

Hand Count Paper Ballots Using the Rocky Mountain Method

Version 1.0

June 22, 2026

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1 Overview

1.1 The Method

The Rocky Mountain Method is a fast, fun and accurate way to hand count paper ballots. A precinct's worth of ballots can be counted Election Night. The method specializes in simplicity and transparency; ballots never leave public view between being cast and counted. No part of the count is ever done alone. Every step of the count is double-checked (at least) in process, and the fully auditable results are available as soon as the count is finished, which can be minutes to hours after the close of polls.

The method is made for precinct-level elections but can be scaled up or down for other situations by using more or fewer tally teams.

1.2 History

The Rocky Mountain Method started with a meld of good ideas from other hand count methods; then the process was improved and adapted through elections large and small, informal and formal. To date the biggest test was a 2024 state party assembly, where, although the organizers had only three weeks to plan, 144 volunteers took about 45 minutes to count approximately 2000 3-choice ballots. That is a processing speed better than 1 ballot every 2 seconds! This speed was possible because the ballots were divided among 24 tally teams, illustrating the method's scalability. The method can adapt to large precincts or small teams, depending on whether it is more important to finish counting fast or to fit a few hand counters into a small space.

1.3 Benefits

The Rocky Mountain Method has many benefits:

- Costs very little: it “relies on office supplies and lots of eyes”
- Double-checks results, in process
- Creates an auditable, physical record of the count, in process
- Finds and fixes mistakes immediately
- Discourages mistakes by a disrupted process that draws attention to the problem
- Reinforces correct counting by a smooth process
- Minimizes fraud: ballots stay where they are cast until counted
- Eliminates controversy by inviting all citizens to watch and even participate
- Promotes teamwork and unity as opposing parties work together to achieve a fair result
- Easy to learn, even on-the-job
- Fun to compete for fastest team!

1.4 Process

The Rocky Mountain Method divides hand counting into three processes:

- Batching (dividing up the ballots into small groups)

- Tallying (recording the votes)
- Aggregating (totaling the votes)

Space required: For a large election the three processes may be divided into three different spaces, but for a small number of ballots, the whole process could be done at the same table.

Time required: The average time needed for a team of four to process a ballot will vary with the complexity of the ballot, but should be well under a minute for a reasonably-sized ballot. (Extremely long ballots are a bad practice because of voter fatigue, where voters get tired and don't vote the end of the ballot.)

People required: A team of four is the minimum requirement. The process can be speeded up by more teams counting in parallel, but only up to the point where tracking the batches takes longer than counting them, so hundreds of teams in the same place is probably not practical. A team of 10 (two teams of four to count, plus two for spares/runners/overhead) is a good starting point for planning Election Night counting in an average precinct.

2 Quick Start (simplified process for informal elections)

Skip to the next section if counting a formal election, such as a primary or general election for governmental office. But for an informal election, such as a club of 150 members meeting to elect and count the vote for club officers, the process can be very simple, and is fully explained in this section. The [tally](#) and [aggregation](#) sheets are also simpler for an informal election.

A team of four may be enough to hand count the election. A team of four would start as two batch teams of Batchers 1 and 2, then form one tally team of Caller, Watcher, Tally 1, and Tally 2, then one aggregation team of Caller, Watcher, Agg 1, and Agg 2.

2.1 Batch the ballots

Step	This person...	Does this...	Notes
1	Batcher 1	Count 25 ballots (or fewer for the last ones) from the ballot box.	
2	Batcher 2	Recount the 25 ballots.	
3	Batchers 1 and 2	IF the counts agree, THEN clip the 25 ballots to 2 tally sheets. ELSE recount until both batchers agree.	This is a batch, which will stay together from now on.
4	Batchers 1 and 2	Record the batch number on both tally sheets.	
5	Batchers 1 and 2	Put the batch in a pile for tallying.	

2.2 Tally the batches

Step	This person...	Does this...	Notes
1	Caller	Read the voted numbers on each ballot from a batch, handing each ballot to the Watcher.	Caller should adjust the speed to whatever is comfortable for Tally 1 and 2.
2	Watcher	Observe the ballot and immediately correct the caller if there are any mistakes.	Watcher keeps the ballots in order, possibly stacking them in groups of 5.

3	Tally 1 and 2	Dot in green each column the Caller reads, in the row for that ballot.	A ruler or other straightedge helps talliers stay on the correct row.
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2.3 Fix mistakes

IF this happens...	THEN do this...
Tally 1 or 2 marks a box that should not have been marked	Cross out the mark in red, so it is clear not to count that mark.
Tally 1 or 2 misses marking a box that should have been marked	Mark the box.
Tally 1 or 2 skips a line and marks a ballot on the wrong row	Go back to the correct row and mark it correctly. Later, on the incorrectly marked row, mark all boxes in green that the Caller reads, and mark out in red any marks the Caller did not read.
Too many mistakes so it is hard to tell marked from unmarked boxes	Start the batch again with a new sheet.

2.4 Total the batch

Step	This person...	Does this...	Notes
1	Tally 1 and 2	Count the dots in each column.	
2	Tally 1 and 2	Write the total at the bottom of each column.	
3	Tally 1	Read the column totals out loud while Tally 2 checks.	
4	Tally 1 and 2	IF a number doesn't match, THEN do the following until the problem is resolved: - Count the marks again. - Compare marks in the column and circle any discrepancies. - Have the Caller re-read any ballot where there is a	

		discrepancy. • Have the Caller re-read the whole batch if necessary.	
5	Caller	Clip the ballots to the tally sheets and put the batch in a pile for aggregating.	

2.5 Aggregate the Batches

Step	This person...	Does this...	Notes
1	Caller, Watcher, Agg 1 and 2	Pick a batch and write the batch number on the next available row of the aggregation sheet.	
2	Caller	Read the column totals from one tally sheet, while Watcher follows along on the other tally sheet, immediately correcting Caller if there are any mistakes.	Caller should adjust the speed to whatever is comfortable for Aggregation 1 and 2.
3	Agg 1 and 2	Write the number the Caller reads for each column, in the row for that batch.	Use pens, not markers, for aggregation.

2.6 Fix mistakes

IF this happens...	THEN do this...
Agg 1 or 2 writes in a box that should have been blank.	Cross out the number, so it is clear not to use that number.
Agg 1 or 2 writes the wrong number in a box.	As neatly as possible, cross out the wrong number and write the right number. If numbers become unreadable, start over with a new sheet.
Agg 1 or 2 skips a line and writes on the wrong row.	Agg 1 and 2 both skip the row and draw a line through all boxes on that row so it is clear not to count those numbers. Both start on the new row.
Too many mistakes so it is hard to read numbers.	Start again with a new sheet.

2.7 Total the totals

Step	This person...	Does this...	Notes
1	Agg 1 and 2	Total the numbers in each column and write the total at the bottom of each column.	Calculators are acceptable but not required.
2	Agg 1	Read the column totals out loud while Total 2 checks.	
3	Agg 1 and 2	IF a number doesn't match, THEN do the following until the problem is resolved: • Total the column again. • Compare numbers in the column and circle any discrepancies. • Have the Caller re-read any batch where there is a discrepancy. • Have the Caller re-read all the batches if necessary.	
4	Caller, Watcher	Compare the totals with the candidate's numbers to see who won, and announce the winners	
5	Caller	Make a package of all the batches, with the aggregation sheets on top.	This is the official record of the election, to be kept as necessary.

3 Terms and Definitions

Adjudication

When the voter's intent is unclear, hand counters may need to decide whether and how to count the vote. Depending on what is unclear about the ballot, the formality of the election, and the laws governing the election, adjudication could be decided by the tally team or may need to be handled separately from the main count. Adjudication should never be done in private, by one person, or by people from only one party. If adjudicated ballots make up more than a tiny percentage of the total, something is wrong.

Agg 1 and 2

The job of Agg 1 and 2 is similar to Tally 1 and 2, but on the aggregation team. Instead of making marks on their sheets, they write the numbers from the tally totals, and total and cross-check those totals.

Aggregating

Totaling the totals; adding up vote totals from multiple batches to get an overall total. If an election is small enough for all the ballots to fit on one tally sheet, aggregation is unnecessary. An aggregation sheet can handle about 625 ballots; beyond that, there is a second level of aggregation (totaling the totals of totals). No precinct should have more ballots than two levels of aggregation can hold.

Aggregation Sheet

[Aggregation sheets](#) can be generic or custom-made for the election. For a formal election the sheet includes chain-of-custody information (batch number, batch station, tally station and the names of each person on the aggregation team) to show who handled each batch of ballots. An informal aggregation sheet just needs to record each batch number. An aggregation sheet may have as many rows as fit on the page, but 25 rows will handle up to 625 ballots, which is enough for most purposes. Size of the aggregation sheet is limited by the need for enough room to write numbers, and possible corrections, in each box. Printing alternately-shaded lines can help talliers keep their place, but do not print faint column numbers in the boxes because they could get confused with vote totals.

Ballot

A ballot allows a voter to communicate election choices in secrecy. In the Rocky Mountain Method of hand counting, ballot size, shape, or paper is not critical as long as each choice is associated with a number. (If a ballot has no numbers, the Caller can even read numbers from a transparency over or template beside the ballot.) Ballot style is unimportant because the method minimizes time and space between ballot casting and counting, which also minimizes the opportunity to insert fake ballots. Numbering ballot choices means the hand count team does not have to pronounce names. Numbers also reduce emotion, as it is harder to notice which candidate is winning.

Batcher 1 and 2

Batchers divide the ballots into batches of 25 or fewer. Both batchers must agree on the count before the batch is complete.

Batching

Taking ballots from the ballot box, separating them into batches of 25 or fewer, and attaching the paperwork and secure ballot bag that tracks the batch through the counting process.

Caller

One of the positions on the tally or aggregation team. The caller reads the ballots or the tally sheets out loud.

Cast Vote Record

The complete record of a precinct's ballots and votes cast by race and candidate, or the complete record from all the precincts within a larger district.

Choice

One of the ovals on the ballot beside a name or an answer (answers are usually "Yes" or "No"). A voter marks, or doesn't mark, each choice. Most races have multiple choices: multiple candidates or answers. Each box in a row and column on a tally sheet reflects one choice.

Overvote

A race with too many choices marked. For instance, both "Yes" and "No" are marked, or multiple candidates marked where only one was allowed. In races where several candidates are selected ("choose 5 of 8"), finding overvotes may require extra attention. None of the votes in the overvoted race count, because it is impossible to know which the voter actually intended, but other races on the ballot should still be counted. One way to focus attention on overvoted ballots is to make separate batch(es) of those ballots during batching.

Precinct Coordinator

Two people of different parties coordinating the precinct effort. Precinct coordinators make sure the hand count team is trained and present. On Election Night, precinct coordinators sign for the ballot boxes from polling station personnel, reconcile the number of ballots after batching and aggregation, post and transmit results at the end of counting, and sign the ballots over to the ballot transporters. Precinct coordinators answer or elevate questions, make sure counters follow procedures, and handle precinct paperwork.

Race

A race is one position or question for which there may be one or many choices of candidates or answers.

Runner

Runners move batches from the batching area to the tally area, or from the tally area to the aggregation area. Runners are important for moving batches when there are many tally teams, but in a small setup, the batchers or members of the tally team will also be the runners.

Spare

Hand count teams should have one or two spare hand counters available to step in for anyone on a tally team needing a break. Spares may work as extra batchers or runners when not otherwise needed.

Spoiled Ballot

A ballot gets spoiled when a voter does something wrong (for instance, marks both yes and no) and realizes it before casting the ballot. The voter can trade the spoiled ballot for a new ballot, and the election judges mark or cut the spoiled ballot to make it clear it must not be counted. A spoiled ballot can also be a ballot so mangled or dirty the voter's intent can't be known, or a misprinted ballot. Ballots are usually spoiled while the polls are open and are handled by the election judges, so it should be rare to find a spoiled ballot in the ballot box. But if there is one, it is part of the total number of ballots the Precinct Coordinators signed for, so it must be tracked separately from the counting process so the number of ballots can be reconciled.

Tabulation

Counting the contents of ballots (vote count), as compared to the number of ballots (ballot count).

Tally 1 and 2

The talliers make up half the tally team and do identical jobs of marking each vote on identical tally sheets. At the end of a batch they total the marks and cross-check the totals with each other.

Tally Sheet

Tally sheets can be generic or custom-made for the election. For a formal election the sheet includes chain-of-custody information (such as ballot box number, batching station number, batch number, each person on the tally team, the runners, and the aggregation station) to show who handled each batch of ballots. An informal tally sheet just needs the batch number. All tally sheets should have 25 rows unless there is a reason for a non-standard batch size. In creating a tally sheet, consider the balance between putting as many choices as possible on a single page so talliers don't have to flip pages, and having fewer columns so the talliers don't lose their place in the middle of the page. Printing faint column numbers in all the boxes or alternately-shaded lines can help talliers keep their place.

Tallying

The actual counting of votes – recording all the votes from a ballot and totaling them with votes from other ballots.

Undervote

An undervote is a race where the voter marked fewer choices than allowed, or none at all. There is nothing wrong with an undervote, but it can be an easy target for fraudulent marks on the ballot before the vote is counted.

Watcher

One of the positions on the tally or aggregation team. The Watcher observes the ballot, or the alternate tally sheet, as a check on what the Caller says, and may also stack ballots and keep an eye on the talliers or aggregators to alert them to any mistakes.

Write-In

In Colorado, write-in votes are not always allowed, and where allowed they are usually limited to officially announced write-in campaigns. So there should be no need to count votes for Mickey Mouse and Donald Duck. If a race allows write-ins, leave space for write-ins at the end of the tally and aggregation sheet, or staple a [separate page for write-ins](#) to the tally and aggregation sheets.

4 Principles of Transparency

Elections must be transparent because the Constitution guarantees citizens of the United States in Article IV, Section 4 the right to elect their representative government. If citizens don't know whether their votes were counted correctly, they can't know the government was elected by the citizens.

4.1 Minimize time and space between casting and counting of votes

Secret ballots create a period of deep vulnerability to fraud. Ballots are kept secret by collecting them with other ballots so a vote cannot be traced to an individual. But collecting the ballots creates time and space between the casting and counting of the vote, during which the ballots are most vulnerable to election fraud. To minimize that vulnerability, we must minimize time and space between casting and counting. Counting should begin as soon as polls are closed and continue until all votes are tabulated and totaled. Voting at the precinct level decentralizes elections and keeps the counting process small enough to finish within hours.

4.2 Maximize eyes on the process between casting and counting of votes

Since the value of an election is shared equally among all registered voters of the precinct, all registered voters of the precinct should be able to watch the counting process closely enough to agree that it was done correctly. Where it is not physically possible for all interested citizens to watch, livestream cameras can improve the transparency of counting. Voting and counting at the precinct level keeps the process small enough for average citizens to oversee.

4.3 Never move or store untabulated ballots

In the same way nobody would accept custody of hundreds of dollars without counting it and agreeing on the total, ballots should never be moved or stored without knowing their vote contents. There are two kinds of numbers associated with ballots: the number of ballots and the number of votes. Knowing the number of ballots but not the number of votes is as pointless as knowing the number of cash bills without knowing whether the bills are worth \$1 or \$100.

4.4 Quiet is important for counting; transparency is essential

Since it is difficult to count ballots with distracting background noise, counting areas should be kept as quiet as possible, but quiet should not be used as an excuse to exclude the public. An ideal counting area would be like the Colorado legislature, where business on the main floor is not easily distracted by coming and going in the galleries, but the public can literally oversee everything that happens.

4.5 Chain of custody

After counting a formal election, there should be a record of every person who had contact with the ballots at all times – the chain of custody records. Meta-information on [tally](#) and [aggregation](#) sheets creates a full record of who batched, tallied, and aggregated which ballots. [Reconciliation sheets](#) track how many ballots there were at the beginning and end of counting. Because the count is the definitive process in which each ballot and its contents are recorded, the totals at the

end of the process should be the most trustworthy. Minor discrepancies could happen because of ballots sticking together or a voter walking out with a ballot. Voting at the precinct level minimizes these discrepancies as there are more people per ballot to pay attention to the chain of custody of every ballot.

4.6 Election processes incompatible with transparency

Ballots should never leave public view between casting and counting and thus should never be placed in an opaque container or machine, including an opaque ballot box. The following processes violate transparency:

- Mail-in ballots violate transparency because the postal process does not preserve chain of custody, much less public view.
- Centralized counting (for instance, at the county level) violates transparency because ballots leave public view to be moved to a central area. If ballots are also cast centrally so they don't have to be moved, transparency is still violated because the counting process is too massive for the public to fully view.
- Multi-day elections violate transparency because ballots have to be stored overnight away from public view.
- Voting outside of one's own precinct violates transparency because the ballot has to be moved to the correct precinct, away from public view.
- Absentee ballots (as for military voters) violate transparency because ballots are moved without public view. However, the American public has historically allowed this small amount of vulnerability in order to allow deployed military to vote. The vulnerability can be reduced by sending ballots only to those who specifically request them and requiring notarization to affirm that the ballot was filled out by the actual voter. (Any military officer qualifies as a notary for this purpose.)

5 Planning for Personnel

5.1 Basic team

Ten people is a good starting estimate for a precinct. A team of ten allows for two tally teams (some will double as batchers and aggregators) plus a couple of people for overhead and spares. As a starting estimate, expect a team of ten to count 600 ballots in 5 hours.

The hand count team is led by two Precinct Coordinators, who should not have the same party affiliation. For a large team, Precinct Coordinator may be a full-time job, but for smaller teams Precinct Coordinators would also be regular team members in batching, tallying, and aggregating.

The minimum number needed at any stage is four people.

For batching	For tallying	For aggregating
Batcher 1	Caller	Caller
Batcher 2	Watcher	Watcher
	Tally 1	Agg 1
	Tally 2	Agg 2

5.2 Personnel needs depend on ballot processing speed

Estimates are that a team of four could batch, tally, and aggregate 100 ballots in 100 minutes, or 300 ballots in the five hours between close of polls and midnight on Election Night. Add more tally teams of four for slower workers or longer ballots.

5.3 Scaling up for faster processing

The slowest part of the process is the tallying, so to handle more ballots or to go faster, add more tally teams, who can also help with batching and aggregating if needed. As the number of teams increase, add a few extra people to use as runners and spares to trade out with tired talliers.

5.4 Planning for breaks

If ballots have 15 or more choices, a short break after each 100 ballots tallied is a good idea to reduce eyestrain. Snacks and drinks are recommended, if there is space to keep it far away from the ballots. Make sure that hand counters on break stay quiet so as not to distract teams that are still counting. The hardest, and most important, time to keep everyone quiet is when tallying is over. Most of the team is done working and wants to know the results, but those who are still working are adding up large columns of numbers, which is hard to do around excited, loud people.

6 Planning for Equipment and Space

6.1 Equipment needed

- Writing utensils
 - Green markers (at least 4 per tally team in case a marker goes dry)
 - Red markers (at least 2 per tally team)
 - Black or blue ballpoint pens (at least 1 per hand counter)
- Paperwork
 - Batch number list (at least 1 per ballot box; enough to accommodate the maximum ballots expected in the box)
 - Tally sheets with enough columns to accommodate all choices on ballot (8 per 100 expected ballots, plus extras)
 - Aggregation sheets with enough columns to accommodate all choices on ballot (2 per 600 expected ballots, plus extras)
 - (If more than 600 expected ballots) second-level aggregation sheets (2 for every 600 expected ballots, plus extras)
 - Spoiled ballot tally sheet (2)
 - Reconciliation sheet (1)
 - Results sheet/poster (1)
 - Transmission sheet (1)
- Office supplies
 - Black binder paper clips (at least 4 per 100 expected ballots)
 - Clear tamper-indicating bags (also known as bank bags), 12” x 16” or big enough to hold 25 ballots
 - Clear tamper-indicating bags big enough to hold the entire package of ballots (may use a locked transparent ballot box instead.)
- Tables and chairs
 - Tally tables (1 per tally team, accommodates 4 people)
 - Batching tables (optional but recommended, 1 per ballot box, accommodates 2 people)
 - Aggregation table (optional, 1 per 600 ballots, accommodates 4 people)
- Optional but recommended
 - Straightedges or t-squares for following across a row (at least 2 per tally team)
 - Simple arithmetic calculators (2 per aggregation team)
 - Cameras and mounts to livestream the counting
- Optional
 - Index cards (and some way to hold them vertically) for signs to identify each batching and tally station (“Batch 1”, “Tally C”, etc.)
 - Name tags/ID tags for hand counters

- Safety vests or other clothing to easily identify hand counters; in a large area different colors for different roles may be useful
- (For larger elections) Desk flags to raise to signal a runner that a batch is ready to move
- Rubber/gel fingertips, fingertip moistener, etc.
- General office supplies such as paper, scissors, tape, duct tape, zip ties, poster board, wide-tip markers, string, wipes, etc.
- Printer for extra copies of sheets and forms, etc.

Consider possible needs for trash cans and signage. Sort supplies ahead of time by station into boxes or bags labeled as “Batch Station A” “Tally Station 2” etc.

6.2 Space needed

- Space for tables and chairs for each tally team (suggested table space of 4' x 2.5')
 - Plenty of space between tables allows runners to move around easily and, more importantly, keeps one table's count from confusing another table.
- Space for public to watch the counting (and/or livestream cameras)
- Space for personal belongings
- Optional
 - Space for batching table(s)
 - Space for aggregation table(s)
 - Space for extra supplies
 - Space for break tables

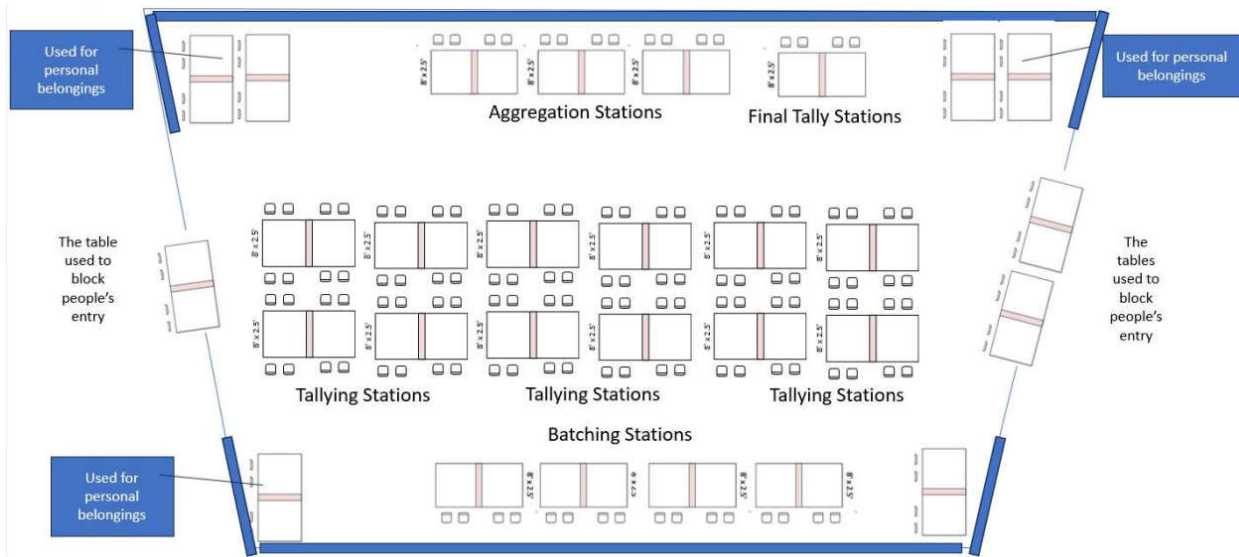
Walk through the venue and hand count area as early as possible in the planning process. Pay attention to traffic flow, electrical needs, sound characteristics, and security of the area, always keeping in mind how the chain of custody of ballots will look throughout the process.

Sample precinct-level setup (team of 10):

Sample small precinct-level setup (team of 4):

Sample large precinct-level setup (team of 20):

Setup from 2024 state assembly for team of 144 counting 2000 ballots:



7 Costs

7.1 Note on costs

Estimated cost of mail-in ballots: at least \$10/ballot. Cancelling universal mail-in ballots frees up at least \$10,000 per average precinct of 1000 voters, money which could be used for precinct-level polling stations and hand counting.

7.2 Cost of space

Space for precinct polling stations should be handled by the city/county/local government. Since the ballots must be counted before they are moved, costs for space should at most add a few more hours on to an existing day-long contract handled by the local government.

7.3 Personnel costs

It is reasonable to pay hand counters to do the work the county currently pays election machine vendors to do. A team of 10 working 5 hours at \$20/hour would only cost \$1000/precinct.

However, keep in mind the effort may be much simpler with volunteers. Citizens aren't paid for a few hours of jury duty, and helping count ballots for a few hours Election Night is an easy, local, off-hours civic duty. An all-volunteer force of hand counters does not need to:

- keep exact records of time spent
- send SSN information to the county
- wait weeks to be paid
- be approved by the county

7.4 Cost of equipment/supplies

Most of the supplies are paper, pens, tables, and chairs for about 10 people per precinct. It would be difficult to spend more than a couple hundred dollars on supplies other than cameras.

7.5 Cost of cameras

Livestreaming the hand counting is optional but desirable for maximum transparency, and could cost anything from \$50 to several thousand dollars for a professional videographer.

7.6 Conclusion

The cost per precinct for hand counting could be under \$100, but even renting a gymnasium for each precinct, paying all the hand counters, and hiring a videographer is cheaper than mail-in ballots for the same precinct.

8 How to Sign for Ballots

8.1 Blank ballots are not part of the hand count

Election Judges should account for and return blank ballots to the county; the hand count team should not normally have to count blank ballots.

Step	This person...	Does this...	Notes
1	Election Judges	Record the following numbers on the Polling Station part of the reconciliation sheet : • Number of ballots given to voters • Number of spoiled ballots • Number of other ballots and description • Total number of ballots left for hand counting	If ballots other than in ballot box(es) and spoiled ballots are left for the hand count team, there should be an explanation on the reconciliation sheet.
2	Election judges	Sign and date the reconciliation sheet.	
3	Precinct Coordinators	Sign and date the reconciliation sheet acknowledging receipt of ballot box(es) and spoiled ballots.	

8.2 Why there could be discrepancies

The number of ballots given to voters minus the number of spoiled ballots ought to equal the number of ballots in the ballot box(es). There could be minor discrepancies if for instance a voter decided not to vote and left with a ballot. Election Judges should be able to account for any discrepancies; the Precinct Coordinator is only accepting responsibility for the ballots listed as available for hand counting, plus the responsibility to deliver the listed spoiled ballots.

9 How to Batch Ballots

9.1 Create batch teams

A batch team is two people, Batcher 1 and 2. A Precinct Coordinator assigns each batch team a number. Because tallying takes longer than batching, it may be fastest to have only one or two batch teams, while the other hand counters form tally teams as soon as batches are assembled.

9.2 Check for overvotes, spoiled ballots, and improper write-ins

(The level at which this check is done is optional; it can be done during batching, tallying, or both. Since batchers have the simpler task, batchers may be able to pay more attention to these checks. On the other hand, the tally team caller/watcher may spend more time with each ballot.)

Step	This person...	Does this...	Notes
1	Batchers 1 and 2	Sort through ballots in the ballot box, checking for spoiled ballots and setting them aside with any spoiled ballots from the election judges.	Spoiled ballots should be rare at this stage.
2	Batchers 1 and 2	Check for overvotes and improper write-ins.	A ballot with a write-in not on the list of approved write-in candidates should be treated as an overvote for that race.
3	Batchers 1 and 2	IF one or more races is overvoted, THEN set the ballot aside for an “overvote batch”.	Separating overvoted ballots from other batches helps talliers pay attention to overvotes.
4	Batchers 1 and 2	Put checked ballots in batching area.	

9.3 Count out a batch

Step	This person...	Does this...	Notes
1	Batcher 1	Count 25 ballots (or fewer for the last batch) from the ballot box.	Each batch team should work with one ballot box at a time.
2	Batcher 2	Recount the 25 ballots.	
3	Batchers 1 and 2	IF the counts agree,	This is a batch, which will

		THEN clip the 25 ballots to 2 tally sheets and a clear tamper-indicating bag. ELSE recount until both batchers agree.	stay together from now on.
4	Batchers 1 and 2	Fill out this information on both tally sheets: • Date • Batch station • Ballot box • Batch number • Number of ballots in batch	Each batch team should number their batches consecutively. A batch is uniquely identified by its ballot box, batch team, and batch number. For a small election, “batch station” and “ballot box” may both be “1”. “Number of ballots in batch” will usually be “25”.

9.4 Separate spoiled ballots and record total ballot numbers

Step	This person...	Does this...	Notes
1	Batchers 1 and 2	Count spoiled ballots.	
2	Precinct Coordinators	Fill out this information on the spoiled ballot tally sheets: • Date • Total ballots from polling and batching	
3	Batchers 1 and 2	Clip the spoiled ballots and the spoiled ballot tally sheets with a clear tamper-indicating bag but do not seal the ballots in the bag.	
4	Runner	Fill out this information on both spoiled ballot tally sheets: • Batch to aggregation runner	
5	Runner	Take spoiled ballots to the aggregation	

		area.	
6	Precinct Coordinators	Record the following numbers on the Batching Station part of the reconciliation sheet: • Number of full batches • Total number of ballots in full batches • Number in partial batches • Total number of ballots in partial batches • Total number of ballots from ballot boxes • Number of spoiled ballots • Number of other ballots • Total number of ballots left for hand counting	
7	Precinct Coordinators	Sign and date the reconciliation sheet for the number of ballots counted in batching.	

9.5 If there are discrepancies

If the total number of ballots left for hand counting in the Polling Station section does not equal the total number of ballots left for hand counting in the Batching Station section, try to find the reason for any discrepancy. If the discrepancy cannot be resolved, refer to election law to decide whether the discrepancy is small enough the team can move on to the next step.

10 How to Tally Ballots

10.1 Check for overvotes

Caller and Watcher may go through the batch before reading the ballots, to check for overvotes in any races. If ballots have already been checked for overvotes by the batching team, this check is not critical, but is still a good idea in races where voters choose multiple candidates, since overvotes may be harder to notice. Put any spoiled ballots with the other spoiled ballots and change (and initial) the number of ballots listed on the tally sheet for the batch.

10.2 Write-in votes

For a ballot with a write-in vote, Tally 1 and 2 should write the candidate's name in the write-in column on the tally sheet or attached write-in sheet. The column can be numbered or treated as an additional column that happens to have a name rather than a number.

10.3 Tally a batch

Step	This person...	Does this...	Notes
1	Caller	Signal a runner to bring a batch.	
2	Runner	Bring a batch from the batching area and fill out this information on both tally sheets: • Batch to tally runner	
3	Caller	Read the voted numbers on each ballot and hand the ballot to the Watcher.	Caller should adjust the speed to whatever is comfortable for Tally 1 and 2.
4	Watcher	Observe the ballot and immediately correct the caller if there are any mistakes.	Watcher should stack ballots in crosswise groups of five to in case the team needs to refer back to a ballot.
5	Tally 1 and 2	Mark in green each column the Caller reads, in the row for that ballot.	A ruler or other straightedge helps talliers stay on the correct row.

10.4 How to fix a mistake

IF this happens...	THEN do this...
--------------------	-----------------

Tally 1 or 2 marks a box that should not have been marked	Cross out the mark in red, so it is clear not to count that mark.
Tally 1 or 2 misses marking a box that should have been marked	Mark the box.
Tally 1 or 2 skips a line and marks a ballot on the wrong row	Go back to the correct row and mark it correctly. Later, on the incorrectly marked row, mark in green all boxes the Caller reads, and mark out in red any marked boxes the Caller does not read.
Too many mistakes so it is hard to tell marked from unmarked boxes	Write “SPOILED” across the tally sheet but keep it with the batch. Start the batch again with a new sheet.

10.5 Total the batch

Step	This person...	Does this...	Notes
1	Tally 1 and 2	Count the dots in each column, writing the total at the bottom of each column.	Use pen, not marker.
2	Tally 1	Read the column totals out loud while Tally 2 checks.	
3	Tally 1 and 2	IF a number doesn’t match, THEN do the following until the problem is resolved: • Count the marks again. • Compare marks in the column and circle any discrepancies. • Have the Caller re-read any ballot where there is a discrepancy. • Have the Caller re-read the whole batch if necessary.	Re-reading the whole batch is rarely necessary.
4	Tally 1 and 2	Initial any corrections.	

10.6 Document the batch for aggregation

Step	This person...	Does this...	Notes
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1	Caller	Put the ballots in a clear tamper-indicating bag, clipping the tally sheets to the bag.	For a completely clear bag (no writing on the bag itself) best practice is to also put one tally sheet in the bag, facing outward so it is completely readable, and seal the bag, clipping the other tally sheet to the bag. This arrangement is a safeguard against changes to the tally sheet.
2	Caller, Watcher, Tally 1 and 2	Fill out this information on both tally sheets: • Tally station • Tally caller • Tally watcher • Tally one • Tally two	
3	Caller	Signal a runner to take the batch to the aggregation area.	
4	Runner	Fill out this information on both tally sheets: • Tally to aggregation runner	
5	Runner	Take the batch to the aggregation area.	For easier reconciliation, make separate piles of partial batches (fewer than 25) and full batches, at the aggregation station.

11 How to Aggregate Batches

11.1 Write-in votes

For a batch with write-in votes, Agg 1 and 2 should write a candidate's name in the write-in column on the aggregation sheet or attached write-in sheet. The column can be numbered or treated as an additional column that happens to have a name rather than a number.

11.2 Aggregate a batch

Step	This person...	Does this...	Notes
1	Agg 1 and 2	Enter for each batch the following numbers (listed on the tally sheets) in each row of the aggregation sheets: • Tally station • Batch station • Batch #	
2	Caller	Read the column totals from one tally sheet.	Caller should adjust the speed to whatever is comfortable for Total 1 and 2.
3	Watcher	Follow along on the other tally sheet and immediately correct the Caller if there are any mistakes.	The tally sheets have already been double-checked against each other; this step quadruple-checks them.
4	Agg 1 and 2	Write in each column the number the Caller reads.	Use pens, not markers, for aggregation.

11.3 How to fix a mistake

IF this happens...	THEN do this...
Agg 1 or 2 writes in a box that should have been blank.	Cross out the mark, so it is clear not to count that mark.
Agg 1 or 2 writes the wrong number in a box.	As neatly as possible, cross out the wrong number and write the right number. If numbers become unreadable, starting over with a new sheet may be necessary. (Write

	“SPOILED” across the old sheet and bag it with the batches after aggregating.)
Agg 1 or 2 skips a line and writes on the wrong row.	Agg 1 and 2 both skip the row (draw a line through all boxes on that row so it is clear not to count those numbers) and start on the new row. For aggregation, it is not important to use all the rows on the sheet, but it is important that Agg 1 and 2 use the same rows.
Too many mistakes so it is hard to read numbers.	Write “SPOILED” across the sheet but bag it with the batches after aggregating. Start again with a new sheet.

11.4 Total the totals

Step	This person...	Does this...	Notes
1	Agg 1 and 2	Total the numbers in each column and write the total at the bottom of each column.	Calculators are acceptable but not required. Calculators don’t violate transparency because the numbers are on the paper for anyone to see; anyone watching could check the totals by adding the same numbers with a calculator, abacus, pencil, or mental math.
2	Agg 1	Read the column totals out loud while Agg 2 checks.	
3	Agg 1 and 2	IF a number doesn’t match, THEN do the following until the problem is resolved: • Total the column again. • Compare numbers in the column and circle any discrepancies. • Have the Caller re-read any batch where there is a discrepancy.	Re-reading all the batches shouldn’t be necessary. Since the batches are numbered it is easy to identify which batch will resolve the discrepancy.

		• Have the Caller re-read all the batches if necessary.	
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11.5 Document the batches for reporting

Step	This person...	Does this...	Notes
1	Caller	Fill out this information on both tally sheets: • Aggregation station	
2	Caller, Watcher, Agg 1 and 2	Fill out this information on both aggregation sheets: • Date • Agg station • Agg sheet # • Agg caller • Agg watcher • Agg 1 • Agg 2	
3	Caller	Check that all tally sheets are sealed in or clipped to the correct ballot bags.	
4	Precinct Coordinators	Record these numbers on the Aggregation Station part of the reconciliation sheet: • Number of full batches • Total number of ballots in full batches • Number in partial batches • Total number of ballots in partial batches	
5	Caller	Seal the ballot bags and tally sheets, and one aggregation sheet, in a large clear tamper-indicating bag with the aggregation sheet facing out, and clip the other aggregation sheet to the bag.	If second-level aggregation is needed, wait to seal the bag until the second-level aggregation is done.

11.6 Second-level aggregating

A 25x25 aggregation sheet can handle up to 625 ballots. For a larger election, the aggregation sheet could be expanded to 30 or 40 rows, but rather than sacrifice readability, some of the batches can be recorded on a second set of aggregation sheets. The aggregation team then does a second level of aggregation to get the final totals. See the [sample sheet](#) in the Appendix.

Step	This person...	Does this...	Notes
1	Agg 1 and 2	Enter for each first-level aggregation sheet the following number in each row of the second-level aggregation sheets: • Agg sheet #	
2	Caller	Read out the column totals from one first-level aggregation sheet.	Caller should adjust the speed to whatever is comfortable for Total 1 and 2.
3	Watcher	Follow along on the other first-level aggregation sheet and immediately correct the Caller if there are any mistakes.	
4	Agg 1 and 2	Write the number the Caller reads for each column.	
5	Agg 1 and 2	Total the numbers in each column and write the total at the bottom of each column.	Calculators are acceptable but not required.
6	Agg 1	Read the column totals out loud while Total 2 checks.	
7	Agg 1 and 2	Resolve any discrepancies.	
8	Caller, Watcher, Agg 1 and 2	Fill out this information on both second-level aggregation sheets: • Date • Agg station • Agg caller	

		• Agg watcher • Agg 1 • Agg 2	
9	Caller	Seal the first-level aggregation bags, and seal the first-level bags in a second-level bag along with one second-level aggregation sheet facing out, and clip the other second-level aggregation sheet to the bag.	

11.7 Reconcile total ballot numbers

Step	This person...	Does this...	Notes
1	Agg Caller and Watcher	Count, and confirm the count of, all spoiled ballots.	
2	Agg Caller and Watcher	Fill out this information on the spoiled ballot tally sheets: • Aggregation station • Additional spoiled ballots from tallying • Total spoiled ballots	
3	Agg Caller and Watcher	Seal the spoiled ballots and one spoiled ballot tally sheet in a clear tamper-indicating bag, with the spoiled ballot tally sheet facing out so it is completely readable, and clip the other spoiled ballot tally sheet to the bag.	
4	Precinct Coordinators	Record these numbers on the Aggregation Station part of the reconciliation sheet: • Total number of ballots from ballot boxes • Number of spoiled ballots • Number of other ballots • Total number of ballots left for	

		hand counting	
5	Precinct Coordinators	Sign and date the reconciliation sheet for the number of ballots counted in batching.	

11.8 If there are discrepancies

If the total number of ballots left for hand counting in the Polling Station and Batching Station sections do not equal the total number of ballots left for hand counting in the Aggregation Station section, try to find the reason for any discrepancy. Refer to election law to decide whether the discrepancy is small enough the team can move on to the next step.

11.9 Post and Transmit Results

Step	This person...	Does this...	Notes
1	Precinct Coordinators	Fill out this information on the results sheet: • 10-digit precinct number • Number of ballots cast • Number of votes cast for each candidate/question choice • Total number of votes cast for each race	
2	Precinct Coordinators	Post the results sheet at the precinct site in a secure place that is in full view of the public.	For instance, post the results sheet facing out, on the inside of the window of a locked door.
3	Precinct Coordinators	Fill out this information on the precinct section of the transmission sheet: • Number of ballots cast • Number of votes cast for each candidate/question choice • Total number of votes cast for each race	
4	Precinct Coordinators	Call in the results to the next level (district/city/county/etc.) Report the total number of ballots cast for the precinct. For each candidate/question choice, 1. Ask for the current total for the district/city/county/etc. and enter it on the transmission sheet. 2. Add the precinct's total to the current total. 3. Report the precinct total for that choice and confirm the	This process creates a record to show that precinct totals were correctly transmitted to the next level and correctly totaled at that level.

		new current total.	
5	Precinct Coordinators	Sign over package of ballots and forms to ballot transporters.	

12 Extreme Situations

12.1 Formal and informal elections

Hand counting should be kept as simple as possible; fraud is best hidden in complexity. An informal election where numbers are small and everyone is present for the whole process won't need detailed chain-of-custody documentation and ballot reconciliation. On the other hand, formal elections for governmental positions may require extra procedures not in this manual; refer to local laws as long as they support, rather than threaten, transparency.

12.2 Scaling up (many ballots)

The average number of registered voters in a precinct is around 1000. However, some precincts in Colorado are several times that size. A precinct of 3000 may be more than three times as complex as an average precinct, but the hand count method is scalable (see comparison chart below). A good estimate for recruiting enough hand counters is to get 1% of the registered voters. Remember to prepare a larger space for a scaled-up counting effort.

Precinct of 1000 voters with 600 ballots	Precinct of 4000 with 3000 ballots
10 hand counters	50 hand counters
2 tally teams	10 tally teams
2 batching stations each handling 12 batches	5 batching stations each handling 24 batches
1 aggregation station	5 aggregation stations
Can count 120 ballots per hour	Can count 600 ballots per hour
Start at 7pm, finish by midnight	Start at 7pm, finish by midnight

12.3 Scaling down (few ballots)

The smallest precincts in the county may have so few ballots they fit on one tally sheet. In this case, many procedures in this manual may seem like overkill, but can still be important for keeping precinct results consistent.

In a small precinct, ballot secrecy becomes a concern, and redaction of detailed results is often suggested as the solution, but citizens will see the ballots before any redaction. Even if this situation threatens ballot secrecy, courts have ruled that transparency, and in particular auditability, is more important than ballot secrecy, so a small precinct is not a reason to avoid hand counting.

Another consideration is that with mail-in ballots, the election judges who take ballots out of the ballot envelopes know exactly who the ballot belonged to, although nobody can know for sure if that person voted their own ballot. Citizens counting neighbors' ballots might make educated

guesses about whose ballot is whose, but since the ballots are nameless, citizens can never threaten ballot secrecy as much as election judges under the current system.

12.4 Many choices

A ballot with 30 choices (for instance, three races with four candidates each, plus five judge retention questions, plus four ballot questions) is a reasonable size of ballot for a county, state, or federal election. Recent Colorado ballots have been several times that size, but could be reduced by holding separate elections, with separate ballots, for each level. Besides making ballots easier to count, smaller ballots are better for voters. When voters get tired of trying to keep track of every race on the ballot, the most local races get neglected. Unfortunately, those local races are the ones that affect the voter most directly.

A tally sheet with 75 or 100 choices should rarely be necessary, but if it does become necessary, one way to handle it is to print the pages on a legal (8.5x17) or tabloid (11x17) page, and use straightedges carefully to keep track of which row is which. Another possibility is to print the choices over several pages, and after marking the first 25 or so choices, talliers flip to the second page and continue until 50 or so, then flip again. The page flipping takes extra time, but the boxes on the chart don't have to be compressed.

The aggregation sheet can be handled similarly to the tally sheet, but since the aggregation stage doesn't take as long as tallying but does need enough space in the boxes to write numbers, the page-flipping option may be best.

12.5 Little time

Adding more tally teams multiplies the overall speed of processing ballots, but only up to a point. As the number of tally teams increases, the complexity of keeping track of the batches (not to mention the complexity of dealing with more people) also increases. Ideal team size is in the sweet spot between the simplicity of a single team and the speed of multiple teams.

12.6 Little space

If there is not much space for counting the ballots, allow more time for counting. Four people could work just in the space that four chairs occupy, without a table, by using clipboards on their laps. But it won't be easy to organize the paperwork and it won't be very comfortable, which is a problem if the team is going to be there for several hours.

12.7 Few workers

If volunteers get sick, or don't show up, or work much slower than expected, or other factors slow the effort, as soon as the problem becomes evident, Precinct Coordinators should contact the next level of election reporting to resolve the problem. Possible solutions include reassigning extra people from nearby precincts or precincts that finish early.

12.8 Many workers

A large precinct may need to identify workers with badges or clothing (for instance, different-colored vests) to keep track of who should be handling ballots and who should be doing which job. Visual signaling for runners (for instance, raising a small flag) will help keep background noise down, and for the same reason citizens observing the process may need to be in a separate room watching livestreamed cameras.

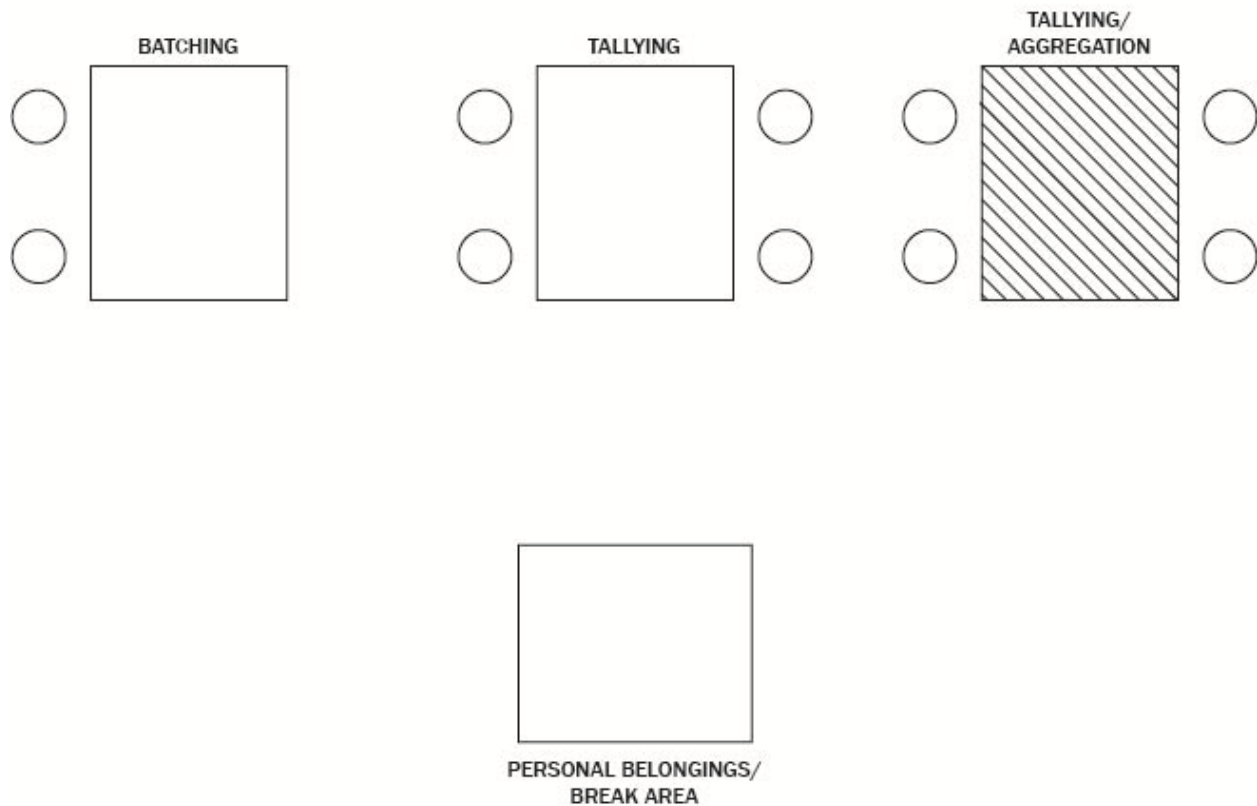
12.9 Military/overseas ballots

Although precinct-level hand counting does not mix well with overseas ballots under the UOCAVA law, a team of hand counters would count these ballots at the place the county receives them. The first step would probably be sorting them by precinct number/ballot type. The results could be added to precinct results as a separate notation after the precinct results are received. Local Precinct Coordinators could note military/overseas results as an addendum to the results posted at the precinct.

Appendix A Sample Table Setups

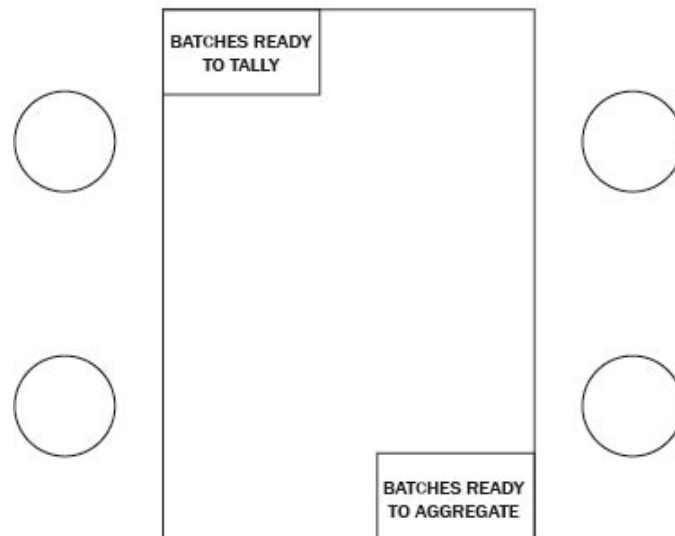
A team of 10 can handle an average precinct. After batching is done, the batch team becomes spares for other roles as needed. The second tally team becomes the aggregation team when the tallying is done.

PRECINCT TEAM OF 10



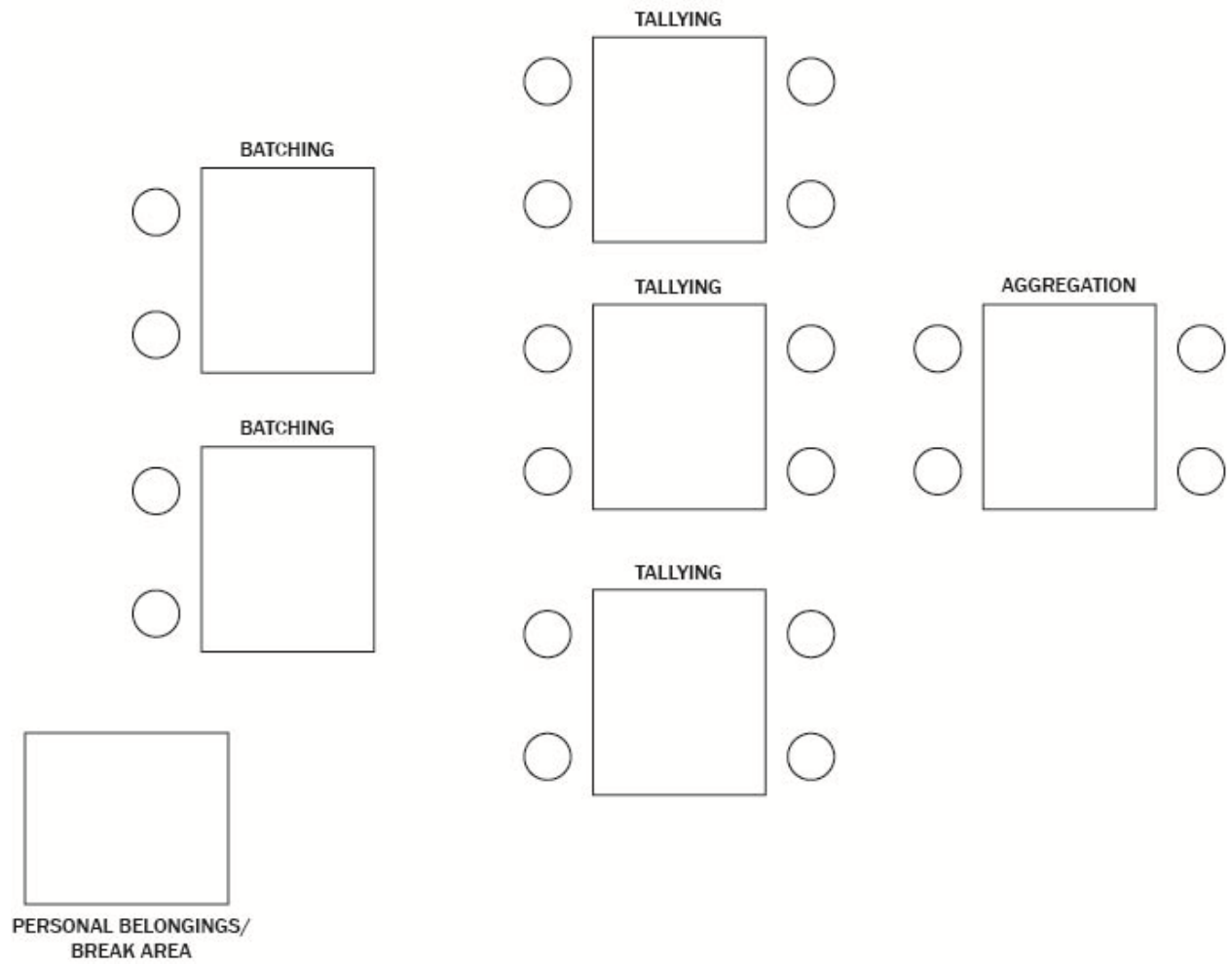
For a small precinct, a team of 4 can batch, then tally, then aggregate at the same table.

PRECINCT TEAM OF 4



For a large precinct, a team of 20 can divide the tallying among 3 teams (or 4 if the aggregation team helps tally for a while). After batching, the batchers become spares for other positions as needed.

PRECINCT TEAM OF 20



Appendix B Sample Ballot

Definitely Not Official Ballot
Arapahoe County, Colorado
Tuesday, November 3, 2026

Precinct 6163803153 - 1
Ballot Type: 1

WARNING: Any person who, by use of force or other means, unduly influences an eligible elector to vote in any particular manner or to refrain from voting, or who falsely makes, alters, forges, or counterfeits any mail ballot before or after it has been cast, or who destroys, defaces, mutilates, or tampers with a ballot is subject, upon conviction, to imprisonment, or to a fine, or both. Section 1-7.5-107(3)(b), C.R.S

County Clerk and Recorder (Vote for One)

1. ☐ Shirley U. Jest
Democratic
2. ☐ Reid Enright
Republican

County Treasurer (Vote for One)

3. ☐ Winsome Cash
Republican
4. ☐ Penny Wise
Democratic
5. ☐ Meg A. Moola
Libertarian

County Assessor (Vote for One)

6. ☐ Iona Lott
Republican
7. ☐ U. O. Money
Democratic
8. ☐ Rich Mann
Libertarian

County Sheriff (Vote for One)

9. ☐ Marshall Law
Republican
10. ☐ Lauren Order
Democratic
11. ☐ Jay Walker
Libertarian

County Coroner (Vote for One)

12. ☐ M. Balmer
Republican
13. ☐ Phil Graves
Democratic
14. ☐ Liv Long
Libertarian

Judicial Retention Questions (Vote YES or NO)

County Court Judge

Shall Judge Eileen Dover of the
Arapahoe County Court be
retained in office?

15. ☐ Yes
16. ☐ No

Shall Judge Olive Branch of the
Arapahoe County Court be
retained in office?

17. ☐ Yes
18. ☐ No

Shall Judge Kerry Okey of the
Arapahoe County Court be
retained in office?

19. ☐ Yes
20. ☐ No

Shall Judge Woody Forrest of the
Arapahoe County Court be
retained in office?

21. ☐ Yes
22. ☐ No

Ballot measures (Vote YES or NO)

City of Littleton Ballot Issue 3A

Shall the City of Littleton forbid
the forbidding of protests that
protest protesters of protests

23. ☐ YES/FOR
24. ☐ NO/AGAINST

City of Littleton Ballot Question 301

Shall cereal be defined as soup in
Littleton restaurants?

25. ☐ YES/FOR
26. ☐ NO/AGAINST

City of Littleton Ballot Question 3B

Shall it be illegal to call pets silly
names within the borders of the
City of Littleton?

27. ☐ YES/FOR
28. ☐ NO/AGAINST

City of Littleton Ballot Question 3C

Shall snow be forbidden in
summer, defined as from May 1st
to September 15th, within the City
of Littleton?

29. ☐ YES/FOR
30. ☐ NO/AGAINST

Appendix C Batch Station Record

Name of Election

Batch Station _____

Number in Batch

Batch 1	_____
Batch 2	_____
Batch 3	_____
Batch 4	_____
Batch 5	_____
Batch 6	_____
Batch 7	_____
Batch 8	_____
Batch 9	_____
Batch 10	_____

Appendix D Informal Tally Sheet

Tally Sheet for 20 Choices		Caller:					Watcher:					Tally One:					Tally Two:						
Choice #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Write-in 1	Write-in 2	Write-in 3
Ballot																							
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
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15																							
16																							
17																							
18																							
19																							
20																							
21																							
22																							
23																							
24																							
25																							
Choice #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Write-in 1	Write-in 2	Write-in 3
Total for choice																							

Appendix E Informal Aggregation Sheet

Aggregation Sheet for 625 Ballots					Agg Caller:					Agg Watcher:					Agg One:					Agg Two:			
Batch #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Write-in 1	Write-in 2	Write-in 3
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
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17																							
18																							
19																							
20																							
21																							
22																							
23																							
24																							
25																							
Choice #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Write-in 1	Write-in 2	Write-in 3
Agg total for choice																							

Appendix F Sample Tally Sheet

Election for:		Date:		BATCHING		Batch Station:		Batch #:		Ballot Box:		Batch to Tally Runner:																		
Tally Sheet for 30 Choices		TALLYING		Tally Station:						Tally Watcher:																				
Notes:		Tally Clerk:		Tally One:		Tally Two:																								
		AGGREGATION		Aggregation Station:								Tally to Aggregation Runner:																		
Choice	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ballot	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
9	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
13	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
17	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
18	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
19	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
21	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
22	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
23	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
25	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Total for choice	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Appendix G Sample Aggregation Sheet

[illegible]

Appendix H Sample Second-Level Aggregation Sheet

[illegible]

Appendix I Sample Write-In Tally Sheet

Election for:		Date:	BATCHING	Batch Station:	Batch R:	Ballot Box:	Batch to Tally Runner:
Tally Sheet for Write-Ins			TALLYING	Tally Station:			
Notes:		Tally Caller:		Tally Watcher:		Tally to Aggregation Runner:	
		Tally One:		Tally Two:			
		AGGREGATION		Aggregation Station:			
Choice							
Ballot							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
Choice							

Appendix J Sample Write-In Aggregation Sheet

[illegible]

Appendix K Sample Spoiled Ballot Tally Sheet

Spoiled Ballot Tally Sheet		Date:
Batch Station:	Aggregation Station:	Batch to Aggregation Runner:

Total spoiled ballots from polling and batching: _____

Additional spoiled ballots from tallying: _____

Total spoiled ballots: _____

Appendix L Sample Reconciliation Sheet
Reconciliation Sheet

Polling Station

1 Number of ballots given to voters:

2 Number of spoiled ballots:

3 Number of other ballots:

Description:

4 Total number of ballots left for hand counting:

I certify that the numbers above are true to the best of my knowledge:

Election Judges:

Printed name:

Signature:

Date:

Party:

I acknowledge the above totals:

Precinct Coordinators:

Printed name:

Signature:

Date:

Party:

Batching Station

5 Number of full batches (25 ballots):

6 Total number of ballots in full batches (line 5 x 25):

7 Number in partial batches:

8 Total number of ballots in partial batches:

9 Total number of ballots from ballot boxes (line 6 + line 8):

10 Number of spoiled ballots:

11 Number of other ballots:

Description

12 Total number of ballots left for hand counting (line 9 + line 10 + line 11):

I certify that the numbers above are true to the best of my knowledge:

Precinct Coordinators:

Printed name:

Signature:

Date:

Party:

Aggregation Station

13 Number of full batches (25 ballots):

14 Total number of ballots in full batches (line 13 x 25)

15 Number in partial batches:

16 Total number of ballots in partial batches:

17 Total number of ballots from ballot boxes (line 14 + line 16):

18 Number of spoiled ballots:

19 Number of other ballots:

Description

20 Total number of ballots left for hand counting (line 17+ line 18 + line 19):

I certify that the numbers above are true to the best of my knowledge:

Precinct Coordinators:

Printed name

Signature:

Date:

Party:

Appendix M Resources:

[Colorado State Assembly Teller/Hand Count Report 2024](#)

White paper documenting a major test of what became the Rocky Mountain Method

[Shasta County Mechanical Hand Count Voting System](#)

Example of county-required legal details for another method of hand counting

[Shasta County Manual Tally Plan](#)

Example of detailed plan for a hybrid system of scanning ballots, hand counting a percentage via another hand count method, and machine counting to fit state requirements

[Missouri Method](#)

One of the first hand count methods successfully replacing election machines in an actual election administered by an election authority