May 8, 2024

The Honorable Shirley N. Weber, Ph.D.
California Secretary of State
1500 11th Street
Sacramento, CA 95814

Via email to Ddawson@sos.ca.gov

Dear Secretary Weber:

The people signing below are happy for the opportunity to submit these joint comments on California's revised proposed rules for manual counts, based on the "Second Amended Proposed Text of Regulations" at https://www.sos.ca.gov/administration/regulations/proposed-regulations.

We support the previous comments, attached and at http://votewell.net/cacount.pdf. We appreciate the improvements in the revisions. We believe the changes are not adequate, and the previous comments need to be adopted,

- To avoid arbitrary and unsupportable differences among initial counts, 1% counts and recounts, and limits on them, in accord with California laws
- To ensure accurate cumulations
- To ensure a reliable chain of custody

We can highlight:

VOTERS' MARKS

1. p.2 20282(c) "A mark is considered valid when it is clear that it represents the voter's choice and is the technique consistently used by the voter to indicate their selections."
    a. The "and" clause is harmful: It says that *even when it is clear that a mark "represents the voter's choice,"* the rule suppresses this vote when someone decides the mark is not consistent with other marks.
2. p.3 20283(c)(1) through (4) have the same flaw of insisting on consistency.
3. p.4 20283(d)(7) says that initial counts suppress a write-in vote when the voter has written in a name but not marked the target (bubble), but manual tallies and manual recounts count them. Both rules are harmful. Both rules should be that a vote is valid when the voter has written in a name without marking the bubble, as long as this does not create an overvote. If it created an overvote, it might very well mean the voter thought about the write-in, but ultimately decided to vote for someone else. Scanners are almost as capable as manual tallies of detecting writing in the space. Treating the 1% manual tally differently from the machine

rule creates unnecessary conflict between the two counts. Applying the rule to machines may need delay to allow recertification.

4. p.5 20283(d)(8) suppresses write-ins made by a sticker or rubber stamp. This needs justification. Forcing people to hand-write makes it harder for staff to read choices, and hurts candidates with hard-to-spell names, and degrades vote secrecy when someone on staff or at a manual tally or recount sees the handwriting. We have not found rules from the scanner manufacturers forbidding stickers, which are used across the country, including redaction tape used by election offices. We are interested in what the reason would be to forbid rubber stamps.

HASHES & CHAIN OF CUSTODY

5. p.6 20297(b), p.20 20310(b), and p.25 20351(c) define chain of custody as a process to track who has election materials, when and why. Paperwork does not stop or detect bad actors, who skip the paperwork. We understand the Secretary wishes to match the EAC definition. However it does not define an adequate chain of custody for California election materials. In the rules on p. 8 20298(a), p.14 20303(c), and p.23 20314, (or in an addition to the definition) requirements are needed to:
    a. Publish hash values of all files when first created on time-stamped online archives independent of election official control, such as Sigstore or the Internet Archive. This is California in the 21st century. We can use computers to complement paper records.
    b. Track seal numbers, and use certified seals[1] (e.g., strong tamper evidence and requiring manufacturers not to make duplicate seals). Secure the seal logs.
    c. Use certified locks[2] (e.g., UL-487) where at least 2 locks need to be opened to access materials. The 2 or more locks need to have keys held by, and with locks re-keyed by, independent offices, such as Registrar and Auditor, Assessor or Prosecutor.

CONSISTENT RULES

6. pp.6-end create arbitrary and unsupportable differences among initial manual counts, 1% manual tallies and manual recounts. Certainly, sampling only applies to the 1% and payment only applies to recounts, but if other rules are justified for one approach they are justified for the others, including plans, notice, sequentially numbering ballots, observation, methods, changing colors of ink and watermarks, etc.
7. 1% manual tally and recount need to require that each team have only part of a batch, where the batch is any unit for which the computer has a count. The two

[1] http://www.votewell.net/locks.html#_Toc163030928
[2] http://www.votewell.net/locks.html#_Toc163030926

parts would then be added, to compare to the computer count, and the teams and supervisors would not know in advance what each team's results "should" be.

8. p.11 20300(b) We appreciate counting boards must include, if feasible, people of more than one political party or no party. We also appreciate that this rule and (d)(3) require 2 independent talliers, and allow more. Having 3 tallies will help boards find errors faster, when 2 of 3 agree. P.34 20371(a) needs the same flexibility to allow more than 4 board members and more than 2 talliers.
9. p.13 20302(c) and p.16 20304(a) still require "a cumulating board", when they should say "one or more cumulating boards..." A big recount or other count will need many cumulating boards.

TALLY SHEETS AND RCV

10. p.15 20303(m)(2)(B) We appreciate allowing pre-numbered tally sheets to strike through. The diagram is misleading, since it shows none of the required slashes and Xs, but only the line-through indicating no further votes, described in 20303(n)(1).
11. There need to be tally sheets and rules designed for RCV. The proposed tally sheets are only meaningful for plurality contests, not RCV. Options include:
    a. A tally sheet for a 1% manual tally of an RCV contest can cover the first 2 rounds, like Wisconsin's for single-winner contests (IRV) at www.votewell.net/tally.htm#_Toc161937696 with rules to continue the RCV rounds until a candidate has 50.1% of the non-exhausted ballots in the 1% sample. A different tally sheet would be needed for multi-winner contests (STV). Cambridge, MA, used to hand-tally STV without fractional transfers. They sorted ballots by the first rank, then proceeded with rounds of transferring votes.[3]
    b. Between the last 2 candidates left standing in the machine count, in single-winner contests (IRV), a tally sheet can see which of these 2 had the most votes by tallying 3 categories of ballots:
        - Alice before Bob (or with no mention of Bob)
        - Bob before Alice (or with no mention of Alice)
        - no mention of either

       Dr. Vanessa Teague, an expert in RCV tallying, suggested this option and notes that "Australian electoral authorities do this in the polling place". But note that such results would have no meaning if these candidates truly should not be the 2 in the last round.
    c. To check 3 top candidates would take 10 categories, which would be hard to do accurately.[4]

[3] Recently Cambridge, MA, uses software, again without transferring fractional votes. Each election has a link, called "Spreadsheet (PDF) - with transfer details", which shows results. http://rwinters.com/elections/index.html

[4] Ten categories to check top 3 would be these. The > symbol here means "ranked before."

1. A > B > C (or with no mention of C)

d. The machine records for each sampled batch can be totaled for each rank, considering each rank as a separate contest. The hand tally would tally each rank as a separate contest and compare the total votes for each candidate in each rank with the totals derived from the cast vote records for that batch. This does not audit the ranking process itself but checks if the machine is properly configured to evaluate voters' marks.

12. p.16 20303(m)(6)(B) still requires the supervisor, responsible for 4 tables, to join one and ignore the others, for a third tally. Better to skip to the end of the paragraph and require "a process" to resolve discrepancies, which would often be giving the batch to another or bigger team, or counting it later under close observation.

1% MANUAL TALLY

13. p.20 20310(b) allows 1% random selection any time after polls close. Selecting hours or days before the tally lets bad actors change sampled ballots to match bad tallies, or change all tallies other than the sampled ones to bad results, before they come out of the machines. As in Utah,[5] the sample should be selected only 15 minutes before the manual tally starts.
14. p.21 20311(g) still lets offices limit notice to one obscure social media post and one notice at some building open to the public. All counties have websites, so posting on the election office's home page should be required, not optional.
15. p.21 20312(a)(3) and (4) We appreciate the public may observe ballots being retrieved and voters' marks. The public also needs to see tally sheets when being created and accumulated.
16. p.21 20312(b) lets the public ask questions. It also needs to require timely answers.
17. p.22 20313(b)(1) still allows selection of numbered paper slips or balls from a hopper, with no way to know that all numbers are present exactly once, and that no texture identifies some to be selected.
18. p.22 20313(b)(2)(A) and (D) still allow software to select samples, with no way to know if the software has been hacked by insiders or outsiders to pre-select the sample.

---

2. A > C > B (or with no mention of B)
3. A with no mention of B or C
4. B > A > C (or with no mention of C)
5. B > C > A (or with no mention of A)
6. B with no mention of A or C
7. C > A > B (or with no mention of B)
8. C > B > A (or with no mention of A)
9. C with no mention of A or B.
10. No mention of A, B or C.

[5] Cann, Damon, Quin Monson, Leah Murray (2023-11-13). "Election Audits and Election Security: A Report for the State of Utah" (PDF). *Utah Lieutenant Governor*.

19. p.22 20313(b)(2)(B) and (C) still provide higher probability of selection for higher-numbered batches. The arithmetic of this problem was explained in three different ways in earlier comments by CVF, Verified Voting, Common Cause and Brennan,[6] Lutz,[7] Burke et al.[8] The lack of correction shows misunderstanding of the arithmetic or acceptance of biased sampling. Either reason is terrifying in the office managing elections in the country's biggest and richest state. Ten-sided dice, as in (B), would be fine using the methods described in the comments, which do not oversample higher-numbered batches.

RESEARCH NEEDED ON COUNTING APPROACHES

20. p.35 20372(a)(3) requires sorting as well as read-and-tally. We need experiments to know if this helps or hurts accuracy. The accuracy of sorting has been questioned in small experiments.[9]

    It is possible that sorting, and then other staff checking the sorted piles, will add accuracy. Sorting is natural for RCV single-winner contests, where the stack for the eliminated candidate in each round is re-sorted to add votes for remaining candidates in the next round.

    It is also possible that read-and-tally from sorted files makes staff lose concentration, missing the occasional mis-sorted ballot in a stream of calling and tallying the same name. Unless the ballots are sequentially numbered before sorting, sorting removes the original order of ballots, which, in central count, could have been compared to the order of ballot images and cast vote records, to research discrepancies.

    We appreciate the rules that require read-and-tally for the sorted stacks, not just counting them, which is hard to observe or do consistently.

21. p.36 20373(a) requires sorting once for each candidate in each multi-winner contest. Each time, there is a stack for candidate i and a stack for other candidates. Staff read out only the ballots sorted for candidate i, losing permanently any of i's ballots placed in the wrong stack. So they need to read out both stacks (time-consuming) or have another way to prove no ballot was misclassified. Any approach needs to be tested by substantial experiments before requiring it in large, important jurisdictions such as California.

---

[6] https://www.calvoter.org/sites/default/files/comments-regs-cvf-bc-ccc-vv-june302023.pdf;
[7] http://votewell.net/cacount1.pdf
[8] http://votewell.net/cacount.pdf
[9] Goggin, Byrne & Gilbert, "Post-Election Auditing: Effects of Procedure and BallotType on Manual Counting Accuracy, Efficiency, and Auditor Satisfaction and Confidence," *ELECTION LAW JOURNAL* v.11, no.1, 2012. https://www.liebertpub.com/doi/10.1089/elj.2010.0098 *Dr. Goggin is now at SDSU.*

22. California hand-counts more votes than any other state:[10] 1% of the 12 million election-night total in the 2020 general election,[11] times an average of about 20 votes per ballot, a total of about 2.4 million votes. The SOS needs to sponsor a good research program to test the accuracy of different counting and accumulating methods. The scattered measurements of accuracy so far[12] have not tested all approaches, and few test the weak step of accumulating large numbers of tally sheets. The accumulation step could be tested separately by using past tally sheets, or random ones, to sum by different team sizes and methods.

Thank you for considering our comments.

Sincerely,
Note: All affiliations are for reference only and do not constitute an endorsement

Paul Burke - admin@VoteWell.net, California voter, poll worker in California, West Virginia, and Bosnia

Lynn T. Surum - California voter, LA County

John L. McCarthy - California voter, Alameda County, retired computer scientist Lawrence Berkeley National Laboratory

Dale Axelrod - Sonoma County Democratic Party, Chair – Outreach, Advocacy, & Legislation Committee

Tim White - WA State pollworker, election observer

Luther Weeks - Computer Scientist, Executive Director, Connecticut Citizen Election Audit

Ray Lutz - Executive Director, CitizensOversight.org

Harvie Branscomb - electionquality.com

Celeste Landry - past CA and recent Colorado (CO) poll worker, CO election canvass board member, registered volunteer lobbyist on CO election bills including RCV (both IRV and STV) bills

[10] https://en.wikipedia.org/wiki/Election_audit#Table_of_U.S._audit_rules
[11] https://web.archive.org/web/20201105171748/https://electionresults.sos.ca.gov/returns/status
[12] https://en.wikipedia.org/wiki/Vote_counting#Errors_in_manual_counts

July 5, 2023

The Honorable Shirley N. Weber
California Secretary of State
1500 11th Street
Sacramento, CA 95814

Via email to Ddawson@sos.ca.gov, nrobinson@sos.ca.gov

Dear Secretary Weber:

The people signing below have these joint comments on California's proposed rules for election hand counts. https://www.sos.ca.gov/administration/regulations/proposed-regulations

Some of our main points are:

- There are differences without apparent reason, in the proposed rules for initial counts, recounts and 1% manual counts.
- The requirement to machine-audit initial hand counts contrasts with rules for 1% manual tallies and recounts, and with the opinion of some experts, that hand counts are the gold standard and are more reliable than machine counts.
- The cumulation of thousands of tally sheets needs more detail, which we suggest.
- Ballot images are effective to check the chain of custody and recover from problems.
- Proposed rules for recounts "by means of the voting system used originally," unnecessarily restrict a helpful approach used in other states.

The Notice cited only three reports as a basis for the rules, two by Ansolabehere *et al*. on New Hampshire and Wisconsin, and an interview in Nevada. These do not provide justification for most of the rules. The footnotes below cite several other reports with helpful information.

We would appreciate a chance to meet with the staff while these rules are being finalized, to answer any questions and discuss ways to make hand counts better, for election workers, observers and the general public.

Verified Voting lists 648 jurisdictions in the US using hand counts in 2022.[1] 41 entire counties use hand counts, including 11 each in Idaho and Montana with a total population of 84,000. Columbia County, NY, with 40,000 voters, has hand counted most contests for years.[2] There were four problematic hand counted elections from 2020-2023 identified in comments from the California Voter Foundation, Verified Voting, California Common Cause and Brennan Center.[3] This is a very small number of problems among 648 hand-counting jurisdictions. In the same period there were at least 11 problematic machine counted elections.[4]

[1] The Verifier — Election Day Equipment — November 2022, Excel download (under Alaska on page). https://verifiedvoting.org/verifier/#mode/navigate/map/ppEquip/mapType/normal/year/2022
[2] "They keep voting honest, one ballot at a time," *UpStater*, 2012. https://theupstater.com/news/by-debora-gilbert-196/ and Richey, Warren, "Securing the vote: How 'paper' can protect US elections from foreign invaders," *Christian Science Monitor*, 2017. https://www.csmonitor.com/USA/Politics/2017/1107/Securing-the-vote-How-paper-can-protect-US-elections-from-foreign-invaders
[3] https://www.calvoter.org/sites/default/files/comments-regs-cvf-bc-ccc-vv-june302023.pdf
[4] https://en.wikipedia.org/wiki/Electronic_voting_in_the_United_States#Errors_in_optical_scans

Hand counts in a wide range of studies take about 0.1 minutes (6 seconds) per vote tallied, for single sheets tallied in sequence.[5] Time is higher for random single ballots in RLAs. A team can tally 1,800 ballot sheets per week (averaging 10 votes/sheet, 6 hours/day to allow time for setup and adjustments each day). 30 teams can tally 50,000 ballot sheets per week. A team of 5 at $20/hour costs $4,000/week, or $2.20/ballot sheet.

AMBIGUOUS MARKS

Proposed rules 20281-20283 were the subject of comments some of us made in 2022, when the rules were numbered 20981-20983. We reiterate those comments.

REQUIRING AND REVISING A MANUAL TALLY PLAN

Proposed rule 20299(a) requires each hand-count county to create a Manual Tally Plan. Manual counts are explicitly allowed by Election Law 15270-15290, without requiring a plan. The Secretary's authority to require or disapprove the Plan seems unclear. A similar plan, the Election Administration Plan, is only required because Election Law 4005(a)(10) requires it.

If there is a Plan, proposed rules 20299(a) and (e) need to require each draft Manual Tally Plan and status update to be posted on the County and Secretary of State websites when submitted. Other rules recognize that all counties have websites.

Proposed rules 20299(b) and (d) arbitrarily let the Secretary of State wait until 90 days before election day to approve or reject the county's plan, even if the plan is submitted far in advance. Then there is an arbitrary rule that the county has only one chance to revise the plan within 10 days and the Secretary has 10 days to approve or reject. It would be more reasonable for the Secretary to approve or reject the plan within 30 days after submission, and let the county revise any time before the original deadline of 120 days before election day, with a 10-day review by the Secretary for each revision. This gives plenty of time for multiple revisions, especially until there is precedent for what each Secretary will accept.

MANUAL TALLY PLAN CONTENT

Proposed rule 20299(c)(2) is unreasonably vague, "sufficient detail to fully describe each element, and could be void for vagueness. It would take many precedents for counties to know what each Secretary will accept.

According to proposed rules 20299(f)(6) and (14), "use of cell phones, cameras, and audio or video recording devices in the location where the manual tally is conducted shall be restricted." During counting, ballots are not identified with any voter. Election law 15272 says "the ballot read and the tally sheet kept shall be within the clear view of watchers." Since these anonymous marks are public, there is no basis to restrict phones or recordings, which can dispel misinformation. Webcams for people with disabilities to observe the public count are needed.

Proposed rules 20299(f)(8) and 20303(a) require numbering and imaging each ballot. Machine-counted ballots are not required to be numbered, so it is not clear that the law requires numbering hand-counted ballots. Capturing ballot images seems to be make-work unless the rules are amended to say how they will be used. Electronic ballot images are valuable for machine recounts, in the approach recommended in our comments on 20370(b) below. If that approach is adopted, it will provide a use for the images. Otherwise, other uses need to be identified to justify imposing this cost on counties, and this delay on public results.

Proposed rule 20299(f)(13) requires daily changes of pen colors. If this is needed, it would also be needed for 1% manual tallies and recounts.

[5] Staff time per vote divided by team size. commons.wikimedia.org/wiki/File:Time_for_hand_counts.png

Proposed rule 20301(a)(11) requires tally sheets to have a different color watermark each day, so the county would need to print many new tally sheets, for each type of ballot, for each day, which is more security risk than not changing colors and not printing so many excess copies. If changing colors is required, it would also be needed for 1% manual tallies and recounts.

AUDITS OF FULL HAND COUNTS

According to proposed rules 20299(f)(11) and (15) and 20305(a)(3), "manual tally results will be verified and audited using a certified voting system tabulator," and "All ballots shall be audited using the certified voting system tabulator." Only 1% of machine-counted ballots are audited, and the hand counts are the standard of accuracy, so it is not clear that the law requires machine auditing any hand-counted ballots, let alone 100%.

The reason hand count results can audit machine counts is that machine counts can and do make big systematic errors.[6] Hand counts typically make small errors, and, people are "able to discern and agree on the voter's intent, which, beyond a certain point, a machine cannot."[7]

It seems clear that in any significant difference between a machine count and a manual count, the manual count will be believed, so the machine count is a costly distraction.

RECONCILIATION

Reconciliation provides a more believable and wide-ranging check on manual counts than machine retabulations do. Much of the reconciliation process outlined below should be similarly required for machine counts.

1. The two talliers check each other after every 25 ballot sheets. (Approved machine voting systems do not generally have similar independent tallies to check each other.)
2. Total of each contest - Another check is possible when tally sheets show for each contest: total overvotes,[8] undervotes and valid votes for each candidate. Machine counts should also show the number of undervotes and overvotes and have the same checks listed here, to enable this level of rigor:
    a. Total tallies (**overvotes+undervotes+candidate_votes**) in all 1-winner contests on a sheet should be the same and equal to the number of ballot sheets containing the target contest. Checking this provides another check on accuracy of the hand tally. In hand counts, summing tallies within each contest should be a required step before accepting a tally sheet.
    b. In multi-winner contests, **number** of undervotes needs to be tallied, and each overvote tally needs to be multiplied by the number of winners. Then **contest_total = #winners x #sheets**.
    c. In **RCV**, each rank needs to be checked separately.
3. A very important audit step which the rules need to require is to check that **independent counts** (voters signing in, number of ballots collected from mailboxes and drop boxes) match the total

---

[6] Theisen, Ellen, "Ballot-Scanner Voting System Failures in the News — A Partial List" 2009. www.votersunite.org/info/opscansinthenews.pdf
Norden, Lawrence. "Voting system failures: a database solution". *Brennan Center, 2010*. https://www.brennancenter.org/sites/default/files/2019-08/Report_Voting_Machine_Failures_Database-Solution.pdf
https://en.wikipedia.org/wiki/Electronic_voting_in_the_United_States#Errors_in_optical_scans

[7] https://www.timesunion.com/opinion/article/Hand-count-votes-to-reduce-errors-977654.php

[8] When a voter selects three candidates in a 1-winner or 2-winner contest , that is "An overvote" in the contest, as defined in 20281(g), not three overvotes.

ballot sheets tallied. Keeping subtotals by type of ballot, date received, etc. will break up these comparison totals to isolate issues. This step is the only step which ensures all ballots have been included in the cumulation. Lack of this step was the flaw in erroneous results from Indiana, Scotland and Austria.[9] Lack of good data entry was the flaw in Arizona.[10] The cumulating boards can do this reconciliation step, as suggested below, or it can be a separate task.

4. The independent counts show the number of ballots. Tallies (manual or machine) show number of ballot sheets. Voters are most likely to return the first sheet, i.e., the sheet with the highest-profile contests. So the number of first sheets should be a high percent of the number of ballots. The number of second and third sheets will be some percent of first sheets. It would be helpful for the Secretary to collect and provide these percentages, for all counties, to give a frame of reference.
5. After the cumulating boards or auditors enter all data, they need to sum the **total of each contest in the final cumulative data**, to be sure contest totals (overvotes+undervotes+candidate_votes) for contests on the same sheets still match after cumulating, as they did on each tally sheet in step 2.

PARTISANSHIP

Proposed rule 20300(c) needs to require that the 4-person counting boards have no more than 2 members with the same party preference, to decrease public suspicions, rather than being silent on party composition. It also needs to require that teams be randomly mixed and rotated, so two friends are not consistently in position to have doubts cast about their work together.

FULL COUNT METHOD

Proposed rule 20301(a)(7) calls for tally sheets designed for 25 ballots. Having few ballots per tally sheet is a good approach, since it lets 30 or more contests be on the same tally sheet to avoid flipping pages when tallying. It raises the question why the approach is not required for 1% manual tallies, which similarly cover all contests, and for recounts. These sub-batches are even more important when there is already a machine count, as in 1% manual tallies and recounts, so the counting team cannot force the result to match a known total.

Proposed rule 20301(a)(8) requires tallies of "overvotes cast for each candidate". This is a good concept, which will help show when overvotes affect outcomes and need review. However it seems hard to avoid mistakes when tallying single votes for each candidate and overvotes for each candidate on the same sheet. It would be important to identify jurisdictions which have tallied overvotes for each candidate and their tally sheet designs before imposing this rule statewide. It also raises the question why overvotes for each candidate are not required for 1% manual tallies, recounts, and machine counts.

Proposed rule 20303(d) requires "medical style exam gloves". This may be a useful worker protection measure, and raises the question why they are not required for 1% manual tallies and recounts.

Proposed rule 20303(i) requires a re-tally if there is any discrepancy between two talliers. More reasonably, 20372(g) and 20373(g) allow recount boards to correct simple mistakes without a re-tally, and that is needed here.

---

[9] Beilman, Elizabeth, "Jeffersonville City Council At-large recount tally sheets show vote differences". *News and Tribune (Jeffersonville, IN)*.
Open Rights Group. May 2007 Election Report. pp.51-52 which are 55-56 of pdf
Currie, Richard, "Election Excel blunder declared a 'low point' for Austrian social democracy," 2023. https://www.theregister.com/2023/06/06/austria_election_excel_blunder/

[10] Anglen, Robert, "Why what happened in 2021 Arizona election 'audit' still matters," *USAToday* 2023. https://www.usatoday.com/story/news/local/arizona-investigations/2023/06/12/new-cyber-ninjas-text-2021-arizona-audit/70299020007/ and https://docs.real-audits.org/s/smdKQGmkR9ik9f3

Proposed rule 20303(m)(2) requires five or one tally mark per numbered box. Five marks in one space leads to error-prone reporting if there is a number centered at the top of each column, showing the count if the column is full (as in Los Angeles and Indiana). That centered number is easy to misinterpret as the beginning of the column, to which people mistakenly add the tally marks in the column.[11] The number needs to be right-justified or above the line dividing two adjacent columns instead of in the space. One tally mark per box is one good approach. Crossing out numbers, as in San Diego, should also be allowed. It similarly avoids misinterpretation. There is no research cited for the methods allowed, or for disallowing the San Diego approach of crossing out numbers. The rule also needs to apply equally to 1% manual tallies and recounts.

A different format needs to be allowed for ranked choice voting. A Wisconsin format allows tallying or recording first and second choices on one tally sheet.

Proposed rule 20303(m)(3) should not require "tally keepers shall verify that the total number of votes for each candidate or ballot measure match, prior to moving onto the next contest." Tallying one contest at a time before moving to the next contest is rarely done, since it takes more time and puts far more wear and tear on the ballots and staff than tallying all contests before moving on to the next ballot sheet, which is the common approach, and is allowed by proposed rule 20303(g), "a different method or process is authorized by the elections official."

SUPERVISORS

Proposed rule 20303(j) requires supervisors to distribute materials to counting teams. 20303(m)(6)(B) requires a supervisor to drop all other responsibilities and join a counting board after two discrepancies. These tasks need to be done by others. They would distract supervisors from other duties in (m)(4) and 20302(a), and the combination of duties would delay the distribution of materials, and therefore delay the count.

Proposed rule 20358(b) has a similar diversion of recount supervisors into transporting, instead of supervising. On the other hand proposed rule 20358(c) allows for additional recount staff to produce and retrieve material, which is a flexibility needed on all hand counts, especially when ballots are stored and counted in different locations.

CUMULATING BOARD

Proposed rule 20304(a) requires "a board" to accumulate tally sheets. All but the smallest counties need many boards, not "a board." Every 25,000 ballots will have 1,000 tally sheets. Compiling election totals, from all the individual tally sheet totals, is the weakest point in hand counts, because large errors can enter, as they have in other places from Austria to Arizona, as noted above. Entering data from all the tally sheets needs great care, to check & recheck it and make it observable.

Rules need to provide for checking of cumulating boards. Traditionally accountants and bookkeepers key in columns of numbers so fast that they check their own work by keying the same column of numbers twice, and checking for a match in the data file or adding machine tape. While cumulating boards are not as experienced, they can benefit from a similar approach:

1. Cumulating boards need to enter tally sheets **twice,** independently, in multi-viewer software (like google sheets or MS sharepoint), with overhead webcams recording, so observers can watch any time, staff won't know if there are observers, and the two entries can be compared. The line-by-line data entries and tally sheets need to be public afterwards, so the public can see they match.

[11] Beilman, Elizabeth, "Jeffersonville City Council At-large recount tally sheets show vote differences". *News and Tribune (Jeffersonville, IN)*.

2. These boards or someone needs to check that **independent counts** (voters signing in, number of ballots collected from mailboxes and drop boxes) match the total ballot sheets tallied, as described above in Reconciliation.
3. After data entry, these boards or someone needs to check that contest totals (**candidates+undervotes+overvotes**) from a ballot sheet are consistent, as described above in Reconciliation.
4. Tally sheets need to be scanned into electronic images, digitally signed and published online with the cumulated results, same day, so errors appear quickly. A way to check the images is to scan before data entry, and have one of the independent data entry teams work from paper sheets and one from the scanned image, so they will catch any errors in the image as well as their own data entry errors.

Proposed rule 20304(b) requires either adding numbers on paper, or using a machine "approved or certified by the Secretary of State pursuant to Elections Code sections 362 and 19202." These Code sections of law don't provide for certification of machines or software to total tally sheets, so compliance is not possible for most jurisdictions. Election Law 15270-15290 does not seem to give authority to the Secretary to control the totalling process.

1% MANUAL TALLY

Proposed rule 20310 allows sample selection after the close of the polls on election day. This is too early. Sample selection needs to wait until contest totals are published for every precinct and batch subject to sampling, so the public knows it was not possible to choose the audit sample, then change numbers in the other batches, which will never be audited, before publishing final numbers. California audits are poor enough, because they omit later ballots, but they are a pretense if the sample is selected before all data are published.

Proposed rule 20315(b)(12) requires counties to report discrepancies. This is a good requirement. We call on the Secretary to stop accepting incredible reports from big counties that all hand counts perfectly matched machine counts. While good hand counts are close to accurate and show if machine counts have significant problems, hand counts do not always exactly match machine counts, and claims of perfection deserve investigation. Besides the occurrence of random errors, people are "able to discern and agree on the voter's intent, which, beyond a certain point, a machine cannot."[12]

PUBLIC NOTICE

Proposed rule 20311(f) allows "public" notices to be posted only on an obscure wall and an obscure social media account. Rules need to require the current first & third options (website & email list that people can sign up for), not any 2 of 5 options.

OBSERVATION

Proposed rule 20312(a)(4) requires the public to be able to "observe the voters' marks on every tallied ballot" Election Law 15004(c) authorizes 10 non-party observers plus 2 per party. It is hard for this many, to crowd behind the team, to see voters' marks well. The rules need to allow or require webcams focused on the ballots, with a small number of the observers rotating to positions to watch directly so all can trust the webcams. The webcams also give needed access for observers with disabilities. Besides the marks, observers and webcams need to be able to see the ballot sequence number, if that isn't dropped from the rules, so when observers disagree with a reader, they can seek correction later. Observers and webcams also need to see the tally sheet & cumulation process. The cumulation process is the step in manual

[12] https://www.timesunion.com/opinion/article/Hand-count-votes-to-reduce-errors-977654.php

counts where the biggest problems can be seen or hidden. This rule needs to apply also to complete counts and recounts.

Proposed rule 20312(b) implements the law that observers may ask questions, ELEC 2300(a)(9)(B) also says observers have the right to get answers, which needs to be in the rules.

RANDOM SELECTION

Proposed rules 20313(b)(2)(A) and (D) let counties use a random number generator or spreadsheet to choose samples. Spreadsheets depend on software in a computer, and random number generators usually do. The Secretary of State, county officials and the public don't know when a computer's random number generator or spreadsheet is hacked to omit any tampered precincts or batches of ballots. These two approaches should not be allowed.

Proposed rules 20313(b)(2)(B) and (C) let counties roll dice or draw lots to choose each digit separately for a list of precincts or batches. This gives very uneven probabilities. In the rules' example of 123 precincts, there is a ½ chance the first digit is 1, and

- There are 24 precincts from 100-123, so each has around ½ x $^1/_{24}$ = $^1/_{48}$ chance of selection
- There are 99 precincts from 001-099, so each has around ½ x $^1/_{99}$ = $^1/_{198}$ chance of selection.
- Actually #120-123 have highest chances, multiplying the chances for each of the 3 digits: ½ x ⅓ x ¼ = $^1/_{24}$ chance of selection. Let's hope those precincts were accurate.

There are better ways,[13] which the comments from California Voter Foundation, Verified Voting, California Common Cause and Brennan Center explain at length.

CHAIN OF CUSTODY

Proposed rule 20314(c) calls for seals, without recognizing their unreliability. Professor Appel a decade ago evaluated seals,[14] and they can still be breached by children.[15]

Proposed rule 20314(d) calls for "procedures to ensure the security..." This over-promises. Procedures can address security, not ensure it, since bad actors bypass procedures. The rule needs to require that paper ballots in the 1% sample, before or after the 1% sample is tallied, must be compared publicly to the election machines' original ballot images, which Secretary Weber requires to be kept.[16] The ballot images themselves need to be secured by using the scanners' digital signatures for each set of ballot images.[17] Unlike seals and locks, checking against ballot images, and using images if paper has changed, does "ensure the security" of the chain of custody. Comments from the California Voter Foundation, Verified Voting, Common Cause and Brennan Center said ballot images "enable the election official to rely on the captured ballot image for counting." Image accuracy can be checked by comparing a sample of ballots and images when they are scanned.[18]

---

[13] Cordero, Wagner & Dill, "The Role of Dice in Election Audits," 2006 https://people.eecs.berkeley.edu/~daw/papers/dice-wote06.pdf

[14] https://www.cs.princeton.edu/~appel/voting/SealsOnVotingMachines.pdf "I demonstrated for the judge the complete removal and replacement of all seals with no visible evidence of tampering... The tamper evident seals are inspected and removed—but by whom?... the public must be able to receive training on detection of tampering of those particular seals."

[15] https://www.youtube.com/watch?v=yaOVIFnoIjo and http://www.votewell.net/locks.html#_Toc130299073

[16] https://elections.cdn.sos.ca.gov/ccrov/2021/may/21059sl.pdf

[17] Dominion: p.4 of https://files7.philadelphiavotes.com/announcements/Dominion_-_Redacted.pdf
ES&S: Pp.27-28 of https://sos.nh.gov/media/2wydqgkb/es-and-s-response-to-nh-questionnaire.pdf

[18] Burke, Paul, "Count Votes; Check," 2022. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4178650

RECOUNTS

Proposed rule 20353(c) changes *shall* to *may* for copies of relevant materials. This should change back to require copies, so requestors can be convinced and convince others about the results.

Proposed rules 20354(a) and (b) let the initial request specify the order of batches, and any later changes are subject to approval. The rules need to let the requestor know reported vote totals by batch before the initial choice of batches, or allow changes without approval. All parties are served if the requestor can start with random or outlier batches and stop when convinced.

Proposed rule 20358 requires there be only 4 members in a recount board. This is an arbitrary limit on local discretion. A Connecticut citizen group has found it helpful to have a 5th member checking and encouraging other members to complete work accurately.[19]

Proposed rule 20361 authorizes each county to have its own policy for recording devices used by media, interested parties and observers. This authority will lead to needless argument and unequal access in different counties. Limiting interested parties and observers to the recording limits desired by media is unreasonable and arbitrary. Media usually want short recordings. Interested parties and observers benefit from recording at length. Recording devices protect elections from false accusations and poorly remembered incidents. The rule needs to allow interested parties and observers to record continuously, with the specific exceptions listed.

OPTIONAL RECOUNTS BY MEANS OF THE VOTING SYSTEM

Proposed rule 20370(b) provides an option to recount with the "same methods used to tabulate the ballots originally." This "same methods" unduly restricts the authority in Election law 15627(a) for recounts "by means of the voting system used originally." A more meaningful way to recount "by means of the voting system used originally" is to take advantage of all the procedures the voting system used to create, organize and digitally sign ballot images and cast vote records. The recount can analyze these images with independent software, compare to the original cast vote records, and provide fine-grained information on the sources of any differences. This re-use of the "voting system used originally" is more convincing than simply re-using the "same methods used to tabulate the ballots originally." The independent analysis can be by a contractor paid by the requestor, and chosen by the requestor, subject to state rules, or by election officials, as Maryland[20] and South Carolina[21] do statewide. This way of recounting saves the election office a large amount of work at a busy time, since they only need to turn over the image files to a qualified contractor, and do not need to re-feed thousands of ballots into the scanners.

Comments from the California Voter Foundation, Verified Voting, California Common Cause and Brennan Center said ballot images "enable the election official to rely on the captured ballot image for counting." Image accuracy can be checked by comparing a sample of ballots and images when they are scanned.

---

[19] Connecticut Citizen Election Audit Coalition (2011-01-12). Report and Feedback December 2010 Bridgeport Connecticut Coalition Recount.

[20] Maryland State Board of Elections, "Automated Ballot Tabulation Audit," 2020. https://elections.maryland.gov/voting_system/ballot_audit_plan_automated_2020.html

[21] South Carolina Election Commission, "Results Verification Audits," 2023. https://web.archive.org/web/20230404015235/https://scvotes.gov/elections-statistics/election-audits/

SORTING IN MANUAL RECOUNTS

Proposed rule 20372(a) requires sorting ballots by precincts and candidates and counting the stacks. Research shows that sort and stack is less accurate than read and tally.[22] It is also less observable, which is especially sensitive in a recount. The rule should drop the high unnecessary and arbitrary cost, risk to ballots, and privacy risk to sort absentee and vote center ballots by precinct. If a recount applies to all or most precincts, teams can simply start tallying the unsorted batches from absentee voting and vote centers, without sorting by precinct. Tallying from the original batches lets the hand count for each batch be compared to the machine count, to isolate errors in each count. In fact proposed rule 20362 envisions totals by batch as an alternative to precincts. However, each team needs to have less than a full batch, so they cannot force the hand count to match a known machine count. Comparison of hand and machine batch totals is inherent in the 1% manual tally.

If a recount only applies in some precincts or styles, machine sorters can set them aside from the rest in a single tray, but do not need to sort by precinct.

Thank you for considering our comments.

Sincerely,

Note: All affiliations are for reference only and do not constitute an endorsement

Paul Burke - admin@VoteWell.net, California voter, poll worker in California, West Virginia, and Bosnia

Ian S. Patton - *Long Beach Reform Coalition*

Celeste Landry - poll worker (CA and CO), election canvass board member (CO), registered volunteer lobbyist on election bills (CO), helped to craft election bills(CO)

Ray Lutz - CitizensOversight.org, creator of AuditEngine.org, a ballot image auditing platform.

Mimi Kennedy - Election Issues Team, Progressive Democrats of America

Tim White, pollworker & election watcher, WA State

[22]Goggin, Byrne & Gilbert, "Post-Election Auditing: Effects of Procedure and BallotType on Manual Counting Accuracy, Efficiency, and Auditor Satisfaction and Confidence," *ELECTION LAW JOURNAL* v.11, no.1, 2012. https://www.liebertpub.com/doi/10.1089/elj.2010.0098