

How It Works: Election Auditing



ES&S is a strong supporter of post-election audits — a way for election officials to verify that votes were counted accurately.

Audits help ensure a correct election outcome and instill trust in a fair, accurate election process. There are many types of audits, and the way audits are performed is determined by state or local election officials. ES&S systems support all types of audits. Here are three of the most common types:

1. RISK-LIMITING AUDIT

A risk-limiting audit (RLA) is a post-election audit that provides statistical evidence that the election outcome is correct and has a high probability of validating the outcome. These statistics are calculated based on the number of votes cast, the margin of victory, and the accepted risk limit. Random ballots are chosen using proven methods and checked manually until there is enough evidence that the reported outcome is correct (the risk limit is met or exceeded). RLAs typically require fewer ballots be audited than other types of audits.

EXAMPLE 1	Total votes: 3 million	Candidate 1 votes: 1.8 million (60%)
	State-required risk-limit: 5%	Candidate 2 votes: 1.2 million (40%)
Election officials calculate an initial sample size of 34 ballots.		
Election officials randomly select 34 ballots.		
Selected ballots compared to cast vote record.		
More than 32 ballots (95% of the sample) match cast vote record, providing statistical confidence of a correct outcome.		

EXAMPLE 2	Total votes: 3 million	Candidate 1 votes: 1.53 million (51%)
	State-required risk-limit: 5%	Candidate 2 votes: 1.47 million (49%)
Election officials calculate an initial sample size of 339 ballots.		
Election officials randomly select 339 ballots.		
Selected ballots compared to cast vote record.		
More than 322 ballots (95% of the sample) match cast vote record, providing statistical confidence of a correct outcome.		

Comparing Risk-Limiting Audit Methods

RLA Method	Description
Ballot-level comparison	Individual ballots are randomly selected, counted and compared to the voting system's cast vote record for each ballot.
Batch-level comparison	Batches of ballots are randomly selected, counted and compared to batch subtotals produced by the voting system.
Ballot-polling	A random sample of ballots are selected and the results for the selected contest(s) are tallied; the audit stops when it produces strong enough evidence to support the reported outcome.
Batch-polling	A random sample of batches are selected and the results for the audit stops when it produces strong enough evidence to support the outcome.

2. FIXED-PERCENTAGE AUDIT

Fixed-percentage audits of voting districts or voting machines compare the paper record to the tabulated cast vote record produced by the election management system. Post-election audits can be completed by hand counting; however some states choose to re-scan ballots electronically, on central tabulators.

While most states performing traditional audits count the same percentage of ballots no matter the outcome, some states use a “tiered” system, meaning they change the number of ballots reviewed depending on the margin of victory. If the margin is larger, fewer ballots need to be counted. If the race is tighter, more ballots are audited.

EXAMPLE	Total votes: 3 million	Total precincts: 2,000	Candidate 1 votes: 1.59 million (53%)
	State-required precinct sample: 3%	Sample size of precincts: 60	Candidate 2 votes: 1.41 million (47%)

Election officials select 3% of precincts at random

Manual count of paper ballots at selected precincts

Manual count compared to equipment count

Less than 1% discrepancy between manual count and equipment count, providing statistical confidence of a correct outcome.

If the manual count differs by more than 1 percent from the automated equipment count, or if the outcome of the election would change due to the discrepancy, then additional auditing is performed until the election results can be verified.

3. THIRD-PARTY AUDIT

Third-party audits of ballot images are performed by a third-party vendor. These extensive audits are done independently from the election management software to verify the election results.

HOW DOES ES&S SUPPORT AUDITS?

ES&S fully supports the use of paper ballots and post-election audits as a way to ensure accuracy and increase confidence in our country’s election process.

- ES&S Electionware® election management system offers election officials the ability to conduct a wide range of post-election audits with improved effectiveness and efficiency. The system offers easy-to-read, side-by-side comparisons of the unaltered ballot image and its corresponding cast vote record make it possible to audit any election in a fraction of the time.
- Electionware maintains a detailed audit log of all actions and events that have occurred on the voting system, including log-in attempts, election definition, ballot preparation and results processing. This includes a record of all user actions, with username and timestamp to the system audit log. This audit log can be filtered by date and type of event and printed or saved in a variety of file formats.
- Electionware provides an export of cast vote records that are easily imported into the various RLA systems in use today.