING INTO ROUND 4
Louise	150 <i>Elected</i>	126	126		126
David	110	110	140 <i>Elected</i>	x 90% =	126
Diane	80	80	85	+ 10% x 126 =	97.6
Larry	75	91	91	+ 10% x 3 =	91.3
Logan	50	58	58	+ 10% x 2 =	58.2
Danielle	35	35 <i>Eliminated</i>	0		0
<i>Inactive</i>				+ 10% x 9 =	0.9
Total	500	500	500		500

Proportional Ranked Choice Voting Study

Round 4: Logan Eliminated

No active candidate has 126 votes, so Round 4 is an elimination round. Logan is in last place, and the software transfers each of his votes (including the 'change' from Louise and David) to the next active candidate on the associated ballot. Logan's Library Lovers rank Louise and Larry ahead of any D-funder. Louise has already been elected, so the software skips over her and all but 7 of Logan's votes land on Larry.

CANDIDATES	ROUND 1	ROUND 2	ROUND 3	ROUND 4	(Transfer)	VOTES GOING INTO ROUND 5
Louise	150 <i>Elected</i>	126	126	126		126
David	110	110	140 <i>Elected</i>	126		126
Diane	80	80	85	97.6	+0 =	97.6
Larry	75	91	91	91.3	+51.2 =	142.5
Logan	50	58	58	58.2 <i>Eliminated</i>	-58.2 =	0
Danielle	35	35 <i>Eliminated</i>	0	0		0
<i>Inactive</i>				0.9	+7 =	7.9
Total	500	500	500	500		500

Proportional Ranked Choice Voting Study

Round 5: Larry Elected

With one more seat to fill, and just two candidates remaining, Larry is elected because he has more votes than Diane does. All three seats have been filled and the tabulation is complete.

CANDIDATES	ROUND 1	ROUND 2	ROUND 3	ROUND 4	ROUND 5
✓ Louise	150 <i>Elected</i>	126	126	126	126
✓ David	110	110	140 <i>Elected</i>	126	126
Diane	80	80	85	97.6	97.6
✓ Larry	75	91	91	91.3	142.5 <i>Elected</i>
Logan	50	58	58	58.2 <i>Eliminated</i>	0
Danielle	35	35 <i>Eliminated</i>	0	0	0
<i>Inactive</i>				0.9	7.9
Total	500	500	500	500	500

Is it Proportional?

The pRCV tabulation of this hypothetical ‘Bookfield’ election returned two Library Lovers and one D-funder. If we assume that each voter’s first choice candidate is a reliable reflection of their position on the Library, we can determine the relative size of each voting bloc.

Library Lovers won two of three seats, or 66.6%, with 55% of the votes.

Louise	150 votes
Larry	75 votes
Logan	50 votes
<hr/>	
	=275 votes
275 votes/500 total votes	
= 55%	

D-funders won one of three seats, or 33.3%, with 45% of the votes.

David	110 votes
Diane	70 votes
Danielle	45 votes
<hr/>	
	=225 votes
225 votes/500 total votes	
= 45%	

With three seats to fill, electing two from the larger group and one from the smaller is as close as we can get to proportional representation.

Will voters be satisfied with this result?

Approximately $\frac{2}{3}$ of the Bookfield voters (335 of 500) were able to elect their first choice. An additional 80 voters saw their second choice elected. (Some of Logan’s ballots went to the voter’s third choice, but only because Louise had already been elected). Ballots assigned to Diane were not used in electing a candidate, but it is reasonable to expect that most of her voters ranked David either second (or third behind Danielle) and may be reasonably satisfied with the outcome. While real voters are not this orderly, analysis of real pRCV elections finds that in most cases more than 90% of voters see one of their top choices elected.

Appendix C

A hypothetical Vote-for-3 election in 'Bookfield'

Appendix B.3 introduced the little town of 'Bookfield' where an upcoming Town Council election is dominated by the question of whether to defund and close the library. Recall that a pRCV election returned two "Library Lovers" and one "D-Funder", a result that approximates proportionality and allowed most voters to elect one of their top choices. In this appendix, we explore the effect of Vote-for-3 elections in this same hypothetical community, with the same 500 well informed voters casting ballots.

Majority Capture. A majority (55%) of the 'Bookfield' voters are Library Lovers, and as long as the number of Library Loving candidates matches the number of open seats, D-Funders will be excluded. In this first example, we feature the same six candidates running for the same three open seats:

- Louise, Larry and Logan support continued funding the library. "Vote 'L' if you Love the Library!"
- David, Diane and Danielle are campaigning to defund the library. "D-fund the library! D-fund!"

A Vote-for-3 ballot doesn't ask voters to rank the candidates, but it's reasonable to assume that the 275 (55%) Library Lovers will tend to mark Louise, Larry and Logan, while the 225 (45%) D-Funders will mark David, Diane and Danielle (though ~10% of the D-Funders aren't fans of Diane because she skipped a lot of meetings back when she was on the School Board. . .) Let's assume that the voters are fluent in strategic voting as

Proportional Ranked Choice Voting Study

it applies to Vote-for-N contests, so D-Funders who choose not to vote for Diane do not complete their ballot with a vote for one of the Library Lovers. The vote totals would be:

- 275 Louise (one vote on each Library Lover's ballot)
- 275 Larry (one vote on each Library Lover's ballot)
- 275 Logan (one vote on each Library Lover's ballot)
- 225 David (one vote on each D-Funder's ballot)
- 225 Danielle (one vote on each D-Funder's ballot)
- 203 Diane (10% of the D-Funders do not support Diane)

In this case, the top three candidates are all Library Lovers, which makes the Library Loving voters super happy, but the remaining 45% of our Bookfield voters are decidedly unsatisfied to see that none of their preferred candidates have been elected. We can contrast this outcome with the pRCV outcome (see [Appendix B.3](#)) in which 83% of voters saw their first or second choice elected, and everybody saw at least one winning candidate who shared their position on the library.

Of course, vote-for-N elections don't always result in majority capture, because even in a real election, voters have all kinds of reasons not to vote for a candidate that shares their position on the issue at hand, and minority candidates can win seats when a majority candidate is weak or otherwise compromised. Perhaps Larry is a bit of a bully and has alienated pretty much everybody in the Kiwanis Club. Perhaps a local religious leader has instructed his followers never to vote for female candidates, cutting into the vote totals for Louise (as well as Danielle and Diane). Perhaps Logan is incredibly shy and has avoided door-to-door campaigning and all public appearances. In this election, a library supporting candidate would only need to lose the vote of 51 of the Library Lovers (19%) for the strongest D-Funder to pick up a seat — or fewer, if some of those Library Lovers 'complete' their ballot with an otherwise well-liked D-Funder.

Candidate List Effects. Minority candidates can also win seats when the majority does not match the number of candidates to the number of open seats. This time, imagine that the Librarian doesn't understand enough about Vote-for-N elections to manage the situation effectively. He encourages and endorses four candidates, all of similar appeal. If our 275 Library Lovers, with three votes each, end up splitting those 825 votes across four candidates, each library supporting candidate gets just over 200 votes. If vote totals for the D-Funders are unchanged, then minority bloc D-Funders (without doing anything differently) win two of the three seats - and majority control of the Town Council. (And if Diane hadn't skipped so many School Board meetings, she also would have won, shutting out the Library Loving majority entirely.)

- 225 David (one vote on each D-Funder's ballot)
- 225 Danielle (one vote on each D-Funder's ballot)
- 207 Ludmilla (~25% of 825 votes)
- 206 Louise (~25% of 825 votes)
- 206 Larry (~25% of 825 votes)
- 206 Logan (~25% of 825 votes)
- 203 Diane (10% of the D-Funders do not support Diane)

Minority representation is a critical component of proportional representation, but should not hinge on the existence of an extra majority candidate.

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