State of California

PROCEDURES

Required for Use of the

AVC Edge®

Direct Recording Electronic Voting System

These procedures are adopted by the Secretary of State pursuant to Elections Code sections 19100 and 19205 and shall regulate and govern the use of the AVC Edge® Direct Recording Electronic Voting System at all elections governed by the California Elections Code.

Insofar as feasible, all procedures prescribed herein shall be carried out in full view of the public.

These procedures constitute a minimum standard of performance. They are not intended to preclude additional steps being taken by individual elections officials to enhance the security and reliability of the electoral process.

The Secretary of State reserves the right to amend these procedures at any time.

Submitted

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1. THE AVC EDGE® VOTING SYSTEM

1.1. System Overview

The AVC Edge® Voting System consists of two major components, the AVC Edge® Electronic Voting Machine (Edge) and the Election Database System (WinEDS) Central System.

The Edge incorporates a color LCD with an integral touchscreen, a control panel for use by election poll workers, appropriate electronic circuitry and processing devices for performing specified system functions, internal memory for storing ballot data and voting records, a removable Results Cartridge with non-volatile memory, protective and public counters, and integrated voter privacy panels.

The Results Cartridge is used both to load the electronic ballot onto the Edge and record voting results. It is removed from the machine at the closing of the polls and tallied by the WinEDS Central System. The Results Cartridge stores:

- an electronic representation of the ballot,
- ballot logic to enable the voter to make those selections to which he or she is lawfully entitled,
- the aggregated vote totals,
- a randomized record of all individual ballots cast, and
- a chronological log of significant machine operations, including error conditions.

The WinEDS Central System ("WinEDS") is a computer software system, which contains application software developed specifically for election requirements. The WinEDS System consists of the following subsystems:

- Security management, which allows WinEDS users the ability to accomplish tasks they are authorized to perform.
- Profile management, which allows the election office to maintain jurisdictional parameters such as political districts, precincts, polling places, offices, and parties.
- Election setup, which provides functions to initialize an election, define the political parties, offices and party positions, political subdivisions, types of elections and other global election variables.
- Candidate management, which allows the election office to identify the contests and candidates for an election.
- Ballot management, which provides for the layout of the visual ballots and the generation of the ballots in electronic or paper form.
- Edge management, which provides functions that helps manage Edge testing, maintenance, and election preparation.
- Election results management, which provides the functions for election night tally of Results and Consolidation Cartridges and paper ballots (Absentee Ballots), the re-canvass of the election and the certification of all contests to the political parties and state election reporting agencies.

1.2. DEFINITIONS

Audit Trail	A block of memory, internal to the Edge, containing the ballot, vote totals and event logs. An exact copy of the data stored in the Audit Trail is kept in the Results Cartridge.
Auxiliary Port	A cartridge port to the right of the results port. It is used for various activities including audit trail transfers and test vote simulation.
Ballot	1. The complete set of display pages containing the contests and candidates which will be used in an election for an Edge. 2. The information contained in a ballot. 3. A set of data files which the Edge can read and interpret as the information stored in a ballot.
Ballot Definition	The data structures and text that describe the ballot.
Ballot Image	The detailed record of the selections made by a particular voter.
Ballot Subset	That portion of a ballot that a particular voter is eligible to vote on. The subset (e.g. a precinct ID) is selected prior to the voter making selections.
Candidate	A person, question response, or write-in selector that a voter may select.
Consolidation	An optional election function that allows results from more than one Edge to be collected into a single report.
Contest	A race for elected office between candidates or parties. Also, a question, proposal, or amendment.
Contest Headers	The space on the displayed ballot page where the contest name is shown. Typically, the number of candidates to vote for is also displayed there.
Election	The process of creating a ballot, downloading it into the Edge, verifying it, and running the election applications, including the Official Election, which registers the votes of the voters.
Election Cycle	One complete pass through all the required Election Modes of the Edge.
Election Database	A database created for each election that defines the appropriate election parameters and attributes including the number issues, offices, candidates, and other election specific information.
Election Mode	The "passes" through the voting process: Pre-LAT, Official Election, Post-LAT.
Election State	The steps within an election mode: Ready to Open Polls, Printing Zero Proof, Polls Open, Simulation, Printing Results, Polls Closed.
Maintenance Diagnostics	A series of software and hardware tests and system utilities that allow for system maintenance and setting parameters.
Official Election	The Edge mode in which voters cast official ballots for their candidate choices. There are several election modes besides the Official Election, which are used for testing of the Edge and its ballot.
Pre Election LAT	The election mode which is run prior to the Official Election, in which election officials test the logic and accuracy of the Edge.

Polls Switch	The switch that opens and closes the polls.
Post Election LAT	The optional election mode which is run after the Official Election, in which election officials may test the logic and accuracy of the Edge.
Protective Counter	A counter that is never reset, and is incremented every time a vote is cast on the Edge.
Public Counter	A counter that is reset every election and maintained separately for each election mode; Pre LAT, Official Election, and Post LAT. It is incremented once for each vote cast on the Edge.
Results Cartridge	A removable memory cartridge which contains a copy of the ballot and election results in the Audit Trail. Identical data is stored on the Audit Trail and Results Cartridge.
Results Report	A report generated by the Edge in each of the election modes which displays much of the ballot information, as well as the vote totals for each candidate.
Write-In Candidate	This is an optional candidate type used to provide a means to the voter to type in the name of a candidate whose name does not appear on the displayed ballot.
Zero Proof Report	A report generated by the Edge in each of the election modes which displays much of the ballot information, as well as confirming that the vote total for each candidate is zero.

2. General System Specifications

2.1.   The Voting Machine shall:

(1)   Provide facilities for voting for such candidates as may be nominated and upon such questions as may be submitted;

(2)   Permit each voter in a presidential general election to vote by making a single selection for electors for a pair of candidates for President and Vice-President of the United States.

(3)   Provide a method for write-in voting and shall report the number of votes cast in each contest in write-in voting positions;

(4)   Permit each voter to vote for any person, for any office, for as many persons for an office, and for or against any question for which the voter is entitled.

(5)   Preclude each voter from voting for more persons for any office than he or she is entitled to vote for, and from voting for any candidate for the same office for the same office or upon any question more than once;

(6)   Permit voters in a closed primary election to vote only for the candidates seeking nomination of the political party with which they are affiliated, or nonpartisan candidates only if they are not affiliated with a political party;

(7)   Permit each voter to change his or her vote for any candidate or upon any question appearing upon the screen, up to the time of the final operation to register his or her vote by pressing "Cast Vote" on the screen;

(8)   Permit and require voting in absolute secrecy, and shall be so constructed that no person can see or know for whom any other voter has voted or is voting, except voters receiving assistance as prescribed by law;

(9)   Have a "public counter," which is visible from the outside of the machine, which shall show during any period of voting the total number of voters who have operated the machine during the applicable period of voting;

(10)   Have a "protective counter," which is visible from the outside of the machine, which cannot be reset, and is incremented every time a vote is cast on the unit;

(11)   Register and record votes correctly and accurately. This shall be done by recording the votes in the audit trail memory on the voting machine and also in the results cartridge in two different formats. One as summary totals for each candidate and the other as individual ballot images of each voters selections, randomized so to protect the voter's secrecy. In between each voter the machine shall perform a count of the individual ballot images and compare this count to the summary totals in both locations. In the event the totals do not reconcile, the machine must sound an audible alarm, notify the election officer to call for a technician and stop itself from further voting.

(12)   Upon the turning of the switch that closes the polls, the machine must not permit the voting mechanism to be re-opened for voting;

(13)   Be constructed of material of good quality, in a neat and workmanlike manner;

(14)   Be constructed so it is easy for a voter to learn the method of operation;

(15)   Be so constructed and controlled that, during the progress of voting, it shall preclude every person from seeing or knowing the number of votes registered for any contest and from tampering with any of the recorded votes.

(16)   Be safely transported;

(17)   The machine shall be capable of automatically printing machine totals either to file, screen, or in printed form in the precinct after the polls switch is turned to the closed

polls position. The machine shall be capable of printing the same number of results reports as the number of return sheets required by law.

2.2. The Central System shall:

(1) Be capable of accumulating and reporting by precinct the total votes cast for each candidate and for or against each question.

(2) Be capable of tabulating and reporting the vote cast for each candidate and for or against each question, by groups of precincts, such as legislative districts, wards and complete jurisdictions.

3. Voting Machines, Hardware, and Software

3.1. Voting Machines

The voting machines supplied as part of the system are direct record electronic voting devices. The machine provides a display and touchscreen to present the ballot and allow the voter to make their selections. The presentation of the offices and issues can be set up in multiple formats allowing the election administrators maximum flexibility in the layout of ballots. Except when otherwise authorized by the Secretary of State, the distribution of the voting machines shall be no less than one per 300 active registered voters, and an additional machine for every fractional part of such unit; in the case of special elections, however, the local election official may exercise discretion in determining the number of machines to be furnished to each precinct polling place.

3.2. Election Database

Backup copies of the *election database* shall be made and secured in a location separate from the working copies by the local election official after completion of pre-election logic and accuracy testing (Pre-LAT) as detailed in Section 4. of these procedures:

(1) For as long after the election as required by law; or
(2) By order of a court or directive of the Secretary of State.

Any changes made to the central system software (WinEDS) or the *election database* after Pre-LAT is completed shall be documented in the central system internal audit log and reportable on the system output printer. WinEDS source code shall be placed in escrow pursuant to state law.

3.3. Results Cartridge

The *results cartridge* used for vote tallying shall have both a physical, readable label and an electronic recognizable identifier. A match between the physical label and the electronic identifier shall be verified as part of pre-election testing.

3.4. Audit Log

The central system software (WinEDS) of the computer shall be programmed to report automatically on the system internal audit trail all actions taken by operators to change conditions and the time of occurrence. Actions not reported on the system shall be recorded on a log book by the operators. That log book as well as all reports produced by the printer shall be retained by the local election official for the purpose of post-election audit.

The central system software shall be maintained under the control of the local election official and not used for any other purpose. The central system software shall be available for inspection by the local election official.

4. Pre-Election Set-up and Testing

Complete testing of the voting machines and the central system shall be conducted before the use of this equipment in an election. This testing is required for equipment to be used in polling places and in the counting center.

4.1. Loading the Ballot

Before a ballot can be loaded onto the Edge, a *results cartridge* must be loaded with the *ballot definition* data. This is a function that is performed by the Central System. The voting machine must be powered up and at the *maintenance diagnostics* display. Then insert the *results cartridge* in the *results port*.

4.2. Election Verification

After the results cartridge is inserted, the ballot definition data is copied to the audit trail of the voting machine and a series of tests are performed to verify the election. Once the self tests are completed and the ballot loaded, the system will automatically enter the Pre-Election Logic and Accuracy Test (Pre-LAT) mode.

4.3. Pre-Election Logic and Accuracy Test (Pre-LAT)

The local election official shall have the entire system, both machines and central system, tested to ascertain that it will properly count the votes cast for all offices and all questions. The test shall be conducted by manually and/or electronically performing Vote Simulation Cartridge in the Pre-Election Logic and Accuracy Test mode of the voting machine. The test must utilize a pre-determined test script of at least one vote for each possible selection within an office of question. To test the central system, a number of results cartridges from the machines will be tallied. The printed results from the central system are compared to both the machine results and the test script. If a voting machine or the central system does not accurately count the test script or test vote, the cause for the error shall be ascertained and corrected and an errorless count shall be made before the system is approved for use of counting votes.

The test script used for testing each voting machine shall be a test script that properly tests all contests and questions for that ballot style for that precinct in which the voting machine is used on election day.

The Pre-LAT begins by moving the polls switch to the open position. The Edge automatically verifies that the system parameters residing in internal memory are the same as in the results cartridge. When verification is complete, a Pre-LAT Zero Proof Report is printed to show that all candidate and measure counters are at zero when the Pre-LAT begins.

The technician activates the Edge, enters simulated voter selections, and casts votes in a predetermined voting pattern. The voting pattern must insure each candidate receives at least one vote, must test over-voting in each contest, and must test complex ballot features such as recall elections, and primary elections.

After the Pre-LAT data is entered, polls are closed by moving the polls switch to the closed position. The Edge prints the Pre-LAT results report. The results report shall be compared to the controlled test data to verify the Edge is correctly counting votes.

When verification is complete, the technician signs the verification section on the results report indicating successful completion.

The details of conducting a Pre-LAT are described in the Edge's Operations Manual.

4.4. Vote Simulation (Option)

This feature provides for the automatic selection of candidates and casting of votes during the Pre-LAT to enable high volume and more extensive testing than is practicable through a purely manual Pre-LAT.

Vote simulation is executed by a vote simulation cartridge which is programmed by the Central System with a series of votes called a script. The script is created, using standard word processing packages, for each ballot type and is used on several machines.

Vote simulation is initiated by pressing the screen display in Pre-LAT mode which states "Start Vote Simulation." The system then prompts you to insert the vote simulation cartridge into the auxiliary port. The machine then casts the ballot stored on the vote simulation cartridge and processes them exactly as if they had been cast through the screen.

After completing the simulation script, the technician has an option to continue to vote manually. When the polls are closed, the Pre-LAT results report is printed.

4.5. System Proofing

System proofing is the mandatory, preliminary, in-house testing of all phases of election preparations except the Logic and Accuracy tests of the computer hardware and software used to tally and summarize votes. System proofing shall include, but is not limited to, verifying of the correctness of the following:

- assignment of jurisdictions participating in the election to ballot styles;
- linkage of precincts in which the election will be held to ballot style;
- ballot content of each ballot style, including offices, district designations, candidate assignment and rotation, ballot measures, all in the proper sequence;
- precinct identification coding (if used);
- election night summary report format;
- all phases of preparation of machines and results cartridges, as described herein;
- testing of all cartridges to be used in the election.

4.6. Storage of Test Script

Following the Pre-LAT, the test script must be maintained by the local election official and locked in sure storage until actual vote counting commences.

4.7. Sealing the Edge

After the Pre-LAT is completed, the Edge is ready to be sealed for shipment to the polling site. This process may include recording the protective counter number, sealing the results cartridge in place and recording the seal number, sealing the Poll Switch Door in place and recording the

seal number, and optionally placing Pre-LAT zero proof report and results reports into the machine preparation envelope (if the Edge is equipped with a printer).

4.8. Early Voting

Voters voting at early voting locations must have their identities authenticated prior to voting. The county and its vendor may jointly determine the specifics of voter authentication.

For early voting, pollworkers would seal the lid on the "Polls Open/Closed" switch after the polls are opened in the first day of early voting. After each day of early voting, the power switch is turned off, but the polls switch remains open (and sealed). For additional security, the results cartridge is removed (voting cannot occur when the results cartridge is not present) and placed in a sealed, secure location. The machine is also secured at the location. At the beginning of each day, the pollworker retrieves the results cartridge and replaces it in the unit. The power is then turned on, and voting may resume. The polls switch is closed at the end of the Early Voting period.

5. Election Day

5.1. Opening the Polls
At least 15 minutes before the polls open, precinct workers shall do the following:
(1)   Determine the proper location of the Edges.
(2)   Place the unit on a table so that the bottom storage side is facing up.
(3)   Remove bottom storage cover.
(4)   Remove legs.
(5)   Remove power cord.
(6)   Replace bottom storage cover.
(7)   Assemble legs:
- Turn each inside leg 90 degrees to make 2 "X's".
- Insert the 4 black button ends into the holes on the bottom storage case by pressing the leg retention pins. Insert each of the 4 legs into corresponding sockets on bottom of unit. Make sure the leg brace assembly is at the rear of the unit.
- Insert bottom legs and turn until silver button snaps into place. This will lock the leg assembly securely.
(8)   Rotate unit onto its side.
(9)   Turn the unit right side up and set on the floor.
(10)   Unlock the 4 latches (2 are located next to the handle, 2 are on the other side of the unit.)
(11)   Remove the top cover.
(12)   Stand in the front of the unit and gently raise the screen assembly. The black bar behind the screen assembly will automatically slide into the first groove. You may adjust the screen assembly to any of 5 positions by repositioning this bar.
(13)   Open Privacy Panels
(14)   Plug the power cord into the AC power receptacle in the back of the unit, and an AC outlet.
(15)   Raise the cover on the main power on/off unit.
(16)   Turn the power switch to the "ON" position.
(17)   Cut the seal on the Polls Switch Cover and raise the cover. Turn polls switch to "Open", The Official Election Zero Proof Report will be displayed on the screen or printer in a few seconds.
(18)   If applicable, review the "Official Zero Proof Report". Check to ensure that each candidate is at zero votes.
(19)   Close the Polls Switch Cover and seal the cover.
(20)   Place the sample ballot where the voters can easily see it.

5.2. Voter Activation Card Programmer
Each polling place will be given a Voter Activation Card Programmer and a number of Voter Activation Cards in their supplies. The Voter Activation Cards are used to activate the machine for the voter. To set-up the Voter Activation Programmer:
- Plug the Programmer into an AC outlet.
- Turn the Power Switch on.

- The programmer will be ready for inserting a Voter Activation Card.

5.3. Demonstrating the Voting Procedures

When the voter enters the Polling Place, a poll worker, using a sample ballot, should demonstrate the voting procedure by doing the following:

(1)   Explain to each voter how to insert the voter activation card.
(2)   Show each voter what the screen will look like by using the sample or demonstration ballot.
(3)   Explain to the voter how the green checkmark to the right of the candidate's name is displayed when a selection is made.
(4)   Point out to the voter that a selected candidate may be canceled by pressing the checkmark again. The green checkmark turns off.
(5)   Point out the "Next" and "Back" arrows on the screen, explaining to the voter that pressing these arrows will allow the voter to move to the next screen or back to the previous screen (to review prior selections).
(6)   Familiarize the voter with the "cast vote" display (the last screen) and explain that their vote is electronically recorded when the "cast vote" button is pressed. Instruct voters not to press the cast vote button until all their selections are made.

5.4. Activating the Voting Machine

After the voter's name is checked off the list of voters, do the following:

(1)   Insert a Voter Activation Card into the Programmer.
(2)   If applicable, enter the Ballot Code (e.g. ballot style number, precinct number, party, etc.) then press OK.
(3)   If applicable, the ballot code name will appear.
(4)   Press Activate if correct.
(5)   The card will eject automatically after programming. Remove and hand to the voter.
(6)   Instruct the voter to proceed to an available machine and insert the Voter Card into the slot in the lower left side of the unit.
(7)   After the voter inserts the card, the machine will immediately activate for the voter.
(8)   After the voter presses "Cast Vote," the Card will automatically eject. The voter then returns the card to the poll worker. To avoid the possibility of a voter attempting to vote twice, used Voter Activation Cards are rendered incapable of activating a machine until a poll worker reprograms the card.

5.5. Closing the Polls

After the last voter has exited the polling place, the polls may be closed by performing the following procedure:

(1)   Go to the back of the machine and cut the seal on the Polls Switch Cover.
(2)   Lift the cover and close the polls by turning the Polls Switch to CLOSED.

     If the Edge is equipped with a printer, it will begin printing the Official Results Report. Press the Results Report button (on the front screen) for any additional copies.

If the Edge does not have a printer, the report will be displayed on screen or printed directly to file.

(3) (If the Edge is equipped with a printer) When the printer stops, tear off the tape. The poll workers must sign at the bottom of the official election results report on the lines provided at the end of the printout. Place this printout in the official results envelope. A second copy of the report shall be printed and posted at the polling place.   No results shall be sent by modem prior to the printing of these reports.

(4) Cut the seal on the cartridge door and remove the results cartridges. Place it in the cartridge envelope.

(5) Raise the power on/off cover and turn the Power Switch to "Off."

(6) Unplug the power cord and remove it from the back of the machine.

(7) Lift the black bar in back of the screen and gently lower the screen down.

(8) Close privacy panels. Place the top cover back on the machine and secure the four latches on the sides.

(9) Turn the machine upside down and disassemble the legs (reverse step 7 on pg. 5).

(10) Remove the bottom storage cover, and place the power cord and legs back into the machine. Replace the bottom storage cover.

(11) Poll workers return the Supply Bag, Printout Bag, Signs, Official Results Envelope, and Cartridge Envelope to the elections official on Election Night.

6. Post Election Logic and Accuracy Test (Post-LAT)

This feature is used to verify that both the Edge's logic and its ability to count votes accurately have not been compromised since the Pre-LAT. The Post-LAT is functionally similar to the Pre-LAT inasmuch as a zero proof sheet is created; the Edge is voted on; and a results tape is printed to verify the test.

7. Aggregation of Precinct Totals in Counting Center

7.1. Election Night Procedures

The local election official shall prepare written procedures detailing the following:

(1)   Assembly of the Cartridges returned from the polling places;

(2)   Tabulation of write-in votes, when appropriate, as follows:

    (a)   The Results Report produced by the Edge voting machine shall indicate the number of votes cast in each Write-in position for each contest. The Results Cartridge will also contain the actual Write-in candidates' names cast by the voter and copy them to the Central System.

    (b)   After all cartridges from all machines have been read, the Central System will produce on its printer a Write-in Report which lists all Write-in votes for each office in which a Write-in was cast.

    (c)   The local elections official will tally and record the Write-in votes cast for Write-in candidates from this Write-in Report.
    (i) The write-in resolution function in WinEDS shall not be used to resolve Write-in votes.

    (d)   The reporting of Write-in votes as part of the official returns shall be required by law or by directive of the Secretary of State, or both.

(3)   Tabulation of provisional votes, when appropriate, as follows;

    (a)   The Results Report produced by the Edge voting machine shall indicate the number of provisional ballots cast.

    (b)   After all cartridges from all machines have been read, the Central System will produce a status report and worksheet for all provisional ballots cast.

    (c)   The local elections official will tally and record the provisional votes cast for provisional votes from this Provisional Ballot Report in accordance with California Law.
    (i) The "corrected precinct" provisional ballot resolution function in WinEDS shall not be used to resolve provisional ballots in split precincts.

    (d)   The reporting of provisional ballots as part of the official returns shall be required by law or by directive of the Secretary of State, or both.

(4)   Tabulation of votes from the Cartridges;

(5)   Review, inspection, and tabulating the absentee ballots and the manual data entry or electronic import of the absentee results into the Central System;

(6)   Aggregation of the vote count for the entire county, including both polling place and absentee totals;

(7)   Security of the premises where vote tabulation and aggregation is being conducted, including definition by the local elections official as to who shall be admitted to the premises while vote tabulation is taking place.

7.2. Security of Materials Following Tabulation

Either on Election night during tabulation, or following tabulation, all of the event log, ballot images and summary totals from each cartridge used in the election shall be backed up to the tabulation database. The local election official shall provide for retention and storage of the database containing the cartridge information and of any other data processing materials related to the vote counting in accordance with statutory retention requirements. After tabulation, all of these materials shall be placed in locked storage in a secure location, and shall remain there until the expiration of the period for challenging elections and for as long as required by law, unless a court orders their release. During the period of storage, the local elections official or the Secretary of State may order the release of the materials for purposes of a recount or for election verification, after which they shall be returned to storage.

8. One Percent Manual Recount

One percent of the precincts in each election shall be recounted manually by adding together vote totals from the official results report from each machine and comparing the total to the report from the central system. If the recount does not agree with the original tabulation, the local elections official shall determine the cause and make any necessary correction.

A record shall be made of the recount, including the identity of the precincts or contests, or both, recounted and the results of the recount.

9. System Management and Security

The local elections official has management control over all resources employed during the voting and tallying process until the control is voluntarily relinquished when no longer needed.

If it becomes necessary to transfer control of any equipment back to the vendor for repairs, operational elections activity may not be carried out on the equipment while it is under the vendor's control.

10. Certification and Reporting Requirements

10.1. Vote Counting Programs to the Secretary of State

No later than seven days prior to each statewide election, vote counting programs for statewide elections are to be deposited with the Secretary of State. The vote counting program must be accompanied by the elections official's certification of testing as well as the list of vote-counting equipment used. If changes are required following certification submission to the Secretary of State, resubmission and re-certification is required.

10.2. Election Observer Panel

All procedures prescribed in these procedures shall be carried out in full view of the public insofar as feasible. In addition, the responsible elections official shall devise a plan, subject to the approval of the Voting Systems Panel, whereby all critical procedures of the vote tallying process described herein are open to observation by an Election Observer Panel. Representatives of the qualified political parties and representatives of the news media shall be among those invited to serve on this Panel and shall be given the opportunity to observe that the correct procedures have been followed in the operation of the Edge®.

10.3. Biennial Certification of Hardware

Elections Code section 19220 requires elections officials to inspect and certify the accuracy of their voting equipment at least once every two years. The elections official shall certify the results of this inspection to the Secretary of State.

10.4. Certification of Specialized Vote Counting Equipment

All specialized vote counting equipment must be certified for use in elections by the Secretary of State prior to use in any election.

10.5. Notification of Equipment

For each statewide election, the responsible county elections official shall cause to be prepared a list, including quantities, of all equipment to be used to tabulate votes during the semi-official and official canvass.

Seven days before each statewide election, the elections official shall certify to the Secretary of State the results of the logic tests as well as the accurate functioning of all ballot counting equipment. This certification shall also affirm the use of the same equipment for the Pre-LAT test and for semi-official and official vote canvasses. In the event of a change to the vote counting program after certification, an amended certificate shall be submitted no later than the day before the election.

In the event any equipment is repaired, altered or replaced following the certification specified in this section, and prior to completion of the official canvass of the vote, an amended certification of logic and accuracy testing and a revised list of equipment used must be submitted to the Secretary of State no later than submission of official canvass.

10.6. Public Education Program

The local election official may develop and conduct a program of public education to ensure understanding of the system by the community. The program may include, but not be limited to, a pre-election mailing to voters, with both written and graphic instructional material regarding the machine and its use, as well as a demonstration of the voting on the ballot face in the polling place.

The public education program may also be directed at candidates, campaign groups, schools, and news media. The Secretary of State shall be kept informed of the development and conduct of public education programs.

10.7. System Security

Introduction:

Security is a blanket term that involves a variety of elements designed to mitigate potential risks and threats. In general, secure systems will control, through use of specific features, access to information such that only properly authorized individuals, or processes operating on their behalf, will have access to read, write, create, or delete information.

The design of a secure environment involves the use of three types of *controls*:

- **Preventative Controls:** The purpose of this type of control is to PREVENT the occurrence of one or more specific risks or threats. These controls can be use as a means of restricting or limiting access to data, functionality, or components. They may also be used to directly interdict potential threats or outside attack.

- **Detective Controls:** ALL risks, threats, or attacks cannot be prevented — e.g., a system which permits outside dial-up access can use preventative control to stop unauthorized access, but it cannot prevent recurring attempts. In these cases, it is important to at least detect or record that such an event occurred. Detective controls are intended to identify real, potential, or attempted breaches in security. They are also often used to record an audit trail of activity which can be subsequently examined to identify potential problems or risks.

- **Corrective Controls:** Even with preventative and detective controls in place, it is possible that damage or loss could occur (e.g., an authorized person uses such authorization to damage the system). Corrective controls are procedures or mechanisms which enable recovery from the loss or damage.

The security of any system, organization, or environment is NOT the result of merely one or two system components. It is the result of a variety of features, controls, architectural decisions, and procedures combining and building upon each other to produce a *security infrastructure*.

Security is fundamental to the election process. Security implies that the system must be reliable, it must accurately record votes and it must maintain the integrity of those votes. Security is achieved through features and controls which are inherent in the system design and through administrative controls. The acceptable level of security cannot be achieved with just one. Both types of controls must be present. This document is an overview of the security features and controls in the design of the AVC Edge® Direct-Record Electronic voting machines.

This sub-chapter discusses the procedures for System Security. Please see the respective Security Specifications for security features built into the AVC Edge and WinEDS systems.

General Procedures:

- The WinEDS server and workstation should NEVER be connected to the World Wide Web.

WinEDS Security:

Physical Security of PC:

- Should remain in a controlled, preferably locked area, with access limited to authorized staff.

- Should not be left unattended without first activating one or more levels of password protection.

- Should be locked up between elections.

- Should be dedicated to election use.

- Should be locked to provide security against unauthorized entry.

- The master installation disk should also be locked up to prevent unauthorized access.

Controlled Access to PC:

- Measures should be taken to prevent unauthorized operating system access to the PC. This is especially important if the room cannot be fully secured.

- At least two persons in the county shall have administrator level access to the PC.

Passwords:

- Windows passwords should be used to protect against unauthorized entry into the system.

- Passwords shall, to the extent practicable, meet or exceed best practices for strong passwords.

- Passwords should be used for WinEDS software, to secure pre-set Roles, Users, and Workstations.

- Passwords should be changed before every election.

- Passwords and login IDs may not be used by anyone other than the individuals to whom they have been issued.

- A user should immediately change a password, if the password is suspected or known to be disclosed to an unauthorized party.

Equipment and Data Security:

- If the PC cannot be dedicated, reload all software and data files from secured backup copies to assure an intact system.

- Do not allow unauthorized software to be run on the PC, particularly "shareware".

- An approved virus-checking program must be installed on the PC. It should be updated, and a virus scan run immediately prior to each election, to protect against the introduction of viruses.

- Externally supplied floppy disks, CDs or DVDs shall not be used unless they have first been checked by the anti-virus software.

- If the Central System is not on a standalone "closed" network, an approved firewall program must be installed on the PC.

- The vendor shall provide the jurisdiction with a list of all software needed by the election management software. All other Third-party software must NOT be installed, that has not been previously approved for use by authorized personnel, to prevent the introduction of software that may damage the PC.

- If modem transmission is used to upload unofficial election results, the modems shall only be enabled when unofficial results are expected. Before such transmissions are sent, a backup of the database should be made and stored in a protected location. Official elections results should be stored in this backup after it is restored.

Storage of the AVC Edge:

- House the machines in an access-controlled area.

- Keep all spare parts, especially CPU Board and firmware sets, locked up at all times.

- Keep all cartridges (Results, Consolidation, etc.) locked up when not being used.

- Limit access to the machines, cartridges, spare parts, etc. as much as possible.

- Perform a full inspection of each machine, including validating the firmware version, before election use.

Loading the Ballot onto the AVC Edge:

- The ballot load and Pre-LAT operations should be performed by AVC Edge technicians, with the machines still in the storage warehouse.

Transportation:

- Seal the Results Cartridge in place with a numbered seal and record the seal number.

- Seal the POLLS OPEN/CLOSED cover with a numbered Seal and record the seal number.

Conducting the Election:

- During the Election, the Results Cartridge must always be inserted in the AVC Edge. If it is removed, the AVC Edge® will stop its normal operations, generate an error indication and make an entry in the Event Log.

- The Auxiliary Port must be kept empty. Attempting to insert ANY cartridge type into this port will also stop normal operations, generate an error condition and make an Event Log entry.

- A numbered seal should be installed to physically ensure that the Results Cartridge is not removed. This seal is recorded on election paperwork, and cannot be removed without destroying it.

- Seal on POLLS OPEN/CLOSED cover must NOT be cut until machine has been assembled, and Polls are Open. Then after turning the POLLS switch to OPEN, the POLLS OPEN/CLOSED cover must be sealed with a replacement Seal

Tallying Results:

- Removal and transport of the Results Cartridge, to the central tabulation center, must be done in a secure manner - the cartridges must be placed in a sealed case and transported by at least two poll workers.

For Questions about Integrity or Accuracy of Election Night Tally:

If a question arises about the integrity or accuracy of the election night tally, several safeguards can be relied upon:

- The cryptographic signatures of the totals information can be re-validated.

- There is still a redundant copy of the vote data, and ballot, on each AVC Edge. An AVC Edge's Results Cartridge can be returned to the AVC Edge, and the two copies verified to still match.

- The data that WinEDS tallied from the Results Cartridge can be verified against the Results Report generated by the AVC Edge when polls closed.

- WinEDS can print data directly from a Results Cartridge. Results Reports, Ballot Image details, and the Event Log can all be printed.

- Additional copies of the Results Report can be printed from the AVC Edge's Audit Trail memory.

For Lost or Damaged Results Cartridge, while in Transit to WinEDS:

There are three backup methods for dealing with this situation:

- Use WinEDS to manually enter the vote data for the AVC Edge, from the printed Results Report.

- Use a special "Audit Trail Transfer" Cartridge. This cartridge, in conjunction with a firmware function only available at polls closed, allows for transferring an exact copy of the AVC Edge's Audit Trail memory to the cartridge. WinEDS can then do its tally from this cartridge.

- Additional copies of the Results Report can be printed from the AVC Edge's Audit Trail memory.