Exploring Audits: *Part Two*

Conducting a Tabulation Audit

The Elections Group

Introduction

Tabulation audits are conducted after an election to ensure that the voting equipment was programmed accurately and tallied ballots correctly. Typically the process includes comparing the markings on a ballot to the interpretation made by the voting equipment. To conduct the process, auditors or audit boards:

1 Select a random sample of voted ballots.

2 Examine each selected ballot and hand tally one or more contests.

3 Determine voter intent, such as marks outside the target area or write-in votes.

4 Compare the hand tally to the results from the voting system - either by ballot or by batch.

The most common tabulation audit methods are:

- Fixed percentage audits - A predetermined percentage of ballots are randomly selected and hand tallied, and compared to the machine count.[1]
- Risk-limiting audits[2] (RLAs) - Similar to a fixed percentage audit except the initial sample size will vary based on the margin of victory for the audited contest and total number of ballots cast. The audit is designed to increase in scale and even escalate to a full hand count depending on discrepancies discovered.

These types of audits use human eyes to review or tally a certain number of ballots and compare those findings to the machine count.

One other method – known as a transitive audit[3] – has been used to confirm the accuracy of results, but uses machines rather than humans. In a transitive audit, ballots are scanned using a different voting system or tabulator than the primary voting system and then the two systems' results are compared. If both systems report the same winner(s), it provides evidence that the outcome is correct, even if there are some discrepancies.[4]

---

[1] In general, sample sizes for fixed percentage audits run from 1 to 5% of the ballots cast or of participating precincts. Some jurisdictions use a mix of criteria to ensure that contests from an entire county are represented from which to draw the sample. See https://www.ncsl.org/elections-and-campaigns/post-election-audits

[2] For more on risk-limiting audits see the Democracy Fund's, Knowing It's Right series. https://democracyfund.org/idea/knowing-its-right-limiting-the-risk-of-certifying-elections/

[3] This type of audit may also be referred to as an automated audit. See https://www.eac.gov/sites/default/files/bestpractices/Election_Audits_Across_the_United_States.pdf

[4] For example, Florida election officials have the option to conduct an independent automated audit, which involves using independent hardware and software technology to tally votes cast across every race that appears on ballots in at least 20% of precincts chosen randomly. Fla. Stat. 101.591

As noted in Part One of the Report, the proper sample size for a post-election tabulation audit is one of the areas in which additional research is needed. Currently, jurisdictions have used a variety of methods to establish sample size:

- Jurisdictions that conduct fixed percentage audits typically set the sample size by statute or by audit board such as 1% of precincts, or 2% of in-person ballots along with 1% of mail ballots;
- Jurisdictions using risk-limiting audits typically define the risk limit by statute or the election authority makes a determination prior to the election; [5]
- Another option is to use a tiered percentage of audit units that varies depending on the margin of victory, where the smaller the margin of victory, the more ballots must be audited;[6] or
- In limited circumstances, a full hand count may be needed where the margins are very small and the sample size is large.[7]

Regardless of the sample size, it is a best practice to include a method to expand the audit by successive rounds or increased sample size if there are too many discrepancies.

---

[5] Risk limits are frequently set at 5% for statewide contests

[6] See New Mexico's tiered approach which designates the number of precincts that must be examined based on the margin between the top two candidates for certain contests. New Mexico Statutes 1-14-13.2

[7] Following the November 2020 General Election, Georgia conducted a full manual tally of all votes cast due to the tight margin of the audit. See https://sos.ga.gov/page/2020-general-election-risk-limiting-audit

Standards

1 | *A designated state official (audit committee, Secretary of State, etc.) should designate one or more statewide contests and one or more countywide contests for auditing.*[8]

2 | *A ballot accounting and reconciliation of all ballots must be performed prior to the audit (see Ballot Management Audit guide).*

3 | *The audit sample is randomly drawn from a population of all ballots cast in the election. This should include mail ballots, in-person ballots, military and overseas ballots, and accepted provisional ballots.*

4 | *Ballots from all precincts and political subdivisions should be included.*

5 | *The random selection of audit units (batches or individual ballots) should be conducted after ballot tabulation in a manner that can be publicly verified.*

---

[8] Factors to consider include the closeness of the reported outcome of a contest, public scrutiny or concerns regarding the accuracy of a contest, and the ability to complete the audit before certification deadlines.

6 *The ballots selected for audit should be physically examined by the auditors. This means reviewing the physical piece of paper and not relying on a ballot image file.*

7 *Auditors should have no knowledge of how the voting system interpreted each ballot or knowledge of the subtotals or final counts for the ballots they are examining (batches or sub-units).*

8 *State or local election officials who were directly involved in handling and processing ballots should not perform the audit.*

9 *The audit should be conducted in a way that neither the ballot or the tabulation records can be matched back to an individual voter.*

10 *The audit should be conducted prior to the certification of results.[9]*

11 *A timely post-audit report is drafted in plain language and made available to the public.*

---

[9] Piloting is an appropriate method for jurisdictions to develop the best practices that will work for them and to determine whether statutory changes need to be made to adjust the post-election deadlines or to harmonize auditing processes with recount deadlines.

Getting Started

Reports and Materials Needed

- Ballot manifest (an internal report of each ballot batch including the specific scanner used to tabulate the batch, the number of ballots in the batch, and the storage container number)
- Ballot reconciliation reports
- Results reports from the voting system – these may be summary reports, batch subtotal reports or cast vote record files depending on the specific method being used
- Manual tally sheets for auditors to record and tally voter markings

Who Conducts the Audit?

- Some jurisdictions may already have requirements in place for audit boards or counting boards that could be extended to apply to auditors conducting tabulation audits.
- Due to the sensitive nature of handling ballots, tabulation audits should be conducted by independent, bipartisan teams under the supervision of the ballot custodian who is usually the local election official.
- Each audit team should consist of two qualified electors from differing political parties or affiliation and should be approved by the local election authority. Depending on the number of ballots that will be audited, more than one audit team may need to be appointed.

Who Observes the Audit?

Election audit transparency is enhanced by opening the audit event to observers such as members of the community. Some general considerations when observation is feasible and allowed by law.

- Observers must not direct or interfere with the audit process or compromise the security and privacy standards for the audit.
- Public notice should be given to announce opportunities to observe audit events.
- A member of staff should be designated as an observer liaison to help answer questions.
- Materials such as handouts should be available so observers understand the audit process.

For tabulation audits:

- The audit should be conducted in such a way that observers can see the voter markings and evaluate for themselves whether the voter marking agrees with the audit team's interpretation of the voter's selection.
- Insofar as security and privacy can be maintained, the general public may observe from a designated space.
- The public should be given timely access to the post-audit report

When Should the Audit Take Place?

- In their 2018 publication entitled Principles and Best Practices for Post-Election Tabulation Audits[10], Verified Voting opined that it was a best practice for post-election tabulation audits to be binding on official outcomes. This means the timeline to complete audits and recounts needs to be thoughtful so local officials are able to certify accurate results in a timely manner.

- Piloting is an appropriate method for jurisdictions to develop the best practices that will work for them and to determine whether statutory changes need to be made to adjust the post-election deadlines or to harmonize auditing processes with recount deadlines.

- Changes should also be considered for existing laws requiring ballots to be impounded for a specific period following the election.

---

[10] See Verified Voting's Principles and Best Practices for Post-Election Tabulation Audits
https://verifiedvoting.org/publication/principles-and-best-practices-for-post-election-tabulation-audits/;
See also Verified Voting's Coordinating Audits and Recounts to Strengthen Election Verification
https://verifiedvoting.org/publication/audits-recounts-nov-2022/.

Conducting the Audit

Prior to conducting the audit, the election authority should decide the appropriate criteria for determining if the audit is complete.

- Criteria should be established to determine when the audit is complete - what is the acceptable number of discrepancies that will be tolerated?[11]
- A method should be established to define the threshold for discrepancies that will trigger additional rounds of audits - how many discrepancies would lead to sampling more ballots in order to feel confident about the outcome.
- A method should be established to determine at what point the audit should escalate to a full recount - how many additional rounds of auditing or ballots sampled or number of discrepancies to require a recount?

RECONCILIATION

- Finish tabulating all valid ballots that will be included in the audit.
- Generate a summary results report from the voting system for all ballots that will be audited including overvotes, undervotes, blank-voted contests, and valid write-in votes.
- Verify the total number of ballots shown in the summary results report equals the aggregate number of ballots in the ballot manifest.
  - Research the discrepancy.
  - Correct when possible.
  - Do not force the numbers to match.
- Verify the total number of ballots in the ballot manifest equals the number of voters whose ballots were returned or who checked in at voting locations.[12]
- If auditing batches of ballots, verify that the total number of ballots cast in each subtotal report from the voting system equals the total number of ballots in the corresponding batch in the ballot manifest.

---

[11] See, e.g., Arizona counties conduct fixed percentage hand counts for each election. The Arizona Secretary of State appoints a seven-member Vote Count Verification Committee under A.R.S. 16-602(K) to establish the designated, acceptable margins for conducting hand counts for early ballots and polling place/vote center ballots. Under Election Rule 25, Colorado, which conducts risk-limiting audits for its elections, provides that the Secretary of State must establish the risk limit and target contests for each election and provides that the risk-limiting audit will continue until the risk limit for the target contests is met or until a full hand count results. If a county identifies discrepancies in its audit report, the Secretary may direct the county to conduct additional audit rounds, a random audit, a full hand count, or other actions and may instruct the county to delay the canvass until these actions are completed.

[12] Some small differences may be understandable between the manifest and the vote histories. This usually is caused by voters who check in at a polling place but then choose not to cast a ballot. There should be documentation to support that conclusion in the reconciliation forms. See the Ballot Management Audit in Section 2 for more information.

BALLOT RETRIEVAL

- Use a ballot manifest, in combination with your random selection mechanism, to randomly select the initial sample of ballots to be reviewed.
- Locate the storage container for the selected ballot or batch of ballots.
- Verify the security seals on the ballot storage container match the seals recorded on the chain-of-custody log (if a separate log is maintained).
- Locate the batch or ballots you are looking for within the storage container.
- Place the retrieved ballot/batch in a designated audit folder or bin.
- Check or initial a ballot/batch retrieval list to indicate the ballot/batch has been pulled for the audit.
- Re-seal the ballot container and record the security seal numbers on the chain-of-custody log.

BALLOT REVIEW AND VERIFICATION

Working in teams of two, auditors:

- Verify the correct ballot or batch was retrieved.
- Auditor #1 reads out loud the voter selection(s) on the ballot for each audited contest while Auditor #2 records the voter selections on a tally sheet.
- Review the recorded selections by having Auditor #2 read out loud from the tally sheet and Auditor #1 compares what is read to what is marked on the ballot.
- Continue recording and reviewing votes for all ballots.
- Tally all the votes for each audited contest after all ballots have been reviewed and recorded.

CONCLUDING THE AUDIT

- Confirm that all ballots or batches selected have been audited.
- Determine if the audit is complete or if additional rounds of auditing are necessary by comparing the auditor's totals against the totals report for the audited contests.
- Prepare a signing document for auditors and officials to complete affirming the audit has been conducted. The signing document may serve as a cover sheet to the audit report.
- Generate the audit report.
- Make the final audit reports publicly available.

SAMPLE TALLY SHEET

Tabulation Audit Log			
County	Adams	**Auditor 1**	Trey Anastasio
Audit Date	Dec. 12 – 16, 2022	**Auditor 2**	Page McConnell

Tally Sheet		
Candidate	**Number of Votes Cast Per Candidate**	**Total**
Example **DOE, John "Johnny"** Governor	~~1 2 3 4 5 6 7 8 9 10~~ ~~1 2 3 4 5 6 7 8 9 20~~ ~~1 2 3 4 5 6~~ 7 8 9 30 1 2 3 4 5 6 7 8 9 40 1 2 3 4 5 6 7 8 9 50 1 2 3 4 5 6 7 8 9 60 1 2 3 4 5 6 7 8 9 70 1 2 3 4 5 6 7 8 9 80 1 2 3 4 5 6 7 8 9 90 1 2 3 4 5 6 7 8 9 100	**26**
MOUSE, Mickey Governor	1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 20 1 2 3 4 5 6 7 8 9 30 1 2 3 4 5 6 7 8 9 40 1 2 3 4 5 6 7 8 9 50 1 2 3 4 5 6 7 8 9 60 1 2 3 4 5 6 7 8 9 70 1 2 3 4 5 6 7 8 9 80 1 2 3 4 5 6 7 8 9 90 1 2 3 4 5 6 7 8 9 100	
DUCK, Donald Governor	1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 20 1 2 3 4 5 6 7 8 9 30 1 2 3 4 5 6 7 8 9 40 1 2 3 4 5 6 7 8 9 50 1 2 3 4 5 6 7 8 9 60 1 2 3 4 5 6 7 8 9 70 1 2 3 4 5 6 7 8 9 80 1 2 3 4 5 6 7 8 9 90 1 2 3 4 5 6 7 8 9 100	
GOOF, Goofy Governor	1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 20 1 2 3 4 5 6 7 8 9 30 1 2 3 4 5 6 7 8 9 40 1 2 3 4 5 6 7 8 9 50 1 2 3 4 5 6 7 8 9 60 1 2 3 4 5 6 7 8 9 70 1 2 3 4 5 6 7 8 9 80 1 2 3 4 5 6 7 8 9 90 1 2 3 4 5 6 7 8 9 100	
WRITE-IN Governor	1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 20 1 2 3 4 5 6 7 8 9 30 1 2 3 4 5 6 7 8 9 40 1 2 3 4 5 6 7 8 9 50 1 2 3 4 5 6 7 8 9 60 1 2 3 4 5 6 7 8 9 70 1 2 3 4 5 6 7 8 9 80 1 2 3 4 5 6 7 8 9 90 1 2 3 4 5 6 7 8 9 100	
BLANK	1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 20 1 2 3 4 5 6 7 8 9 30 1 2 3 4 5 6 7 8 9 40 1 2 3 4 5 6 7 8 9 50 1 2 3 4 5 6 7 8 9 60 1 2 3 4 5 6 7 8 9 70 1 2 3 4 5 6 7 8 9 80 1 2 3 4 5 6 7 8 9 90 1 2 3 4 5 6 7 8 9 100	

Audit Reports

Public facing audit reports should be written in plain language and include definitions for any technical terms used. At a minimum, reports should include:

- Date and timeline for the audit
- Who conducted the audit
- Methods used for conducting the audit
- Sample size or number of records or other artifacts reviewed
- Findings, including recommended improvements to procedures

Provide a summary that includes the following:

- Relevant statutes or regulations, and where applicable, a copy of any state decree calling the contests to be audited
- Information about the audited contest(s) including the name of the contest, the number of winners, and the votes allowed (e.g. Vote for Two)
- Total number of ballots cast
- Total number of ballots counted
- Identification of the contest(s) audited
- Tabulated votes for each candidate/issue
- Number of batches and ballots selected for the audit
- Where, when and how the audit was conducted
- Whether observers were present
- Discrepancies found during the audit.

Any discrepancies between the auditors' review and the results report from the election management system should include a narrative with relevant context and an explanation. Examples may include the following:

- Machine error (ballot programming error, bleed through interpreted as a mark)
- Audit error (wrong ballot retrieved, miscount in audit, ballot reconciliation issue)
- Voter intent (There are likely to be discrepancies on hand-marked paper ballots where a voter has not made their intent clear (marginal marks) and the ballot was sent to an adjudication team. It is possible that the decision about whether or not to count a voter mark as a valid vote may differ from the decision made by the auditor.)

Auditors should draw out patterns for discrepancies and identify outliers in the data. For example, auditors making different determinations of voter intent may indicate that the settings on the tabulation equipment need to be reviewed to see if questionable ballot markings are being properly out-stacked or adjudicated.

Consider issuing a public-facing report that uses plain language to explain the audit process and findings, while also making available a more technical report that includes data files and other supporting information. A public facing report might include:

- Audited contest(s)
- Where and when the audit took place
- Observers present
- Who conducted the audit
- How many ballots (and which types) were selected for the audit
- A summary comparison of the original and audited results
- Number of discrepancies or disagreements
- Reason for the discrepancies
- Did the audit conclude with just the initial ballots sampled? Did it escalate to another round?
- What can the public conclude from the results of the audit?
- Lessons learned or opportunities for improvement

This guide is part of our Exploring Election Audits series. We welcome feedback and suggested modifications to this guide. Please reach out to support@electionsgroup.com with any comments.

electionsgroup.com