



NOTICE OF PROPOSED RULEMAKING

Office of the Secretary of State
Election Rules
8 CCR 1505-1

November 30, 2009

Pursuant to the requirements of section 24-4-103(3)(a), C.R.S., (2009), notice of proposed rulemaking is hereby given by the Secretary of State. A rulemaking hearing will be held on **January 7, 2010 from 9:00am to 12:00pm** in the Blue Spruce Conference Room on the second floor of the Office of the Secretary of State at 1700 Broadway, Denver, Colorado 80290. All interested persons will be afforded an opportunity to be heard on the subject of revisions and amendments to the "Election Rules" of the Colorado Secretary of State, 8 C.C.R. 1505-1.

Subject of the Proposed Rulemaking

Amendments and revisions to the Colorado Secretary of State Election Rules as may be necessary or appropriate to improve the administration of elections in Colorado, including but not necessarily limited to amendments to Rules 35, 37 and 45. The revisions and amendments to be considered include rules concerning accessibility requirements for voting systems in the State of Colorado, the removal of federal certification requirements, and voting systems certification testing requirements. House Bill 09-1335 removed the requirement that voting systems be certified by the Election Assistance Commission (EAC) prior to being certified for use in the State of Colorado. Additionally, the legislation removed the requirement that all voting systems be compliant to the most current standard set by the EAC, but required instead that all systems meet the 2002 Voting System Standards.

Authority for Proposed Rulemaking

Revisions and amendments to the "Election Rules" of the Colorado Secretary of State, 8 C.C.R. 1505-1, are proposed pursuant to the following statutes:

1. Section 1-1-107(2)(a), C.R.S., (2009), which authorizes the Secretary of State "[t]o promulgate, publish and distribute . . . such rules as the secretary finds necessary for the proper administration and enforcement of the election laws."
2. Section 1-1.5-104(1)(e), C.R.S., (2009), which authorizes the Secretary of State to "[p]romulgate rules in accordance with article 4 of title 24, C.R.S., as the secretary finds necessary for proper

administration and implementation of [the “Help America Vote Act of 2002”, 42 U.S.C. 15301-15545].”

3. Section 1-5-601.5, C.R.S., (2009), which authorizes the Secretary of State to require by rule that voting systems and voting equipment satisfy certain voting systems standards promulgated by the federal Election Assistance Commission
4. Section 1-5-613(1), C.R.S., (2009), which requires the Secretary of State to “adopt uniform rules in accordance with article 4 of title 24, C.R.S., for the purchase and sale of voting equipment in the state.”
5. Section 1-5-616, C.R.S., (2009), which authorizes the Secretary of State to “[a]dopt rules in accordance with article 4 of title 24, C.R.S., that establish minimum standards for electronic and electromechanical voting systems.”
6. Section 1-5-617, C.R.S., (2009), which requires a political subdivision to “[a]pply to the secretary of state for approval of the purchase, installation, and use of the system” and authorizes the Secretary of State to “[p]rescribe the form and procedure of the application by rule adopted in accordance with article 4 of title 24, C.R.S.”
7. Section 1-5-619, C.R.S., (2009), which authorizes the Secretary of State to adopt rules regarding the temporary approval of a voting system for use by a political subdivision.
8. Section 1-5-623(4), C.R.S., (2009), which authorizes the Secretary of State to “[p]romulgate rules in accordance with article 4 of title 24, C.R.S., as may be necessary to administer and enforce any requirement of this section, including any rules necessary to specify permissible conditions of use governing electronic voting devices or systems or related components of such devices or systems in accordance with the requirements of this part 6.”

Copies of the initial draft of the proposed rules may be obtained from the office of the Secretary of State at 1700 Broadway, Suite 270, Denver, Colorado, 80290, or by calling (303) 894-2200, extension 6329. The proposed rules are also posted on the Secretary of State website at www.sos.state.co.us.

A final copy of the proposed rules for consideration at the public rulemaking hearing will be posted on the Secretary of State website and made available to the public no later than **December 31, 2009** in accordance with section 24-4-103(4)(a), C.R.S., (2009), which states that “[a]ny proposed rule or revised proposed rule by an agency which is to be considered at the public hearing . . . shall be made available to any person at least five days prior to said hearing.”

The rulemaking hearing on January 7, 2010 will be held in accordance with section 24-4-103, C.R.S., (2009). Written and oral data, comments, and arguments will be received from all interested parties. Written submissions must be filed at or before the commencement of the hearing on January 7, 2010 at 9:00am in order to be considered. Oral testimony may be limited in order to allow the proceedings to go forward with reasonable promptness and efficiency. The hearing will be audio recorded and broadcast over the Internet. The broadcast may be accessed through the Secretary of State website at www.sos.state.co.us on the “Information Center” page under “Broadcast and

Recorded Meetings.” For additional information, please contact Andrea Gyger, Elections Division at andrea.gyger@sos.state.co.us or (303) 894-2200 ext. 6329.

Dated this 30th Day of November, 2009.



William A. Hobbs
Deputy Secretary of State

For

Bernie Buescher
Colorado Secretary of State



Proposed Statement of Basis, Purpose, and Specific Statutory Authority

Office of the Secretary of State Election Rules

November 30, 2009

1. Basis and Purpose

This proposed statement pertains to the amendments to the Colorado Secretary of State Election Rules for the administration of Colorado State Constitution Article VII, and Title 1 of the Colorado Revised Statutes. The amendments are proposed to achieve the uniform and proper administration and enforcement of the election laws of the State of Colorado, including the requirements of the federal Help America Vote Act of 2002 (“HAVA”), P.L. No. 107-252. See sections 1-1.5-101 *et seq.*, C.R.S. (2009).

The proposed amendments to these rules are necessary for the implementation of Article VII of the Colorado Constitution and Article 1, Title 1 of the Colorado Revised Statutes. Such proposed revisions are necessary to improve the administration of elections in Colorado, and to increase the transparency and security of the election process. The proposed amendments are further necessary to implement changes to the election laws made during the 2009 regular session of the 67th General Assembly and answer questions arising under Title 1 of the Colorado Revised Statutes.

The Secretary of State finds that the proposed amendments and revisions to specific rules are necessary to implement changes made by House Bill 09-1335 regarding the certification of voting systems. The legislative changes removed the requirement that federal certification first be obtained before state certification be conducted; that all voting systems meet, at a minimum, the federal 2002 Voting System Standards; and allows the Secretary of State to incorporate testing documentation from other states and/or conduct functional certification testing in tandem with another jurisdiction.

2. Statutory Authority

Amendments to the Colorado Secretary of State Election Rules are adopted pursuant to the following statutory provisions:

1. Section 1-1-107(2)(a), C.R.S. (2009), which authorizes the Secretary of State:
“[t]o promulgate, publish, and distribute . . . such rules as the secretary of state finds necessary for the proper administration and enforcement of the election laws.”
2. Section 1-1.5-104(1), C.R.S. (2009), which provides that:

“The secretary may exercise such powers and perform such duties as reasonably necessary to ensure that the state is compliant with all requirements imposed upon it pursuant to HAVA . . . including, without limitation, the power and duty to:

(e) Promulgate rules in accordance with the requirements of article 4 of title 24, C.R.S., as the secretary finds necessary for the proper administration, implementation, and enforcement of HAVA and of this article.”

3. Section 1-5-601.5, C.R.S., (2009), which authorizes the Secretary of State to require by rule that voting systems and voting equipment satisfy certain voting systems standards promulgated by the federal Election Assistance Commission
4. Section 1-5-613(1), C.R.S., (2009), which requires the Secretary of State to “adopt uniform rules in accordance with article 4 of title 24, C.R.S., for the purchase and sale of voting equipment in the state.”
5. Section 1-5-616, C.R.S., (2009), which authorizes the Secretary of State to “[a]dopt rules in accordance with article 4 of title 24, C.R.S., that establish minimum standards for electronic and electromechanical voting systems.”
6. Section 1-5-617, C.R.S., (2009), which requires a political subdivision to “[a]pply to the secretary of state for approval of the purchase, installation, and use of the system” and authorizes the Secretary of State to “[p]rescribe the form and procedure of the application by rule adopted in accordance with article 4 of title 24, C.R.S.”
7. Section 1-5-619, C.R.S., (2009), which authorizes the Secretary of State to adopt rules regarding the temporary approval of a voting system for use by a political subdivision.
8. Section 1-5-623(4), C.R.S., (2009), which authorizes the Secretary of State to “[p]romulgate rules in accordance with article 4 of title 24, C.R.S., as may be necessary to administer and enforce any requirement of this section, including any rules necessary to specify permissible conditions of use governing electronic voting devices or systems or related components of such devices or systems in accordance with the requirements of this part 6.”

COLORADO SECRETARY OF STATE

8 CCR 1505-1

ELECTION RULES

Preliminary Draft of Proposed Rules

November 30, 2009

***Disclaimer:** This draft is not necessarily final. The proposed changes to be considered at the public rulemaking hearing may be different than the proposed changes in this draft. This draft is submitted to the Department of Regulatory Agencies for the purpose of complying with section 24-4-103(2.5), C.R.S., which requires that a draft be submitted to the Department at the time that a notice of proposed rulemaking is filed with the Secretary of State.*

*A final copy of the proposed rule changes will be available to the public no later than **December 31, 2009**, and a copy will be posted on the Department of State's web site, in compliance with the requirement of section 24-4-103(4)(a), C.R.S., that "[a]ny proposed rule or revised proposed rule by an agency which is to be considered at the public hearing . . . shall be made available to any person at least five days prior to said hearing."*

*Proposed additions to the current rules are reflected in **SMALL CAPS**. Proposed deletions from current rules are shown in ~~stricken type~~. Annotations may be included.*

1 **New Rule 35.2 would be adopted as follows:**

2 35.2 VOTING SYSTEMS SHALL BE SUBSTANTIALLY COMPLIANT WITH THE FOLLOWING:

3 35.2.1 AUDIO BALLOTS SHALL MEET THE FOLLOWING STANDARDS:

4 (A) THE VOTING SYSTEM SHALL ALLOW THE VOTER TO PAUSE AND RESUME THE AUDIO
5 PRESENTATION.

6 (B) THE AUDIO SYSTEM SHALL ALLOW VOTERS TO CONTROL WITHIN REASONABLE LIMITS, THE
7 RATE OF SPEECH.

8 35.2.2 NO VOTING SYSTEM SHALL REQUIRE VOTER SPEECH FOR ITS OPERATION.

9 35.2.3 ALL TOUCHSCREEN TECHNOLOGY SHALL BE TESTED FOR USE OF FINGERS AS WELL AS NON-HUMAN
10 TOUCH THAT IS BOTH WET AND DRY.

1 35.2.4 ALL VOTING SYSTEMS SHALL ALSO INCLUDE ANY FORM OF SWITCHES, SIP AND PUFF DEVICES, OR
2 ADDITIONAL BLINK CONTROL DEVICES.

3 35.2.5 ADJUSTABILITY OF COLOR SETTINGS, SCREEN CONTRASTS AND/OR SCREEN ANGLES/TILT MAY BE
4 MADE BY EITHER THE POLL WORKER OR VOTER IF THE SYSTEM USES A DISPLAY SCREEN. A
5 MINIMUM OF TWO COLOR SETTINGS, TWO CONTRAST SETTINGS AND TWO ANGLES SHALL BE
6 AVAILABLE FOR ALL DISPLAY SCREENS.

7 35.2.6 DOCUMENTATION OF THE ACCESSIBILITY OF THE VOTING SYSTEM SHALL INCLUDE THE FOLLOWING
8 ITEMS AT A MINIMUM:

9 (A) IF APPROPRIATE, VOTING BOOTH DESIGN FEATURES THAT PROVIDE FOR PRIVACY FOR THE
10 VOTER WHILE VOTING (IF A VOTING BOOTH IS NOT INCLUDED WITH THE SYSTEM, THEN
11 DESCRIBE HOW VOTER PRIVACY IS ACCOMPLISHED);

12 (B) ADAPTABILITY OF THE PROPOSED SYSTEM FOR VOTERS WITH DISABILITIES AS OUTLINED IN THE
13 AMERICANS WITH DISABILITIES ACT GUIDELINES;

14 (C) TECHNOLOGY USED BY THE VOTING SYSTEM THAT PREVENTS HEADSET/HEADPHONE
15 INTERFERENCE WITH HEARING AIDS;

16 (D) TYPES AND SIZE OF VOICE FILE(S) THE VOTING SYSTEM USES;

17 (E) METHOD FOR RECORDING, SHARING AND STORING VOICE FILES IN THE VOTING SYSTEM;

18 (F) HOW NAVIGATION THROUGH VIEWABLE SCREENS IS ACCOMPLISHED IF IT IS REQUIRED WITH
19 THE VOTING SYSTEM;

20 (G) VARIOUS METHODS OF VOTING TO ENSURE ACCESS BY PERSONS WITH MULTIPLE DISABILITIES;

21 (H) CAPABILITIES OF THE VOTING SYSTEM TO ACCURATELY ACCEPT A NON-HUMAN TOUCH AS INPUT
22 ON THE TOUCH SCREEN; AND

23 (I) METHOD FOR ADJUSTING COLOR SETTINGS, SCREEN CONTRASTS, AND SCREEN ANGLES/TILT IF
24 THE SYSTEM USES A DISPLAY SCREEN.

25 **Rule 37 would be amended as follows:**

26 Rule 37. The Acquisition, Purchase or Lease of Voting Systems.

27 37.1 Declaration of Intent.

- 1 37.1.1 The federal Help America Vote Act of 2002 (“HAVA”) established uniform
2 voting systems standards used in elections. The following rules seek to
3 conform Colorado requirements to federal HAVA requirements pertaining to
4 voting systems.
- 5 37.1.2 Voting systems (including optical scanning voting systems or direct recording
6 electronic systems) certified by the SECRETARY OF STATE ~~secretary of state~~ and
7 acquired, purchased or leased by counties pursuant to state law shall:
- 8 (a) permit the voter to verify (in a private and independent manner) the votes
9 selected by the voter on the ballot before the ballot is cast and counted;
- 10 (b) provide the voter with the opportunity (in a private and independent
11 manner) to change the ballot or correct any error before the ballot is cast
12 and counted (including the opportunity to correct the error through the
13 issuance of a replacement ballot if the voter was otherwise unable to
14 change the ballot or correct any error); and
- 15 (c) if the voter selects votes for more than one candidate for a single office:
- 16 (i) notify the voter that the voter has selected more than 1 candidate for
17 a single office on the ballot;
- 18 (ii) notify the voter before the ballot is cast and counted of the effect of
19 casting multiple votes for the office; and
- 20 (iii) provide the voter with the opportunity to correct the ballot before
21 the ballot is cast and counted.
- 22 (d) Ensure that any notification required under this paragraph preserves the
23 privacy of the vote and the confidentiality of the ballot.
- 24 37.1.3 Counties of the State of Colorado that use a paper ballot voting system or a
25 central count voting system (including mail-in ballots and mail ballots), may
26 meet the requirements of this rule by:
- 27 (a) establishing a voter education program specific to that voting system that
28 notifies each voter of the effect of casting multiple votes for an office; and
- 29 (b) providing the voter with instructions on how to correct the ballot before it
30 is cast and counted (including instructions on how to correct the error

1 through the issuance of a replacement ballot if the voter was otherwise
2 unable to change the ballot or correct any errors).

3 37.1.4 The voting systems described in the foregoing paragraphs shall produce a
4 record with an audit capacity for such system.

5 (a) The voting system shall produce a permanent paper record with a manual
6 audit capacity for such system.

7 (b) The voting system shall provide the voter with an opportunity to change
8 the ballot or correct any error before the permanent paper record is
9 produced.

10 (c) The paper record produced under subparagraph (a) shall be available as an
11 official record for any recount conducted with respect to any election in
12 which the system is used.

13 (d) The paper record shall be accessible for individuals with disabilities
14 including non-visual accessibility for the blind and visually impaired, in a
15 manner that provides the same opportunity for access and participation
16 (including privacy and independence) as for other voters.

17 37.1.5 The voting system shall:

18 (a) be accessible for individuals with disabilities, including non-visual
19 accessibility for the blind and visually impaired, in a manner that provides
20 the same opportunity for access and participation (including privacy and
21 independence) as for other voters;

22 (b) satisfy the requirements of paragraph 37.1.5(a) through the use of at least
23 one direct recording electronic voting system or other voting system
24 equipped for individuals with disabilities at each polling place; and

25 (c) be installed in each polling place in the state. ~~by the first federal election~~
26 ~~held after January 1, 2006.~~

27 37.1.6 The voting system shall provide alternative language accessibility pursuant to
28 the requirements of section 203 of the Voting Rights Act of 1965.

29 37.2 Prohibition of lease, purchase, or acquisition of voting systems pending action by the
30 Election Assistance Commission (EAC) and certification through the Secretary of State.-

1 37.2.1 No voting system may be leased, purchased, or acquired by any county or
2 political subdivision of this state until the EAC and the Secretary of State have
3 promulgated voting systems standards that address these concerns. This rule
4 shall not apply to voting systems that have been certified by the Secretary of
5 State and purchased by the political subdivisions pursuant to state law prior to
6 the effective date of this rule.

7 37.3 Adoption of April 30, 2002 Voting Systems Standards promulgated by the Federal
8 Election Commission for voting systems.

9 37.3.1 The Secretary of State hereby adopts the April 30, 2002 Voting Systems
10 Standards promulgated by the Federal Election Commission for voting systems.
11 Therefore, all voting systems, including, but not limited to, optical scan voting
12 systems, direct record electronic voting systems, and touch screens, purchased
13 by the political subdivisions of the State of Colorado are required to meet the
14 qualifications of the Voting Systems Standards promulgated by the Federal
15 Election Commission on April 30, 2002 ~~and be certified by an independent~~
16 ~~testing authority certified by the National Association of Election Directors~~
17 ~~until such time, and subsequently thereto, at each time, as the Election~~
18 ~~Assistance Commission promulgates new Voting Systems Standards.~~

19 ~~37.3.2 Upon any revision or new release of Voting Systems Standards by the Election~~
20 ~~Assistance Commission, the Secretary of State hereby automatically adopts~~
21 ~~such standards as may be promulgated, and any vendor seeking state~~
22 ~~certification shall follow such adopted voting systems standards and the~~
23 ~~processes mandated by state law in order to be certified by the Secretary of~~
24 ~~State.~~

25 37.3.2~~3~~ Any voting system or equipment submitted to the Secretary of State for
26 certification shall HAVE BEEN TESTED FOR COMPLIANCE WITH THE 2002 VOTING SYSTEMS
27 STANDARD OR LATER. FOR CERTIFICATION IN COLORADO, THE 2002 VOTING SYSTEMS
28 STANDARD SHALL TAKE PRECEDENT EXCEPT AS SUPERSEDED WITHIN THESE RULES. ~~meet the~~
29 ~~federal voting system standards in effect at the time the voting system or~~
30 ~~equipment is submitted to the Secretary of State. The adoption of any new or~~
31 ~~amended voting system standards by the Election Assistance Commission after~~
32 ~~a voting system or equipment is submitted to the Secretary of State for~~
33 ~~certification shall not preclude certification or sale of the voting system or~~
34 ~~equipment under the standards in effect at the time the system or equipment~~
35 ~~was submitted for certification.~~

1 37.3.34 ~~On and after December 13, 2007 (the effective date of the 2005 Voluntary~~
2 ~~Voting System Guidelines of the Election Assistance Commission), t~~ The
3 governing body or designated election official of a political subdivision may
4 purchase any voting system ~~that was previously~~ certified BY THE SECRETARY OF
5 STATE under the 2002 Voting Systems Guidelines.

6 37.4 The Secretary of State requires all voting systems and all individual parts of voting
7 systems to pass certification criteria as outlined in the State of Colorado Voting Systems
8 Certification Program. The designated election official shall retain records of all
9 certification procedures pertaining to voting systems and parts of voting systems.

10 Rule 45 would be amended as follows:

11 **Rule 45. Rules Concerning Voting System Standards for Certification**

12 45.1 Definitions The following definitions apply to their use in this rule only, unless
13 otherwise stated.

14 45.1.1 "Audio ballot" means a voter interface containing the list of all candidates, ballot
15 issues, and ballot questions upon which an eligible elector is entitled to vote ~~at~~ IN
16 an election. It ~~and that~~ ALSO provides the voter with audio stimuli and allows the
17 voter to communicate voting intent to the voting system through vocalization or
18 physical actions.

19 45.1.2 "Audit log" means a system-generated record, in printed and/or electronic
20 format, providing a record of activities and events relevant to initializing ~~ation of~~
21 election software and hardware, THE identification of files containing election
22 parameters, initializing ~~ation of~~ the tabulation process, processing ~~of~~ voted
23 ballots, and terminating ~~ion of~~ the tabulation process.

24 45.1.3 "Ballot image" ~~or "Ballot image log"~~ means a corresponding representation in
25 electronic form of the marks or vote positions of a cast ballot that are captured
26 by a direct recording electronic voting device.

27 45.1.4 "Ballot style" ~~assignment"~~ means A SPECIFIC BALLOT LAYOUT OR CONTENT ~~the creation~~
28 ~~of unique, specific ballots~~ for an election. THE BALLOT STYLE IS THE PRESENTATION OF
29 THE UNIQUE COMBINATION OF CONTESTS AND CANDIDATES FOR WHICH THE VOTER IS ELIGIBLE TO
30 VOTE. IT INCLUDES THE ORDER OF CONTESTS AND CANDIDATES, THE LIST OF BALLOT POSITIONS FOR
31 EACH CONTEST, AND THE BINDING OF CANDIDATE NAMES TO BALLOT POSITIONS WITHIN THE
32 PRESENTATION. MULTIPLE PRECINCTS MAY USE A SINGLE BALLOT STYLE. MULTIPLE STYLES MAY

1 APPEAR IN A SINGLE PRECINCT WHERE VOTERS ARE SPLIT BETWEEN TWO OR MORE DISTRICTS OR
2 OTHER CATEGORIES DEFINING VOTER ELIGIBILITY FOR PARTICULAR CONTESTS AND CANDIDATES. ~~by~~
3 ~~the election management system based on criteria keyed into the system for~~
4 ~~districts, precincts, and races to create combinations of possibilities of races for~~
5 ~~individual voters based on their individual precincts.~~

6 45.1.5 “Closed network” means a network structure ~~where~~ IN WHICH devices are not
7 connected to the internet or other office automation networks, except as
8 allowable under ~~section~~ RULE 45.5.2.7.

9 45.1.6 “Communications devices” means devices that may be incorporated in, or
10 attached to, components of the voting system for the purpose of transmitting
11 tabulation data BETWEEN COMPONENTS OR to another data processing system,
12 printing system, or display device.

13 45.1.7 “DRE” means a direct recording electronic voting device. A DRE is a voting
14 device that records votes by means of a ballot display provided with mechanical
15 or electro-optical components or an audio ballot that can be activated by the
16 voter, ~~that~~ processes data by means of a computer program; and ~~that~~ records
17 voting data and ballot images in memory components or other media. The
18 device may produce a tabulation of the voting data stored in a removable
19 memory component and as printed copy. The device may also provide a means
20 for transmitting individual ballots or vote totals to a central location for
21 consolidating and reporting results from remote sites to the central location.

22 45.1.8 “EAC” means the United States Election Assistance Commission.

23 45.1.9 “ELECTION MANAGEMENT SYSTEM” INCLUDES, BUT IS NOT LIMITED TO, THE BALLOT DEFINITION
24 SUBSYSTEM AND THE ELECTION REPORTING SUBSYSTEM. THE ELECTION MANAGEMENT SYSTEM
25 MAY PROVIDE UTILITIES FOR OTHER ELECTION ADMINISTRATION TASKS, INCLUDING MAINTAINING
26 EQUIPMENT INVENTORIES, ESTIMATING BALLOT PRINTING NEEDS AND MAINTAINING INFORMATION
27 ON POLLING PLACES.

28 45.1.109 “Election media” means any device including a cartridge, card, memory
29 device, or hard drive used in a voting system for the purposes of programming
30 ballot image data (ballot or card styles), recording voting results from electronic
31 vote tabulating equipment, or any other data storage ~~needs~~ required by the
32 voting system for a particular election function. The election management
33 system typically ~~delivers~~ (downloads) ballot style information to the election
34 media and ~~receives~~ (uploads) results and ballot images FROM THE ELECTION MEDIA.

1 45.1.110 "Equipment" or "device" means a complete, inclusive term to represent all
2 items submitted for certification by the voting system provider. This can include,
3 but is not limited to, any voting device, accessory to voting device, DRE, touch
4 screen voting device, card programming device, software, and hardware.
5 "EQUIPMENT" MAY ALSO MEAN ~~, as well as a complete end to end voting system~~
6 solution.

7 ~~45.1.11 "FEC" means the Federal Election Commission.~~

8 45.1.12 "Remote site" means any physical location identified by a ~~D~~Designated ~~E~~Election
9 ~~o~~Official as a location where the jurisdiction shall ~~be conducting~~ the casting of
10 ballots for a given election. A remote site includes locations such as precinct
11 polling places, vote centers, early voting SITES AND, mail-in ballot counting, ~~etc.~~

12 45.1.13 "Removable Storage Media" means STORAGE DEVICES THAT CAN BE REMOVED FROM THE
13 SYSTEM AND TRANSPORTED TO ANOTHER LOCATION FOR READOUT AND REPORT GENERATION.
14 EXAMPLES OF REMOVABLE STORAGE MEDIA INCLUDE, BUT ARE NOT LIMITED TO, PROGRAMMABLE
15 READ-ONLY MEMORY (PROM), RANDOM ACCESS MEMORY (RAM) WITH BATTERY BACKUP,
16 THUMB DRIVES, MAGNETIC MEDIA AND OPTICAL MEDIA. ~~any device that is intended to be~~
17 ~~removed that has the ability of storing or processing data for a voting system.~~

18 45.1.14 "SECRETARY OF STATE" WITHIN THE CONTEXT OF THIS RULE, MEANS THE COLORADO
19 SECRETARY OF STATE AND HIS OR HER DESIGNATED AGENTS INCLUDING EMPLOYEES, CONTRACTORS
20 AND VOLUNTEERS.

21 45.1.154 "Security" means the ability of a voting system to protect election information
22 and election system resources with respect to confidentiality, integrity and
23 availability.

24 45.1.165 "Split Precinct" means a precinct that has a geographical divide between one
25 or more political jurisdictions which ~~may~~ RESULTS IN ~~cause~~ EACH JURISDICTION WITHIN
26 THE PRECINCT TO BE ASSIGNED DIFFERENT ~~a unique~~ ballot styles ~~to be created~~ for a
27 specific election.

28 45.1.176 "Test Log" OR "TEST RECORDS" means THE documentation of certification testing
29 and processes ~~which is independently reproducible to recreate all test scenarios~~
30 ~~conducted by the testing board.~~ These log ~~may include~~ documentation ~~such~~
31 ~~as:~~ MAY INCLUDE, BUT IS NOT LIMITED TO, CERTIFICATION TESTING REPORTS, TEST PLANS,
32 REQUIREMENTS MATRICES, photographs, written notes, video and/or audio
33 recordings. ~~ed notes.~~

1 45.1.187 “Trusted Build” means the write-once installation disk or disks for
2 software and firmware for which the Secretary of State or his/her agent has
3 established the chain of evidence to the building of a disk, which is then used to
4 establish and/or re-establish the chain of custody of any component of the
5 voting system which contains firmware or software. The trusted build is the
6 origin of the chain of evidence for any software and firmware component of the
7 voting system.

8 45.1.198 ~~“VSTL” OR means a “voting system testing laboratory” MEANS A “FEDERALLY~~
9 ~~ACCREDITED LABORATORY”, AS DEFINED IN SECTION 1-1-104 (16.5) C.R.S. WHICH IS~~
10 ~~ACCREDITED BY that provides engineering, testing, or evaluation services for voting~~
11 ~~systems, and is qualified by the EAC to conduct CERTIFICATION qualification testing~~
12 ~~on FOR a voting systems.~~

45.2 Introduction

45.2.1 Definition of voting system for certification purposes

14 45.2.1.1 The definition of a voting system for the purposes of this rule shall be
15 as the term is defined in HAVA Ssection 301(b). For Colorado purposes,
16 no single component of a voting system, ~~OR such as a precinct~~
17 ~~tabulation~~ device, meets the definition of a voting system.

18 45.2.1.2 Sufficient components shall be assembled to create a configuration that
19 ~~shall~~ allows the system as a whole to meet the requirements as
20 described for a voting system in this rule.

45.2.2 Authority

22 45.2.2.1 Pursuant to Articles 5 and 7 of Title 1, C.R.S., the Secretary of State is
23 expressly authorized to adopt this rule.

45.2.3 Documents Incorporated by Reference

25 45.2.3.1 All documents incorporated by reference in this Rule 45 do not include
26 any later amendments or editions of ~~the~~ THOSE documents.

27 45.2.3.2 All documents incorporated by reference in this Rule 45 may be viewed
28 on the “Voting Systems” page of the “Elections Center” on the
29 Secretary of State’s website at www.sos.state.co.us, or by contacting

1 the Secretary of State Voting EQUIPMENT CERTIFICATION PROGRAM ~~Systems~~
2 ~~Specialist~~/1700 Broadway – Suite 270 /Denver, CO 80290.

45.3 Certification Process Overview and Timeline

3 45.3.1 The voting system shall be considered as a unit, and all components of such
4 system shall be tested at once, unless the circumstances necessitate ~~otherwise~~
5 ~~(e.g. retrofitted VVPATs, etc.)~~. Any change made to individual components of a
6 voting system shall require ~~re-certification of~~ the entire voting system BE
7 RECERTIFIED in accordance with this rule UNLESS THE CHANGE IS A MODIFICATION THAT CAN
8 BE APPROVED UNDER THE PROVISIONS OF SECTION 1-5-618 (1.5) C.R.S.

9 45.3.2 For a voting system to BE CERTIFIED, the voting system provider shall successfully
10 complete all phases of the certification process, ~~which shall include:~~ submitting a
11 complete application, ~~;~~ A review of the documentation to evaluate ~~if~~ WHETHER the
12 system meets the requirements of this rule, ~~;~~ A PUBLIC demonstration of the
13 system, ~~and,~~ functional testing of the voting system ~~which shall~~ to demonstrate
14 substantial compliance with the requirements of this rule AND, Colorado Election
15 Code, ~~and~~ AS WELL AS any additional testing that is deemed necessary by the
16 Secretary of State.

17 45.3.3 The following ~~milestones~~ PHASES indicate the flow FOR EACH PHASE of the
18 certification process ~~— see timeline below:~~

19 (a) Phase I — ~~6 days maximum~~. Voting system provider submits AN application
20 AND ALL DOCUMENTATION REQUIRED IN RULE 45.4. THE ~~and~~ Secretary of State
21 reviews the applicaton AND INFORMS THE VOTING SYSTEM PROVIDER WHETHER OR NOT
22 THE APPLICATION IS COMPLETE. IF THE APPLICATION IS COMPLETE, THE SECRETARY OF STATE
23 MAKES ARRANGEMENTS WITH THE VOTING SYSTEM PROVIDER FOR A PUBLIC DEMONSTRATION.
24 IF THE APPLICATION IS incomplete, THE SECRETARY OF STATE SHALL IDENTIFY THE
25 DEFICIENCIES AND ~~—~~THE Voting system provider ~~shall~~ WILL have 30 days to
26 remedy THE DEFICIENCIES and make THE application complete. ~~;~~

27 (b) Phase II — ~~16 Days maximum~~. THE Secretary of State reviews the SUBMITTED
28 documentation, CONDUCTS THE REVIEW OF VSTL OR EVALUATIONS PROVIDED BY ANOTHER
29 STATE UNDER RULE 45.5.1.3, ~~submitted and~~ PREPARES A CERTIFICATION TEST PLAN FOR
30 THE SYSTEM AND PRESENTS THE TEST PLAN TO THE VOTING SYSTEM PROVIDER. ~~upon~~
31 ~~successful completion makes arrangements with voting system provider for~~
32 ~~demonstration.~~

1 (c) Phase III ~~—36 days maximum.~~ UPON RECEIPT OF THE VOTING SYSTEM PROVIDER’S
2 AGREEMENT TO THE TEST PLAN, ~~When demonstration is complete,~~ THE Secretary of
3 State performs the functional testing.

4 (d) Phase IV ~~—2 days maximum.~~ Upon completion of functional testing, THE
5 ~~Office of the~~ Secretary of State PRODUCES A CERTIFICATION TEST REPORT. ~~makes a~~
6 ~~decision to certify a voting system and produces applicable certification~~
7 ~~document.~~

8 (e) Phase V ~~—30 days maximum.~~ THE SECRETARY OF STATE REVIEWS THE CERTIFICATION
9 TEST REPORT AND MAKES THE DECISION WHETHER TO CERTIFY THE VOTING SYSTEM. Upon
10 THE decision to certify a ~~THE~~ voting system, ~~Secretary of State shall produce a~~
11 ~~qualification~~ THE CERTIFICATION TEST REPORT ~~report~~ for the voting system and
12 ~~components certified, which~~ shall be posted on the Secretary of State’s
13 website.

14 (F) WITHIN 30 DAYS OF CERTIFICATION OF A VOTING SYSTEM, THE SECRETARY OF STATE SHALL
15 PUBLISH CONDITIONS OF USE AND PROCEDURES FOR INSTALLING THE TRUSTED BUILD.

16 45.4 Application Procedure

17 45.4.1 Any voting system provider may apply to the Secretary of State for certification
18 at any time.

19 45.4.2 A voting system provider that submits a voting system for certification shall
20 complete the Secretary of State’s “Application for Certification of Voting
21 System”.

22 45.4.3 THE SECRETARY OF STATE, IN ACCORDANCE WITH SECTION 24-21-104 (1)(A), C.R.S., SHALL
23 CHARGE ALL DIRECT AND INDIRECT COSTS ASSOCIATED WITH THE TESTING OF A VOTING SYSTEM
24 SUBMITTED FOR CERTIFICATION. ~~The voting system provider shall establish an escrow~~
25 ~~account pursuant to State procurement processes to compensate the Secretary~~
26 ~~of State for necessary outside costs associated with the testing of the system.~~
27 The Secretary of State shall provide an estimate of costs for certification testing
28 at the conclusion of Phase II evaluation. ALL COSTS SHALL BE PAID IN FULL PRIOR TO THE
29 ISSUANCE OF A FINAL DETERMINATION BY THE SECRETARY OF STATE.

30 45.4.4 Along with the application, the voting system provider shall submit all ~~the~~
31 documentation REQUIRED IN THIS RULE 45. THE REQUIREMENTS INCLUDE DOCUMENTATION
32 necessary for the identification of the full system configuration submitted for

1 certification. This Documentation shall include information that defines the
2 voting system design, method of operation, and related resources. It shall also
3 include a system overview and documentation of the voting system's
4 functionality, accessibility, hardware, software, security, test and verification
5 specifications, operations procedures, maintenance procedures, and personnel
6 deployment and training requirements. In addition, the documentation
7 submitted shall include the voting system provider's configuration management
8 plan and quality assurance program.

9 45.4.5 Electronic copies of documentation are preferred and shall be submitted in lieu
10 of a hard copy when possible.

11 45.4.6 THE VENDOR SHALL IDENTIFY ANY MATERIAL IT ASSERTS IS EXEMPT FROM PUBLIC DISCLOSURE
12 UNDER THE COLORADO OPEN RECORDS ACT, SECTION 24-72-204, ET. SEQ., C.R.S., TOGETHER
13 WITH A CITATION TO THE SPECIFIC GROUNDS FOR EXEMPTION. THE REQUEST SHALL BE MADE PRIOR
14 TO THE START OF PHASE III OF THE CERTIFICATION PROCESS.

15 45.4.76 If the EAC has established a trusted build for the system submitted for
16 certification, the trusted build shall be provided by the EAC. The voting system
17 provider shall execute and submit to the EAC any necessary releases for the EAC
18 to provide the same, and shall provide the Secretary of State's office with a copy
19 of such executed releases. The voting system provider shall pay directly to the
20 EAC any cost associated with same. In addition, the voting system provider shall
21 submit all documentation and instructions necessary for the creation of and
22 guided installation of files contained in the trusted build which will be created at
23 the start of functional testing and will be the model tested against. The
24 Secretary of State reserves the right to add additional instructions or guidance
25 for the use of the trusted build when initiating the chain of custody process for a
26 jurisdiction using the specified equipment.

27 45.4.78 If the EAC does not have a trusted build for the voting system submitted
28 for certification, the voting system provider shall coordinate with the Secretary
29 of State for the establishment of the trusted build. At a minimum, this shall
30 include a compilation of files placed on write-once media for which the Secretary
31 of State has observed the chain of evidence from THE time of source code
32 compilation—COMPILATION through delivery, and an established hash file
33 distributed from a VSTL or the National Software Reference Library to compare
34 federally certified versions against. All or any part of the Trusted Build disks
35 may be encrypted. IF APPLICABLE, They should all be labeled as Proprietary

1 information if applicable and with identification of the voting system provider's
2 name and release version based on the voting system provider's release
3 instructions.

4 45.4.89 All materials submitted to the Secretary of State shall remain in the
5 custody of the Secretary of State during the life of the certification and for 25
6 months after the last election in which the system is used with the exception of
7 any equipment provided by the voting system provider ~~to~~ FOR THE purposes of
8 testing.

9 45.4.910 In addition to the application and the documentation specified above, the
10 Secretary of State may request additional information from the applicant, as
11 deemed necessary. ~~by the Secretary of State.~~

45.5 Voting System Standards

45.5.1 Federal Standards

13 45.5.1.1 All voting systems shall meet the voting systems standards pursuant to
14 section 1-5-601.5, C.R.S., and Secretary of State Rule 37.3.

15 45.5.1.2 All voting system software, hardware and firmware shall meet all
16 requirements of federal law that address accessibility for the voter
17 interface of the voting system. These laws include, but are not
18 necessarily limited to, (a) the Help America Vote Act, (b) the Americans
19 with Disabilities Act, and (c) the Federal Rehabilitation Act. The voting
20 system provider shall EXPLICITLY acknowledge ~~explicitly~~ that their
21 proposed software, hardware, and firmware are all in compliance with
22 the relevant accessibility portions of these laws.

23 45.5.1.3 The Secretary of State ~~or his/her designee~~ MAY USE AND RELY UPON THE
24 TESTING OF A VOTING SYSTEM PERFORMED BY A VSTL OR BY ANOTHER STATE UPON
25 SATISFACTION OF THE FOLLOWING CONDITIONS: ~~shall review all of the~~
26 ~~documentation submitted from federal testing for compliance with~~
27 ~~applicable laws and regulations. Documentation of tests completed at~~
28 ~~the federal level may be used for compliance of duplicate State level~~
29 ~~requirements; however compliance with federal standards does not~~
30 ~~necessarily establish compliance with Colorado standards.~~

1 procedures for voting, auditing information,
2 inventory control, counting ballots, opening and
3 closing polls, recounts, reporting and accumulating
4 results as required herein;

5 (g) Conduct the post election audit as required herein;
6 and

7 (h) Preserve the system for future election use.

8 45.5.2.1.3 The voting system shall accurately integrate election-day
9 ELECTION DAY voting results with mail-in, early voting and
10 provisional ballot results.

11 45.5.2.1.4 The voting system shall be able to count all of an elector's
12 votes on a provisional ballot or only federal and statewide
13 offices and statewide ballot issues and questions, as
14 provided under section 1-8.5-108(2), C.R.S.

15 45.5.2.1.5 The voting system shall provide for the tabulation of votes
16 cast in split precincts where all voters residing in one
17 precinct are not voting the same ballot style.

18 45.5.2.1.6 The voting system shall provide for the tabulation of votes
19 cast in combined precincts at remote sites, where more
20 than one precinct is voting at the same location, on either
21 the same ballot style or a different ballot style.

22 45.5.2.1.7 The voting system application shall provide authorized
23 users with the capability to produce electronic files
24 including election results in either ASCII (both comma-
25 delimited and fixed-width) or web-based format that shall
26 contain (a) all data or (b) any user selected data elements
27 from the database. The software shall provide authorized
28 users with the ability to generate these files on an "on-
29 demand" basis. After creating such files, the authorized
30 users shall, at their discretion, have the capability to copy
31 the files to diskette, tape, or CD-ROM or to transmit the
32 files to another information system.

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(a) Exports necessary for the Secretary of State shall conform to an ~~agreed upon~~ format. AGREED UPON BY THE SECRETARY AND THE VOTING SYSTEM PROVIDER. IF THE VOTING SYSTEM PROVIDER AND THE SECRETARY HAVE NOT PREVIOUSLY AGREED UPON A FORMAT, THE VOTING SYSTEM PROVIDER SHALL PROVIDE THE SECRETARY WITH SPECIFICATIONS FOR ALL AVAILABLE EXPORT FILE FORMATS. AS PART OF THE CERTIFICATION TEST, THE VOTING SYSTEM PROVIDER WILL DEMONSTRATE THAT PRELIMINARY AND CANVASSING LEVEL ELECTION RESULT DATA, USING ONE OR MORE OF THE PROVIDED FORMATS, CAN BE IMPORTED TO A COMMERCIALY AVAILABLE DATA MANAGEMENT PROGRAM SUCH AS A SPREADSHEET, DATABASE, OR REPORT GENERATOR WHICH CAN ACCEPT THAT FORMAT AND WHICH IS USED AND SELECTED BY THE SECRETARY'S OFFICE. USING THE IMPORTED DATA, THE SECRETARY'S TEST TEAM SHALL CONFIRM THAT THE ELECTION RESULTS DATA MAY BE CONSOLIDATED WITH RESULTS FROM ONE OR MORE ADDITIONAL ELECTION JURISDICTIONS, SEARCHED, SELECTED, SORTED, GENERATE TOTALS FROM SELECTED SUBSETS OF THE DATA, AND FORMATTED FOR REPORTING.

(b) Export files shall be generated so that election results can be communicated to the Secretary of State on election night both during the accumulation of results and after all results have been accumulated.

45.5.2.1.8 The voting system shall include hardware and software to enable the closing of the remote voting location and disabling THE acceptance of ballots on all vote tabulation devices to allow for the following:

(a) Machine-generated paper record of the time the voting system was closed.

(b) Readings of the public counter and protective counter shall become a part of the paper audit record upon disabling the voting system to prevent further voting.

- 1 (c) Ability to print an abstract of the count of votes
2 which shall contain:
- 3 (i) Names of the offices;
- 4 (ii) Names of the candidates and party when
5 applicable;
- 6 (iii) A tabulation of votes from ballots of different
7 political parties at the same voting location in
8 a primary election;
- 9 (iv) Ballot titles;
- 10 (v) Submission clauses of all initiated, referred or
11 other ballot issues or questions; and
- 12 (vi) The number of votes counted for or against
13 each candidate or ballot issue.
- 14 (d) Abstract shall include an election judge's certificate
15 and statement that contains:
- 16 (i) Date of election (day, month and year);
- 17 (ii) Precinct Number (ten digit format);
- 18 (iii) County or Jurisdiction Name;
- 19 (iv) State of Colorado;
- 20 (v) Count of votes as indicated in this section;
21 and
- 22 (vi) Area for judge's' signatures with the words
23 similar to: "Certified by us", and "Election
24 Judges". Space should allow for a minimum
25 of two signatures.
- 26 (e) Votes counted by a summary of the voting location;
27 and by individual precincts.

1 (f) Ability to produce multiple copies of the unofficial
2 results at the close of the election.

3 (g) Ability to accommodate a two page ballot (races on
4 four faces) is required.

5 45.5.2.1.9 Voters voting on DRE ~~devices~~ shall be able to navigate
6 through the screens without the use of page scrolling.
7 Features such as next or previous page options shall be
8 used.

9 45.5.2.1.10 The voting system application shall ensure that an election
10 setup may not be changed once ballots are printed and/or
11 election media devices are downloaded for votes to be
12 conducted without proper authorization and
13 acknowledgement by the application administrative
14 account. The application and database audit transaction
15 logs shall accurately reflect the name of the system
16 operator making the change(s), the date and time of the
17 change(s), and the "old" and "new" values of the
18 change(s).

19 45.5.2.1.11 THE VOTING SYSTEM SHALL ENSURE THAT ALL TABULATED RESULTS WILL
20 BE ACCURATELY CAPTURED, INTERPRETED, AND REPORTED TO THE LEVEL
21 OF ACCURACY REQUIRED IN THE 2002 VOTING SYSTEM STANDARDS.

22 45.5.2.2 Performance Level

23 45.5.2.2.1 Performance Level shall refer to any operation related to
24 the speed and efficiency required from the voting system
25 to accomplish the successful conduct of an election on the
26 voting system.

27 45.5.2.2.2 The voting system shall meet the ~~following minimum~~
28 requirements for casting ballots AS DETAILED IN THE VENDOR
29 DOCUMENTATION REQUIRED FOR CERTIFICATION. ~~during functional~~
30 ~~testing for certification. Speed requirements are based on~~
31 ~~a printed double sided complete 18" ballot with a~~
32 ~~minimum of 20 contests:~~

1 ~~(a) Optical Scan Ballots at voting location(s) = 100 ballots~~
2 ~~per hour;~~

3 ~~(b) DRE / Touch Screen = 20 ballots per hour; and~~

4 ~~(c) Central Count Optical Scan Ballots = 100 ballots per~~
5 ~~hour.~~

6 45.5.2.2.3 The voting system provider shall publish and specify
7 processing standards for each component of the voting
8 system as part of the documentation required for
9 certification.

10 45.5.2.2.4 For the purposes of evaluating software, the voting system
11 provider shall be required to provide detailed information
12 as to the type of hardware required to execute the
13 software. The performance level shall be such that an
14 evaluator of the software would have pauses equal to less
15 than five ~~(5)~~ seconds in the system during the ballot design
16 and creation, along with the downloading and uploading
17 of election media devices. Specifically, the following
18 minimum standards are required:

19 (a) Ballot style initial layout is less than TEN ~~(10)~~ seconds
20 per ballot style;

21 (b) Election mMedia DDownload for vote storage media
22 without audio files is less than 35 seconds per media;

23 (c) Election mMedia uUpload is less than 20 seconds per
24 media; and

25 (d) The application software upon creation of the layout
26 of the races on ballot shall produce the ballot image
27 (on screen) for the evaluator in less than ~~thirty (30)~~
28 seconds per ballot image.

29 45.5.2.2.5 At no time shall third party hardware or software
30 ~~negatively~~ HAVE A NEGATIVE impact ON performance levels of
31 THE voting system application, unless, THROUGH
32 DOCUMENTATION, a voting system provider specifically

1 details ~~through documentation~~ the specific hardware or
2 software, the performance impact, and a workaround for
3 the end user to overcome the issue.

4 45.5.2.3 Physical and Design Characteristics

5 45.5.2.3.1 Physical and design characteristics shall address any and
6 all external or internal construction of the physical
7 environment of the voting system, or the internal workings
8 of the software necessary for the ~~functioning of the~~ voting
9 system TO FUNCTION. The voting system shall substantially
10 comply with these requirements to be considered
11 successful in the conduct of an election on the voting
12 system.

13 45.5.2.3.2 The voting system shall meet the following environmental
14 controls allowing for storage and operation in the
15 following physical ranges:

16 (a) Operating – ~~MAXIMUM~~ 95 Degrees Fahrenheit;
17 ~~MINIMUM~~ 50 Degrees Fahrenheit, with ~~maximum~~
18 humidity of 90%, normal or minimum operating
19 humidity of 15%.

20 (b) Non-Operating – ~~MAXIMUM~~ 140 Degrees Fahrenheit;
21 ~~MINIMUM~~ MINUS 4 Degrees Fahrenheit. Non-
22 operating humidity ranges from 5% to 90% for
23 various intervals throughout the day.

24 The material supplied by the voting system provider shall
25 include a statement of all requirements and restrictions
26 regarding environmental protection, electrical service,
27 telecommunications service, and any other facility or
28 resource required for the installation, operation, and
29 storage of the voting system.

30 45.5.2.3.3 The ballot definition subsystem of the voting system
31 application consists of hardware and software required to
32 accomplish the functions outlined in this ~~section~~ RULE
33 45.5.2.3. System databases contained in the ~~Ballot~~

1 Definition sSubsystem may be constructed individually or
2 they may be integrated into one database. These
3 databases are treated as separate databases to identify
4 the necessary types of data ~~that shall~~ to be handled and to
5 specify, where appropriate, those attributes that can be
6 measured or assessed for determining compliance with
7 the requirements of this standard.

8 45.5.2.3.4 The ~~B~~Ballot ~~D~~Definition sSubsystem shall be capable of
9 formatting ballot styles in English and any alternate
10 languages as are necessary to comply with The "Voting
11 Rights Act of 1965" 42 U.S.C. § 1973c et seq. (1965).

12 45.5.2.3.5 The voting system application shall allow the operator to
13 generate and maintain an administrative database
14 containing the definitions and descriptions of political
15 subdivisions and offices within the jurisdiction.

16 45.5.2.3.6 The ballot definition subsystem shall provide for the
17 definition of political and administrative subdivisions
18 where the list of candidates or contests may vary within
19 the remote site and for the activation or exclusion of any
20 portion of the ballot upon which the entitlement of a voter
21 to vote may vary by reason of place of residence or other
22 such administrative or geographical criteria. This database
23 shall be used by the system with the administrative
24 database to format ballots or edit formatted ballots within
25 the jurisdiction.

26 45.5.2.3.7 For each election, the subsystem shall allow the user to
27 generate and maintain a candidate and contest database
28 and provide for the production and/or definition of
29 properly formatted ballots and software.

30 45.5.2.3.8 The ballot definition subsystem shall be capable of
31 handling at least 500 potentially active voting positions,
32 arranged to identify party affiliations in a primary election,
33 offices ~~WITH and~~ their associated labels and instructions,
34 candidate names ~~WITH and~~ their associated labels and

1 instructions, and ballot issues or questions WITH ~~and~~ their
2 associated text and instructions.

3 45.5.2.3.9 The ballot display may consist of a matrix of rows or
4 columns assigned to political parties or non-partisan
5 candidates and columns or rows assigned to offices and
6 contests. The display may consist of a contiguous matrix of
7 the entire ballot or it may be segmented to present
8 portions of the ballot in succession.

9 45.5.2.3.10 The voting system application shall provide a facility for
10 the definition of the ballot, including the definition of the
11 number of allowable choices for each office and contest,
12 and for special voting options such as write-in candidates.
13 It shall provide for all voting options and specifications as
14 provided for in Articles 5 and 7, Title 1, C.R.S. The system
15 shall generate all required masters and distributed copies
16 of the voting program in conformance with the definition
17 of the ballot for each voting device and remote site. The
18 distributed copies, resident or installed, in each voting
19 device, shall include all software modules required to
20 monitor system status and generate machine-level audit
21 reports, accommodate device control functions performed
22 by remote location officials and maintenance personnel,
23 and register and accumulate votes.

24 45.5.2.3.11 The trusted build of the voting system software,
25 installation programs, and third party software (~~such as~~
26 ~~operating systems, drivers, etc.~~) used to install or to be
27 installed on voting system devices shall be distributed on a
28 write-once media.

29 45.5.2.3.12 The voting system shall allow the system administrative
30 account to verify that the software installed is the certified
31 software by comparing it to the trusted build or other
32 reference information.

33 45.5.2.3.13 All DRE voting devices shall use touch screen technology or
34 other technology providing visual ballot display and
35 selection. The voting system provider shall provide

1 documentation concerning the use of touch screen or
2 other display and selection technology, including, but not
3 limited to:

4 (a) Technical documentation describing the nature and
5 sensitivity of the tactile device (if the system uses
6 touch screen technology);

7 (b) Technical documentation describing the nature and
8 sensitivity of any other technology used to display
9 and select offices, candidates, or issues;

10 (c) Any mean time between failure (MTBF) data
11 collected on the vote recording devices; and

12 (d) Any available data on problems caused for persons
13 who experience epileptic seizures due to the DRE
14 voting devices's screen refresh rate.

15 ~~45.5.2.3.14 The voting system shall contain a control subsystem that~~
16 ~~consists of the physical devices and software that~~
17 ~~accomplish and validate the following operations:~~

18 ~~(a) Voting System Preparation — The control subsystem~~
19 ~~shall encompass the hardware and software required~~
20 ~~to prepare remote location voting devices and~~
21 ~~memory devices for election use. Remote site~~
22 ~~preparation includes all operations necessary to~~
23 ~~install ballot displays, software, and memory devices~~
24 ~~in each voting device. The control subsystem shall be~~
25 ~~designed in such a manner as to facilitate the~~
26 ~~automated validation of ballot and software~~
27 ~~installation and to detect errors arising from their~~
28 ~~incorrect selection or improper installation.~~

29 ~~(b) Error Detection — the voting system shall contain a~~
30 ~~detailed list and description of the error messages~~
31 ~~that will appear on the voting devices, the controller~~
32 ~~(if any), the paper ballot printer, programmer, or any~~

1 other device used in the voting process to indicate
2 that a component has failed or is malfunctioning.

3 ~~45.5.2.3.15 The voting system shall have a high level of integration~~
4 ~~between the ballot layout subsystem and the vote~~
5 ~~tabulation subsystem. This integration shall permit and~~
6 ~~facilitate the automatic transfer of all ballot setup~~
7 ~~information from the automated ballot layout module to~~
8 ~~the single ballot tabulation system that will be used in a~~
9 ~~fully integrated manner for DRE, optical scan, and any~~
10 ~~other voting devices included in the voting system.~~

11 ~~45.5.2.3.16 The processing subsystem contains all mechanical,~~
12 ~~electromechanical, and electronic devices required to~~
13 ~~perform the logical and numerical functions of interpreting~~
14 ~~the electronic image of the voted ballot and assigning~~
15 ~~votes to the proper memory registers. Attributes of the~~
16 ~~processing subsystem that affect its suitability for use in a~~
17 ~~voting system, are accuracy, speed, reliability, and~~
18 ~~maintainability.~~

19 ~~(a) Processing accuracy refers to the ability of the~~
20 ~~subsystem to receive electronic signals produced by~~
21 ~~vote marks and timing information, to perform~~
22 ~~logical and numerical operations upon these data,~~
23 ~~and to reproduce the contents of memory when~~
24 ~~required without error. Processing subsystem~~
25 ~~accuracy shall be measured as bit error rate, which is~~
26 ~~the ratio of uncorrected data bit errors to the~~
27 ~~number of total data bits processed when the system~~
28 ~~is operated at its nominal or design rate of~~
29 ~~processing in a time interval of four (4) hours. The bit~~
30 ~~error rate shall include all errors from any source in~~
31 ~~the processing subsystem. For all types of systems,~~
32 ~~the Maximum Acceptable Value (MAV) for this error~~
33 ~~rate shall be one (1) part in five hundred thousand~~
34 ~~(500,000) ballot positions, and the Nominal~~
35 ~~Specification Value (NSV) shall be one (1) part in ten~~
36 ~~million (10,000,000) ballot positions.~~

~~(b) Memory devices that are used to retain control programs and data shall have demonstrated at least a ninety-nine and a half (99.5) percent probability of error-free data retention for a period of six months for operation and non-operation.~~

~~45.5.2.3.17 The reporting subsystem contains all mechanical, electromechanical, and electronic devices required to print reports of the tabulation. The subsystem also may include data storage media and communications devices for transportation or transmission of data to other sites. Telecommunications Devices shall not be used for the preparation or printing of an official canvass of the vote unless they conform to a data interchange and interface structure and protocol that incorporates auditing and error check as required by 45.5.2.7.~~

~~45.5.2.3.18 The approach to design shall be unrestricted, and it may incorporate any form or variant of technology that is capable of meeting the requirements of this rule, and other attributes specified herein. The frequency of voting system malfunctions and maintenance requirements shall be reduced to the lowest level consistent with cost constraints. Applicants are required to meet or exceed MIL HDBK 454; "Standard General Requirements for Electronic Equipment" that is hereby adopted and incorporated by reference, as a guide in the selection and application of materials and parts only as is relevant to this section.~~

45.5.2.3.149 All electronic voting devices ~~provided~~ SUPPLIED by the voting system provider shall have the capability to continue operations and provide continuous device availability during a period of electrical outage without any loss of election data.

(a) For optical scan devices, this capability shall include, at a minimum, for a period of not less than two ~~(2)~~ hours the ability to:

- 1 (i) Continue to scan or image voters' ballots;
- 2 (ii) ACCURATELY TTabulate accurately voters'
- 3 choices from the ballots;
- 4 (iii) Store accurately STORE voters' ballot
- 5 choices during a period of electrical outage;
- 6 and
- 7 (iv) Transmit required results files accurately if
- 8 power failure OCCURS experienced during
- 9 transmittal of results.
- 10 (b) For DRE devices, this capability shall include, at a
- 11 minimum, for a period of not less than two (2) hours
- 12 the ability to:
- 13 (i) Continue to present ballots accurately to
- 14 voters;
- 15 (ii) Accept voters' choices accurately on the
- 16 devices;
- 17 (iii) Tabulate voters' choices accurately;
- 18 (iv) Store voters' choices accurately in all storage
- 19 locations on the device; and
- 20 (v) Transmit required results files accurately if
- 21 power failure is experienced during
- 22 transmittal of results.
- 23 (c) For V-VPAT devices connected to DREs, this
- 24 capability shall include, at a minimum, for a period of
- 25 not less than two (2) hours the ability to:
- 26 (i) Continue to print voters' choices on the DRE
- 27 accurately and in a manner that is identical to
- 28 the manner of the printers' operations during
- 29 a period of normal electrical operations; and

1 (ii) Continue to store the printed ballots in a
2 secure manner that is identical to the manner
3 of the printers' operations during a period of
4 normal electrical operations.

5 (d) The voting system provider shall deliver to the
6 Secretary of State documentation detailing
7 estimated time of BATTERY operation ~~on battery~~ for
8 each type of optical scanner, ballot imager, DRE, and
9 V-VPAT they provide, assuming continuous use of the
10 devices by voters during an interruption of normal
11 electrical power.

12 (e) The voting system provider shall deliver to the
13 Secretary of State documentation specifying the
14 steps and times required for charging batteries for
15 each type of optical scanner, ballot imager, DRE and
16 V-VPAT they provide.

17 45.5.2.3.15~~20~~ The voting system provider's software application
18 shall be able to recover operations after a power outage or
19 other abnormal shutdown of the system on which that
20 application and database are operating without loss of
21 more than the current transaction data record on which
22 the administrative account or authorized operator account
23 is currently working.

24 45.5.2.3.16~~21~~ The voting system shall provide capabilities to
25 PROTECT THE ~~enforce~~ confidentiality of voters' ballot choices.

26 (a) All optical scan devices, associated ballot boxes and
27 V-VPAT storage devices shall provide physical locks
28 and procedures to prevent disclosure of voters'
29 confidential ballot choices during and after the vote
30 casting operation.

31 (b) All DRE devices shall provide randomization of all
32 voter choices and stored electronic ballot
33 information, regardless of format, to prevent
34 disclosure of voters' confidential ballot choices

1 during and after storage of the voters' ballot
2 selections.

3 ~~45.5.2.3.22 The voting system and all associated components shall~~
4 ~~have an estimated useful life of at least eight (8) years.~~
5 ~~Voting system provider shall provide documentation of the~~
6 ~~basis for the estimate.~~

7 45.5.2.3.17~~23~~ The voting system provider shall submit drawings,
8 photographs, and any related brochures OR documents to
9 assist with the evaluation of the physical design of the use
10 of the voting system.

11 45.5.2.4 Documentation Requirements

12 45.5.2.4.1 ~~In addition to other documentation requirements in this~~
13 ~~rule, †The voting system provider shall provide the~~
14 ~~following documents:~~

- 15 (a) Standard Issue Users/Operator Manual;
- 16 (b) System Administrator's / Application Administration
17 Manual;
- 18 (c) Training Manual (and RELATED materials);
- 19 (d) Systems Programming and Diagnostics Manuals; and
- 20 (e) A list of minimum services needed for THE successful,
21 secure and hardened operation of all components of
22 voting system.

23 45.5.2.4.2 FOR THE REVIEW OF VSTL TESTING IN RULE 45.5.1.3 COPIES OF AAll
24 VSTL qualification reports, test logs and technical data
25 packages shall be PROVIDED TO THE SECRETARY OF STATE.
26 ~~evaluated to determine if the voting system meets the~~
27 ~~requirements of this rule and have completed the~~
28 ~~applicable federal certification requirements at the time of~~
29 ~~State testing.~~ Failure to provide such documentation of
30 independent VSTL testing will result in the voting system
31 application being rejected.

1 (a) The voting system provider shall execute and submit
2 any necessary releases for the applicable VSTL
3 and/or EAC to discuss any and all procedures and
4 findings relevant to the voting system submitted for
5 certification WITH THE SECRETARY OF STATE AND ALLOW THE
6 REVIEW OF ANY DOCUMENTATION, DATA, REPORTS OR SIMILAR
7 INFORMATION UPON WHICH THE VSTL RELIED IN PERFORMING
8 ITS TESTING BY ~~with the Secretary of State's office.~~ The
9 voting system provider shall provide a copy of the
10 same to the Secretary of State's office.

11 (B) THE VOTING SYSTEM PROVIDER, THE VSTL AND/OR THE EAC
12 WILL IDENTIFY TO THE SECRETARY OF STATE ANY SPECIFIC
13 SECTIONS OF DOCUMENTS FOR WHICH THEY ASSERT A LEGAL
14 REQUIREMENT FOR REDACTION.

15 45.5.2.4.3 PRIOR TO APPLYING FOR CERTIFICATION, ~~All~~ voting system
16 providers submitting a voting system ~~for certification after~~
17 ~~March 31, 2008, shall, prior to applying for certification,~~
18 ~~have completed and provided documentation of an~~
19 ~~independent analysis of the system. coordinated through~~
20 ~~the Secretary of State's office.~~ The independent analysis
21 shall include:

22 (a) Application penetration test conducted to OPEN
23 SOURCE SECURITY TESTING METHODOLOGY MANUAL
24 (OSSTMM) 2.2 standards for White or Double Gray
25 box testing;

26 (b) Source code evaluated to the requirements
27 identified in ~~section~~ RULE 45.5.2.6.1(f);

28 ~~(c) A complete review of the source code for these two~~
29 ~~tests shall be provided as part of the certification~~
30 ~~process;~~

31 ~~(cd) A complete report of acceptable~~ RECOMMENDATIONS ~~on~~
32 ~~compensating~~ ON COMPENSATING controls FOR
33 VULNERABILITIES shall be provided IN THE REPORTS FOR ~~with~~

1 the tests conducted for items (a) and (b) of this
2 section.

3 ~~(i) Inability for the voting system provider to~~
4 ~~provide acceptable compensating controls~~
5 ~~will require a retest of the system under this~~
6 ~~section until all compensating controls have a~~
7 ~~valid procedural mitigation strategy.~~

8 ~~(e) The vendor shall use an EAC approved VSTL to~~
9 ~~perform the independent analysis;~~

10 (E) The Secretary of State ~~or the designated agent~~ shall
11 review all work performed ~~by contractor~~ for quality
12 of work product under this section. The review may
13 include any or all of the following requirements:

14 (i) Review of records at contractor's OR ANY
15 SUBCONTRACTOR'S site;

16 (ii) Interviews of THE INDIVIDUALS ~~employees~~ who
17 performed the work; and

18 ~~(iii) Interviews of any subcontractors used.~~

19 (F) WHEN AN ANALYSIS PERFORMED BY ANOTHER STATE IS USED,
20 ~~The~~ Secretary of State has the right to reject ANY
21 evaluations ~~performed~~ if not satisfied with the work
22 product and TO REQUIRE ~~may request~~ additional
23 ANALYSIS ~~reviews~~ TO MEET THE REQUIREMENTS OF THIS RULE.
24 ~~of the voting system provider.~~

25 45.5.2.4.4 Documentation submitted to the Secretary of State shall
26 be reviewed to DETERMINE THE EXTENT TO WHICH ~~ensure~~ the
27 voting system has been tested to federal standards.

28 ~~(a) Voting System providers shall provide the Secretary~~
29 ~~of State with their documented project plans for~~
30 ~~modifying their voting systems to comply with and~~
31 ~~achieve certification under the EAC's adopted 2005~~
32 ~~Voluntary Voting System Guidelines by January 1,~~

1 ~~2008 if not currently tested and certified to that~~
2 ~~standard at time of applying for certification.~~

3 45.5.2.4.5 Failure by the voting system provider to provide any
4 documentation with THEIR APPLICATION FOR CERTIFICATION WILL
5 ~~in the timelines established in this rule shall delay the~~
6 ~~certification processing for the specific application UNTIL THE~~
7 DOCUMENTATION IS PROVIDED.

8 45.5.2.5 Audit capacity

9 45.5.2.5.1 The voting system shall be capable of producing electronic
10 and printed audit logs of system operation and system
11 operators' actions which shall be substantially compliant
12 to allow operations and input commands to be audited.

13 45.5.2.5.2 The voting systems shall include detailed documentation
14 as to the level, location, and programming of audit trail
15 information throughout the system. The audit information
16 shall apply to:

- 17 (a) Operating Systems (workstation, server, and/or DRE);
18 (b) Election Programming Software;
19 (c) Election Tabulation devices – optical scan and DRE;
20 and
21 (d) Election Result Consolidation and Reporting.

22 45.5.2.5.3 The voting system shall track and maintain audit
23 information of the following voting system application
24 events:

- 25 (a) Log on and log off activity;
26 (b) Application start and stop;
27 (c) Printing activity, {where applicable};
28 (d) Election events – setup, set for election, unset for
29 election, open polls, close polls, end election, upload

1 devices, download devices, create ballots, create
2 precincts, create districts, create poll places (or Vote
3 Centers), initialize devices, backup devices and voting
4 activity; and

5 (e) Hardware events – add hardware, remove hardware,
6 initialize hardware, and change hardware properties.

7 45.5.2.5.4 All tabulation devices shall display the unit serial
8 number(s) both physically and within any applicable
9 software, logs, or reports.

10 45.5.2.5.5 Vote tabulation devices shall allow for an alternate
11 method of transfer of audit records if the device or a
12 memory storage device is damaged or destroyed.

13 45.5.2.5.6 All transaction audit records of the voting system
14 application database shall be maintained in a file outside
15 of or separate from the database, which is not accessible
16 by user/operator accounts.

17 45.5.2.6 Security Requirements

18 45.5.2.6.1 All voting systems submitted for certification shall meet
19 the following minimum system security requirements:

20 (a) The voting system shall accommodate a general
21 system of access by least privilege and role based
22 access control. The following requirements shall
23 apply:

24 (i) The operating system Administrative
25 Account shall not have access to read or
26 write data to the database and shall not have
27 the ability or knowledge of the database
28 administrator password;

29 (ii) The operating system administrative account
30 shall not be required to use any function of
31 the voting system during normal operations;

- 1 (iii) A unique system user/operator account shall
2 be created for operating system use that is
3 restricted from the following aspects of the
4 operating system:
- 5 a. No access to system root directory;
6 b. No access to operating system specific
7 folders;
8 c. No access to install or remove
9 programs; and
10 d. No access to modify other user accounts
11 on the system.
- 12 (iv) A unique application administrative account
13 shall be created which has full access and
14 rights to the application and database;
- 15 (v) A unique application user/operator account
16 shall be created with limited rights specifically
17 designed to perform functional operation
18 within the scope of the application. This
19 user/operator shall be restricted in the
20 creation or modification of any user/operator
21 accounts; and
- 22 (vi) Voting system provider shall not have AN
23 administrative account, or administrative
24 account access.
- 25 (b) The voting system shall meet the following
26 requirements for network security:
- 27 (i) All components of the voting system shall
28 only be operated on a closed network only for
29 the use of the voting system;
- 30 (ii) All components of the voting system shall
31 include the limited use of non-routable IP

1 address configurations for any device
2 connected to the closed network. For the
3 purposes of this requirement, non-routable IP
4 addresses are those defined in the RFC 1918
5 Address base; and

6 (iii) The voting system shall be tested to contain
7 provisions for updating security patches,
8 software and/or service packs without access
9 to the open network.

10 (c) All voting systems submitted for certification ~~after~~
11 ~~March 31, 2008,~~ shall meet the following
12 requirements for database security:

13 (i) All voting systems submitted for
14 certification SHALL HAVE DATABASES HARDENED TO
15 SPECIFICATIONS DEVELOPED BY THE VOTING SYSTEM
16 PROVIDER. DOCUMENTATION INCLUDED WITH THE
17 APPLICATION SHALL PROVIDE A DETAILED PRESCRIPTION
18 FOR HARDENING AND THE PROCEDURE USED TO HARDEN
19 THE SYSTEM. ANY GOVERNMENT OR INDUSTRY
20 GUIDELINES ADOPTED IN WHOLE, OR IN PART, ARE TO BE
21 IDENTIFIED IN THE DOCUMENTATION. ~~using Oracle~~
22 ~~9i, Oracle 10g, or Microsoft SQL shall be~~
23 ~~hardened to the existing and published NSA~~
24 ~~guidelines for databases as follows: _____~~
25 _____

26 a. ~~Oracle 9i and Oracle 10g databases shall~~
27 ~~be hardened to the Center for Internet~~
28 ~~Security Benchmark for Oracle 9i/10g~~
29 ~~Ver. 2.0;~~

30 b. ~~Microsoft SQL databases shall be~~
31 ~~hardened to the NSA Guide to the~~
32 ~~Secure _____ Configuration _____ and~~
33 ~~Administration of Microsoft SQL Server~~
34 ~~2000.~~

1 ~~(ii) All other voting system databases submitted~~
2 ~~for certification shall have the voting systems~~
3 ~~databases hardened to database~~
4 ~~manufacturer's existing hardening~~
5 ~~requirements; or~~

6 ~~(iii) If the manufacturer has not established~~
7 ~~requirements for the specifically designed~~
8 ~~system, the voting systems submitted for~~
9 ~~certification shall have the voting systems~~
10 ~~databases hardened to the voting system~~
11 ~~providers' specifications.~~

12 ~~(iv) All voting systems submitted for certification~~
13 ~~shall have all voting systems databases~~
14 ~~restricted to allowing access to database~~
15 ~~authentication from application only (or~~
16 ~~through application only);~~

17 ~~(v) All data stored at rest in any voting system~~
18 ~~database shall be encrypted in accordance~~
19 ~~with section (vi) of this requirement; and~~

20 ~~(vi) All Cryptography modules shall be~~
21 ~~documented by the voting system provider to~~
22 ~~be certified to US Federal Information~~
23 ~~Processing Standard (FIPS 140 2), and~~
24 ~~validated to FIPS 180 standards.~~

25 (d) The voting system shall meet the following
26 requirements for operating system security:

27 (i) All voting systems ~~being~~ submitted for
28 certification ~~after March 31, 2008,~~ shall have
29 all operating systems hardened to
30 SPECIFICATIONS DEVELOPED BY THE VOTING SYSTEM
31 PROVIDER. DOCUMENTATION INCLUDED WITH THE
32 APPLICATION SHALL PROVIDE A DETAILED PRESCRIPTION
33 FOR HARDENING AND THE PROCEDURE USED TO HARDEN
34 THE SYSTEM. ANY GOVERNMENT OR INDUSTRY

1 GUIDELINES ADOPTED IN WHOLE, OR IN PART, ARE TO BE
2 IDENTIFIED IN THE DOCUMENTATION. NSA
3 guidelines for operating systems as follows:

4 ~~a. Apple Mac OS X systems shall be hardened to~~
5 ~~the NSA Apple Mac OS X v10.3.x "Panther"~~
6 ~~Security Configuration Guide Version 1.1;~~

7 ~~b. Apple Server Operating Systems shall be~~
8 ~~hardened to the NSA Apple Mac OS X Server~~
9 ~~v10.3.x "Panther" Security Configuration~~
10 ~~Guide;~~

11 ~~c. Microsoft Windows XP Operating systems shall be~~
12 ~~hardened to the NSA Windows XP Security~~
13 ~~Guide Version: 2.2 and the NSA Windows XP~~
14 ~~Security Guide Addendum Version 1.0;~~

15 ~~d. Microsoft Windows 2000 operating systems~~
16 ~~shall be hardened to the following NSA~~
17 ~~Guides:~~

18 ~~i. Guide to the Secure Configuration and~~
19 ~~Administration of Microsoft Internet~~
20 ~~Information Services 5.0 Version 1.4;~~

21 ~~ii. Guide to the Secure Configuration and~~
22 ~~Administration of Microsoft ISA Server 2000~~
23 ~~Version 1.5;~~

24 ~~iii. Guide to Securing Microsoft Windows 2000~~
25 ~~Active Directory Version 1.0;~~

26 ~~iv. Guide to the Secure Configuration and~~
27 ~~Administration of Microsoft Windows 2000~~
28 ~~Certificate Services Version 2.1.1;~~

29 ~~v. Guide to Securing Microsoft Windows 2000 DHCP~~
30 ~~Version 1.3;~~

31 ~~vi. Guide to Securing Microsoft DNS Version 1.0;~~

- 1 ~~vii. Guide to Securing Microsoft Windows 2000~~
2 ~~Encrypting File System Version 1.0;~~
- 3 ~~viii. Guide to Securing Microsoft Windows 2000~~
4 ~~File and Disk Resources Version 1.0.1;~~
- 5 ~~ix. Guide to securing Microsoft Windows 2000~~
6 ~~Group Policy Version 1.1;~~
- 7 ~~x. Group Policy Reference Version 1.0.8;~~
- 8 ~~xi. Guide to Securing Microsoft Windows 2000~~
9 ~~Group Policy: Security Configuration Tool Set~~
10 ~~Version 1.2.1;~~
- 11 ~~xii. Microsoft Windows 2000 IPSec Guide Version~~
12 ~~1.0;~~
- 13 ~~xiii. Guide to Windows 2000 Kerberos Settings~~
14 ~~Version 1.1;~~
- 15 ~~xiv. Microsoft Windows 2000 Network~~
16 ~~Architecture Guide Version 1.0;~~
- 17 ~~xv. Microsoft Windows 2000 Router~~
18 ~~Configuration Guide Version 1.02;~~
- 19 ~~xvi. Guide to Securing Microsoft Windows 2000~~
20 ~~Schema Version 1.0;~~
- 21 ~~xvii. Guide to Securing Microsoft Windows 2000~~
22 ~~Terminal Services Version 1.0; and~~
- 23 ~~xviii. Guide to Securing Windows NT/9x~~
24 ~~Clients in a Windows 2000 Network~~
25 ~~Version 1.0.2;~~
- 26 ~~e. Microsoft Windows Server 2003~~
27 ~~operating systems shall be hardened to~~
28 ~~the NSA Microsoft Windows Server~~
29 ~~2003 Security Guide Version 2.1 and The~~

1 Microsoft Windows Server 2003
2 Security Guide Addendum Version 1.0;

3 ~~f. Sun Solaris 8 operating systems shall be~~
4 ~~hardened to the NSA Guide to the~~
5 ~~Secure Configuration of Solaris 8~~
6 ~~Version 1.0; and~~

7 ~~g. Sun Solaris 9 operating systems shall be~~
8 ~~hardened to the NSA Guide to the~~
9 ~~Secure Configuration of Solaris 9~~
10 ~~Version 1.0.~~

11 (ii) THE VOTING SYSTEM PROVIDER SHALL SUBMIT
12 DOCUMENTATION CONTAINING A LIST OF MINIMUM
13 SERVICES AND EXECUTABLES REQUIRED TO RUN
14 THE VOTING SYSTEM APPLICATION; ~~All other voting~~
15 ~~system operating systems submitted for~~
16 ~~certification after March 31, 2008, shall have~~
17 ~~all operating systems hardened to existing~~
18 ~~manufacturer's hardening requirements; or~~

19 ~~(iii) If the manufacturer has not established~~
20 ~~requirements for the specifically designed~~
21 ~~system, all voting systems being submitted~~
22 ~~for certification after March 31, 2007 shall~~
23 ~~have all operating systems hardened to the~~
24 ~~voting system providers' specifications;~~

25 ~~(iv) The voting system provider shall provide~~
26 ~~documentation containing a list of minimum~~
27 ~~services and executables that are required to~~
28 ~~run the voting system application;~~

29 (iii) The voting system provider shall configure
30 the voting system operating system of the
31 workstation and/or server used for the
32 election management software to the
33 following requirements:

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- a. The ability for the system to take an action upon inserting a removable media (~~Autorun~~—AUTO RUN) shall be disabled; and
 - b. The voting system shall only boot from the drive or device identified as the primary drive. The voting system shall not boot from any alternative device.
- (iv) The voting system provider shall use a virus protection/prevention application on the election management server(s)-/workstations which shall be capable of manual updates without the use of the internet.
- (e) The voting system shall meet the following requirements for password security:
- (i) All passwords shall be stored and used in a non-reversible format;
 - (ii) Passwords to database shall not be stored in database;
 - (iii) Password to database shall be owned and ~~known~~ only known by the application;
 - (iv) The application's database management system shall require separate passwords for the administrative account and each operator account with access to the application;
 - (v) The system shall be designed in such a way TO ENSURE ~~that~~ the use of the administrative account password shall not be required for normal operating functions at any remote location;

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(vi) The system shall be designed in such a way to facilitate the changing of passwords for each election cycle;

(vii) The use of blank or empty passwords shall not be permitted at any time with the exception of a limited one-time use startup password which requires a new password to be assigned before the system can be used; and

(viii) All voting systems submitted for certification ~~after March 31, 2008,~~ shall have all components of voting system capable of supporting passwords of a minimum of EIGHT (8) characters, which shall be capable of including numeric, alpha and special characters in upper case or lower case used in any combination.

(f) All voting system software submitted for certification ~~after March 31, 2008,~~ shall be in compliance with THE SOFTWARE DESIGN AND CODING STANDARDS OF THE "VOTING SYSTEMS STANDARDS ADOPTED IN RULE 37.3. ~~known software coding standards applicable to the base language of the application. The voting system shall meet the following minimum requirements for software security:~~

~~(i) Self modifying, dynamically loaded or interpreted code is prohibited, except under the security provisions required by federal testing. External modification of code during execution shall be prohibited. Where the development environment (programming language and development tools) includes the following features, the software shall provide controls to prevent accidental or~~

1 deliberate attempts to replace executable
2 code:

3 a. ~~Unbounded arrays or strings (includes~~
4 ~~buffers used to move data);~~

5 b. ~~Pointer variables; and~~

6 c. ~~Dynamic memory allocation and~~
7 ~~management.~~

8 (ii) ~~All voting systems submitted for certification~~
9 ~~after March 31, 2008, shall have application~~
10 ~~software designed in a modular fashion.~~
11 ~~COTS software is not required to be inspected~~
12 ~~for compliance with this requirement. For the~~
13 ~~purpose of this requirement, "modules" may~~
14 ~~be compiled or interpreted independently.~~
15 ~~Modules may also be nested. The modularity~~
16 ~~rules described here apply to the component~~
17 ~~sub-modules of a library. The principle to be~~
18 ~~followed is that the module contains all the~~
19 ~~elements to compile or interpret successfully~~
20 ~~and has limited access to data in other~~
21 ~~modules. The design concept is simple~~
22 ~~replacement with another module whose~~
23 ~~interfaces match the original module. All~~
24 ~~modules shall be designed in accordance with~~
25 ~~the following requirements for systems~~
26 ~~submitted for certification after March 31,~~
27 ~~2008:~~

28 a. ~~Each module shall have a specific~~
29 ~~function that can be tested and verified~~
30 ~~independently of the remainder of the~~
31 ~~code. In practice, some additional~~
32 ~~modules (such as library modules) may~~
33 ~~be needed to compile the module under~~
34 ~~test, but the modular construction~~
35 ~~allows the supporting modules to be~~

1 replaced by special test versions that
2 support test objectives.

3 ~~b. Each module shall be uniquely and~~
4 ~~mnemonically named, using names that~~
5 ~~differ by more than a single character.~~
6 ~~In addition to the unique name, the~~
7 ~~modules shall include a set of header~~
8 ~~comments identifying the module's~~
9 ~~purpose, design, conditions, and version~~
10 ~~history, followed by the operational~~
11 ~~code. Headers are optional for modules~~
12 ~~of fewer than ten executable lines~~
13 ~~where the subject module is embedded~~
14 ~~in a larger module that has a header~~
15 ~~containing the header information.~~
16 ~~Library modules shall also have a header~~
17 ~~comment describing the purpose of the~~
18 ~~library and version information.~~

19 ~~c. All required resources, such as data~~
20 ~~accessed by the module, should either~~
21 ~~be contained within the module or~~
22 ~~explicitly identified as input or output to~~
23 ~~the module. Within the constraints of~~
24 ~~the programming language, such~~
25 ~~resources shall be placed at the lowest~~
26 ~~level where shared access is needed. If~~
27 ~~that shared access level is across~~
28 ~~multiple modules, the definitions should~~
29 ~~be defined in a single file (called header~~
30 ~~files in some languages, such as C)~~
31 ~~where any changes can be applied once~~
32 ~~and the change automatically applies to~~
33 ~~all modules upon compilation or~~
34 ~~activation.~~

35 ~~d. Each module shall have a single entry~~
36 ~~point, and a single exit point, for normal~~

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~~process flow. For library modules or languages such as the object oriented languages, the entry point is to the individual contained module or method invoked. The single exit point is the point where control is returned. At that point, the data that is expected as output shall be appropriately set. The exception for the exit point is where a problem is so severe that execution cannot be resumed. In this case, the design shall explicitly protect all recorded votes and audit log information and shall implement formal exception handlers provided by the language.~~

~~e. Process flow within the modules shall be restricted to combinations of the control structures defined below. This shall apply to any language feature where program control passes from one activity to the next, such as control scripts, object methods or sets of executable statements, even though the language itself is not procedural.~~

~~i. In the constructs, any 'process' may be replaced by a simple statement, a subroutine or function call, or any of the control constructs.~~

~~ii. Using the replacement rule to replace one or both of the processes in the Sequence construct with other Sequence constructs, a large block of sequential code may be formed. The entire chain is recognized as a Sequence construct~~

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~~and is sometimes called a BLOCK construct. Sequences shall be marked with special symbols or punctuation to delimit where it starts and where it ends.~~

~~iii. A special case of the GENERAL LOOP is the FOR loop. The FOR loop may be programmed as a DO WHILE loop. The FOR loop shall execute on a counter. The control FOR statement shall define a counter variable or variables, a test for ending the loop, and a standard method of changing the variable(s) on each pass such as incrementing or decrementing.~~

~~iv. The use of the FOR loop shall avoid common errors such as a loop that never ends. The GENERAL LOOP shall not be used where one of the other loop structures will serve. However, if defined in the language, it may be useful in defining some loops where the exit needs to occur in the middle. Also, in other languages the GENERAL LOOP logic may be used to simulate the other control constructs. The use of the GENERAL LOOP shall require the strict enforcement of coding conventions to avoid problems.~~

~~v. The voting system software code shall use uniform calling sequences. All parameters shall either be validated for type and range on entry into each unit or the unit~~

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~~comments shall explicitly identify the type and range for the reference of the programmer and tester. Validation may be performed implicitly by the compiler or explicitly by the programmer.~~

~~vi. The voting system software code shall have the return explicitly defined for callable units such as functions or procedures (do not drop through by default) for C based languages and others to which this applies, and in the case of functions, shall have the return value explicitly assigned. Where the return is only expected to return a successful value, the C convention of returning zero shall be used. If an uncorrected error occurs so the unit shall return without correctly completing its objective, a non zero return value shall be given even if there is no expectation of testing the return. An exception may be made where the return value of the function has a data range including zero.~~

~~vii. The voting system software code shall not use macros that contain returns or pass control beyond the next statement.~~

~~viii. For those languages with unbound arrays, the voting system software shall provide controls to prevent writing beyond the array, string, or buffer boundaries.~~

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~~ix. For those languages with pointers or which provide for specifying absolute memory locations, the voting system software shall provide controls that prevent the pointer or address from being used to overwrite executable instructions or to access inappropriate areas where vote counts or audit records are stored.~~

~~x. For those languages supporting case statements, the voting system software shall have a default choice explicitly defined to catch values not included in the case list.~~

~~xi. The voting system software shall provide controls to prevent any vote counter from overflowing. An assumption that the counter size is large enough such that the value will never be reached does not meet this requirement.~~

~~xii. The voting system software code shall be indented consistently and clearly to indicate logical levels.~~

~~xiii. Excluding code generated by commercial code generators, the voting system software code is written in small and easily identifiable modules, with no more than 50% of all modules exceeding 60 lines in length, no more than 5% of all modules exceeding 120 lines in length, and no modules exceeding 240 lines in length. "Lines" in this~~

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~~context, are defined as executable statements or flow control statements with suitable formatting and comments.~~

~~xiv. Where code generators are used, the voting system software source file segments provided by the code generators shall be marked as such with comments defining the logic invoked and, a copy of the source code provided to the accredited test lab with the generated source code replaced with an unexpanded macro call or its equivalent.~~

~~xv. The voting system software shall have no line of code exceeding 80 columns in width (including comments and tab expansions) without justification.~~

~~xvi. The voting system software shall contain no more than one executable statement and no more than one flow control statement for each line of source code.~~

~~xvii. In languages where embedded executable statements are permitted in conditional expressions, the single embedded statement may be considered a part of the conditional expression. Any additional executable statements should be split out to other lines.~~

~~xviii. The voting system software shall avoid mixed mode operations. If mixed mode usage is necessary,~~

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~~then all uses shall be identified and clearly explained by comments.~~

~~xix. Upon exit() at any point, the voting system software shall present a message to the operator indicating the reason for the exit().~~

~~xx. The voting system software shall use separate and consistent formats to distinguish between normal status and error or exception messages. All messages shall be self-explanatory and shall not require the operator to perform any look-up to interpret them, except for error messages that require resolution by a trained technician.~~

~~xxi. The voting system software shall reference variables by fewer than five levels of indirection.~~

~~xxii. The voting system software shall have functions with fewer than six levels of indented scope, counted as follows:~~

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int function()  
{  
    if (a = true)  
    {  
        if (b = true)  
        {  
            if (c = true)
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3 _____ {  
_____ if ( d =  
true )  
4 _____ {  
_____   
_____ while ( e > 0 )  
5 _____   
_____ {  
_____   
_____ code  
_____   
_____ }  
}   
}   
}   
}   
}
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~~xxiii. The voting system software shall initialize every variable upon declaration where permitted.~~

~~xxiv. The voting system software shall have all constants other than 0 and 1 defined or enumerated, or shall have a comment which clearly explains what each constant means in the context of its use. Where "0" and "1" have multiple meanings in the code unit, even they shall be identified.~~

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~~xxv. The voting system software shall only contain the minimum implementation of the "a = b ? c : d" syntax. Expansions such as "j=a?(b?c:d):e;" are prohibited.~~

~~xxvi. The voting system software shall have all assert() statements coded such that they are absent from a production compilation. Such coding may be implemented by ifdef()s that remove them from or include them in the compilation. If implemented, the initial program identification in setup should identify that assert() is enabled and active as a test version.~~

~~f. Control Constructs within the modules shall be limited to the acceptable constructs of Sequence, If-Then-Else, Do While, Do Until, Case, and the General Loop (including the special case for loop).~~

~~i. If the programming language used does not provide these control constructs, the voting system provider shall provide comparable control structure logic. The constructs shall be used consistently throughout the code. No other constructs shall be used to control program logic and execution.~~

~~ii. While some programming languages do not create programs as linear processes, stepping from an initial condition through changes to a~~

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~~conclusion, the program components may nonetheless contain procedures (such as "methods" in object-oriented languages). In these programming languages, the procedures shall execute through these control constructs or their equivalents, as defined and provided by the voting system provider.~~

~~iii. Operator intervention or logic that evaluates received or stored data shall not redirect program control within a program routine. Program control may be redirected within a routine by calling subroutines, procedures, and functions, and by interrupt service routines and exception handlers (due to abnormal error conditions). Do-While (False) constructs and intentional exceptions (used as GoTos) are prohibited.~~

~~g. All modules of the voting system software shall use the following naming conventions:~~

~~i. Object, function, procedure, and variable names shall be chosen to enhance the readability and intelligibility of the program. Names shall be selected so that their parts of speech represent their use, such as nouns to represent objects and verbs to represent functions.~~

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~~ii. Names used in code and in documentation shall be consistent.~~

~~iii. Names shall be unique within an application. Names shall differ by more than a single character. All single-character names are forbidden except those for variables used as loop indexes. In large systems where subsystems tend to be developed independently, duplicate names may be used where the scope of the name is unique within the application. Names shall always be unique where modules are shared.~~

~~iv. Language keywords shall not be used as names of objects, functions, procedures, variables, or in any manner not consistent with the design of the language.~~

~~h. All modules of the voting system software shall adhere to basic coding conventions. The voting system providers shall identify the published, reviewed, and industry-accepted coding conventions used.~~

~~i. All modules of the voting system software shall use the following comment conventions:~~

~~i. All modules shall contain headers. For small modules of 10 lines or less, the header may be limited to identification of unit and revision information. Other header information should be included in~~

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~~the small unit headers if not clear from the actual lines of code. Header comments shall provide the following information:~~

- ~~1. The purpose of the unit and how it works;~~
- ~~2. Other units called and the calling sequence;~~
- ~~3. A description of input parameters and outputs;~~
- ~~4. File references by name and method of access (i.e., read, write, modify or append);~~
- ~~5. Global variables used; and~~
- ~~6. Date of creation and a revision record.~~

~~ii. Descriptive comments shall be provided to identify objects and data types. All variables shall have comments at the point of declaration clearly explaining their use. Where multiple variables that share the same meaning are required, the variables may share the same comment.~~

~~iii. In line comments shall be provided to facilitate interpretation of functional operations, tests, and branching.~~

~~iv. Assembly code shall contain descriptive and informative~~

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~~comments such that its executable lines can be clearly understood.~~

~~v. All comments shall be formatted in a uniform manner that makes it easy to distinguish them from executable code.~~

(g) All modules of the system shall meet the following requirements for installation of software, including hardware with embedded firmware.

(i) If software is resident in the system as firmware, the voting system provider shall ~~PROVIDE require and state in the system~~ documentation that ~~DESCRIBES HOW every~~ devices ~~MAY is to~~ be retested to validate each ROM prior to the start of elections operations.

~~(ii) To prevent alteration of executable code,~~ No ~~no~~ software shall be permanently installed or resident in the voting system unless the system documentation states that the jurisdiction shall provide a secure physical and procedural environment for the storage, handling, preparation, and transportation of the system hardware.

(iii) The voting system bootstrap, monitor, and device-controller software may be resident permanently as firmware, provided that this firmware has been shown to be inaccessible to activation or control by any means other than by the authorized initiation and execution of the vote counting program, and its associated exception handlers.

(iv) The election-specific programming may be installed and resident as firmware, provided

1 that such firmware is installed on a
2 component (such as a computer chip) other
3 than the component on which the operating
4 system resides.

5 (v) After initiation of ~~election day~~ ELECTION DAY
6 testing UNDER RULE 11.5.3, no source code, or
7 compilers or assemblers shall be resident or
8 accessible.

9 (vi) WHERE THE SYSTEM INCLUDES A FEATURE TO INTERPRET
10 AND CONTROL EXECUTION USING DATA FROM A SCRIPT,
11 CODE TOKENS, OR OTHER FORM OF CONTROL DATA FILE
12 SEPARATE FROM THE SOURCE CODE, THE HUMAN-
13 READABLE SOURCE INFORMATION SHALL BE MADE
14 AVAILABLE AS PART OF THE SOURCE CODE REVIEW AND
15 THE DATA FILES USED SHALL BE DEFINED AND
16 CONTROLLED AS PART OF THE TRUSTED BUILD AS IF IT
17 WERE PART OF THE EXECUTABLE CODE.

18 (vii) SECURITY FEATURES AND PROCEDURES SHALL BE
19 DEFINED AND IMPLEMENTED TO PREVENT ANY CHANGES
20 OF INTERPRETED DATA FILES AFTER THE INITIAL ELECTION
21 TESTING OF THE FINAL ELECTION DEFINITION AND ONLY
22 ALLOW AUTHORIZED REPLACEMENT OF THE DATA FILES
23 WITH TESTED AND APPROVED FILES FROM THE TRUSTED
24 BUILD BY AUTHORIZED PERSONNEL BEFORE THE
25 ELECTION DEFINITION IS FINALIZED FOR AN ELECTION.

26 (viii) THE INTRODUCTION OF INTERPRETED DATA DURING
27 EXECUTION SHALL NOT BE PERMITTED UNLESS DEFINED
28 AS A PRE-DEFINED SET OF COMMANDS OR ACTIONS
29 SUBJECT TO SECURITY REVIEW AND THE INTERPRETATION
30 FUNCTION PROVIDES SECURITY EDITS ON INPUT TO
31 PREVENT THE INTRODUCTION OF OTHER COMMANDS OR
32 THE MODIFICATION OR REPLACEMENT OF EXISTING
33 CODE.

34 (ix) Independent analysis will test for the
35 following conditions and report on absence or

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presence of the following input validations in accordance with ~~Section~~ RULE 45.5.2.4.3:

- A1. Path manipulation;
- B2. Cross Site Scripting.Basic X;
- C3. Resource Injection;
- D4. OS Command Injection (also called “Shell Injection”); and
- E5. SQL Injection.

(xvii)- Independent analysis will test for the following conditions and report on THEIR absence or presence of the following range errors in accordance with ~~section~~—RULE 45.5.2.4.3:

- A1. Stack Overflow;
- B2. Heap Overflow;
- C3. Format string vulnerability; and
- D4. Improper Null Termination.

(xiviii)- Independent analysis will test for THE following conditions and report on THEIR absence or presence of the following APPLICATION PROGRAMMING INTERFACE (API) abuses in accordance with ~~section~~—RULE 45.5.2.4.3:

- A1. Heap Inspection; and
- B2. String Management/ Manipulation.

(+xii)- Independent analysis will test for THE following conditions and report on THEIR absence or presence of the following TTime

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and sState conditions in accordance with
~~section~~ RULE 45.5.2.4.3:

- A1. Time-of-check/Time-of-use race condition; and
- B2. Unchecked Error Condition.

(XIII)- Independent analysis will test for THE following conditions and report on THEIR absence or presence of the following code quality conditions accordance with ~~section~~ RULE 45.5.2.4.3:

- A1. Memory Leaks;
- B2. Unrestricted Critical Resource Lock;
- C3. Double Free;
- D4 Use After Free;
- E5. Uninitialized variable;
- F6. Unintentional pointer scaling;
- G7. Improper pointer subtraction; and
- H8. Null Dereference.

(XIV)- Independent analysis will test for THE following conditions and report on THEIR absence or presence of the following encapsulation conditions in accordance with ~~section~~ RULE 45.5.2.4.3:

- A1. Private Array-Typed Field Returned from a Public Method;
- B2. Public Data Assigned to Private Array-Typed Field;

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- c3. Overflow of static internal buffer; and
- D4. Leftover Debug Code.

(xv4)- The Application shall not open database tables for direct editing.

(H)k- All voting systems submitted for certification after ~~March 31, 2008~~, shall meet the following minimum requirements for removable storage media with data controls:

- (i)- All voting data stored THAT ~~which~~ includes vote records, ballot images, tally data and cast votes shall be authenticated and validated. ~~in accordance with cryptography requirements of subsection (c)(vii) of this requirement;~~
- (ii)- All non-voting data stored shall be authenticated, encrypted, and validated. ~~in accordance with cryptography requirements of subsection (c)(vii) of this requirement; and~~
- (iii)- Antivirus software shall be present and scan removable media upon insertion of media or media device on server and/or workstations hosting the elections management software.

45.5.2.6.2 The voting system provider shall provide documentation detailing voting system security in the areas listed below. The system shall contain documented configurations, properties and procedures to prevent, detect and log changes to system capabilities for:

- (a) Defining ballot formats;
- (b) Casting and recording votes;
- (c) Calculating vote totals consistent with defined ballot formats;

- 1 (d) Reporting vote totals;
- 2 (e) Altering of voting system audit records;
- 3 (f) Changing, or preventing the recording of, a vote;
- 4 (g) Introducing data for a vote not cast by a registered
- 5 voter;
- 6 (h) Changing calculated vote totals;
- 7 (i) Preventing access to vote data, including individual
- 8 votes and vote totals, to unauthorized individuals;
- 9 and
- 10 (j) Preventing access to voter identification data and
- 11 data for votes cast by the voter such that an
- 12 individual can determine the content of specific
- 13 votes cast by the voter.

14 45.5.2.6.3 The voting system provider shall submit to the Secretary of
15 State its recommended policies or guidelines governing:

- 16 (a) Software access controls;
- 17 (b) Hardware access controls;
- 18 (c) Data communications;
- 19 (d) Effective password management;
- 20 (e) Protection abilities of a particular operating system;
- 21 (f) General characteristics of supervisory access
- 22 privileges;
- 23 (g) Segregation of duties; and
- 24 (h) Any additional relevant characteristics.

25 45.5.2.6.4 The voting system shall include detailed documentation
26 REGARDING ~~as to~~ the security measures it has in place for all
27 systems, applicable software, devices that act as

1 connectors (upload, download, and other programming
2 devices); and any security measures the voting system
3 provider recommends to the jurisdictions that purchase
4 the voting system.

5 45.5.2.7 Telecommunications Requirements

6 45.5.2.7.1 Telecommunications includes all components of the
7 system that transmit data outside of the closed network as
8 defined in this Rule 45.

9 45.5.2.7.2 All electronic transmissions from a voting system shall
10 meet the following minimum standards:

11 (a) Modems from remote devices shall be "dial only"
12 and cannot be programmed to receive a call;

13 (b) ~~All communications of data in transfer shall be~~
14 ~~encrypted, authenticated and verified to the FIPS~~
15 ~~140-2 standard and verified to the FIPS 180 standard~~
16 USE AN ENCRYPTION STANDARD CURRENTLY DOCUMENTED AND
17 VALIDATED FOR USE BY AN AGENCY OF THE UNITED STATES
18 FEDERAL GOVERNMENT; and

19 (c) PROVIDE A MEANS TO DETECT THE PRESENCE OF AN INTRUSIVE
20 PROCESS, SUCH AS AN INTRUSION DETECTION SYSTEM.

21 45.5.2.7.3 Any modem in any component failing to meet these
22 criteria shall not be used by any voting system.

23 45.5.2.7.4 All wireless components ~~on~~ IN voting systems shall be
24 disabled with the exception of line of sight infrared
25 technology used in a closed environment where the
26 transmission and reception is shielded from external
27 infrared signals and can only accept infrared signals
28 generated from within the system.

29 45.5.2.7.5 All systems that transmit data over public
30 telecommunications networks shall maintain a clear audit
31 trail that can be provided to the Secretary of State when

1 election results are transmitted by telephone, microwave
2 or ~~any~~ other type of electronic communication.

3 45.5.2.7.6 Systems designed for transmission of voter information
4 (~~i.e. electronic pollbooks~~) over public networks shall meet
5 security standards that address the security risks
6 attendant with the casting of ballots at remote sites
7 controlled by election officials using the voting system
8 configured and installed by election officials and/or their
9 voting system provider or contractor, and using in-person
10 authentication of individual voters.

11 45.5.2.7.7 Any voting system provider of systems that cast individual
12 ballots over a public telecommunications network shall
13 provide detailed descriptions of:

14 (a) All activities mandatory to ensuring effective system
15 security to be performed in setting up the system for
16 operation, including testing ~~of~~ security before an
17 election.

18 (b) All activities that should be prohibited during system
19 setup and during the time frame for voting
20 operations, including ~~both~~ the hours when polls are
21 open and when polls are closed.

22 45.5.2.7.8 In any situation in which the voting system provider's
23 system transmits data through any telecommunications
24 medium, the system shall be able to recover, either
25 automatically or with manual intervention, from
26 incomplete or failed transmission sessions and resume
27 transmissions automatically when telecommunications are
28 re-established.

29 (a) Recovery of transmissions shall include notations of
30 the interrupted transmission session and the
31 resumed transmission session in the system and
32 application transaction logs.

1 (b) Failure and recovery of transmissions shall not cause
2 any error in data transmitted from the polling place
3 to the central election site during a recovered
4 transmission session.

5 45.5.2.7.9 Voting systems that use public telecommunications
6 networks shall provide system documentation that clearly
7 identifies all COTS hardware and software products and
8 communications services used in the development and/or
9 operation of the voting system, including operating
10 systems, communications routers, modem drivers and
11 dial-up networking software. Documentation shall identify
12 the name, voting system provider, and version used for
13 each such component.

14 45.5.2.7.10 Voting systems providers shall document how they plan to
15 monitor and respond to known threats to which their
16 voting systems are vulnerable. This documentation shall
17 provide a detailed description, including scheduling
18 information, of the procedures the voting system provider
19 will use to:

20 (a) Monitor threats, such as through the review of
21 assessments, advisories, and alerts for COTS
22 components;

23 (b) Evaluate the threats and, if any, proposed responses.

24 (c) Develop responsive updates to the system and/or
25 corrective procedures; and

26 (d) As part of THE certification requirements of the
27 proposed system, provide assistance to customers,
28 either directly or through detailed written
29 procedures, how to update their systems and/or to
30 implement the corrective procedures within the
31 timeframe established by the Secretary of State.

32 ~~45.5.2.8 Accessibility Requirements~~ REPEALED

1 ~~45.5.2.8.1~~ Specific minimum accessibility requirements include those
2 specified in section ~~1-5-704 C.R.S., Secretary of State Rule~~
3 ~~34, Rule 35~~ and the following:

4 ~~(a)~~ Buttons and controls shall be distinguishable by both
5 shape and color;

6 ~~(b)~~ Audio ballots shall meet the following standards:

7 ~~(i)~~ The voting system shall allow the voter to
8 pause and resume the audio presentation.

9 ~~(ii)~~ The audio system shall allow voters to control
10 within reasonable limits, the rate of speech.

11 ~~(c)~~ No voting system or any of its accessible components
12 shall require voter speech for its operation;

13 ~~(d)~~ All Touchscreen technology shall be tested for use of
14 fingers as well as non-human touch that is both wet
15 and dry;

16 ~~(e)~~ Voting systems shall include at least the ability to
17 activate and navigate by means of push buttons,
18 dials, wheels, keypads, and/or touch screens. All
19 voting systems submitted for certification after
20 March 31, 2008, shall also include any form of either
21 switches, sip and puff devices, or additional blink
22 control devices; and

23 ~~(f)~~ Adjustability of color settings, screen contrasts
24 and/or screen angles/tilt may be made by either the
25 poll worker or voter if the system uses a display
26 screen. A minimum of two color settings, two
27 contrast settings and two angles shall be available for
28 all display screens.

29 ~~45.5.2.8.2~~ Documentation of the accessibility of the voting system
30 shall include the following items at a minimum:

1 ~~(a) If appropriate, voting booth design features that~~
2 ~~provide for privacy for the voter while voting (if a~~
3 ~~voting booth is not included with the system, then~~
4 ~~describe how voter privacy is accomplished);~~

5 ~~(b) Adaptability of the proposed system for voters with~~
6 ~~disabilities as outlined in the Americans with~~
7 ~~Disabilities Act guidelines;~~

8 ~~(c) Technology used by the voting system that prevents~~
9 ~~headset/headphone interference with hearing aids;~~

10 ~~(d) Types and size of voice file(s) the voting system uses;~~

11 ~~(e) Method for recording, sharing and storing voice files~~
12 ~~in the voting system;~~

13 ~~(f) How paginating through viewable screens is~~
14 ~~accomplished if it is required with the voting system;~~

15 ~~(g) Various methods of voting to ensure access by~~
16 ~~persons with multiple disabilities;~~

17 ~~(h) Capabilities of the voting system to accurately accept~~
18 ~~a non-human touch as input on the touch screen;~~
19 ~~and~~

20 ~~(i) Method for adjusting color settings, screen contrasts,~~
21 ~~and screen angles/tilt if the system uses a display~~
22 ~~screen.~~

23 *[Note: This rule 45.5.2.8 is relocated to rule 35.2 as it deals with the requirements for*
24 *accessibility of voting equipment. The relocation was based on feedback received*
25 *during public meetings that consolidation of the accessibility requirements would*
26 *create efficiency in referencing requirements.]*

27 45.5.2.98 Voter-Verifiable Paper Record Requirements (V-VPAT)

28 45.5.2.98.1 V-VPAT shall refer to a Voter-verified paper record as
29 defined in Ssection1-1-104(50.6)(a), C.R.S.

1 45.5.2.98.2 Existing systems that are retrofitted to comply with this
2 law shall be examined for certification by the Secretary of
3 State. Any retrofitted voting system shall comply with the
4 process and application for certification as identified by
5 this R#ule 45.

6 45.5.2.98.3 The V-VPAT shall consist of the following minimum
7 components:

8 (a) The voting device shall contain a paper audit trail
9 writer or printer that shall be attached, built into, or
10 used in conjunction with the DRE. The printer shall
11 duplicate a voter's selections from the DRE onto a
12 paper record;

13 (b) The unit or device shall have a paper record display
14 unit or area that shall allow a voter to view his or her
15 paper record;

16 (c) The V-VPAT unit shall contain a paper record storage
17 unit that shall store cast and spoiled paper record
18 copies securely; and

19 (d) These devices may be integrated as appropriate to
20 their operation.

21 45.5.2.98.4 V-VPAT devices shall allow voters to verify his or her
22 selections on a paper record prior to casting ballots. The
23 voter shall either accept or reject the choices represented
24 on the paper record. Both the electronic record and the
25 paper record shall be stored and retained ~~upon the~~
26 ~~completion of casting a ballot~~ WHEN THE BALLOT IS CAST.

27 45.5.2.98.5 The V-VPAT printer connection may be any standard,
28 publicly documented printer port (or the equivalent) using
29 a standard communication protocol.

30 45.5.2.98.6 The printer shall not be permitted to communicate with
31 any ~~other~~ device OTHER than the voting device to which it is
32 connected.

- 1 45.5.2.98.7 The printer shall only be able to function as a printer, and
2 not perform any other non-printer related services.
- 3 45.5.2.98.8 Every electronic voting record shall have a corresponding
4 paper record.
- 5 45.5.2.98.9 The paper record shall be considered an official record of
6 the election available for recounts, and shall be sturdy,
7 clean, and of sufficient durability to be used for this
8 purpose.
- 9 45.5.2.98.10 The V-VPAT device shall be designed to allow every voter
10 to review, and accept or reject his/her paper record in as
11 private and independent manner as possible for both
12 disabled and non-disabled voters.
- 13 45.5.2.98.11 The V-VPAT system shall be designed in conjunction with
14 sState Law to ensure the secrecy of votes so that it is not
15 possible to determine which voter cast which paper
16 record.
- 17 45.5.2.98.12 The V-VPAT printer shall print at a font size no less than
18 ten (10) points for ease of readability. Any protective
19 covering intended to be transparent shall be in such
20 condition that it can be made transparent by ordinary
21 cleaning of its exposed surface.
- 22 45.5.2.98.13 The V-VPAT system shall be designed to allow each voter
23 to verify his or her vote on a paper record in the same
24 language they voted in on the DRE.
- 25 45.5.2.98.14 The V-VPAT system shall be designed to prevent
26 tampering with unique keys and/or seals for the
27 compartment that stores the paper record, as well as meet
28 the security requirements of this rule. Additional security
29 measures may be in place on the printer to prevent
30 tampering with the device.
- 31 45.5.2.98.15 The V-VPAT system shall be capable of printing and storing
32 paper record copies for at least ~~seventy-five (75)~~ ballots

1 cast without requiring the paper supply source, ink or
2 toner supply, or any other similar consumable supply to be
3 changed, assuming a fully printed double sided ~~eighteen~~
4 ~~{18}~~ inch ballot with a minimum of 20 contests.

5 45.5.2.98.16 The V-VPAT unit shall provide a “low supply” warning to
6 the election judge to add paper, ink, toner, ribbon or other
7 like supplies. In the event that an election judge is
8 required to change supplies during the process of voting,
9 the voter shall be allowed to reprint and review the paper
10 audit trail without having to re-mark his or her ballot, and
11 the device shall prevent the election judge from seeing any
12 voters’ ballots.

13 45.5.2.98.17 All voting systems submitted for certification ~~after March~~
14 ~~31, 2008,~~ shall stop the V-VPAT printer of all forward
15 operations of the DRE if the printer is not working due to
16 paper jams, out of OTHER ~~supply of~~ consumables, or ANY
17 other issue which may cause the correct readable printing
18 of information on the V-VPAT record as designed.

19 45.5.2.98.18 The voting system provider shall provide procedures and
20 documentation for the use of the V-VPAT device.

21 45.5.2.98.19 The printed information on the printed ballot or
22 verification portion of the V-VPAT device shall contain at
23 least the following items:

- 24 (a) Name or header information of race, question or
25 issue;
- 26 (b) Voter’s selections for the race information;
- 27 (c) Write-in candidate’s names if selected;
- 28 (d) Undervote or overvote information – this is in
29 addition to the information on the review screen of
30 the DRE;
- 31 (e) Ability to optionally produce a unique serial number
32 (randomized to protect privacy); and

1 (f) Identification that the ballot was cancelled or cast.

2 45.5.2.98.20 The V-VPAT shall allow a voter to spoil his or her paper
3 record no more than two ~~(2)~~ times. Upon spoiling, the
4 voter shall be able to modify and verify selections on the
5 DRE without having to reselect all of his or her choices.

6 45.5.2.98.21 Before the voter causes a third and final record to be
7 printed, the voter shall be presented with a warning notice
8 that the selections made on screen shall be final and the
9 voter shall see and verify a printout of his or her vote, but
10 shall not be given additional opportunities to change their
11 vote.

12 45.5.2.98.22 ~~WHEN ALL V-VPAT COMPONENTS ARE CAPABLE OF~~
13 ~~INTEGRATING INTO VOTING SYSTEMS THE NEW CONFIGURATION OF~~
14 ~~THE SYSTEM MUST COMPLY WITH EXISTING STATE TESTING AND~~
15 ~~AUDITING REQUIREMENTS.~~

16 45.5.2.98.23 The V-VPAT component should print a barcode with each
17 record that contains the human readable contents of the
18 paper record and digital signature information. The voting
19 system provider shall include documentation of the
20 barcode type, protocol, and/or description of barcode and
21 the method of reading the barcode as applicable to the
22 voting system.

23 45.5.2.98.24 The V-VPAT component shall be designed such that a voter
24 shall not be able to leave the voting area with the paper
25 record.

26 45.5.2.98.25 If used for provisional ballots, the V-VPAT system shall be
27 able to mark paper records as a provisional ballot through
28 the use of human readable text and optionally printing
29 barcode and/or serial number information which shall
30 provide for mapping the record back to ~~both~~ the electronic
31 record and the provisional voter for processing after
32 verification in accordance with Article 8.5 of Title 1 C.R.S.

1 45.5.2.98.26 The VOTING SYSTEM PROVIDER SHALL PROVIDE PROCEDURES TO THE
2 Secretary of State WITH THE APPLICATION FOR CERTIFICATION
3 WHICH DESCRIBE ~~shall keep on file procedures submitted by~~
4 ~~the voting system provider for~~ how to investigate and
5 resolve malfunctions including, but not limited to,
6 misreporting votes, unreadable paper records, paper jams,
7 low-ink, misfeeds, preventing the V-VPAT from being a
8 single point of failure, recovering votes in the case of
9 malfunction and power failures.

45.6 Testing

45.6.1 Voting System Provider Demonstration

10 45.6.1.1 The voting system provider shall demonstrate the exact proposed
11 voting system to the Secretary of State ~~or his or her designee~~ prior to
12 any functional testing. ~~It should be expected that a minimum of 6~~
13 ~~hours would be required of the voting system provider to demonstrate~~
14 ~~and assist with programming of the software as necessary.~~

15 45.6.1.2 The demonstration period does not have a pre-determined agenda for
16 the voting system provider to follow; however, presentations should be
17 prepared to address and demonstrate, within the specific system, the
18 following items as they pertain to each area and use within the voting
19 system:

- 20 (a) System overview;
- 21 (b) Verification of complete system matching EAC certification;
- 22 (c) Ballot definition creation;
- 23 (d) Printing ballots on demand;
- 24 (e) Hardware diagnostics testing;
- 25 (f) Programming election media devices for various count methods:
 - 26 (i) Mail-in Ballots;
 - 27 (ii) Early Voting;

- 1 (iii) Precinct/Poll Place;
- 2 (iv) Provisional; and
- 3 (v) Vote Center.
- 4 (g) Sealing and securing system devices;
- 5 (h) Logic and accuracy testing;
- 6 (i) Processing ballots;
- 7 (j) Accessible use;
- 8 (k) Accumulating results;
- 9 (l) Post-election audit;
- 10 (m) Canvass process handling;
- 11 (n) Audit steps and procedures throughout all processes;
- 12 (o) Certification of results; and
- 13 (p) Troubleshooting.

14 45.6.1.3 The voting system provider shall have access to the demonstration
15 room for one DAY ~~hour~~ prior to the start of the demonstration to
16 provide time for setup of the voting system.

17 45.6.1.4 A maximum of ONE ~~3-business days~~ IS NORMALLY ~~—24 hours total shall be~~
18 ~~allowed for the demonstration.~~ —IF THE VOTING SYSTEM PROVIDER REQUESTS
19 MORE TIME FOR THE DEMONSTRATION OR, IF THE SECRETARY OF STATE FINDS THAT THE
20 COMPLEXITY OF THE SYSTEM IS SUCH THAT MORE TIME IS NEEDED FOR A
21 DEMONSTRATION, MORE TIME MAY BE GRANTED.

22 45.6.1.5 The demonstration shall be open to representatives of the press and
23 the public to the extent allowable. The Secretary of State may limit the
24 number of representatives from each group to accommodate space
25 limitations and other considerations.

26 45.6.1.6 The Secretary of State shall post notice of the fact that the
27 demonstration will take place in the designated ~~public place~~ LEGAL

1 INSTRUMENT for posting SUCH notices for at least seven ~~(7)~~ days before
2 PRIOR TO the demonstration. The notice shall indicate the general time
3 frame during which the demonstration may take place and the manner
4 in which members of the public may obtain specific information about
5 the time and place of the test.

6 45.6.1.7 The voting system provider shall provide the same class of workstation
7 and/or server for testing the voting system as the normal production
8 environment for the State of Colorado.

45.6.2 Functional Testing

9 45.6.2.1 Voting system provider requirements for testing

10 45.6.2.1.1 BASED UPON THE REVIEW OF VSTL OR OTHER STATE REPORTS AND TEST
11 RECORDS, THE SECRETARY OF STATE WILL PREPARE A TEST PLAN. THE
12 TEST PLAN SHALL BE DESIGNED TO TEST FOR ANY REQUIREMENTS
13 SPECIFIC TO COLORADO LAW WHICH WERE NOT ADDRESSED IN PRIOR
14 TESTING AND FOR ANY FEDERAL OR COLORADO REQUIREMENTS WHICH
15 WERE NOT ADDRESSED TO THE SATISFACTION OF THE SECRETARY OF
16 STATE IN THE REPORTS AND RECORDS FROM PRIOR TESTING.

17 45.6.2.1.2 THE TEST PLAN SHALL INCLUDE THE ELECTION DEFINITIONS TO BE USED
18 IN TESTING AND SPECIFICATIONS FOR TEST BALLOTS. TEST BALLOTS AND
19 ELECTION DEFINITIONS SHALL GENERALLY FOLLOW ALL REQUIREMENTS
20 FOR ELECTION DEFINITIONS, BALLOT LAYOUT AND PRINTING TO VERIFY
21 THE SYSTEM'S ABILITY TO MEET THOSE REQUIREMENTS. SOME ELECTION
22 DEFINITIONS AND BALLOTS MAY DEPART FROM THE REQUIREMENTS IN
23 ORDER TO TEST SPECIFIC FUNCTIONS.

24 45.6.2.1.3 FOR EACH SYSTEM TESTED, A REQUIREMENTS MATRIX SHALL BE
25 PREPARED TO IDENTIFY THOSE REQUIREMENTS SATISFIED BY THE REVIEW
26 OF VSTL OR OTHER STATE REPORTS AND TEST DATA AND HOW THOSE
27 REQUIREMENTS NOT SATISFIED ARE TO BE TESTED OR OTHERWISE
28 SATISFIED. IF DURING TEST PLANNING OR TESTING ONE OF THE
29 REQUIREMENTS IN THE VOTING SYSTEMS STANDARDS OR IN THIS RULE
30 ARE DETERMINED TO BE NOT APPLICABLE TO THE SYSTEM UNDER TEST,
31 THE REASON FOR THE DETERMINATION WILL BE DOCUMENTED.

- 1 45.6.2.1.44 The voting system provider shall submit for testing the
2 specific system configuration that ~~shall~~ will be offered to
3 jurisdictions including the components with which the
4 voting system provider recommends ~~that~~ the system be
5 used.
- 6 45.6.2.1.52 The voting system provider is not required to HAVE A
7 REPRESENTATIVE present DURING the functional testing, but
8 shall provide a point of contact for TECHNICAL support.
9 AFTER THE DELIVERY, UNPACKING AND INITIAL INSPECTION OF THE
10 EQUIPMENT FOR SHIPPING DAMAGE AND MISSING COMPONENTS, A
11 VENDOR REPRESENTATIVE SHALL ONLY BE ALLOWED TO OPERATE OR
12 TOUCH THE EQUIPMENT WHEN APPROVED BY THE SECRETARY OF STATE.
13 ALL SUCH ACTIVITY BY A VENDOR REPRESENTATIVE SHALL BE
14 DOCUMENTED ON VIDEO AND IN WRITING.
- 15 45.6.2.1.63 The proprietary software shall be installed on the
16 workstation/server and all applicable voting system
17 components by the ~~testing board~~ SECRETARY OF STATE USING
18 THE ~~following the verification of the~~ trusted build, and
19 ~~using~~ the INSTALLATION procedures provided by the voting
20 system provider. After installation, HASH VALUES FOR the
21 software and firmware shall be COMPARED TO ANY PUBLISHED
22 HASH VALUES OF THE TRUSTED BUILD. ANY MISMATCHES IN HASH
23 VALUES WILL BE INVESTIGATED AND RESOLVED BEFORE PROCEEDING
24 WITH TESTING. ~~verified to the trusted build hash values.~~
- 25 45.6.2.1.7 ALL EQUIPMENT SHALL BE HARDENED USING THE VOTING SYSTEM
26 PROVIDER'S PROCEDURES AND SPECIFICATIONS.
- 27 45.6.2.1.84 TESTING ~~The test~~ shall be performed with TEST ELECTION
28 DEFINITIONS AND test ballots ~~and~~ AS REQUIRED IN THE TEST PLAN.
29 ~~an election setup file, as determined by the Secretary of~~
30 ~~State.~~
- 31 45.6.2.1.9 THE RESULTS OF ALL TESTING SHALL BE RECORDED IN THE
32 REQUIREMENTS MATRIX. THE REQUIREMENTS MATRIX SHALL BE THE
33 PRIMARY RECORD DESCRIBING WHICH REQUIREMENTS WERE MET AND
34 SPECIFYING WHICH WERE NOT. IT SHALL BE SUPPLEMENTED AS
35 NECESSARY TO SUPPORT THE FINDINGS WITH TEST TEAM NOTES AND

1 SYSTEM REPORTS. SUPPLEMENTAL INFORMATION MAY INCLUDE
2 PHOTOGRAPHS AND AUDIO OR VIDEO RECORDINGS.

3 45.6.2.1.105 Functional testing shall be completed according to the
4 PHASES ~~schedule~~ identified in ~~section~~ RULE 45.3.3.

5 45.6.2.2 Secretary of State requirements for testing

6 45.6.2.2.1 The Secretary of State ~~or the designee~~ shall conduct
7 functional testing on the voting system based on this R~~ule~~
8 45 and additional testing procedures as determined by the
9 Secretary of State.

10 45.6.2.2.2 The voting system shall receive a pass, ~~fail~~ or not
11 applicable for each REQUIREMENT ~~test conducted~~ with
12 appropriate ~~licable~~ notation ~~on~~ IN the REQUIREMENTS MATRIX
13 ~~test log~~.

14 45.6.2.2.3 RECORDS ~~A test log~~ of the testing procedures shall be
15 maintained and recorded on file with the Secretary of
16 State. THE RECORDS ~~This test log~~ shall identify the system
17 and all components by voting system provider name,
18 make, model, serial number, software version, firmware
19 version, date tested, test number, TEST PLAN, REQUIREMENTS
20 MATRIX, ~~test description~~, TESTING TEAM NOTES AND OTHER
21 SUPPLEMENTAL INFORMATION, ~~of test, applicable test scripts,~~
22 and results of test. THE ~~All~~ test environment conditions
23 shall be DESCRIBED ~~noted~~.

24 ~~45.6.2.2.4 All operating steps, the identity and quantity of simulated~~
25 ~~ballots, annotations of output reports, any applicable error~~
26 ~~messages and observations of performance shall be~~
27 ~~recorded.~~

28 45.6.2.2.45 In the event that a deviation FROM THE TEST PLAN IS REQUIRED, IT
29 SHALL BE DOCUMENTED IN A TEST TEAM NOTE. THE NOTE SHALL
30 PROVIDE A DESCRIPTION OF THE DEVIATION, THE REASON FOR THE
31 DEVIATION AND EFFECT OF THE DEVIATION ON TESTING AND
32 DETERMINING COMPLIANCE WITH REQUIREMENTS. ~~to requirements~~
33 ~~pertaining to the test environment, voting system~~

1 ~~arrangement and method of operation, the specified test~~
2 ~~procedure, or the provision of test instrumentation and~~
3 ~~facilities is required, this deviation shall be recorded in the~~
4 ~~test log together with a discussion of the reason for the~~
5 ~~deviation and a statement of the effect of the deviation on~~
6 ~~the validity of the test procedure.~~

7 45.6.2.3 General Testing Procedures and Instructions

8 45.6.2.3.1 Certification tests shall be used to determine compliance
9 with applicable performance standards for the system and
10 its components. The general procedure for these tests
11 shall:

12 (a) Verify, by means of THE applicant's standard
13 operating procedure, that the device is in a normal
14 condition and status;

15 (b) Establish the standard test environment or the
16 special environment required to perform the test;

17 (c) Invoke all operating modes or conditions necessary
18 to initiate or to establish the performance
19 characteristic to be tested;

20 (d) Measure and record the value or the range of values
21 of the performance characteristic to be tested; and

22 (e) Verify all required measurements have been
23 obtained, and that the device is still in a normal
24 condition and status.

25 45.6.2.3.2 All tests shall be GENERALLY conducted ~~as described in this~~
26 ~~section 45.6.2.3~~ in regular election mode. TESTS OF TEST
27 MODE AND DIAGNOSTIC FUNCTIONS MAY BE CONDUCTED IN THE
28 APPROPRIATE TEST MODE. ~~At no point shall testing be~~
29 ~~conducted in any form of test mode.~~

30 ~~45.6.2.3.3 Each voting system shall be tested and examined by~~
31 ~~conducting at least three mock elections which shall~~

1 include voting scenarios that exist within a primary, a
2 coordinated election, and a recall election.

3 ~~45.6.2.3.4 Each component of the voting system shall contain~~
4 ~~provisions for verifying it is functioning correctly and,~~
5 ~~whether operation of the component is dependent upon~~
6 ~~instructions specific to that election. Test scripts shall be~~
7 ~~substantive and qualitative in form with expected results~~
8 ~~listed for each test.~~

9 ~~45.6.2.3.5 Election scenarios shall feature at least 10 districts (or~~
10 ~~district types), comprised of at least 20 precincts that will~~
11 ~~result in a minimum of 5 unique ballot styles or~~
12 ~~combinations as indicated in the instructions to providers.~~

13 ~~45.6.2.3.63 The voting system provider is required to produce ballots~~
14 ~~AND ASSEMBLE MARKED TEST DECKS AND SPARE BALLOTS AS SPECIFIED~~
15 ~~IN THE TEST PLAN. in quantities identified below for each of~~
16 ~~the elections. Enough ballots need to be created to~~
17 ~~conduct the testing of the voting system as defined in this~~
18 ~~rule. One complete set of ballots will be tested in each of~~
19 ~~the applicable counter types (or groups) indicated below:~~

20 ~~(a) Poll Place or Vote Center ballots are flat no score~~
21 ~~marks;~~

22 ~~(b) Early Voting ballots are flat no score marks;~~

23 ~~(c) Mail in ballots are scored and folded to fit in standard~~
24 ~~Colorado Mail in Ballot Envelopes; and~~

25 ~~(d) Provisional ballots are flat no score marks.~~

26 ~~45.6.2.3.7 All ballots provided shall be blank with no marks on them.~~
27 ~~The following combinations of ballots are required:~~

28 ~~(a) Four separate decks of ballots shall be provided~~
29 ~~consisting of 25 ballots for each precinct/precinct~~
30 ~~split generated for each election that are flat (1500~~
31 ~~minimum combined). At least one deck shall have~~
32 ~~the General Election data, and at least one shall have~~

1 the Primary election data as indicated in the
2 instructions for voting system providers;

3 ~~(b) Four separate decks of ballots shall be provided~~
4 ~~consisting of 25 ballots for each precinct/precinct~~
5 ~~split generated for each election that are folded~~
6 ~~(1500 minimum combined). At least one deck shall~~
7 ~~have the General Election data, and at least one shall~~
8 ~~have the Primary election data as indicated in the~~
9 ~~instructions for voting system providers;~~

10 ~~(c) Four separate decks of ballots consisting of 300~~
11 ~~ballots of any single precinct from each election.~~
12 ~~Two of these decks shall be printed in all alternative~~
13 ~~languages as required for the State of Colorado~~
14 ~~pursuant to section 45.5.2.3.5;~~

15 ~~(d) One separate deck of ballots consisting of 200 ballots~~
16 ~~of any single precinct from the Coordinated election~~
17 ~~shall be provided that contains a two page ballot~~
18 ~~(races on four faces);~~

19 ~~(e) One separate deck of ballots consisting of 10 ballots~~
20 ~~for each precinct generated for the Recall election~~
21 ~~that are flat as indicated in the instructions for voting~~
22 ~~system providers; and~~

23 ~~(f) Any voting system provider that uses serial numbers~~
24 ~~printed on ballots for processing shall produce~~
25 ~~ballots of each requirement above printed both with~~
26 ~~and without serial numbers.~~

27 45.6.2.3.48 The voting system provider shall provide A MINIMUM OF TEN
28 ~~10~~ ballot marking pens/pencils/markers as defined by their
29 system for marking ballots by the Secretary of State ~~or the~~
30 ~~designee.~~

31 45.6.2.3.59 FOR MARK-SENSE OR OPTICAL SCAN DEVICES, THE SECRETARY OF STATE
32 WILL PREPARE ONE OR MORE TEST BALLOTS WITH ~~The testing board~~
33 ~~shall mark a minimum of 300 ballots with~~ marking devices

1 of various color, weight and consistency to determine THE
2 RANGE OF MARKS THAT CAN BE READ AND THE RANGE AND
3 CONSISTENCY OF READING MARGINAL MARKS. ~~accurate counting~~
4 ~~with a variety of marking devices.~~

5 45.6.2.3.610 Ballots shall be cast and counted in all applicable counter
6 types (or counter groups) as necessary based on the parts
7 included in the voting system. These are, at a minimum,;
8 Poll Place (or Vote Center), Mail-in, Provisional, and Early
9 Voting. ~~Ballots may be run through components 10 or~~
10 ~~more times depending on components and counter group~~
11 ~~being tested to achieve a minimum number of ballots cast~~
12 ~~as follows for each group:~~

13 ~~(a) Polling Place / OS _____ = _____ 1,500;~~

14 ~~(b) Polling Place / DRE _____ = _____ 500;~~

15 ~~(c) Vote Center / OS _____ = _____ 5,000;~~

16 ~~(d) Vote Center / DRE _____ = _____ 500~~

17 ~~(e) Early Voting / OS _____ = _____ 5,000;~~

18 ~~(f) Early Voting / DRE _____ = _____ 250;~~

19 ~~(g) Mail-in _____ = _____ 10,000; and~~

20 ~~(h) Provisional _____ = _____ 5,000.~~

21 45.6.2.3.711 Ballot design shall BE SUFFICIENT TO VERIFY THE ~~cover the~~ scope
22 of allowable BALLOT designs for the given system UNDER
23 COLORADO ELECTION LAW. ~~For example, if a system is capable~~
24 ~~of producing 11" and 18" ballots, then both ballot styles~~
25 ~~shall be tested in each of the elections above. If more~~
26 ~~sizes are available, they shall also be tested. Ballots shall~~
27 ~~be designed and presented with a maximum of four (4)~~
28 ~~columns and a minimum of one (1) column.~~

29 45.6.2.3.812 Ballots shall be printed in applicable languages as required
30 by sState and/or federal law.

1 45.6.2.3.913 Ballots shall include candidates to represent the maximum
2 number of political parties in the State of Colorado, and
3 shall accommodate all qualified political parties and
4 political organizations.

5 45.6.2.3.1014 THE REQUIREMENTS MATRIX SHALL INCLUDE THE FOLLOWING
6 REQUIREMENTS FOR ELECTION DEFINITIONS AND BALLOTS ~~Ballots~~
7 ~~shall include the following minimum race situations to~~
8 simulate and test “real world” situations in the State of
9 Colorado. ELECTION DEFINITIONS AND BALLOTS SHALL INCLUDE THE
10 FOLLOWING MINIMUM ~~race~~ CONTEST ~~situations~~ CRITERIA.

- 11 (a) Parties for different races;
- 12 (b) Selection of a pair of candidates. ~~(i.e. president and~~
13 ~~vice president);~~
- 14 (c) In a Primary Election, allow voters to vote for the
15 candidates of the party FOR WHICH THEY ARE ELIGIBLE ~~of~~
16 ~~his or her choice~~ and for any and all non-partisan
17 candidates and measures, while preventing them
18 ~~voter from voting ON CANDIDATES for a candidate of~~
19 another party;
- 20 (d) In a general election, allow a voter to vote for any
21 candidate for any office, in the number of positions
22 allowed for the office, and to VOTE FOR ~~select any~~
23 measure on the ballot that the voter is allowed to
24 vote in, regardless of party;
- 25 (e) Allow for programming to accommodate Colorado
26 recall questions as prescribed in Article 12 of Title 1,
27 C.R.S.;
- 28 (f) A minimum of 20 pairs of “yes” and “no” positions
29 for voting on ballot issues; and
- 30 (g) Ability to contain a ballot question or issue of at least
31 200 words.

1 45.6.2.3.11~~5~~ Additional tests and procedures may be requested at the
2 discretion of the Secretary of State.

3 45.6.2.3.12 A COUNTY CLERK AND RECORDER DESIGNATED REPRESENTATIVE MAY
4 OBSERVE THE FUNCTIONAL TESTING OF A VOTING SYSTEM. THE
5 REPRESENTATIVE MAY ASSIST AT THE REQUEST OF THE SECRETARY OF
6 STATE. ALL SUCH ACTIVITY BY A VENDOR REPRESENTATIVE SHALL BE
7 DOCUMENTED ON VIDEO AND IN WRITING.

8 45.6.2.3.13 THE PUBLIC SHALL BE ALLOWED TO VIEW ALL FUNCTIONAL TESTING
9 CONDUCTED BY THE SECRETARY OF STATE. HOWEVER, LEGAL
10 LIMITATIONS MAY REQUIRE THAT CERTAIN TESTING, INCLUDING BUT NOT
11 LIMITED TO PROPRIETARY INFORMATION AND SYSTEM SECURITY, BE
12 DONE OUTSIDE THE VIEW OF THE PUBLIC. IF THE FUNCTIONAL TESTING IS
13 OUTSOURCED TO A TESTING LAB OR CONTRACTOR, PUBLIC VIEWING
14 SHALL BE SUBJECT TO LIMITATIONS SET FORTH BY THE TESTING LAB OR
15 CONTRACTOR.

16 45.6.3 Certification

17 45.6.3.1 The Secretary of State shall certify voting systems that substantially
18 comply with the requirements in this Rule 45, Colorado Election Code,
19 and any additional testing that is deemed necessary by the Secretary of
20 State.

21 45.6.3.2 If any malfunction or data error is detected, its occurrence and the
22 duration of operating time preceding it shall be recorded for inclusion
23 in the analysis and the test shall be interrupted. If corrective action is
24 taken to restore the devices to a fully operational condition within EIGHT
25 ~~(8)~~ hours, then the test may be resumed at the point of suspension.

26 45.7 Temporary Use

27 45.7.1 If a voting system provider has a system that has been TESTED ~~approved~~ by an
28 VSTL, but has not yet been approved for certification through the Secretary of
29 State, the voting system provider or the designated election official may apply to
30 the Secretary of State for temporary approval of the system to be used for up to
31 one year.

32 45.7.2 Upon approval of temporary use, a jurisdiction may use the voting system, or

1 enter into a contract to rent or lease the voting system for a specific election
2 upon receiving written notice from the Secretary of State's office. At no time
3 shall a jurisdiction enter into a contract to purchase a voting system that's HAS
4 been approved for temporary use.

5 45.7.3 The Secretary of State shall approve use of a temporarily approved voting system
6 for each election that a jurisdiction ~~would like~~ REQUESTS PERMISSION to conduct
7 with the voting system.

8 45.7.4 Temporary use does not supersede the certification requirements and/or
9 process, and may be revoked at any time at the discretion of the Secretary of
10 State.

11 45.8 Periodic Review

12 45.8.1 The Secretary of State shall periodically review the voting systems in use in
13 Colorado to determine if the system(s):

14 (a) Are defective, obsolete, or unacceptable for use based on the requirements
15 of this Rule 45; and

16 (b) Have been modified from certified and trusted build versions of hardware or
17 software;

18 45.8.2 The Secretary of State shall review a minimum of two randomly selected
19 jurisdictions and voting systems per calendar year at the choosing of the
20 Secretary of State.

21 45.8.3 The Secretary of State shall conduct an annual visual inspection of all software
22 incident records maintained by each voting system provider certified for use in
23 the State of Colorado.

24 45.8.4 After such review, certification or temporary approval for use may be
25 withdrawn. Three ~~(3)~~ months notice shall be given prior to withdrawing
26 certification of any voting system unless the Secretary of State shows good cause
27 for a shorter notice period.

28 45.8.5 All forms, notes and documentation from a periodic review shall be kept on file
29 with the Secretary of State.

30 45.9 Decertification

1 45.9.1 If, after any time the Secretary of State has certified a voting system, it is
2 determined that the voting system fails to substantially meet the standards set
3 forth in this Rule 45, the Secretary of State shall notify any jurisdictions in the
4 State of Colorado and the voting system provider of that particular voting system
5 that the certification of that system for future use and sale in Colorado is to be
6 withdrawn.

7 45.9.2 Certification of a voting system may be revoked and/or suspended at the
8 discretion of the Secretary of State based on information that may be provided
9 after the completion of the initial certification. This information may come from
10 any of the following sources:

11 (a) The Election Assistance Commission (EAC);

12 (b) Voting Systems Testing Laboratories (VSTL);

13 (c) The Federal Election Commission (FEC);

14 (d) The National Software Reference Library (NSRL);

15 (e) National Association of State Election Directors (NASSED);

16 (f) The National Association of Secretaries of State (NASS);

17 (g) Information from any state elections department or Secretary of State;
18 and/or

19 (h) Information from Colorado County Clerk and Recorders or their association.

20 45.9.3 Any use of a decertified or uncertified voting system for any jurisdiction in the
21 State of Colorado shall result in possible loss of future and other existing
22 certifications within the sState, at the discretion of the Secretary of State.

23 45.9.4 Pursuant to section 1-5-621, C.R.S., the Secretary of State shall hold a public
24 hearing to consider the decision to decertify a voting system.

25 45.10 Modifications and Re-examination

26 45.10.1 Any ~~filed~~ modification, change, or other alteration to a CERTIFIED voting
27 system shall require CERTIFICATION OR REVIEW UNDER SECTION 1-5-618 C.R.S. UNLESS THE
28 VOTING SYSTEM PROVIDER DECIDES TO PRESENT THE MODIFIED SYSTEM FOR CERTIFICATION UNDER
29 THIS RULE 45 approval or certification before it may be used in any election within

1 ~~the State of Colorado. 45.10.2A voting system provider may apply to the~~
2 ~~Secretary of State for the review of a modification of an existing certified system~~
3 ~~at any time during the year. Secretary of State shall conduct sufficient testing to~~
4 ~~ensure that all incremental changes to any voting system being submitted for~~
5 ~~certification meet all security requirements set forth in this rule.~~

6 45.11 Acceptance Testing by Jurisdictions

7 45.11.1 Whenever an election jurisdiction acquires a new system or modification
8 of an existing system certified by the Secretary of State, the election jurisdiction
9 shall perform acceptance tests of the system before it may be used to cast or
10 count votes at any election. The voting system shall be operating correctly, pass
11 all tests as directed by the acquiring jurisdiction's project manager or contract
12 negotiator, and shall be identical to the voting system certified by the Secretary
13 of State.

14 45.11.2 The voting system provider shall provide all manuals and training
15 necessary for the proper operation of the system to the jurisdiction, or as
16 indicated by their contract.

17 45.11.3 The election jurisdiction shall perform a series of functional and
18 programming tests that shall test all functions of the voting system at their
19 discretion.

20 45.11.4 The jurisdiction shall coordinate acceptance testing with the Secretary of
21 State's ~~designated agent~~ and complete a Jurisdiction Acceptance Test form
22 provided by the Secretary of State.

23 45.12 Purchases and Contracts

24 45.12.1 Any voting system that has been certified under the procedures of this
25 Rule 45 are eligible for purchase, lease, or rent for use by jurisdictions within the
26 State of Colorado providing the contract contains the following items:

27 (a) The voting system is certified for use within the sState;

28 (b) Contract contains training and maintenance costs for JJurisdiction; and

29 (c) Contract identifies components contained in the certified voting system, and
30 appears complete with all accessories necessary for successfully conducting
31 an election within the laws and rules of the State of Colorado.

1 45.12.2 The SECRETARY OF STATE shall maintain on file a list of all components
2 used and purchased for use. The list shall include, at a minimum, the name of
3 the jurisdiction, the date of purchase, the serial number(s) of voting devices and
4 NAME OF THE voting systems that was purchased.