

The National Popular Vote (NPV) proposal for U.S. Presidential Elections undermines election integrity

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November 26, 2024

Abstract

National Popular Vote (NPV) Interstate Compact [Koza et al., 2024] attempts to provide direct presidential elections in the U.S. without a constitutional amendment, through a binding agreement among “member” states comprising a majority in the Electoral College. The compact is intended to ensure that a majority of Electoral College votes go to the winner of the national popular vote. It does not succeed.

The “national popular winner” has no objectively fair or correct definition if any state uses a non-plurality method (such as ranked-choice voting) for presidential elections, as two states currently do. NPV does not demand any particular method for states to determine tallies for non-plurality voting methods. NPV requires member states to *accept as conclusive and correct the reported vote tallies* in every state—including states that are not members of the compact. It does not require evidence that reported tallies are accurate, does not provide a way for member states to demand such evidence, and does not provide any remedy even if state-level results are untrustworthy or absurd. Even the best current state-level audits do not provide evidence that state totals are (approximately) correct. Auditing NPV would require sweeping changes to state election administration and federal legislation that ensures coordination among states. Because of these faults, any individual state, whether a party to the compact or not, could alter the outcome of the presidential election through error or malfeasance—or simply by following state law. The NPV compact undermines the trustworthiness of U.S. elections.

NPV is a bad idea unless every state is required to use plurality voting and report those votes accurately in their Certificate of Ascertainment (we call this a *simple direct election*), has a trustworthy, organized, physically inventoried paper trail of votes and a rigorous canvass; and there is a federal requirement to conduct a rigorous, binding risk-limiting audit (at the national level) of the outcome of the presidential contest. For the foreseeable future, adopting NPV is worse than doing nothing.

1 Introduction

Article II of the U.S. Constitution specifies that the Electoral College [Wikipedia] (EC) selects the U.S. President and Vice President (the winning slate). Each state selects a number of electors (members of the EC) equal to the number of its federal representatives—senators plus members of the U.S. House of Representatives (while Washington, D.C. gets three electors). The number of seats in the House is currently 435, so there are 538 electors in the EC. The Constitution specifies that each states’ legislature determines how that state’s electors will be selected.¹

A consequence of the EC system is that the presidential slate that wins might not have gotten the most votes nationally. This has happened five times. Surveys find that most Americans would prefer *direct elections* [Kiley, 2024]: the slate that receives the most votes (the “national popular winner”) wins. The United States is the only country that does not chooses its leader by direct election [Holzer, 2024]. (On the other hand, the U.S. is not constrained to running simple direct elections; individual states may use ranked-choice voting and other non-plurality methods.)

Two aspects of the Electoral College combine to violate the direct election principle:

- Because every state and D.C. get at least 3 electors from a total of 538, less populous states generally have more electors per eligible voter than larger states do.
- All but two states allocate *all* their electors to the slate that won in that state.² Except in those two states, voters whose slate did not win their state have no representation in the EC, and thus in the EC’s selection.

The EC has always been controversial. There have been many attempts to amend the U.S. Constitution to change how the Electoral College works to provide direct elections [Koza et al., 2024; Chapter 4]. The National Popular Vote Interstate Compact is the latest.

2 The National Popular Vote Interstate Compact (NPV)

Moving from the current system to *simple direct elections* by eliminating the EC, and having voters vote directly for presidential slates, would require a constitutional amendment [Koza et al., 2024; Ch. 4.7]. While such an amendment nearly passed the Senate in 1970 [Keyssar, 2020; Levitsky and Ziblatt, 2023; Wegman, 2021], it is unlikely ever to pass, in part because it reduces the electoral power of some smaller states; however, see [Koza et al., 2024; Section 9.3].

¹See Bump [2024]; Koza et al. [2024]; Keyssar [2020] for the history of the Electoral College.

²Maine and Nebraska use a modified form of proportional representation.

The National Popular Vote Interstate Compact (NPV), proposed in 2006, is intended provide the effect of direct elections without requiring a constitutional amendment [Wikipedia; National Popular Vote; Koza et al., 2024].

In a nutshell, NPV is supposed to work as follows:

1. The 50 states and D.C. hold their elections as usual, according to state laws.
2. Each report its “tallies” to the Federal Archivist on a federal *Certificate of Ascertainment* (CoA) as already required by Federal law (3 U.S.C. §§ 6–14).
3. The chief election officer of each state in the compact adds the tallies in the CoAs to find the “national popular vote winner.” The member states will agree, because this is simply arithmetic.
4. The member states are then obligated to cast all their electoral votes for the slate that is the national popular vote winner.

NPV takes effect when the signatory states comprise a majority of the votes in the EC. Seventeen states and the District of Columbia, representing 209 electoral votes (38.7% of the Electoral College), have enacted the NPV proposal [Koza et al., 2024]. In April 2024, Maine became the latest [Faris, 2024]. Because some states have now adopted NPV, changing its terms would be nearly impossible.

3 Support for NPV

The NPV proposers wrote a 1214-page book, now in its fifth edition [Koza et al., 2024]. There is a website devoted to promoting the NPV [National Popular Vote]. Robert Reich [Reich] explains and promotes NPV [Reich, 2024].³ Richard L. Hasen, a lawyer with special interest in election law, dislikes the Electoral College but does not support the NPV (see his recent book [Hasen, 2024]).

NPV is often conflated with direct elections. For example, one voter survey cited as support for NPV [Koza et al., 2024; p. 1099] asked,

How do you think we should elect the President: Should it be the candidate who gets the most votes in all 50 states, or the current electoral college system?

This question is about direct elections, *not* about NPV. (And it doesn’t offer ranked-choice voting as an alternative.)

Direct elections may be desirable, but we argue that under NPV, presidential elections would be substantially less trustworthy than they are now: any state could undermine every presidential election.

³Reich also supports ranked-choice voting [Reich, 2023], which is incompatible with simple direct elections, as explained below.

4 NPV’s Worst Problems

There are serious election integrity problems in the first three steps enumerated above.

4.1 Social choice functions and the Certificate of Ascertainment

States have the right to conduct elections using any social choice function, equipment, and procedures they choose. And Federal law leaves it to each state to decide what numbers to report on its CoA: (3 USC 5(a)(2)(A)) says each state may give the “determination under the laws of such State of the number of votes given or cast for each person for whose appointment any and all votes have been given or cast.”

Some states use a social choice function for presidential elections other than plurality, such as instant-runoff voting (IRV), a form of ranked-choice voting (RCV). It is not clear what numbers a state that uses IRV should report as its tallies for each slate. Koza et al. [2024; pp. 918–921] explains that Maine, which uses IRV, decided to report on its CoA the tallies for the last two candidates standing after all others have been eliminated and argues that it was the right thing to do. But it is an arbitrary and arguably unfair choice. Why not report the tallies for the last three candidates standing? In states with plurality voting, third-party candidates garner some votes, and the difference could change the national winner. And if a state stops the IRV algorithm when one candidate remains, that final candidate gets all the votes. (The final round eliminates the runner-up, yielding the same winner.) If the state reports *that* tally on the CoA, that more-or-less recreates the situation before NPV. None of these ways of incorporating a state’s IRV results yields a simple direct election, which would require every state to use plurality voting.

Similarly, under federal law, a state could adopt a “unanimity rule” as their social choice function: the popular winner of the state officially gets all the votes cast. Like running IRV to the final round, this also “undoes” NPV. This rule would be attractive to some states; otherwise, why would the “winner-take-all” rule have become nearly universal? Foley⁴ asserts that there is immense pressure on states to adopt winner-take-all to maximize each state’s clout in the EC. We can easily imagine a cascade of states adopting such a “unanimity rule.” No legal bar is likely, as such decisions merely recreate the current situation. The NPV would become worthless while its results would be unchallengeable.

In summary, if any state uses a social choice function other than plurality, adding the CoA tallies does not yield a simple direct election, and translating state-level results into “tallies” that can be combined across states requires ad hoc choices: there is no single “correct” way to combine them.⁵ And states are

⁴<https://www.youtube.com/watch?v=ip3JIXjkfts>

⁵Koza et al. [2024; Sections 9.27, 9.28] suggest that RCV, STAR, Range, and Approval voting can all be made compatible with NPV. Their suggestions indeed yield numbers that can be added, but require arbitrary choices, and summing the resulting numbers does not

free to adopt voting rules that undermine NPV, such as the unanimity rule or using the final-round IRV tally.

Conversely, NPV precludes selecting the president by national IRV: to find the national IRV winner would require every state to use IRV and to report on its Certificate of Ascertainment the number of voters who ranked the candidates in each possible way; otherwise, the national IRV winner could not be found from the Certificates of Ascertainment. Moreover, finding the national IRV winner involves more than just summing state-level results, so it does not comport with NPV.

4.2 Election integrity and audits

NPV requires election officials in member states to accept as correct and conclusive the counts in other states—counts they have no way to check. Article III of the NPV Compact says,

The chief election official of each member state shall treat as conclusive an official statement containing the number of popular votes in a state for each presidential slate made by the day established by federal law for making a state’s final determination conclusive as to the counting of electoral votes by Congress.⁶

According to Koza et al. [2024; p. 500], “[t]his clause requires that each member state treat every other state’s timely final determination of its popular-vote canvass as conclusive. That is, the role of the chief election official of each member state is entirely ministerial. All of the member states will, after they perform the simple arithmetic involved, arrive at the same ‘national popular vote total.’ ”

Tallies reported on CoAs could be subtly or obviously incorrect, leading to a reported NPV winner that did not really get the most votes. Under the current system, a state’s error or misbehavior can only affect how its own electors vote; but with NPV, any state can change the national election outcome. Under the current system, a state’s exact tally doesn’t matter; all that matters is which slate won the state. But with NPV, statewide tallies need to be accurate enough that adding them identifies the correct national winner. NPV eliminates critical bulkheads that help assure the integrity of U.S. Presidential elections. For instance, nothing in the NPV or federal law prevents any state from reporting a billion votes for one candidate. While some smart lawyer might find a way to challenge such a count, we doubt that there could be a successful legal challenge to a state outcome that used the unanimity rule, as that basically recreates the current situation, yet it defeats the purpose of the NPV.

We think democracy requires *evidence-based elections* [Stark and Wagner, 2012; Appel and Stark, 2020]:

yield simple direct elections. Indeed, some of the suggested choices don’t represent voters’ wishes at all well.

⁶<https://www.nationalpopularvote.com/bill-text>, accessed 19 August 2024.

It is not enough for election officials to declare a winner: they should also provide *convincing public evidence* that the reported winners actually won.

Any method of tabulating votes can make mistakes or be undermined maliciously, and some states' elections are especially untrustworthy, for a variety of reasons (e.g., Appel et al. [2020]; Stark [2024]). Evidence-based elections require recording votes in a trustworthy way, maintaining demonstrably secure chain of custody of that record, and auditing the reported outcomes rigorously using that record. But NPV provides no mechanism to audit the outcome of the presidential election and no way for any party to push back on any state's reported tallies, even member states.

Even worse, there is no practical way to audit an NPV election, absent sweeping changes to election administration nationally, which might infringe on states' rights. State-level audits—including risk-limiting audits (RLAs) [Stark, 2008, 2020, 2023], the 'gold standard' auditing method [National Academies of Sciences, Engineering, and Medicine, 2018; U.S. Election Assistance Commission, 2021; American Statistical Association, 2010]—*do not check the accuracy of tallies*. The best current audits check only whether the reported winner in a state actually won that state. That is not enough to ensure that adding state-level tallies identifies the candidate that (would have) won the most votes, even if every state used plurality voting.

Proponents of NPV say that the results can be audited. Koza et al. [2013; Section 9.13.5, p. 564] claims to rebut the "myth" that "Post-election audits could not be conducted under a national popular vote." Their argument depends upon the passing of federal bills such as Rush Holt's proposed H.R. 2894 of 2009, which did not pass.

While it is possible *in principle* to audit in a way that would provide evidence that the reported national popular winner really won, that would require every state to meet minimum standards for voting equipment, election procedures, and canvassing; and the audit would require national coordination and cooperation among the states, including states that are not members of the NPV compact. Current state audits would *not* suffice, as (at best) they verify which slate won the state, not the tallies for each slate.

Indeed, even if every state (including NPV non-members) conducted a *risk-limiting audit* (RLA) [Stark, 2008, 2020, 2023], widely considered the "gold standard" of election audits, [National Academies of Sciences, Engineering, and Medicine, 2018; U.S. Election Assistance Commission, 2021; American Statistical Association, 2010] that would *not* provide high statistical confidence that summing the reported statewide tallies would yield the true national favorite. That is because RLAs *do not check the tally*: they only check whether the reported winners really won. A tally may have substantial error but produce the correct winners.⁷ The only way to check whether a statewide tally is exactly

⁷For example, suppose the reported tallies in a given state were all 20% larger than the true tallies. The reported winner for that state would be correct, and an RLA would confirm so. But those erroneous tallies could change which slate NPV declared to be the winner.

correct is to carefully hand-examine *every* cast ballot.

4.3 Recounts

Koza et al. [2024; Section 9.34] discusses recounts, which are especially important because an RLA of NPV is infeasible, as explained above. [Koza et al., 2024; p. 1036] argues that recounts

- are rare,
- change very few votes, and
- rarely reverse the original outcome.

But in many circumstances—legal and logistical—they are the only way to check whether a reported outcome is correct. Koza et al. [2024; P. 1061] says, “There is unlikely to ever be a need to conduct a nationwide recount under the National Popular Vote Compact.” Their implicit argument is that a recount is only called for when the reported margin of victory (reported vote count difference between the reported national popular vote winner and the reported runner-up) is small. That is wrong: the reported margin may be large even when the reported outcome is incorrect.

5 Closing the loopholes

NPV cannot ensure that the actual winners of the national popular vote receive the majority of the EC votes—the whole point of NPV! The only way we know of to mitigate these problems is to require every state (including non-member states) to use plurality voting⁸ with accurate attribution of votes to candidates on their Certificates of Ascertainment, and then to use a national RLA (potentially resulting in a national recount) to confirm that the reported national popular vote winner actually won. Running a nationwide RLA or a nationwide recount would require national election administration, which doesn’t exist and which NPV doesn’t create.

Under the current EC system, individual states’ numerical tallies do not matter: all that matters is who won each state. Under NPV, every state’s reported tally does matter. The sum of the states’ reported tallies must be accurate enough to determine the true popular winner for NPV to succeed. That could be ensured by a properly designed, national risk-limiting audit that coordinated sampling across states—provided there were also adequate federal requirements on voting equipment, ballot chain of custody and accounting, physical security, canvasses, and so on, so that every state had a trustworthy, accountable paper record of the votes kept demonstrably secure throughout the canvass and the audit. That might run afoul of the constitutional right of states to run their own elections; regardless, it seems unlikely to happen soon.

⁸With *plurality voting*, the candidate receiving the most votes (even if it isn’t a majority of the votes) wins. In this discussion plurality voting could be replaced by any other voting scheme that is efficiently “summable” [Wikipedia].

6 Conclusion

The National Popular Vote Compact should not be adopted without a mandate for audited election results in each state (member or not), and without clear and workable policies for states having non-plurality voting rules.

References

- American Statistical Association. American Statistical Association Statement on Risk-Limiting Post-Election Audits. Technical report, ASA, 2010. URL <https://www.amstat.org/asa/files/pdfs/POL-ASARecommendsRisk-LimitingAudits.pdf>. last visited 29 December 2021.
- A.W. Appel and P.B. Stark. Evidence-based elections: Create a meaningful paper trail, then audit. *Georgetown Law Technology Review*, 4.2:523–541, 2020. <https://georgetownlawtechreview.org/wp-content/uploads/2020/07/4.2-p523-541-Appel-Stark.pdf>.
- A.W. Appel, R. DeMillo, and P.B. Stark. Ballot-marking devices cannot assure the will of the voters. *Election Law Journal: Rules, Politics, and Policy*, 19(3):432–450, 2020. doi: 10.1089/elj.2019.0619. Preprint: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3375755.
- Philip Bump. Why don’t republicans want california republicans to matter? *Washington Post*, 10 2024. <https://www.washingtonpost.com/politics/2024/10/15/electoral-college-swing-states-trump-biden-harris-walz/>.
- David Faris. The end of the electoral college is finally in sight. *Newsweek*, 4 2024. <https://www.newsweek.com/end-electoral-college-finally-sight-opinion-1891907>.
- Richard L. Hasen. *A Real Right to Vote*. Princeton, 2024.
- Joshua Holzer. No country still uses an electoral college except the us. The Conversation, 10 2024. <https://theconversation.com/no-country-still-uses-an-electoral-college-except-the-us-240281>.
- Alexander Keyssar. *Why do we still have the Electoral College?* Harvard University Press, 2020.
- Jocelyn Kiley. Majority of americans continue to favor moving away from electoral college. <https://www.pewresearch.org/short-reads/2024/09/25/majority-of-americans-continue-to-favor-moving-away-from-electoral-college/>, 9 2024.
- John R. Koza, Barry F. Fadem, Mark Grueskin, Michael S. Mandell, Robert Richie, and Joseph F. Zimmerman. *Every Vote Equal: A State-Based Plan*

- for Electing the President by National Popular Vote* . National Popular Vote Press, fourth edition, 2013. Downloadable for free from <https://www.every-vote-equal.com/>.
- John R. Koza, Barry F. Fadem, Mark Grueskin, Michael S. Mandell, Robert Richie, and Joseph F. Zimmerman. *Every Vote Equal: A State-Based Plan for Electing the President by National Popular Vote* . National Popular Vote Press, fifth edition, 2024. Downloadable for free from <https://www.every-vote-equal.com/>.
- Steven Levitsky and Daniel Ziblatt. How american democracy fell so far behind. *The Atlantic*, 9 2023. <https://www.theatlantic.com/ideas/archive/2023/09/american-constitution-norway/675199/>.
- National Academies of Sciences, Engineering, and Medicine. *Securing the Vote: Protecting American Democracy*. The National Academies Press, Washington, DC, 2018. ISBN 978-0-309-47647-8. doi: 10.17226/25120. URL <https://nap.nationalacademies.org/catalog/25120/securing-the-vote-protecting-american-democracy>.
- National Popular Vote. National popular vote. Downloaded July 23, 2024. <https://www.nationalpopularvote.com/>,.
- Robert Reich. Robert reich. URL <https://robertreich.org/>.
- Robert Reich. Ranked choice voting explained, 2023. URL <https://www.inequalitymedia.org/ranked-choice-voting-explained>.
- Robert Reich. How to eliminate the electoral college, 2024. URL <https://www.youtube.com/watch?v=EXPwJqSdLfE>.
- P.B. Stark. Sets of half-average nulls generate risk-limiting audits: SHANGRLA. In M. Bernhard, A. Bracciali, L.J. Camp, S. Matsuo, A. Maurushat, P.B. Rønne, and M. Sala, editors, *Financial Cryptography and Data Security, Lecture Notes in Computer Science, 12063*, Cham, 2020. Springer Nature.
- P.B. Stark and D.A. Wagner. Evidence-based elections. *IEEE Security and Privacy*, 10:33–41, 2012.
- Philip B. Stark. Conservative statistical post-election audits. *Annals of Applied Statistics*, 2:550–581, 2008. URL <http://arxiv.org/abs/0807.4005>.
- Philip B. Stark. ALPHA: Audit that learns from previously hand-audited ballots. *Annals of Applied Statistics*, 17:641–679, 2023. doi: 10.1214/22-AOAS1646.
- Philip B. Stark. When audits and recounts distract from election integrity: The 2020 u.s. presidential election in georgia. In *E-Vote-ID 2024 Proceedings*, 2024.

U.S. Election Assistance Commission. Election Audits across the United States. https://www.eac.gov/sites/default/files/bestpractices/Election_Audits_Across_the_United_States.pdf, 2021.

Jesse Wegman. The filibuster that saved the electoral college. *The New York Times*, 2 2021. <https://www.nytimes.com/2021/02/08/opinion/filibuster-electoral-college.html>.

Wikipedia. United states electoral college. Last modified July 23, 2024. Downloaded July 23, 2024. https://en.wikipedia.org/wiki/United_States_Electoral_College.

Wikipedia. National popular vote interstate compact. Last modified July 23, 2024. Downloaded July 23, 2024. https://en.wikipedia.org/wiki/National_Popular_Vote_Interstate_Compact.

Wikipedia. Summability criterion. Downloaded November 3, 2024. https://en.wikipedia.org/wiki/Summability_criterion.