

Rule 11. Voting Systems

11.1 Voting system access

- 11.1.1 The designated election official must securely store election setup records. Only persons with the clerk's written authorization may access the records.
- 11.1.2 The county clerk must deputize employees who are authorized to prepare or maintain the voting system or election setup records before the election.
- 11.1.3 In accordance with section 24-72-305.6, C.R.S., all permanent and temporary county staff and all vendor staff who have access to the voting system or any voting or counting equipment must pass a criminal background check. A person convicted of an election offense or an offense containing an element of fraud may not have access to a code, combination, password, or encryption key for the voting equipment, ballot storage area, counting room, or tabulation workstation.

11.2 Voting System Inventory

- 11.2.1 The designated election official must maintain an inventory record for each electronic vote-tabulating device used in an election. The record must include the manufacturer, make, model, serial number, hardware/firmware/software version or release number, hash value documentation where applicable, date of acquisition, description of any services, repairs, maintenance, upkeep, and version upgrades, and the dates the services were performed.
- 11.2.2 If the inventory is in electronic format, it must be exportable to a comma separated (CSV), excel spreadsheet (XLS or XLSX), or quote or tab separated (TXT) file before delivery to the Secretary of State.
- 11.2.3 The designated election official must file the inventory with the Secretary of State no later than ten days before the election for use in the Logic and Accuracy Test and the Post-Election Audit.

11.3 The clerk must perform a hardware diagnostic test, a logic and accuracy test, and a post-election audit.

11.3.1 Hardware Diagnostic Test

- (a) The designated election official must perform the Hardware Diagnostic Test before the election on each device that the designated election official will use in the election, including spare or back up devices. The test must include the following devices and provide the following information:
 - (1) All input and output devices;
 - (2) Communications ports;
 - (3) System printers;
 - (4) System modems when applicable;
 - (5) System screen displays;

- (6) Boot performance and initializations;
 - (7) Firmware loads;
 - (8) Software loads;
 - (9) Display of firmware or software hash value (MD5 or SHA-1) when possible;
 - (10) Confirmation that screen displays are functioning; and
 - (11) Date, time and calibration of systems.
- (b) The designated election official must seal each device upon the successful completion of the test and retain documentation of the seal information and all records in accordance with section 1-7-802, C.R.S.

11.3.2 Logic and Accuracy Test

- (a) The county clerk must conduct the public Logic and Accuracy Test no later than the 18th day before election day.
- (b) The county must ensure that the Logic and Accuracy Test is open to the extent allowable in accordance with section 1-7-509(2)(b), C.R.S. The county clerk may limit the number of representatives from each group because of space limitations.
- (c) Preparing for the Logic and Accuracy Test
 - (1) The county must prepare a test deck of ballots that includes every ballot style and, where applicable, precinct. The county test deck must include a sufficient number of ballots to mark every vote position for every contest including write-in candidates, allow for situations where a contest permits an elector to vote for two or more positions, and include overvotes and undervotes for each contest.
 - (2) The county must convene a Testing Board of one registered elector from each of the major political parties. Testing Board members must be registered to vote in the county.
 - (3) The county must provide at least 25 ballots that are clearly marked as test ballots to each Testing Board member.
 - (4) Testing Board members must mark their test ballots following the instructions printed on the ballots and retain a record of the tally.
 - (5) The Testing Board must test the ballots on each type of voting device used in the election and each type of ballot including audio ballots.
- (d) Conducting the Test
 - (1) The county and Testing Board must observe the tabulation of all test ballots, compare the tabulation with the previously retained records of the test vote count, and correct any discrepancies before the device is used in the election.

- (2) The county must reset the public counter to zero on all devices and present zero tapes to the Testing Board for verification.
- (3) The county must make an appropriate number of voting devices available and the Testing Board may witness the programming and/or downloading of memory devices necessary for the test.
- (4) The Testing Board and designated election official must count the test ballots as follows, if applicable:
 - (A) Optical Scanners:
 - (i) The Testing Board must test at least one central count optical scanner and at least one optical scanner used at a voter service and polling center, if applicable.
 - (ii) The Testing Board must randomly select the machines to test.
 - (iii) The Testing Board must count the board and county's test ballot batches separately and generate reports to verify that the machine count is identical to the predetermined tally.
 - (B) DREs:
 - (i) The Testing Board must test at least one DRE.
 - (ii) The Testing Board must randomly select the machines to test.
 - (iii) Each member of the Testing Board must separately cast his or her test ballots on the selected DREs. Each Testing Board member must cast at least one of his or her test ballots using the audio ballot playback and accessible input devices.
 - (iv) Each Testing Board member must examine the tabulation tape or report and verify that the DRE results match what the Testing Board member manually marked on his or her test ballots.
 - (C) Ballot Marking Devices (BMDs):
 - (i) The Testing Board must test at least one BMD.
 - (ii) At least two members of the Testing Board must use the selected BMD to mark and print at least 25 ballots in the same manner that the testing board member manually marked his or her test ballots. At least two members of the Testing Board must mark at least one of his or her test ballots using the audio ballot playback and accessible input devices.

- (iii) A Testing Board member or county election official must separately scan and tabulate the test ballots marked with and printed from the BMD on one central count or polling location scanner, and generate a results report.
 - (iv) Each Testing Board member must verify that the results report generated from the scanner exactly corresponds to the testing board member's tally of the votes on the manually marked paper ballots comprising his or her test ballots.
 - (e) Completing the test
 - (1) The county must keep all test materials, when not in use, in a durable, secure box. Each member of the Testing Board must verify the seals and initial the chain-of-custody log maintained by the county clerk. If the records are opened for inspection, at least two election officials must verify the seals and initial the chain-of-custody log.
 - (2) The county must upload the results from all tested scanners and DREs to the tabulation software, and save the tabulation results for the ENR test required under Rule 11.10.3.
 - (3) After testing, the Testing Board must watch the county reset and seal each voting device.
 - (4) The Testing Board and the county clerk must sign a written statement attesting to the qualification of each device successfully tested, the number of the seal attached to the voting device at the end of the test, any problems discovered, and any other documentation necessary to provide a full and accurate account of the condition of a given device.
 - (5) The county may not change the programming of any voting device after completing the logic and accuracy test for an election, except as required to conduct a recount or as authorized by the Secretary of State.

11.3.3 Post-Election Audit. The designated election official must conduct the post-election audit mandated by sections 1-7-509(1)(b) and 1-7-514, C.R.S., in accordance with this rule.

- (a) Selected voting devices
 - (1) No later than 48 hours after the close of polls on election night, the Secretary of State must notify the designated election official of the voting devices randomly selected for audit, based on the submitted hardware inventory list referred to in Rule 11.2.
 - (2) The Secretary of State will randomly select, from the voting devices used in the election, at least five percent of the central count ballot scanners; at least one ballot scanner used at a polling location; and five percent of DREs.
- (b) The designated election official must appoint an audit board to conduct the post-election audit in accordance with section 1-7-509(1)(c), C.R.S. At least two canvass board members must observe the random audit. The designated

election official, members of his or her staff, and other duly appointed election judges, may assist with the audit.

- (c) Number of ballots to audit
 - (1) Paper ballots tabulated on ballot scanners. The board must audit at least 500 ballots or 20 percent of the ballots tabulated on each selected ballot scanner, whichever is less. The board may audit more than the minimum number of ballots required.
 - (2) Electronic ballots tabulated on DREs. The board must audit all ballots tabulated on the selected DREs.
- (d) Conducting the audit
 - (1) Paper ballots tabulated on ballot scanners
 - (A) If the voting system is capable of generating batch-level tabulation reports for a selected ballot scanner, the board must randomly select a number of ballot batches tabulated on the ballot scanner that, in the aggregate, contain the minimum number of ballots to be audited. The board must manually verify that the votes on the ballots contained in each randomly selected batch match the voting system's tabulation of votes for that batch.
 - (B) If the voting system is not capable of generating batch-level tabulation reports for a selected ballot scanner, the board can choose to audit all of the ballots that were tabulated on the selected scanner, or randomly select and rescan the minimum number of ballots to be audited. If the board chooses to rescan the minimum number of ballots, the board also must:
 - (i) Reset the selected ballot scanner's results to zero and generate a zero report;
 - (ii) Rescan the randomly selected ballots for audit and generate a tabulation report from the selected ballot scanner; and
 - (iii) Manually verify that the votes on the randomly selected ballots match the tabulation report for those ballots generated from the selected ballot scanner.
 - (2) Ballots tabulated on DREs. The board must examine the VVPAT record of each selected DRE and manually verify that the votes reflected on the VVPAT match the tabulation report.
- (e) If the board discovers discrepancies during the audit, the board must:
 - (1) Confirm that the manual count of the votes contained in the audited ballots is correct;

- (2) Confirm that the manual count of the votes contained in the audited ballots properly reflects overvotes, stray marks on the ballot, and other indications of voter intent;
 - (3) Determine whether any discrepancy is attributable to a damaged ballot; and
 - (4) Take any other action necessary in accordance with the canvass board's powers as described in Part 1, Article 10 of Title 1, C.R.S.
 - (f) The designated election official must report the results of the audit in writing to the Secretary of State by 5:00 p.m. on the last day to canvass. The audit report may be submitted by mail, fax, or email. The audit report must contain:
 - (1) The make, model, and serial number of the voting devices audited;
 - (2) The number of ballots originally counted on each device or the number of ballots audited;
 - (3) The count of the specific races on the summary report printed at the close of polls or the report generated for the audit;
 - (4) The count of the specific races as manually verified;
 - (5) Any other information required by section 1-7-514, C.R.S.; and
 - (6) The signatures of the audit board, the canvass board members who observed the audit, and the designated election official.
 - (g) The designated election official must segregate and seal the materials used during the post-election audit, including all tabulation reports, the audited ballots, and the audit report.
- 11.4 The county must submit election setup records by regular mail no later than 5:00 p.m. on the seventh day before election day.
 - 11.4.1 Jurisdictions that contract with either a software service bureau or an electronic vote counting equipment vendor may choose to have the vendor deliver the election setup records.
 - 11.4.2 Election setup records must be in an electronic media format that is native to the jurisdiction's specific ballot creation and tabulation system. Acceptable media formats include tape, diskette, cartridge, CD-ROM, DVD-ROM, floppy, external hard drive, or flash media.
 - 11.4.3 The designated election official must include a point of contact and method of contact (phone, fax, email, etc.).
 - 11.4.4 Within 24 hours of receipt of the election setup records, the Secretary of State's office will contact the jurisdiction to confirm receipt.
 - 11.4.5 The Secretary of State's office will store the election setup records in a secured, fire proof, limited-access location.

- 11.4.6 All parties must treat as confidential all escrowed materials and any other related information that comes into their possession, control, or custody.
- 11.5 The designated election official must retain all testing records and documentation for 25 months.
- 11.6 Methods of submission are:
- 11.6.1 By regular mail to:
- Colorado Secretary of State
Attn: Voting Systems
1700 Broadway – Suite 200
Denver, CO 80290
- 11.6.2 By email to:
- voting.systems@sos.state.co.us
- 11.6.3 By Fax to:
- 303-869-4861
- 11.7 Rules Concerning Accessible Voting Systems. A political subdivision may not purchase or lease voting systems for use by people with disabilities unless the system is certified in accordance with the 2002 Voting System Standards promulgated by the Federal Election Commission
- 11.8 Rules Concerning Notice of Voting System Malfunction
- 11.8.1 The voting system provider must submit a software incident report to the Secretary of State no later than 72 hours after a software incident has occurred.
- 11.8.2 A vendor or designated election official must notify the Secretary of State within 24 hours of a reported or actual malfunction of its voting system. The notice must include a description, date, and the names of those who witnessed the malfunction, as well as the procedures followed before the malfunction, and any error messages displayed. The notice may be verbal, but a written notice must follow.
- 11.8.3 If the Secretary of State requires additional information the vendor or the designated election official must submit a report to the Secretary of State's office detailing the reprogramming or any other actions necessary to correct a voting system malfunction.
- (a) The report must address whether permanent changes are necessary to prevent similar malfunctions in the future.
- (b) If the malfunction requires a programming or election setup change to the database or other parts of the voting system, the designated election official must submit an updated election setup record to the Secretary of State's office as set forth in Rule 11.4.
- (c) The report must be submitted within 30 days after the date of the request by the Secretary of State. If an election is scheduled within 60 days of the date of request by the Secretary of State, the Secretary of State may set an emergency deadline for filing the report.

- (d) Failure to submit a report within the required period is grounds to decertify the system.
- (e) The political subdivision holding the election in which the voting system malfunction occurred may submit the report in lieu of a report from the system's vendor.
- (f) A copy of this report will be on file in the Secretary of State's office.
- (g) The Secretary of State's office will distribute a copy of this report to all counties using the voting system in question.

11.9 Purchases and Contracts

11.9.1 In accordance with sections 1-5-617(5) and 1-5-623(3), C.R.S., a political subdivision may not purchase, lease, transfer, or use a certified electromechanical or electronic voting system, device, or related component, unless the political subdivision first applies for and obtains approval from the Secretary of State.

11.9.2 In the case of electromechanical or electronic voting systems, devices, or related components certified for use in Colorado before January 1, 2016, the Secretary of State will approve a political subdivision's application to purchase, lease, or use the voting system, device, or related component, only if:

- (a) The political subdivision purchased, leased or used the same voting system, device, or related component, before January 1, 2016; and
- (b) The political subdivision's application for approval is limited to the acquisition or use of voting system applications, components or voting devices intended to replace the same or substantially similar applications, devices and components that are damaged, defective or inoperable; and
- (c) Approval of the application, and the political subdivision's purchase, lease or use of the voting system components or voting devices, will not materially impair the political subdivision's future fiscal ability to purchase or lease a voting system certified for use in Colorado on or after January 1, 2016.

11.9.3 In the case of electromechanical or electronic voting systems, devices or related components certified for use in Colorado on or after January 1, 2016, the Secretary of State will approve a political subdivision's application to purchase, lease, or use the voting system, device, or related component, after considering all relevant factors, including without limitation:

- (a) Evaluations of the voting system performed by public committees organized by the secretary of state, and any recommendations regarding the use of the voting system by any such public committee;
- (b) The voting system's ability to support the efficient and uniform conduct of elections under the uniform election code of 1992, as amended;
- (c) The voting system's utilization of commercial off-the-shelf hardware components, rather than proprietary, purpose-built hardware components;
- (d) The voting system's integration of its data management application, if any, with other components of its election management system, so that system users can

operate or access all election management system components within a single interface on the same server or workstation;

- (e) The voting system's ability to support efficient risk-limiting audits, or the commitment of the voting system provider to develop such capability, in time for the 2017 coordinated election, as required by section 1-7-515.5, C.R.S.;
- (f) The voting system's compatibility, or the voting system provider's commitment to develop such compatibility on or before December 31, 2016, with dependent systems that are not directly related to the tabulation of votes and ballots, but are nevertheless utilized by designated election officials in conducting elections in Colorado, including:
 - (1) Ballot-on-demand systems,
 - (2) Election Night Reporting systems,
 - (3) Electronic ballot delivery systems, and
 - (4) Election definition data exported from SCORE;
- (g) The voting system's ability to efficiently support elections principally conducted by mail ballot, in all political subdivisions, regardless of their size, number of registered electors, or fiscal resources, including:
 - (1) The voting system's inclusion of applications enabling election judges to digitally, rather than manually, adjudicate, resolve, and duplicate ballots with marginal or ambiguous voter markings, and
 - (2) The voting system's use of ballot scanners equipped with automatic document feeders, enabling election judges to scan multiple ballots rather than a single ballot at a time;
- (h) The voting system's ability to enable voters with disabilities to vote independently and privately, and on the same or substantially similar devices throughout Colorado, without regard to their county of residence;
- (i) The voting system's scalability and affordability, enabling all political subdivisions to utilize the same or substantially similar equipment, regardless of their size, number of registered voters, or fiscal resources;
- (j) The voting system's portability as provided in the provider's hardware and software license agreements, enabling political subdivisions that purchase, lease, or use the system to loan or borrow voting devices and related components to or from one another without charge, as exigencies and other circumstances warrant, and as approved by the Secretary of State;
- (k) The voting system's ability to easily export images of voted ballots, in response to requests filed under section 24-72-205.5(3)-(4), C.R.S., of the Colorado Open Records Act;
- (l) The voting system provider's past performance of successfully implementing its voting system in multiple jurisdictions simultaneously;

- (m) The voting system provider's past performance of successfully training local election officials to use its voting system in multiple jurisdictions simultaneously;
- (n) The voting system provider's past performance of post-implementation customer and technical support for political subdivisions that acquire its voting system;
- (o) The voting system provider's past performance of compliance with Colorado law regarding voter anonymity, and responsiveness to other issues and concerns raised by designated election officials and Secretary of State staff members;
- (p) The voting system provider's financial stability and sustainability as an ongoing business concern; and
- (q) The extent to which the voting system provider's hardware and software license agreements permit the Secretary of State, or political subdivisions that license the hardware and software applications necessary to program elections and voting devices, to perform those services without charge for other political subdivisions that are licensed to use the voting system.

11.9.4 The Secretary of State will approve a county's application for the purchase, lease, or use of an electromechanical or electronic voting system, device, or related component, certified on or after January 1, 2016, only if:

- (a) The voting system includes, and the county acquires, digital ballot resolution and adjudication capability;
- (b) The voting system includes, and the county acquires, central count ballot scanners equipped with automatic document feeders capable of scanning multiple ballots rather than a single ballot at a time;
- (c) The voting system integrates all components of the election management system, including the data management application, if any, into a single user interface that is operable or accessible from the same server or workstation;
- (d) The voting system is capable of supporting efficient risk-limiting audits, or the commitment of the voting system provider to develop such capability, on or before December 31, 2016, in the manner required by Rule 21.4.14;
- (e) The voting system is compatible, or the voting system provider commits to develop such compatibility on or before December 31, 2016, with dependent systems that are not directly related to the tabulation of votes and ballots, but are nevertheless utilized by designated election officials in conducting elections in Colorado, including:
 - (1) Ballot-on-demand systems,
 - (2) Election Night Reporting systems,
 - (3) Electronic ballot delivery systems, and
 - (4) Election definition data exported from SCORE;;
- (f) The voting system provider's software and hardware license agreements expressly permit political subdivisions that purchase, lease, or use the system to loan or borrow voting devices and related components to or from one another,

without charge, as exigencies and other circumstances warrant, and as approved by the Secretary of State; and

- (h) The voting system provider's software and hardware license agreements expressly permit the Secretary of State, or political subdivisions that license the hardware and software applications necessary to program elections and voting devices, to perform those services without charge for other political subdivisions that are licensed to use the voting system.

- 11.9.5 Due to their unsuitability for risk-limiting audits, the Secretary of State will not approve a county's application to purchase, lease or use a ballot scanner certified for use on or after January 1, 2016, that is not equipped with an automatic document feeder, whether intended for use by voters at polling locations, or by election judges at central count locations.
- 11.9.6 A political subdivision's contract to purchase or lease a voting system under Rule 11.9.1 must provide for user training and preventative maintenance.
- 11.9.7 The Secretary of State will only approve a political subdivision's application to purchase or lease a voting system or component if the voting system or component allows the designated election official to conduct elections in accordance with Colorado law, as amended.
- 11.9.8 The Secretary of State will maintain a list of all certified electromechanical or electronic voting systems, devices and related components, purchased, leased, or used by Colorado political subdivisions. The list will include, at minimum, the name of the jurisdiction, the name and version of the voting system, the date of acquisition, and the serial number(s) of voting devices.
- 11.10 Election Night Reporting. The county must use the Secretary of State's Election Night Reporting (ENR) system to report results for all primary, general, coordinated, and recall elections in accordance with this Rule.
 - 11.10.1 A data entry county must upload a results data file to ENR containing the election results on the dates and times specified in Rules 11.10.3 through 11.10.5. The county must program its election database so that the results file exported from the voting system is formatted in accordance with the following requirements:
 - (a) Contest names: Except as otherwise provided in subsections (1) – (3) of this Rule, the results file must contain the contest names as they are certified for the ballot.
 - (1) For primary elections, the county must append to the end of the certified contest name the SCORE abbreviation of the political party affiliation of the candidates in the contest (e.g., "United States Senator – Dem," "State Senator – District 21 – REP," "County Treasurer – Lib,").
 - (2) For ballot measures other than judicial retention questions, the contest name must include the political subdivision that referred the measure to the ballot, the ballot measure type, and the number or letter as it appears on the ballot (e.g., "Adams County Ballot Issue 200," "City of Brighton Ballot Question 5A,").
 - (3) For Judicial Retention Questions, the contest name must include the court and the title and last name of the justice or judge standing for

retention (E.g., “Supreme Court – Justice Erickson,” “Court of Appeals – Judge Jones,” “1st Judicial District– Judge Smith,” “Adams County Court – Judge Doe,”).

- (b) Contest order: Except as otherwise provided in subsections (1) – (4) of this Rule, the results file must list the contests in the same order as they are certified for the ballot.
 - (1) For primary elections, the results file must list the contests in the order prescribed by section 1-5-403(5), C.R.S., grouped in ascending alphabetical order of the abbreviated names of the participating major political parties, followed by the abbreviated names of participating minor political parties and qualified political organizations (e.g., “United States Senator – DEM,” “United States Senator – REP,” “United States Senator – GRN,” “United States Senator – LIB,” “United States Senator – UNI,”).
 - (2) The results file must list ballot measures in the order certified by the Secretary of State, followed by the ballot measures certified by other participating political subdivisions in the order and using the numbering conventions specified in Rule 4.5.2(f).
 - (3) A county using the Dominion, Hart, or Sequoia voting system must include and populate the contest sequence number field in its results files to define the order of contests on the ballot as required by this Rule.
 - (4) A county using the ES&S or Premier voting system must include and populate the contest ID field in its results file to define the order of contests as required by this Rule.
- (c) Candidate names: The results file must include candidates’ names in proper case and include periods following initials (e.g., “John A. Smith”), and may not include the name or abbreviation of the candidate’s political party.
- (d) Precinct names: If a county reports results by precinct, its results file may only include the ten-digit precinct number from SCORE.
- (e) Provisional results: The results file must include a “provisional” precinct or counting group as a placeholder for separately reported provisional ballot results if required by section 1-8.5-110(2), C.R.S.

11.10.2 No later than 21 days before the election, a county must provide the following information to the Secretary of State:

- (a) A data entry county must email a sample or “zero” file. Except in the case of withdrawn or deceased candidates, a data entry county may not change or alter the election database or export file after submitting its zero file.
- (b) A manual entry county must send a list of all ballot content.

11.10.3 No later than 14 days before the election, a data entry county must upload the LAT results file to ENR. At a minimum, the LAT results file must contain the results of the complete county test deck required under Rule 11.3.2(c)(1). The county must also provide the Secretary of State with a summary results report for the LAT results file.

- 11.10.4 Election night uploads. Manual entry counties must produce preliminary election results and upload them to the ENR system once counting is completed. All other counties must export or produce preliminary election results and upload them to the ENR system a minimum of three times on election night:
- (a) After the close of polls but no later than 8:00 p.m.
 - (b) At or around 9:00 p.m.
 - (c) The county must indicate that election night reporting is complete in the ENR system after the county uploads the last results on election night.
- 11.10.5 Canvass upload. The county must export or produce official election results, and check the appropriate box in the ENR system to indicate that the canvass upload is complete, not later than close of business of the first business day after the statutory deadline for completing the canvass.

