



★ VIRGINIA ★
DEPARTMENT *of* ELECTIONS

the Handbook

Chapter 4

Voting Equipment and Electronic Pollbooks

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4. VOTING EQUIPMENT

REQUIRED FORMS ELECT Form 633 - Logic and Accuracy Certification (L&A) Survey	ADDITIONAL RESOURCES Election Assistance Commission's Logic and Accuracy Testing ELECT Election Security Webpage Logic and Accuracy Testing Guidelines Logic and Accuracy Checklists
REFERENCES Voting Systems Security Policy Ballot on Demand Systems Certification Standards Virginia Voting Systems Certification Standards Virginia Electronic Pollbook Certification Standards	STATUTES & REGULATIONS 1VAC20-60-50 Overfull Optical Ballot Scanner Container 1VAC20-60-70 Mandatory logic and accuracy testing for electronic pollbooks §24.2-625.1. Voting equipment security §24.2-632. Voting equipment custodians

4.1 CHAPTER ORGANIZATION

The purpose of this chapter is to provide an overview of important aspects of voting equipment. §4.2 discusses the required state certification of voting systems used for elections in the Commonwealth. §4.3 provides information on Ballot on Demand voting equipment. §4.4 provides information on electronic pollbooks. §4.5 discusses Ranked Choice Voting and the software used. §4.6 provides information on voting equipment. §4.7 provides information about equipment custodians and chain of custody for secured equipment §4.8 provides a brief outline to testing the equipment in the logic and accuracy (L&A) testing each locality must complete prior to Election Day. §4.9 discusses voting equipment security and audits. Lastly, §4.10 outlines aspects of FOIA that the local electoral board and general registrar should consider surrounding the security of voting systems.



4.2 STATE CERTIFICATION OF VOTING SYSTEMS

The State Board of Elections (SBE) has established a program by which vendors that manufacture, own, or offer for sale electronic voting or counting machines and ballots designed to be used with such equipment can apply for testing or certification of such voting systems and equipment.¹

Voting systems are defined as electronic voting and counting machines used in elections, ballot scanner machines, on-demand ballot printing systems, and ballot marking devices used to manufacture or mark ballots to be cast by voters on electronic voting and counting machines.² All voting systems must be certified by the State Board prior to their use in an election and must be tested in an actual or mock election in one or more counties or cities.³ Voting systems must be capable of retaining and printing each ballot cast, in order for it to receive State Board approval for certification.⁴ A governing body cannot adopt the use of any voting system that has not been approved by the SBE.

Modification to a previously certified voting system requires a determination of whether the proposed change requires full recertification or is de minimis. No change of any kind can be made to any voting system software or firmware unless the Department of Elections has been informed of the proposed change and made a determination on the scope and effects of those changes on the certification of the system.

The SBE may decertify any previously approved voting system if it no longer complies with the standards adopted by the State Board or has critical software or hardware issues.⁵

The SBE uses the federal EAC VVSG 1.0/1.1 testing standard for certifying voting systems. The SBE will incorporate the new federal EAC VVSG 2.0 standard soon.⁶

4.3 STATE BOARD CERTIFICATION OF BALLOT ON DEMAND SYSTEMS

Ballot On Demand (BOD) systems are stand-alone units that print ballots for each precinct and ballot style within a locality. These systems are typically used during early voting to provide the appropriate ballot style to a voter at check-in but may also be used on Election Day if, for example, a locality runs out of a certain ballot style. BOD systems must be approved by the State Board.⁷ The Ballot on Demand System Certification Standards can be found on ELECT's election security page.⁸

4.4 STATE CERTIFICATION OF ELECTRONIC POLLBOOKS

Electronic pollbooks (EPB) must be approved by the SBE prior to use in elections in Virginia.⁹ The electronic pollbooks can be used to check-in voters at precincts and early voting sites.

¹ See §24.2-629. See also ELECT, [Voting System Certification Standard](#).

² See §24.2-101.

³ *Id.*

⁴ See §24.2-629.

⁵ *Id.*

⁶ ELECT plans to propose the new standard to the SBE in Q4 of 2025.

⁷ See §24.2-629.

⁸ See §24.2-611(D). See ELECT, [Virginia Ballot on Demand Systems Certification Standards](#).

⁹ See ELECT, [Election Security webpage](#).



Any modification to the hardware, software, firmware, infrastructure, or any component of a certified EPB, that is not determined to be de minimis, will invalidate the prior certification unless ELECT can review and provide an assurance to the SBE that the change does not affect the accuracy, reliability, security, usability, or accessibility of the system.¹⁰

ELECT reserves the right to examine any previously certified EPB system for any reason at any time. EPB systems that do not comply with the policies, guidelines, and directives regarding recertification as adopted and modified by the SBE from time to time may be decertified. The Department will work with vendors to resolve issues, but ultimately, the SBE reserves the right to decertify the EPB system. An EPB system that has been decertified by the SBE cannot be used for elections held in Virginia and cannot be purchased by localities to conduct elections.

The federal EAC has adopted an EPB certification standard named, EPBCR 1.0. The SBE has incorporated some of the requirements from VEPBRC 1.0 into the current EPB standards. In the future our standards will indicate that vendors will be required to be VEPBRC 1.0 certified before the Commonwealth will allow the EPB to be used.

4.5 STATE CERTIFICATION OF RANKED CHOICE VOTING TABULATION SOFTWARE

The SBE has approved the use of a ranked choice voting (RCV) tabulation software, Universal RCV Tabulator v1.2.0 (RCTab). RCTab is a federally tested open-source software that meets the Voluntary Voting System Guidelines (VVSG) established by the U.S. Elections Assistance Commission. RCTab does not fall under the definition of a voting system as it does not count the ballots cast but rather tabulates the votes displayed on the Cast Vote Record produced by the electronic voting system. A RCTab security approval report can be found on FormsWarehouse.¹¹

4.6 VOTING EQUIPMENT



An **optical ballot scanning machine** is a voting system that counts marks made on paper by the voter. The tool used to make these marks is called the marking device. A polling place typically needs one optical ballot scanning machine for proper voting operation with certain exceptions for presidential elections.¹²

All localities are required to use a voting system at every precinct and for all elections held in the county, the city, or any part of the county or city.¹³ Choosing a voting and counting system is at the discretion of the local electoral board, but the systems chosen must be from the SBE's approved vendor and system list.

¹⁰ See ELECT, [Electronic Pollbook Certification Standard](#).

¹¹ See ELECT, [Ranked Choice Voting Tabulation Software Approval](#).

¹² See §24.2-627.

¹³ See §24.2-626.



With prior approval of the SBE, localities may experiment with new voting systems in one or more precincts.¹⁴ A new system may be one that has already been certified for use by the Department of Elections, or it may be one that is still in the testing stage. The electoral board must have approval from the State Board of Elections before experimental use of election equipment.¹⁵ The governing body of each county and city is responsible for purchasing the voting machines that have been approved by the State Board.¹⁶

4.6.1 Number of Voting Machines Required



Each precinct is required to deploy a minimum number of ballot scanner machines based on the number of registered voters in the precinct.¹⁷ Absentee voters may be excluded when determining the number of registered voters.¹⁸

- Each precinct must have at least one scanner and one voting booth with a marking device for each 425 registered voters.¹⁹
- During a presidential election, a precinct with more than 4,000 registered voters will be required to have two ballot scanning machines. This requirement may change if the governing body of the county or city, in consultation with the general registrar and local electoral board, determines a second ballot scanning machine is unnecessary.²⁰

4.6.2 Maintaining Digital Ballot Images

If your locality's voting system creates digital ballot images, these records must be maintained with the Clerk of the Circuit Court for twenty-two months for federal elections, and for one year for any other election.²¹ A locality may choose to transfer these records from the original data storage device to another device to ensure compliance with federal law. Any locality choosing to transfer records to another device should work closely with the vendor to ensure proper transfer prior to sealing the records. If a locality decides to host a ranked choice voting contest, their voting equipment must be able to produce a digital ballot image.

4.7 CUSTODIANS

The voting equipment custodian is an individual identified by the electoral board or the general registrar to oversee the programming, configuration, and testing of voting systems in the locality.²² The custodian programs and prepares voting and counting equipment and is charged with overseeing and instructing the vendor technician in programming, testing, calibrating, and delivery of the equipment.²³

¹⁴ See [§24.2-630](#).

¹⁵ See Code of Virginia 24.2-630

¹⁶ See [§24.2-626](#).

¹⁷ See [§24.2-627](#).

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ *Id.*

²¹ See [52 U.S.C. § 20701](#). See [§24.2-669](#).

²² See [§24.2-632](#).

²³ *Id.*



The electoral board and general registrar are responsible for choosing a custodian and must appoint an individual to this position at least 30 days before each election. Any individual within this position must sign an oath prior to taking the position.²⁴

The electoral board may assign a board member or deputy registrar to serve without pay as a custodian; however, if the presence of a board member and the custodian is required, the same individual is prohibited from serving in both positions.²⁵

With the approval of the Department of Elections, the electoral board or general registrar may contract with the voting equipment vendor or another contractor for the purpose of programming, preparing, and maintaining the voting equipment. The voting equipment custodians shall instruct and supervise the vendor or contractor technicians and oversee the programming, testing, calibrating, and delivering of the equipment. The vendor or contractor technicians shall be sworn to perform their duties honestly and faithfully.²⁶

4.8 LOGIC AND ACCURACY TESTING

Logic and accuracy testing is an integral part of preparing for an election. Each machine and electronic pollbook (not a sampling of machines) that will be used in an election must be tested prior to that election to ensure it has been programmed correctly and is functioning properly. This includes the Americans with Disabilities Act (ADA) accessible voting systems.²⁷ The logic and accuracy test for voting machines will also uncover any ballot printing or coding issues that may affect accurate and complete tabulation.

ELECT has created a [Logic and Accuracy Guidelines](#) document to assist localities with best practice principles when performing L&A. ELECT has also created several L&A templates for use with scanners, ADA, ballot on demand and electronic poll books. Those templates can be found in forms warehouse under [voting equipment](#). Before the L&A testing of voting machines for any election, the general registrar must provide a written notice to the chairman of the local committee of each political party, or for an election in which no candidate is a party nominee and which is held when no other election having party nominees is being conducted, to the candidates.²⁸

The notice must provide the time and place where the machines will be tested and state that the political party or candidate receiving the notice may have one representative present while the equipment is tested.²⁹ The representatives must be given an opportunity to see that the equipment is in proper condition for use at the election and that machines are properly sealed after testing.³⁰

Each machine should be tested with enough ballots or votes to substantiate that each machine recorded the correct number of votes for each candidate. An electoral board member, general

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.*

²⁷ See [§24.2-626.1](#).

²⁸ See [§24.2-633](#).

²⁹ *Id.*

³⁰ *Id.*



registrar, or a designated representative, must be present during this process and must certify the results from each machine.³¹ A representative should be used only if it is impracticable for an electoral board member or the general registrar to be present.³² This representative cannot be the custodian or a vendor or contractor technician who was responsible for programming the ballot software, electronic activation devices, or electronic storage media.

Form ELECT-633 must be submitted electronically to the Department of Elections after L&A testing is complete for the voting machines.³³

Logic and accuracy testing for electronic poll books must be performed by 12:00 pm on the day before the election and testing must be certified to ELECT.³⁴ EPBs must be tested to ensure the proper election (or elections in the case of a dual primary) is loaded, the applicable voter registration files were downloaded so that all absentee ballot information is present, and that all precincts show the correct ballot style(s) for voters in the precinct.

Unlike L&A testing for voting machines, testing of EPBs does not require notice to be sent to the chairman of the local committee of each political party. Electronic pollbooks should be tested with the real data files of the election to verify that each precinct is present, correct ballot styles are assigned to several voters across party lines, and password-protected access is in place according to the designated roles at the polling locations.

Frequently Asked Questions

Can a candidate or her representative request to attend the L&A testing of voting machines?

Yes. The general registrar of each locality may exercise discretion in considering whether to grant a candidate's request to attend the testing. If the general registrar permits the requesting candidate to attend the testing, she/he must, as soon as reasonably possible, contact all other candidates for that office to provide an equal opportunity.

Can a general registrar proactively provide notice of the L&A testing to all candidates?

The general registrar must provide equal notice to all candidates or their representatives if they choose to do this. For example, a general registrar should not provide notice to some candidates by telephone and notice by mail to others.

Conducting logic and accuracy testing for electronic pollbooks identifies potential problems within the data files or election setup that might impact the voter check-in process. Carrying out these tests on pollbooks is instrumental in detecting any issues that might lead to either minor or major complications on the day of the election

³¹ *Id.*

³² See §24.2-632. See 2006 Op. Va. Atty. Gen. 58 (Sept. 15, 2006).

³³ See ELECT, FormsWarehouse, [Formsite Links](#).

³⁴ See Virginia Admin. Code, [IVAC20-60-70](#).



4.9 VOTING EQUIPMENT SECURITY

The electoral board or the general registrar of each locality must develop and annually update written plans and procedures to ensure the security and integrity of its electronic voting system.³⁵ The local electoral board is responsible for the security of all voting systems, including electronic pollbooks.³⁶ By August 31st each year, the electoral board and general registrar must sign and submit a cover letter confirming the review and updating of the plans through the Annual Voting Security System Plan Review survey in Formsites as directed by the Department of Elections.³⁷

4.9.1 Risk-limiting Audits



The Department of Elections is required to supervise a risk-limiting audit (RLA) performed by the localities. The purpose of the RLA is to verify that the electronic voting systems have accurately reported the outcome of an election.³⁸ In the Commonwealth, there are two methods for performing an RLA, ballot polling and batch comparison. Details regarding these methods are covered in the RLA Manual.³⁹ Local electoral boards may apply for an RLA of a race wholly contained within the jurisdiction of the local electoral board, pursuant to §24.2-671.2(D).⁴⁰

The Department of Elections has established RLA procedures which can be found in the RLA Manual.⁴¹ The local electoral board is required to submit the results of the audit to the Department. The Department is required to submit a report to the State Board detailing the audited election results and analysis of any detected discrepancies.

4.10 VIRGINIA FREEDOM OF INFORMATION ACT (FOIA)

There are limited exemptions from FOIA public meeting and records disclosure requirements for voting equipment security issues. However, “records of the Department of Elections or of a local electoral board, to the extent such records describe protocols for maintaining the security of ballots or voting and counting equipment, or reveal the results of risk assessments of specific local electoral procedures, the release of which would compromise the security of any election, shall be confidential and excluded from inspection and copying under the Virginia Freedom of Information Act (FOIA).”⁴²

An electoral board of the State Board of Elections may close a meeting to discuss security protocols and conduct security compliance site visits preceded and followed by open meetings about the visits.⁴³ Records describing security protocols or specific risk assessments that could compromise election security if released are exempt from disclosure.

³⁵ See §24.2-625.1.

³⁶ *Id.*

³⁷ See ELECT, FormsWarehouse, [Formsites Links](#).

³⁸ See §24.2-671.2.

³⁹ See ELECT, [RLA Manual](#).

⁴⁰ See §24.2-671.2. See Virginia Admin. Code [IVAC20-60-80](#).

⁴¹ *Id.*

⁴² See §24.2-625.1.

⁴³ *Id.*

