

COLORADO SECRETARY OF STATE

8 CCR 1505-1

ELECTION RULES

Revised Draft of Proposed Rules

December 31, 2009

Disclaimer: This draft supersedes the Preliminary Draft that was issued with the Notice of Proposed Rulemaking on November 30, 2009. This rulemaking hearing to be conducted on January 7, 2010 will use this Revised Draft.

This draft copy of the proposed rule amendments is made available to the public and 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 "Any 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 or underlined. Proposed deletions from current rules are shown in ~~stricken type~~. **Shading** indicates revisions from the previous draft. 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 **PRIOR TO**
3 **BEING CERTIFIED FOR USE IN THE STATE OF COLORADO:**

4 35.2.1 AUDIO BALLOTS SHALL MEET THE FOLLOWING STANDARDS:

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

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

9 ~~35.2.2 NO VOTING SYSTEM SHALL REQUIRE VOTER SPEECH FOR ITS OPERATION.~~

10 35.2.32 ALL TOUCHSCREEN TECHNOLOGY SHALL BE TESTED FOR USE OF FINGERS AS
11 WELL AS NON-HUMAN TOUCH THAT IS BOTH WET AND DRY.

12 35.2.43 ALL VOTING SYSTEMS SHALL ALSO INCLUDE ANY FORM OF SWITCHES, SIP AND
13 PUFF DEVICES, OR ADDITIONAL BLINK CONTROL DEVICES.

1 35.2.54 ADJUSTABILITY OF COLOR SETTINGS, SCREEN CONTRASTS AND/OR SCREEN
2 ANGLES/TILT MAY BE MADE BY EITHER THE POLL WORKER OR VOTER IF THE SYSTEM
3 USES A DISPLAY SCREEN. A MINIMUM OF TWO COLOR SETTINGS, TWO CONTRAST
4 SETTINGS AND TWO ANGLES SHALL BE AVAILABLE FOR ALL DISPLAY SCREENS.

5 35.2.65 DOCUMENTATION OF THE ACCESSIBILITY OF THE VOTING SYSTEM SHALL
6 INCLUDE THE FOLLOWING ITEMS AT A MINIMUM:

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

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

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

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

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

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

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

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

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

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

29 Rule 37 would be amended as follows:

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

1 37.1 Declaration of Intent.

2 37.1.1 The federal Help America Vote Act of 2002 (“HAVA”) established uniform
3 voting systems standards used in elections. The following rules seek to conform
4 Colorado requirements to federal HAVA requirements pertaining to voting
5 systems.

6 37.1.2 Voting systems (including optical scanning voting systems or direct recording
7 electronic systems) certified by the SECRETARY OF STATE ~~secretary of state~~ and
8 acquired, purchased or leased by counties pursuant to state law shall:

9 (a) permit the voter to verify (in a private and independent manner) the votes
10 selected by the voter on the ballot before the ballot is cast and counted;

11 (b) provide the voter with the opportunity (in a private and independent manner)
12 to change the ballot or correct any error before the ballot is cast and counted
13 (including the opportunity to correct the error through the issuance of a
14 replacement ballot if the voter was otherwise unable to change the ballot or
15 correct any error); and

16 (c) if the voter selects votes for more than one candidate for a single office:

17 (i) notify the voter that the voter has selected more than 1 candidate for a
18 single office on the ballot;

19 (ii) notify the voter before the ballot is cast and counted of the effect of
20 casting multiple votes for the office; and

21 (iii) provide the voter with the opportunity to correct the ballot before the
22 ballot is cast and counted.

23 (d) Ensure that any notification required under this paragraph preserves the
24 privacy of the vote and the confidentiality of the ballot.

25 37.1.3 Counties of the State of Colorado that use a paper ballot voting system or a
26 central count voting system (including mail-in ballots and mail ballots), may
27 meet the requirements of this rule by:

28 (a) establishing a voter education program specific to that voting system that
29 notifies each voter of the effect of casting multiple votes for an office; and

30 (b) providing the voter with instructions on how to correct the ballot before it is
31 cast and counted (including instructions on how to correct the error through

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

3 37.1.4 The voting systems described in the foregoing paragraphs shall produce a record
4 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 the
8 ballot or correct any error before the permanent paper record is produced.

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

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

16 37.1.5 The voting system shall:

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

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

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

26 37.1.6 The voting system shall provide alternative language accessibility pursuant to
27 the requirements of section 203 of the Voting Rights Act of 1965.

28 37.2 Prohibition of lease, purchase, or acquisition of voting systems pending action by the
29 Election Assistance Commission (EAC) and certification through the Secretary of State.-

30 37.2.1 No voting system may be leased, purchased, or acquired by any county or
31 political subdivision of this state until the EAC and the Secretary of State have

1 promulgated voting systems standards that address these concerns. This rule
2 shall not apply to voting systems that have been certified by the Secretary of
3 State and purchased by the political subdivisions pursuant to state law prior to
4 the effective date of this rule.

5 37.3 Adoption of April 30, 2002 Voting Systems Standards promulgated by the Federal
6 Election Commission for voting systems.

7 37.3.1 The Secretary of State hereby adopts the April 30, 2002 Voting Systems
8 Standards promulgated by the Federal Election Commission for voting systems.
9 Therefore, all voting systems, including, but not limited to, optical scan voting
10 systems, direct record electronic voting systems, and touch screens, purchased
11 by the political subdivisions of the State of Colorado are required to meet the
12 qualifications of the Voting Systems Standards promulgated by the Federal
13 Election Commission on April 30, 2002 ~~and be certified by an independent
14 testing authority certified by the National Association of Election Directors until
15 such time, and subsequently thereto, at each time, as the Election Assistance
16 Commission promulgates new Voting Systems Standards.~~

17 ~~37.3.2 Upon any revision or new release of Voting Systems Standards by the Election
18 Assistance Commission, the Secretary of State hereby automatically adopts
19 such standards as may be promulgated, and any vendor seeking state
20 certification shall follow such adopted voting systems standards and the
21 processes mandated by state law in order to be certified by the Secretary of
22 State.~~

23 37.3.23 Any voting system or equipment submitted to the Secretary of State for
24 certification shall HAVE BEEN TESTED FOR COMPLIANCE WITH THE 2002 VOTING
25 SYSTEMS STANDARD OR LATER. FOR CERTIFICATION IN COLORADO, THE 2002
26 VOTING SYSTEMS STANDARD SHALL TAKE PRECEDENT EXCEPT AS SUPERSEDED
27 WITHIN THESE RULES. ~~meet the federal voting system standards in effect at the
28 time the voting system or equipment is submitted to the Secretary of State. The
29 adoption of any new or amended voting system standards by the Election
30 Assistance Commission after a voting system or equipment is submitted to the
31 Secretary of State for certification shall not preclude certification or sale of the
32 voting system or equipment under the standards in effect at the time the system
33 or equipment was submitted for certification.~~

34 37.3.34 ~~On and after December 13, 2007 (the effective date of the 2005 Voluntary
35 Voting System Guidelines of the Election Assistance Commission), t The
36 governing body or designated election official of a political subdivision may
37 purchase any voting system that was previously certified BY THE SECRETARY OF~~

1 STATE under the 2002 Voting Systems Guidelines.

2 37.4 The Secretary of State requires all voting systems and all individual parts of voting
3 systems to pass certification criteria as outlined in the State of Colorado Voting Systems
4 Certification Program. The designated election official shall retain records of all
5 certification procedures pertaining to voting systems and parts of voting systems.

6 Rule 45 would be amended as follows:

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

8 45.1 Definitions The following definitions apply to their use in this rule only, unless
9 otherwise stated.

10 45.1.1 “Audio ballot” means a voter interface containing the list of all candidates, ballot
11 issues, and ballot questions upon which an eligible elector is entitled to vote ~~at~~ IN
12 an election. IT ~~and that~~ ALSO provides the voter with audio stimuli and allows the
13 voter to communicate voting intent to the voting system through vocalization or
14 physical actions.

15 45.1.2 “Audit log” means a system-generated record, in printed and/or electronic format,
16 providing a record of activities and events relevant to ~~initializing~~ ~~ation~~ of election
17 software and hardware, THE identification of files containing election parameters,
18 ~~initializing~~ ~~ation~~ of the tabulation process, ~~processing~~ of voted ballots; and
19 ~~terminating~~ ~~ion~~ of the tabulation process.

20 45.1.3 “Ballot image” ~~or “Ballot image log”~~ means a corresponding representation in
21 electronic form of the marks or vote positions of a cast ballot that are captured by
22 a direct recording electronic voting device.

23 45.1.4 “Ballot style” ~~—assignment”~~ means A SPECIFIC BALLOT LAYOUT OR CONTENT ~~the~~
24 ~~creation of unique, specific ballots~~ for an election. THE BALLOT STYLE IS THE
25 PRESENTATION OF THE UNIQUE COMBINATION OF CONTESTS AND CANDIDATES FOR
26 WHICH THE VOTER IS ELIGIBLE TO VOTE. IT INCLUDES THE ORDER OF CONTESTS AND
27 CANDIDATES, THE LIST OF BALLOT POSITIONS FOR EACH CONTEST, AND THE BINDING
28 OF CANDIDATE NAMES TO BALLOT POSITIONS WITHIN THE PRESENTATION.
29 MULTIPLE PRECINCTS MAY USE A SINGLE BALLOT STYLE. MULTIPLE STYLES MAY
30 APPEAR IN A SINGLE PRECINCT WHERE VOTERS ARE SPLIT BETWEEN TWO OR MORE
31 DISTRICTS OR OTHER CATEGORIES DEFINING VOTER ELIGIBILITY FOR PARTICULAR
32 CONTESTS AND CANDIDATES. ~~—by the election management system based on~~
33 ~~criteria keyed into the system for districts, precincts, and races to create~~
34 ~~combinations of possibilities of races for individual voters based on their~~

- 1 ~~individual precincts.~~
- 2 45.1.5 “Closed network” means a network structure ~~where~~ IN WHICH devices are not
3 connected to the internet or other office automation networks, except as allowable
4 under ~~section~~ RULE 45.5.2.7.
- 5 45.1.6 “Communications devices” means devices that may be incorporated in, or
6 attached to, components of the voting system for the purpose of transmitting
7 tabulation data BETWEEN COMPONENTS OR to another data processing system,
8 printing system; or display device.
- 9 45.1.7 “DRE” means a direct recording electronic voting device. A DRE is a voting
10 device that records votes by means of a ballot display provided with mechanical
11 or electro-optical components or an audio ballot that can be activated by the
12 voter; ~~that~~ processes data by means of a computer program; and ~~that~~ records
13 voting data and ballot images in memory components or other media. The device
14 may produce a tabulation of the voting data stored in a removable memory
15 component and as printed copy. The device may also provide a means for
16 transmitting individual ballots or vote totals to a central location for consolidating
17 and reporting results from remote sites to the central location.
- 18 45.1.8 “EAC” means the United States Election Assistance Commission.
- 19 45.1.9 “ELECTION MANAGEMENT SYSTEM” INCLUDES, BUT IS NOT LIMITED TO, THE
20 BALLOT DEFINITION SUBSYSTEM AND THE ELECTION REPORTING SUBSYSTEM. THE
21 ELECTION MANAGEMENT SYSTEM MAY PROVIDE UTILITIES FOR OTHER ELECTION
22 ADMINISTRATION TASKS, INCLUDING MAINTAINING EQUIPMENT INVENTORIES,
23 ESTIMATING BALLOT PRINTING NEEDS AND MAINTAINING INFORMATION ON POLLING
24 PLACES.
- 25 45.1.109 “Election media” means any device including a cartridge, card, memory
26 device; or hard drive used in a voting system for the purposes of programming
27 ballot image data (ballot or card styles), recording voting results from electronic
28 vote tabulating equipment; or any other data storage ~~needs~~ required by the voting
29 system for a particular election function. The election management system
30 typically ~~delivers~~ (downloads) ballot style information to the election media and
31 ~~receives~~ (uploads) results and ballot images FROM THE ELECTION MEDIA.
- 32 45.1.110 “Equipment” or “device” means a complete, inclusive term to represent all
33 items submitted for certification by the voting system provider. This can include,
34 but is not limited to, any voting device, accessory to voting device, DRE, touch
35 screen voting device, card programming device, software; and hardware.

1 “EQUIPMENT” MAY ALSO MEAN ~~as well as~~ a complete end to end voting system
2 solution.

3 ~~45.1.11 “FEC” means the Federal Election Commission.~~

4 45.1.12 “Remote site” means any physical location identified by a ~~D~~Designated ~~E~~Election
5 ~~O~~Official as a location where the jurisdiction shall ~~be conducting~~ the casting of
6 ballots for a given election. A remote site includes, **BUT IS NOT LIMITED TO,**
7 locations such as precinct polling places, vote centers, early voting SITES AND;
8 mail-in ballot counting, ~~ete.~~

9 45.1.13 “Removable Storage Media” means STORAGE DEVICES THAT CAN BE REMOVED
10 FROM THE SYSTEM AND TRANSPORTED TO ANOTHER LOCATION FOR READOUT AND
11 REPORT GENERATION. EXAMPLES OF REMOVABLE STORAGE MEDIA INCLUDE, BUT
12 ARE NOT LIMITED TO, PROGRAMMABLE READ-ONLY MEMORY (PROM), RANDOM
13 ACCESS MEMORY (RAM) WITH BATTERY BACKUP, THUMB DRIVES, MAGNETIC
14 MEDIA AND OPTICAL MEDIA. ~~any device that is intended to be removed that has the~~
15 ~~ability of storing or processing data for a voting system.~~

16 45.1.14 “SECRETARY OF STATE” WITHIN THE CONTEXT OF THIS RULE, MEANS THE
17 COLORADO SECRETARY OF STATE AND HIS OR HER DESIGNATED AGENTS
18 INCLUDING EMPLOYEES, CONTRACTORS AND VOLUNTEERS.

19 45.1.154 “Security” means the ability of a voting system to protect election information
20 and election system resources with respect to confidentiality, integrity and
21 availability.

22 45.1.165 “Split Precinct” means a precinct that has a geographical divide between one or
23 more political jurisdictions which ~~may~~ RESULTS IN ~~cause~~ EACH JURISDICTION
24 WITHIN THE PRECINCT TO BE ASSIGNED DIFFERENT ~~a unique~~ ballot styles ~~to be~~
25 ~~created~~ for a specific election.

26 45.1.176 “Test Log” OR “TEST RECORDS” means THE documentation of certification
27 testing and processes ~~which is independently reproducible to recreate all test~~
28 ~~scenarios conducted by the testing board.~~ This log ~~may include~~ documentation
29 ~~such as:~~ MAY INCLUDE, BUT IS NOT LIMITED TO, CERTIFICATION TESTING REPORTS,
30 TEST PLANS, REQUIREMENTS MATRICES, photographs, written notes, video and/or
31 audio recordings. ~~ed notes.~~

32 45.1.187 “Trusted Build” means the write-once installation disk or disks for
33 software and firmware for which the Secretary of State or his/her agent has
34 established the chain of evidence to the building of a disk, which is then used to

1 establish and/or re-establish the chain of custody of any component of the voting
2 system which contains firmware or software. The trusted build is the origin of the
3 chain of evidence for any software and firmware component of the voting system.

4 45.1.198 ~~“VOTING SYSTEM TEST LABORATORY” OR “VSTL” OR means a “voting system~~
5 ~~testing laboratory”~~ MEANS A “FEDERALLY ACCREDITED LABORATORY”, AS
6 DEFINED IN SECTION 1-1-104 (16.5) C.R.S. WHICH IS ACCREDITED BY ~~that provides~~
7 ~~engineering, testing, or evaluation services for voting systems, and is qualified by~~
8 the EAC to conduct CERTIFICATION ~~qualification-testing on~~ FOR a voting systems.

9 45.2 Introduction

10 45.2.1 Definition of voting system for certification purposes

11 45.2.1.1 The definition of a voting system for the purposes of this rule shall be as
12 the term is defined in HAVA Ssection 301(b). For Colorado purposes,
13 no single component of a voting system, OR ~~such as a precinct tabulation~~
14 device, meets the definition of a voting system.

15 45.2.1.2 Sufficient components shall be assembled to create a configuration that
16 ~~shall~~ allows the system as a whole to meet the requirements as described
17 for a voting system in this rule.

18 45.2.2 Authority

19 45.2.2.1 Pursuant to Articles 5 and 7 of Title 1, C.R.S., the Secretary of State is
20 expressly authorized to adopt this rule.

21 45.2.3 Documents Incorporated by Reference

22 45.2.3.1 All documents incorporated by reference in this Rule 45 do not include
23 any later amendments or editions of ~~the~~ THOSE documents.

24 45.2.3.2 All documents incorporated by reference in this Rule 45 may be viewed
25 on the “Voting Systems” page of the “Elections Center” on the Secretary
26 of State’s website at www.sos.state.co.us, or by contacting the Secretary
27 of State Voting EQUIPMENT CERTIFICATION PROGRAM—~~Systems~~
28 ~~Specialist~~/1700 Broadway – Suite 270 /Denver, CO 80290.

29 45.3 Certification Process Overview and Timeline

30 45.3.1 The voting system shall be considered as a unit, and all components of such
31 system shall be tested at once, unless the circumstances necessitate ~~otherwise~~ (e.g.

1 ~~retrofitted V VPATs, etc.~~). Any change made to individual components of a
2 voting system shall require ~~re-certification of the entire voting system~~ BE
3 RECERTIFIED in accordance with this rule UNLESS THE CHANGE IS A MODIFICATION
4 THAT CAN BE APPROVED UNDER THE PROVISIONS OF SECTION 1-5-618 (1.5) C.R.S.

5 45.3.2 For a voting system to BE CERTIFIED, the voting system provider shall successfully
6 complete all phases of the certification process, ~~which shall TO~~ include:
7 submitting a complete application;~~;~~ A review of the documentation to evaluate ~~if~~
8 WHETHER the system meets the requirements of this rule;~~;~~ A PUBLIC demonstration
9 of the system;~~and,~~ functional testing of the voting system ~~which shall TO~~
10 demonstrate substantial compliance with the requirements of this rule AND;
11 Colorado Election Code,~~and~~ AS WELL AS any additional testing that is deemed
12 necessary by the Secretary of State.

13 45.3.3 The following ~~milestones~~ PHASES indicate the flow FOR EACH PHASE of the
14 certification process:~~— see timeline below:~~

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

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

30 (c) Phase III — ~~36 days maximum~~. UPON RECEIPT OF THE VOTING SYSTEM
31 PROVIDER'S AGREEMENT TO THE TEST PLAN, ~~When demonstration is complete,~~
32 THE Secretary of State performs the functional testSing.

33 (d) Phase IV — ~~2 days maximum~~. ~~Upon completion of functional testSing, THE~~
34 ~~Office of the Secretary of State PRODUCES A CERTIFICATION TEST REPORT.~~
35 ~~makes a decision to cerfity a voting system and produces applicable~~
36 ~~certification document.~~

1 (De) Phase IV ~~30 days maximum~~. THE SECRETARY OF STATE REVIEWS THE
2 RESULTS OF THE FUNCTIONAL TESTS ~~CERTIFICATION TEST REPORT~~ AND MAKES
3 THE DECISION WHETHER TO CERTIFY THE VOTING SYSTEM. ~~Upon THE~~ WITHIN
4 THIRTY DAYS OF THE decision to certify OR NOT CERTIFY a THE voting
5 system, ~~Secretary of State shall produce a qualification~~ THE CERTIFICATION
6 TEST REPORT ~~report~~ for the voting system and components certified, which
7 shall be posted on the Secretary of State's website.

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

11 45.4 Application Procedure

12 45.4.1 Any voting system provider may apply to the Secretary of State for certification at
13 any time.

14 45.4.2 A voting system provider that submits a voting system for certification shall
15 complete the Secretary of State's "Application for Certification of Voting
16 System".

17 45.4.3 THE SECRETARY OF STATE, IN ACCORDANCE WITH SECTION 24-21-104 (1)(A),
18 C.R.S., SHALL CHARGE ALL DIRECT AND INDIRECT COSTS ASSOCIATED WITH THE
19 TESTING OF A VOTING SYSTEM SUBMITTED FOR CERTIFICATION. ~~The voting system~~
20 ~~provider shall establish an escrow account pursuant to State procurement~~
21 ~~processes to compensate the Secretary of State for necessary outside costs~~
22 ~~associated with the testing of the system.~~ The Secretary of State shall provide an
23 estimate of costs for certification testing at the conclusion of Phase II evaluation.
24 ALL COSTS SHALL BE PAID IN FULL PRIOR TO THE ISSUANCE OF A FINAL
25 DETERMINATION BY THE SECRETARY OF STATE.

26 45.4.4 Along with the application, the voting system provider shall submit all ~~the~~
27 documentation REQUIRED IN THIS RULE 45. THE REQUIREMENTS INCLUDE
28 DOCUMENTATION necessary for the identification of the full system configuration
29 submitted for certification. ~~This~~ Documentation shall include information that
30 defines the voting system design, method of operation, and related resources. It
31 shall also include a system overview and documentation of the voting system's
32 functionality, accessibility, hardware, software, security, test and verification
33 specifications, operations procedures, maintenance procedures, and personnel
34 deployment and training requirements. In addition, the documentation submitted
35 shall include the voting system provider's configuration management plan and
36 quality assurance program.

1 45.4.5 Electronic copies of documentation are preferred and shall be submitted in lieu of
2 a hard copy when possible.

3 45.4.6 THE VENDOR SHALL IDENTIFY ANY MATERIAL IT ASSERTS IS EXEMPT FROM PUBLIC
4 DISCLOSURE UNDER THE COLORADO OPEN RECORDS ACT, SECTION 24-72-204, ET.
5 SEQ., C.R.S., TOGETHER WITH A CITATION TO THE SPECIFIC GROUNDS FOR
6 EXEMPTION. THE REQUEST SHALL BE MADE PRIOR TO THE START OF PHASE III OF
7 THE CERTIFICATION PROCESS.

8 45.4.76 If the EAC has established a trusted build for the system submitted for
9 certification, the trusted build shall be provided by the EAC. The voting system
10 provider shall execute and submit to the EAC any necessary releases for the EAC
11 to provide the same, and shall provide the Secretary of State's office with a copy
12 of such executed releases. The voting system provider shall pay directly to the
13 EAC any cost associated with same. In addition, the voting system provider shall
14 submit all documentation and instructions necessary for the creation of and
15 guided installation of files contained in the trusted build which will be created at
16 the start of functional testing and will be the model tested against. The Secretary
17 of State reserves the right to add additional instructions or guidance for the use of
18 the trusted build when initiating the chain of custody process for a jurisdiction
19 using the specified equipment.

20 45.4.78 If the EAC does not have a trusted build for the voting system submitted
21 for certification, the voting system provider shall coordinate with the Secretary of
22 State for the establishment of the trusted build. At a minimum, this shall include
23 a compilation of files placed on write-once media for which the Secretary of State
24 has observed the chain of evidence from THE time of source code compilation
25 COMPILATION through delivery, and an established hash file distributed from a
26 VSTL or the National Software Reference Library to compare federally certified
27 versions against. All or any part of the Trusted Build disks may be encrypted.
28 IF APPLICABLE, They should all be labeled as Proprietary Information if
29 applicable and with identification of the voting system provider's name and
30 release version based on the voting system provider's release instructions.

31 45.4.89 All materials submitted to the Secretary of State shall remain in the
32 custody of the Secretary of State during the life of the certification and for 25
33 months after the last election in which the system is used with the exception of
34 any equipment provided by the voting system provider to FOR THE purposes of
35 testing.

36 45.4.910 In addition to the application and the documentation specified above, the
37 Secretary of State may request additional information from the applicant, as

1 deemed necessary. ~~by the Secretary of State.~~

45.5 Voting System Standards

2 45.5.1 Federal Standards

3 45.5.1.1 All voting systems shall meet the voting systems standards pursuant to
4 section 1-5-601.5, C.R.S., and Secretary of State Rule 37.3.

5 45.5.1.2 All voting system software, hardware and firmware shall meet all
6 requirements of federal law that address accessibility for the voter
7 interface of the voting system. These laws include, but are not
8 necessarily limited to, (a) the Help America Vote Act, (b) the Americans
9 with Disabilities Act, and (c) the Federal Rehabilitation Act. The voting
10 system provider shall EXPLICITLY acknowledge ~~explicitly~~ that their
11 proposed software, hardware, and firmware are all in compliance with
12 the relevant accessibility portions of these laws.

13 45.5.1.3 The Secretary of State ~~or his/her designee~~ MAY USE AND RELY UPON THE
14 TESTING OF A VOTING SYSTEM PERFORMED BY A VSTL OR BY ANOTHER
15 STATE UPON SATISFACTION OF THE FOLLOWING CONDITIONS: ~~shall review~~
16 ~~all of the documentation submitted from federal testing for compliance~~
17 ~~with applicable laws and regulations. Documentation of tests completed~~
18 ~~at the federal level may be used for compliance of duplicate State level~~
19 ~~requirements; however compliance with federal standards does not~~
20 ~~necessarily establish compliance with Colorado standards.~~

21 45.5.1.3.1 THE SECRETARY OF STATE HAS COMPLETE ACCESS TO ANY
22 DOCUMENTATION, DATA, REPORTS OR SIMILAR
23 INFORMATION UPON WHICH THE VSTL RELIED IN
24 PERFORMING ITS TESTS AND WILL MAKE SUCH INFORMATION
25 AVAILABLE TO THE PUBLIC SUBJECT TO ANY REDACTION
26 REQUIRED BY LAW; AND

27 45.5.1.3.2 THE SECRETARY OF STATE MAKES WRITTEN FINDINGS AND
28 CERTIFIES THAT HE OR SHE HAS REVIEWED THE
29 INFORMATION SPECIFIED IN RULE 45.5.1.3.1 AND
30 DETERMINES THAT THE TESTS WERE CONDUCTED IN
31 ACCORDANCE WITH APPROPRIATE ENGINEERING STANDARDS
32 IN USE WHEN THE TESTS WERE CONDUCTED AND THE EXTENT
33 TO WHICH THE TESTS SATISFY THE REQUIREMENTS OF

3 45.5.2 State Standards

4 45.5.2.1 Functional requirements

5 45.5.2.1.1 Functional requirements shall address any and all detailed
6 operations of the voting system related to the management
7 and controls required to successfully conduct an election on
8 the voting system.

9 45.5.2.1.2 The voting system shall provide for appropriately
10 authorized users to:

- 11 (a) Prepare the system for an election;
- 12 (b) Setup and prepare ballots for an election;
- 13 (c) Lock and unlock system to prevent or allow changes
14 to ballot design;
- 15 (d) Conduct hardware and diagnostics testing as required
16 herein;
- 17 (e) Conduct logic and accuracy testing as required herein;
- 18 (f) Conduct an election and meet additional requirements
19 as identified in this section for procedures for voting,
20 auditing information, inventory control, counting
21 ballots, opening and closing polls, recounts, reporting
22 and accumulating results as required herein;
- 23 (g) Conduct the post election audit as required herein; and
- 24 (h) Preserve the system for future election use.

25 45.5.2.1.3 The voting system shall ~~accurately~~ integrate ~~election day~~
26 ELECTION DAY voting results with mail-in, early voting and
27 provisional ballot results.

28 45.5.2.1.4 The voting system shall be able to count all of an elector's
29 votes on a provisional ballot or only federal and statewide

1 offices and statewide ballot issues and questions, as
2 provided under section 1-8.5-108(2), C.R.S.

3 45.5.2.1.5 The voting system shall provide for the tabulation of votes
4 cast in split precincts where all voters residing in one
5 precinct are not voting the same ballot style.

6 45.5.2.1.6 The voting system shall provide for the tabulation of votes
7 cast in combined precincts at remote sites, where more than
8 one precinct is voting at the same location, on either the
9 same ballot style or a different ballot style.

10 45.5.2.1.7 The voting system application shall provide authorized
11 users with the capability to produce electronic files
12 including election results in either ASCII (both comma-
13 delimited and fixed-width) or web-based format that shall
14 contain (a) all data or (b) any user selected data elements
15 from the database. The software shall provide authorized
16 users with the ability to generate these files on an “on-
17 demand” basis. After creating such files, the authorized
18 users shall, at their discretion, have the capability to copy
19 the files to diskette, tape, ~~or~~ CD-ROM or to transmit the
20 files to another information system.

21 (a) Exports necessary for the Secretary of State shall
22 conform to ~~an agreed-upon~~ format: AGREED UPON BY
23 THE SECRETARY AND THE VOTING SYSTEM PROVIDER.
24 IF THE VOTING SYSTEM PROVIDER AND THE
25 SECRETARY HAVE NOT PREVIOUSLY AGREED UPON A
26 FORMAT, THE VOTING SYSTEM PROVIDER SHALL
27 PROVIDE THE SECRETARY WITH SPECIFICATIONS FOR
28 ALL AVAILABLE EXPORT FILE FORMATS. AS PART OF
29 THE CERTIFICATION TEST, THE VOTING SYSTEM
30 PROVIDER WILL DEMONSTRATE THAT PRELIMINARY
31 AND CANVASSING LEVEL ELECTION RESULT DATA,
32 USING ONE OR MORE OF THE PROVIDED FORMATS, CAN
33 BE IMPORTED TO A COMMERCIALY AVAILABLE DATA
34 MANAGEMENT PROGRAM SUCH AS A SPREADSHEET,
35 DATABASE, OR REPORT GENERATOR WHICH CAN
36 ACCEPT THAT FORMAT AND WHICH IS USED AND
37 SELECTED BY THE SECRETARY'S OFFICE. USING THE

1 IMPORTED DATA, THE SECRETARY'S TEST TEAM SHALL
2 CONFIRM THAT THE ELECTION RESULTS DATA MAY BE
3 CONSOLIDATED WITH RESULTS FROM ONE OR MORE
4 ADDITIONAL ELECTION JURISDICTIONS, SEARCHED,
5 SELECTED, SORTED, GENERATE TOTALS FROM
6 SELECTED SUBSETS OF THE DATA, AND FORMATTED
7 FOR REPORTING.

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

12 45.5.2.1.8 The voting system shall include hardware and software to
13 enable the closing of the remote voting location and
14 disabling THE acceptance of ballots on all vote tabulation
15 devices to allow for the following:

- 16 (a) Machine-generated paper record of the time the
17 voting system was closed.
- 18 (b) Readings of the public counter and protective counter
19 shall become a part of the paper audit record upon
20 disabling the voting system to prevent further voting.
- 21 (c) Ability to print an abstract of the count of votes which
22 shall contain:
- 23 (i) Names of the offices;
 - 24 (ii) Names of the candidates and party when
25 applicable;
 - 26 (iii) A tabulation of votes from ballots of different
27 political parties at the same voting location in
28 a primary election;
 - 29 (iv) Ballot titles;
 - 30 (v) Submission clauses of all initiated, referred or
31 other ballot issues or questions; and

- 1 (vi) The number of votes counted for or against
- 2 each candidate or ballot issue.
- 3 (d) Abstract shall include an election judge’s certificate
- 4 and statement that contains:
 - 5 (i) Date of election (day, month and year);
 - 6 (ii) Precinct Number (ten digit format);
 - 7 (iii) County or Jurisdiction Name;
 - 8 (iv) State of Colorado;
 - 9 (v) Count of votes as indicated in this section; and
 - 10 (vi) Area for judge²s’ signatures with the words
 - 11 similar to: “Certified by us”, and “Election
 - 12 Judges”. Space should allow for a minimum
 - 13 of two signatures.
- 14 (e) Votes counted by a summary of the voting location;
- 15 and by individual precincts.
- 16 (f) Ability to produce multiple copies of the unofficial
- 17 results at the close of the election.
- 18 (g) Ability to accommodate a two page ballot (races on
- 19 four faces) is required.

20 45.5.2.1.9 Voters voting on DRE ~~devices~~ shall be able to navigate
21 through the screens without the use of page scrolling.
22 Features such as next or previous page options shall be
23 used.

24 45.5.2.1.10 The voting system application shall ensure that an election
25 setup may not be changed once ballots are printed and/or
26 election media devices are downloaded for votes to be
27 conducted without proper authorization and
28 acknowledgement by the application administrative
29 account. The application and database audit transaction
30 logs shall accurately reflect the name of the system

operator making the change(s), the date and time of the change(s), and the “old” and “new” values of the change(s).

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

45.5.2.2 Performance Level

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

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

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

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

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

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

45.5.2.2.4 For the purposes of evaluating software, the voting system provider shall be required to provide detailed information as to the type of hardware required to execute the software. The performance level shall be such that an evaluator of the software would have pauses equal to less than five (5) seconds in the system during the ballot design and creation, along with the downloading and uploading of election

1 media devices. Specifically, the following minimum
2 standards are required:

- 3 (a) Ballot style initial layout is less than TEN ~~(10)~~ seconds
4 per ballot style;
- 5 (b) Election mMedia dDownload for vote storage media
6 without audio files is less than 35 seconds per media;
- 7 (c) Election mMedia uUpload is less than 20 seconds per
8 media; and
- 9 (d) The application software upon creation of the layout
10 of the races on ballot shall produce the ballot image
11 (on screen) for the evaluator in less than ~~thirty (30)~~
12 seconds per ballot image.

13 45.5.2.2.5 At no time shall third party hardware or software
14 ~~negatively~~HAVE A NEGATIVE impact ON performance levels
15 of THE voting system application, unless, THROUGH
16 DOCUMENTATION, a voting system provider specifically
17 details ~~through documentation~~the specific hardware or
18 software, the performance impact, and a workaround for
19 the end user to overcome the issue.

20 45.5.2.3 Physical and Design Characteristics

21 45.5.2.3.1 Physical and design characteristics shall address any and all
22 external or internal construction of the physical
23 environment of the voting system, or the internal workings
24 of the software necessary for the ~~functioning of the~~voting
25 system TO FUNCTION. The voting system shall substantially
26 comply with these requirements to be considered successful
27 in the conduct of an election on the voting system.

28 45.5.2.3.2 The voting system shall meet the following environmental
29 controls allowing for storage and operation in the following
30 physical ranges:

- 31 (a) Operating – MAXIMUM: 95 Degrees Fahrenheit;
32 MINIMUM 50 Degrees Fahrenheit, with maximum-
33 humidity of 90%, normal or minimum operating
34 humidity of 15%.

1 (b) Non-Operating – Maximum–140 Degrees Fahrenheit;
2 Minimum– Minus 4 Degrees Fahrenheit. Non-
3 operating humidity ranges from 5% to 90% for
4 various intervals throughout the day.

5 The material supplied by the voting system provider shall
6 include a statement of all requirements and restrictions
7 regarding environmental protection, electrical service,
8 telecommunications service, and any other facility or
9 resource required for the installation, operation, and storage
10 of the voting system.

11 45.5.2.3.3 The ballot definition subsystem of the voting system
12 application consists of hardware and software required to
13 accomplish the functions outlined in this ~~section~~–RULE
14 45.5.2.3. System databases contained in the B~~B~~allot
15 D~~D~~efinition S~~S~~ubsystem may be constructed individually or
16 they may be integrated into one database. These databases
17 are treated as separate databases to identify the necessary
18 types of data ~~that shall~~ TO be handled and to specify, where
19 appropriate, those attributes that can be measured or
20 assessed for determining compliance with the requirements
21 of this standard.

22 45.5.2.3.4 The B~~B~~allot D~~D~~efinition S~~S~~ubsystem shall be capable of
23 formatting ballot styles in English and any alternate
24 languages as are necessary to comply with The “Voting
25 Rights Act of 1965” 42 U.S.C. § 1973c et seq. (1965).

26 45.5.2.3.5 The voting system application shall allow the operator to
27 generate and maintain an administrative database
28 containing the definitions and descriptions of political
29 subdivisions and offices within the jurisdiction.

30 45.5.2.3.6 The ballot definition subsystem shall provide for the
31 definition of political and administrative subdivisions
32 where the list of candidates or contests may vary within the
33 remote site and for the activation or exclusion of any
34 portion of the ballot upon which the entitlement of a voter
35 to vote may vary by reason of place of residence or other
36 such administrative or geographical criteria. This database
37 shall be used by the system with the administrative

- 1 database to format ballots or edit formatted ballots within
2 the jurisdiction.
- 3 45.5.2.3.7 For each election, the subsystem shall allow the user to
4 generate and maintain a candidate and contest database and
5 provide for the production and/or definition of properly
6 formatted ballots and software.
- 7 45.5.2.3.8 The ballot definition subsystem shall be capable of
8 handling at least 500 potentially active voting positions,
9 arranged to identify party affiliations in a primary election,
10 offices WITH ~~and~~ their associated labels and instructions,
11 candidate names WITH ~~and~~ their associated labels and
12 instructions, ~~and~~ ballot issues or questions WITH ~~and~~ their
13 associated text and instructions.
- 14 45.5.2.3.9 The ballot display may consist of a matrix of rows or
15 columns assigned to political parties or non-partisan
16 candidates and columns or rows assigned to offices and
17 contests. The display may consist of a contiguous matrix of
18 the entire ballot or it may be segmented to present portions
19 of the ballot in succession.
- 20 45.5.2.3.10 The voting system application shall provide a facility for
21 the definition of the ballot, including the definition of the
22 number of allowable choices for each office and contest,
23 and for special voting options such as write-in candidates.
24 It shall provide for all voting options and specifications as
25 provided for in Articles 5 and 7, Title 1, C.R.S. The system
26 shall generate all required masters and distributed copies of
27 the voting program in conformance with the definition of
28 the ballot for each voting device and remote site. The
29 distributed copies, resident or installed, in each voting
30 device, shall include all software modules required to:
31 monitor system status and generate machine-level audit
32 reports, accommodate device control functions performed
33 by remote location officials and maintenance personnel,
34 and register and accumulate votes.
- 35 45.5.2.3.11 The trusted build of the voting system software, installation
36 programs, and third party software (~~such as operating~~
37 ~~systems, drivers, etc.~~) used to install or to be installed on

1 voting system devices shall be distributed on a write-once
2 media.

3 45.5.2.3.12 The voting system shall allow the system administrative
4 account to verify that the software installed is the certified
5 software by comparing it to the trusted build or other
6 reference information.

7 45.5.2.3.13 All DRE voting devices shall use touch screen technology
8 or other technology providing visual ballot display and
9 selection. The voting system provider shall provide
10 documentation concerning the use of touch screen or other
11 display and selection technology; including, but not limited
12 to:

13 (a) Technical documentation describing the nature and
14 sensitivity of the tactile device (if the system uses
15 touch screen technology);

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

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

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

24 ~~45.5.2.3.14 The voting system shall contain a control subsystem that~~
25 ~~consists of the physical devices and software that~~
26 ~~accomplish and validate the following operations:~~

27 ~~(a) Voting System Preparation The control subsystem~~
28 ~~shall encompass the hardware and software required~~
29 ~~to prepare remote location voting devices and~~
30 ~~memory devices for election use. Remote site~~
31 ~~preparation includes all operations necessary to install~~
32 ~~ballot displays, software, and memory devices in each~~
33 ~~voting device. The control subsystem shall be~~
34 ~~designed in such a manner as to facilitate the~~

1 automated validation of ballot and software
2 installation and to detect errors arising from their
3 incorrect selection or improper installation.

4 ~~(b) Error Detection the voting system shall contain a~~
5 ~~detailed list and description of the error messages that~~
6 ~~will appear on the voting devices, the controller (if~~
7 ~~any), the paper ballot printer, programmer, or any~~
8 ~~other device used in the voting process to indicate that~~
9 ~~a component has failed or is malfunctioning.~~

10 ~~45.5.2.3.15 The voting system shall have a high level of integration~~
11 ~~between the ballot layout subsystem and the vote tabulation~~
12 ~~subsystem. This integration shall permit and facilitate the~~
13 ~~automatic transfer of all ballot setup information from the~~
14 ~~automated ballot layout module to the single ballot~~
15 ~~tabulation system that will be used in a fully integrated~~
16 ~~manner for DRE, optical scan, and any other voting devices~~
17 ~~included in the voting system.~~

18 ~~45.5.2.3.16 The processing subsystem contains all mechanical,~~
19 ~~electromechanical, and electronic devices required to~~
20 ~~perform the logical and numerical functions of interpreting~~
21 ~~the electronic image of the voted ballot and assigning votes~~
22 ~~to the proper memory registers. Attributes of the~~
23 ~~processing subsystem that affect its suitability for use in a~~
24 ~~voting system, are accuracy, speed, reliability, and~~
25 ~~maintainability.~~

26 ~~(a) Processing accuracy refers to the ability of the~~
27 ~~subsystem to receive electronic signals produced by~~
28 ~~vote marks and timing information, to perform logical~~
29 ~~and numerical operations upon these data, and to~~
30 ~~reproduce the contents of memory when required~~
31 ~~without error. Processing subsystem accuracy shall~~
32 ~~be measured as bit error rate, which is the ratio of~~
33 ~~uncorrected data bit errors to the number of total data~~
34 ~~bits processed when the system is operated at its~~
35 ~~nominal or design rate of processing in a time interval~~
36 ~~of four (4) hours. The bit error rate shall include all~~
37 ~~errors from any source in the processing subsystem.~~

1 For all types of systems, the Maximum Acceptable
2 Value (MAV) for this error rate shall be one (1) part
3 in five hundred thousand (500,000) ballot positions,
4 and the Nominal Specification Value (NSV) shall be
5 one (1) part in ten million (10,000,000) ballot
6 positions.

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

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

22 ~~_____ 45.5.2.3.18 The approach to design shall be unrestricted, and it may~~
23 ~~incorporate any form or variant of technology that is~~
24 ~~capable of meeting the requirements of this rule, and other~~
25 ~~attributes specified herein. The frequency of voting system~~
26 ~~malfunctions and maintenance requirements shall be~~
27 ~~reduced to the lowest level consistent with cost constraints.~~
28 ~~Applicants are required to meet or exceed MIL HDBK-~~
29 ~~454; "Standard General Requirements for Electronic~~
30 ~~Equipment" that is hereby adopted and incorporated by~~
31 ~~reference, as a guide in the selection and application of~~
32 ~~materials and parts only as is relevant to this section.~~

33 45.5.2.3.149 All electronic voting devices ~~provided~~ SUPPLIED by the
34 voting system provider shall have the capability to continue
35 operations and provide continuous device availability
36 during a period of electrical outage without any loss of
37 election data.

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

1 operations during a period of normal electrical
2 operations; and

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

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

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

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

26 45.5.2.3.16~~21~~ The voting system shall provide capabilities to
27 PROTECT THE ~~enforce~~ confidentiality of voters' ballot
28 choices.

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

34 (b) All DRE devices shall provide randomization of all
35 voter choices and stored electronic ballot information,

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
6 ALLOW THE REVIEW BY THE SECRETARY OF STATE OF
7 ANY DOCUMENTATION, DATA, REPORTS OR SIMILAR
8 INFORMATION UPON WHICH THE VSTL RELIED IN
9 PERFORMING ITS TESTING. BY with the Secretary of
10 State's office. The voting system provider shall
11 provide a copy of the same to the Secretary of State's
12 office.

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

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

24 (a) THE INDEPENDENT ANALYSIS SHALL INCLUDE:

25 (I) AN Application penetration test conducted
26 to ANALYZE THE SYSTEM FOR ANY
27 POTENTIAL VULNERABILITIES THAT MAY
28 RESULT FROM POOR OR IMPROPER SYSTEM
29 CONFIGURATION, KNOWN AND/OR UNKNOWN
30 HARDWARE OR SOFTWARE FLAWS, OR
31 OPERATIONAL WEAKNESSES IN PROCESS OR
32 TECHNICAL COUNTERMEASURES. THE TEST
33 SHALL INVOLVE ACTIVE EXPLOITATION OF
34 SECURITY VULNERABILITIES OF THE VOTING
35 SYSTEM, WHETHER OR NOT THE
36 VULNERABILITIES CAN BE MITIGATED
37 THROUGH COMPENSATING CONTROLS. OPEN

~~SOURCE SECURITY TESTING METHODOLOGY
MANUAL (OSSTMM) 2.2 standards for
White or Double Gray box testing;~~

~~(Ib) A Source code evaluation CONDUCTED
PURSUANT to the requirements identified in
section—RULE 45.5.2.6.1(f), REQUIRING
COMPLIANCE WITH THE 2002 VOTING SYSTEM
STANDARDS.;~~

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

~~(Bcd) A complete report of acceptable DETAILING ALL
FINDINGS AND RECOMMENDATIONS on
compensating ON COMPENSATING controls FOR
VULNERABILITIES AND DEFICIENCIES IDENTIFIED. shall
be provided IN THE REPORTS FOR with the tests
conducted for items (a) and (b) of this section.~~

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

~~(Ce) The vendor shall use an EAC approved VSTL to
perform the independent analysis, OR SUBMIT THE
RESULTS OF TESTING CONDUCTED IN ANOTHER STATE,
OR SOME COMBINATION OF SUCH VSTL AND STATE
TESTING THAT MEETS THE REQUIREMENTS OF THIS
RULE;~~

~~(Def) The Secretary of State or the designated agent shall
CONDUCT A QUALITY review all work performed by
contractor for quality of work product under this
section. The review may include any AN
EXAMINATION OF THE TESTING RECORDS, INTERVIEWS
OF THE INDIVIDUALS WHO PERFORMED THE WORK, OR
BOTH. or all of the following requirements: REVIEW
OF TESTING RECORDS MAY BE CONDUCTED AT THE~~

VSTL, THE STATE IN WHICH THE TESTING WAS CONDUCTED, OR AT THE SITE OF ANY CONTRACTOR OR SUBCONTRACTOR UTILIZED BY ANOTHER STATE TO CONDUCT THE TESTING.

~~(i) — Review of records at contractor’s OR ANY SUBCONTRACTOR’S’ site;~~

~~(ii) — Interviews of THE INDIVIDUALS employees who performed the work.; and~~

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

~~(Efg) WHEN AN ANALYSIS PERFORMED BY ANOTHER STATE IS USED, TThe Secretary of State has the right to reject ANY evaluations performed if not satisfied with the work product and TO REQUIRE may request additional ANALYSIS reviews TO MEET THE REQUIREMENTS OF SECTION 1-5-608.5, C.R.S., AND THIS RULE. of the voting system provider.~~

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

~~(a) — Voting System providers shall provide the Secretary of State with their documented project plans for modifying their voting systems to comply with and achieve certification under the EAC’s adopted 2005 Voluntary Voting System Guidelines by January 1, 2008 if not currently tested and certified to that standard at time of applying for certification.~~

45.5.2.4.5 DOCUMENTATION SHALL INCLUDE THE FINANCIAL STATEMENTS SET FORTH IN 45.13 AND SHALL BE FOR THE PRIOR FISCAL YEAR AND ANY QUARTERLY FINANCIAL STATEMENTS FOR THE PERIOD FOLLOWING THE PRIOR FISCAL YEAR AND PRECEEDING THE DATE OF APPLICATION FOR CERTIFICATION.

45.5.2.4.6 Failure by the voting system provider to provide any documentation with THEIR APPLICATION FOR CERTIFICATION

1 WILL ~~in the timelines established in this rule~~ shall delay the
2 ~~certification processing for the specific application~~ UNTIL
3 THE DOCUMENTATION IS PROVIDED.

4 45.5.2.5 Audit capacity

5 45.5.2.5.1 The voting system shall be capable of producing electronic
6 and printed audit logs of system operation and system
7 operators' actions which shall be substantially compliant to
8 allow operations and input commands to be audited.

9 45.5.2.5.2 The voting systems shall include detailed documentation as
10 to the level, location, and programming of audit trail
11 information throughout the system. The audit information
12 shall apply to:

- 13 (a) Operating Systems (workstation, server, and/or DRE);
14 (b) Election Programming Software;
15 (c) Election Tabulation devices – optical scan and DRE;
16 and
17 (d) Election Result Consolidation and Reporting.

18 45.5.2.5.3 The voting system shall track and maintain audit
19 information of the following voting system application
20 events:

- 21 (a) Log on and log off activity;
22 (b) Application start and stop;
23 (c) Printing activity, (where applicable);
24 (d) Election events – setup, set for election, unset for
25 election, open polls, close polls, end election, upload
26 devices, download devices, create ballots, create
27 precincts, create districts, create poll places (or Vote
28 Centers), initialize devices, backup devices and
29 voting activity; and
30 (e) Hardware events – add hardware, remove hardware,
31 initialize hardware, and change hardware properties.

1 45.5.2.5.4 All tabulation devices shall display the unit serial
2 number(s) both physically and within any applicable
3 software, logs, or reports.

4 45.5.2.5.5 Vote tabulation devices shall allow for an alternate method
5 of transfer of audit records if the device or a memory
6 storage device is damaged or destroyed.

7 45.5.2.5.6 All transaction audit records of the voting system
8 application database shall be maintained in a file outside OF
9 or separate from the database, which is not accessible by
10 user/operator accounts.

11 45.5.2.6 Security Requirements

12 45.5.2.6.1 All voting systems submitted for certification shall meet the
13 following minimum system security requirements:

14 (a) The voting system shall accommodate a general
15 system of access by least privilege and role based
16 access control. The following requirements shall
17 apply:

18 (i) The operating system Administrative
19 Account shall not have access to read or
20 write data to the database and shall not have
21 the ability or knowledge of the database
22 administrator password;

23 (ii) The operating system administrative account
24 shall not be required to use any function of the
25 voting system during normal operations;

26 (iii) A unique system user/operator account shall
27 be created for operating system use that is
28 restricted from the following aspects of the
29 operating system:

30 a. No access to system root directory;

31 b. No access to operating system specific
32 folders;

- 1 c. No access to install or remove programs;
2 and
- 3 d. No access to modify other user accounts
4 on the system.
- 5 (iv) A unique application administrative account
6 shall be created which has full access and
7 rights to the application and database;
- 8 (v) A unique application user/operator account
9 shall be created with limited rights specifically
10 designed to perform functional operation
11 within the scope of the application. This
12 user/operator shall be restricted in the creation
13 or modification of any user/operator accounts;
14 and
- 15 (vi) Voting system provider shall not have AN
16 administrative account, or administrative
17 account access.
- 18 (b) The voting system shall meet the following
19 requirements for network security:
- 20 (i) All components of the voting system shall
21 only be operated on a closed network only for
22 the use of the voting system;
- 23 (ii) All components of the voting system shall
24 include the limited use of non-routable IP
25 address configurations for any device
26 connected to the closed network. For the
27 purposes of this requirement, non-routable IP
28 addresses are those defined in the RFC 1918
29 Address base; and
- 30 (iii) The voting system shall be tested to contain
31 provisions for updating security patches,
32 software and/or service packs without access
33 to the open network.

1 (c) All voting systems submitted for certification ~~after~~
2 ~~March 31, 2008,~~ shall meet the following
3 requirements for database security:

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

19 a. ~~Oracle 9i and Oracle 10g databases shall~~
20 ~~be hardened to the Center for Internet~~
21 ~~Security Benchmark for Oracle 9i/10g~~
22 ~~Ver. 2.0;~~

23 b. ~~Microsoft SQL databases shall be~~
24 ~~hardened to the NSA Guide to the~~
25 ~~Secure Configuration and~~
26 ~~Administration of Microsoft SQL Server~~
27 ~~2000.~~

28 (ii) ~~All other voting system databases submitted~~
29 ~~for certification shall have the voting systems~~
30 ~~databases hardened to database~~
31 ~~manufacturer's existing hardening~~
32 ~~requirements; or~~

33 (iii) ~~If the manufacturer has not established~~
34 ~~requirements for the specifically designed~~
35 ~~system, the voting systems submitted for~~
36 ~~certification shall have the voting systems~~

1 databases hardened to the voting system
2 providers' specifications.

3 ~~(iv) All voting systems submitted for certification~~
4 ~~shall have all voting systems databases~~
5 ~~restricted to allowing access to database~~
6 ~~authentication from application only (or~~
7 ~~through application only);~~

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

11 ~~(vi) All Cryptography modules shall be~~
12 ~~documented by the voting system provider to~~
13 ~~be certified to US Federal Information~~
14 ~~Processing Standard (FIPS 140-2), and~~
15 ~~validated to FIPS 180 standards.~~

16 (d) The voting system shall meet the following
17 requirements for operating system security:

18 (i) All voting systems ~~being~~ submitted for
19 certification ~~after March 31, 2008,~~ shall have
20 all operating systems hardened to
21 SPECIFICATIONS DEVELOPED BY THE VOTING
22 SYSTEM PROVIDER. DOCUMENTATION
23 INCLUDED WITH THE APPLICATION SHALL
24 PROVIDE A DETAILED PRESCRIPTION FOR
25 HARDENING AND THE PROCEDURE USED TO
26 HARDEN THE SYSTEM. ANY GOVERNMENT OR
27 INDUSTRY GUIDELINES ADOPTED IN WHOLE, OR
28 IN PART, ARE TO BE IDENTIFIED IN THE
29 DOCUMENTATION. ~~NSA guidelines for~~
30 ~~operating systems as follows:~~

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

34 ~~b. Apple Server Operating Systems shall be~~
35 ~~hardened to the NSA Apple Mac OS X Server~~

1 v10.3.x “Panther” Security Configuration
2 Guide;

3 e. ~~Microsoft Windows XP Operating systems shall be~~
4 ~~hardened to the NSA Windows XP Security~~
5 ~~Guide Version: 2.2 and the NSA Windows XP~~
6 ~~Security Guide Addendum Version 1.0;~~

7 d. ~~Microsoft Windows 2000 operating systems~~
8 ~~shall be hardened to the following NSA~~
9 ~~Guides:~~

10 i. ~~Guide to the Secure Configuration and~~
11 ~~Administration of Microsoft Internet~~
12 ~~Information Services 5.0 Version 1.4;~~

13 ii. ~~Guide to the Secure Configuration and~~
14 ~~Administration of Microsoft ISA Server 2000~~
15 ~~Version 1.5;~~

16 iii. ~~Guide to Securing Microsoft Windows 2000~~
17 ~~Active Directory Version 1.0;~~

18 iv. ~~Guide to the Secure Configuration and~~
19 ~~Administration of Microsoft Windows 2000~~
20 ~~Certificate Services Version 2.1.1;~~

21 v. ~~Guide to Securing Microsoft Windows 2000~~
22 ~~DHCP Version 1.3;~~

23 vi. ~~Guide to Securing Microsoft DNS Version~~
24 ~~1.0;~~

25 vii. ~~Guide to Securing Microsoft Windows 2000~~
26 ~~Encrypting File System Version 1.0;~~

27 viii. ~~Guide to Securing Microsoft Windows 2000~~
28 ~~File and Disk Resources Version 1.0.1;~~

29 ix. ~~Guide to securing Microsoft Windows 2000~~
30 ~~Group Policy Version 1.1;~~

31 x. ~~Group Policy Reference Version 1.0.8;~~

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

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

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

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

- (iii*) The voting system provider shall configure the voting system operating system of the workstation and/or server used for the election management software to the following requirements:
 - 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

1 which shall be capable of manual updates
2 without the use of the internet.

3 (e) The voting system shall meet the following
4 requirements for password security:

5 (i) All passwords shall be stored and used in a
6 non-reversible format;

7 (ii) Passwords to database shall not be stored in
8 database;

9 (iii) Password to database shall be owned and
10 ~~known~~ only known by the application;

11 (iv) The application's database management
12 system shall require separate passwords for
13 the administrative account and each operator
14 account with access to the application;

15 (v) The system shall be designed in such a way TO
16 ENSURE ~~that~~ the use of the administrative
17 account password shall not be required for
18 normal operating functions at any remote
19 location;

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

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

28 (viii) All voting systems submitted for certification
29 ~~after March 31, 2008,~~ shall have all
30 components of voting system capable of
31 supporting passwords of a minimum of EIGHT
32 (8) characters, which shall be capable of
33 including numeric, alpha and special

1 characters in upper case or lower case used in
2 any combination.

3 (f) All voting system software submitted for certification
4 ~~after March 31, 2008,~~ shall be in compliance with THE
5 SOFTWARE DESIGN AND CODING STANDARDS OF THE
6 “VOTING SYSTEMS STANDARDS ADOPTED IN RULE
7 37.3. ~~known software coding standards applicable to~~
8 ~~the base language of the application.~~ The voting
9 system shall meet the following minimum
10 requirements for software security:

11 ~~(i) Self modifying, dynamically loaded or~~
12 ~~interpreted code is prohibited, except under~~
13 ~~the security provisions required by federal~~
14 ~~testing. External modification of code during~~
15 ~~execution shall be prohibited. Where the~~
16 ~~development environment (programming~~
17 ~~language and development tools) includes the~~
18 ~~following features, the software shall provide~~
19 ~~controls to prevent accidental or deliberate~~
20 ~~attempts to replace executable code:~~

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

23 b. ~~Pointer variables; and~~

24 c. ~~Dynamic memory allocation and~~
25 ~~management.~~

26 ~~(ii) All voting systems submitted for certification~~
27 ~~after March 31, 2008, shall have application~~
28 ~~software designed in a modular fashion.~~
29 ~~COTS software is not required to be inspected~~
30 ~~for compliance with this requirement. For the~~
31 ~~purpose of this requirement, “modules” may~~
32 ~~be compiled or interpreted independently.~~
33 ~~Modules may also be nested. The modularity~~
34 ~~rules described here apply to the component~~
35 ~~sub-modules of a library. The principle to be~~
36 ~~followed is that the module contains all the~~

1 elements to compile or interpret successfully
2 and has limited access to data in other
3 modules. The design concept is simple
4 replacement with another module whose
5 interfaces match the original module. All
6 modules shall be designed in accordance with
7 the following requirements for systems
8 submitted for certification after March 31,
9 2008:

10 a. Each module shall have a specific
11 function that can be tested and verified
12 independently of the remainder of the
13 code. In practice, some additional
14 modules (such as library modules) may
15 be needed to compile the module under
16 test, but the modular construction allows
17 the supporting modules to be replaced by
18 special test versions that support test
19 objectives.

20 b. Each module shall be uniquely and
21 mnemonically named, using names that
22 differ by more than a single character. In
23 addition to the unique name, the
24 modules shall include a set of header
25 comments identifying the module's
26 purpose, design, conditions, and version
27 history, followed by the operational
28 code. Headers are optional for modules
29 of fewer than ten executable lines where
30 the subject module is embedded in a
31 larger module that has a header
32 containing the header information.
33 Library modules shall also have a header
34 comment describing the purpose of the
35 library and version information.

36 c. All required resources, such as data
37 accessed by the module, should either be
38 contained within the module or

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~~explicitly identified as input or output to the module. Within the constraints of the programming language, such resources shall be placed at the lowest level where shared access is needed. If that shared access level is across multiple modules, the definitions should be defined in a single file (called header files in some languages, such as C) where any changes can be applied once and the change automatically applies to all modules upon compilation or activation.~~

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

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- ~~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 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~~

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~~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 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~~

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~~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.~~

~~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~~

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~~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 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~~

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~~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,
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)
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2 _____ {  
_____ if ( c == true )  
3 _____ {  
_____ if ( d ==  
true )  
4 _____ {  
_____ while(e > 0 )  
5 _____  
_____ {  
_____ code  
_____ }  
}  
}  
}  
}  
}
```

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~~

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~~the code unit, even they shall be identified.~~

~~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~~

1 conclusion, the program components
2 may nonetheless contain procedures
3 (such as “methods” in object-
4 oriented languages). In these
5 programming languages, the
6 procedures shall execute through
7 these control constructs or their
8 equivalents, as defined and provided
9 by the voting system provider.

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

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

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

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

35 ~~iii. Names shall be unique within an~~
36 ~~application. Names shall differ by~~
37 ~~more than a single character. All~~

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~~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 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;~~

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

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

- (v) After initiation of ~~election day~~ ELECTION DAY testing UNDER RRULE 11.5.3, no source code, ~~or~~ compilers or assemblers shall be resident or accessible.

- (VI) WHERE THE SYSTEM INCLUDES A FEATURE TO INTERPRET AND CONTROL EXECUTION USING DATA FROM A SCRIPT, CODE TOKENS, OR OTHER FORM OF CONTROL DATA FILE SEPARATE FROM THE SOURCE CODE, THE HUMAN-READABLE

1 SOURCE INFORMATION SHALL BE MADE
2 AVAILABLE AS PART OF THE SOURCE CODE
3 REVIEW AND THE DATA FILES USED SHALL BE
4 DEFINED AND CONTROLLED AS PART OF THE
5 TRUSTED BUILD AS IF IT WERE PART OF THE
6 EXECUTABLE CODE.

7 (VII) SECURITY FEATURES AND PROCEDURES SHALL
8 BE DEFINED AND IMPLEMENTED TO PREVENT
9 ANY CHANGES OF INTERPRETED DATA FILES
10 AFTER THE INITIAL ELECTION TESTING OF THE
11 FINAL ELECTION DEFINITION AND ONLY ALLOW
12 AUTHORIZED REPLACEMENT OF THE DATA FILES
13 WITH TESTED AND APPROVED FILES FROM THE
14 TRUSTED BUILD BY AUTHORIZED PERSONNEL
15 BEFORE THE ELECTION DEFINITION IS
16 FINALIZED FOR AN ELECTION.

17 (VIII) THE INTRODUCTION OF INTERPRETED DATA
18 DURING EXECUTION SHALL NOT BE PERMITTED
19 UNLESS DEFINED AS A PRE-DEFINED SET OF
20 COMMANDS OR ACTIONS SUBJECT TO SECURITY
21 REVIEW AND THE INTERPRETATION FUNCTION
22 PROVIDES SECURITY EDITS ON INPUT TO
23 PREVENT THE INTRODUCTION OF OTHER
24 COMMANDS OR THE MODIFICATION OR
25 REPLACEMENT OF EXISTING CODE.

26 (IX~~v~~i): Independent analysis will test for the
27 following conditions and report on absence or
28 presence of the following input validations in
29 accordance with ~~Section~~ RULE 45.5.2.4.3:

30 A1. Path manipulation;

31 B2. Cross Site Scripting.Basic X;

32 C3. Resource Injection;

33 D4. OS Command Injection (also called
34 "Shell Injection"); and

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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.

(Xviii)- 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.

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

- 1 A1. Memory Leaks;
- 2 B2. Unrestricted Critical Resource Lock;
- 3 C3. Double Free;
- 4 D4 Use After Free;
- 5 E5. Uninitialized variable;
- 6 F6. Unintentional pointer scaling;
- 7 G7. Improper pointer subtraction; and
- 8 H8. Null Dereference.

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

- 14 A1. Private Array-Typed Field Returned
15 from a Public Method;
- 16 B2. Public Data Assigned to Private Array-
17 Typed Field;
- 18 C3. Overflow of static internal buffer; and
- 19 D4. Leftover Debug Code.

20 (XVH)- The AApplication shall not open database
21 tables for direct editing.

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

- 26 (i)- All voting data stored THAT ~~which~~ includes
27 vote records, ballot images, tally data and cast
28 votes shall be authenticated and validated. ~~in~~

1 ~~accordance with cryptography requirements of~~
2 ~~subsection (c)(vii) of this requirement;~~

3 (ii): All non-voting data stored shall be
4 authenticated, encrypted, and validated. ~~in~~
5 ~~accordance with cryptography requirements of~~
6 ~~subsection (c)(vii) of this requirement; and~~

7 (iii): Antivirus software shall be present and scan
8 removable media upon insertion of media or
9 media device on server and/or workstations
10 hosting the elections management software.

11 45.5.2.6.2 The voting system provider shall provide documentation
12 detailing voting system security in the areas listed below.
13 The system shall contain documented configurations,
14 properties and procedures to prevent, detect and log
15 changes to system capabilities for:

- 16 (a) Defining ballot formats;
- 17 (b) Casting and recording votes;
- 18 (c) Calculating vote totals consistent with defined ballot
19 formats;
- 20 (d) Reporting vote totals;
- 21 (e) Altering of voting system audit records;
- 22 (f) Changing, or preventing the recording of, a vote;
- 23 (g) Introducing data for a vote not cast by a registered
24 voter;
- 25 (h) Changing calculated vote totals;
- 26 (i) Preventing access to vote data, including individual
27 votes and vote totals, to unauthorized individuals; and
- 28 (j) Preventing access to voter identification data and data
29 for votes cast by the voter such that an individual can
30 determine the content of specific votes cast by the
31 voter.

- 1 45.5.2.6.3 The voting system provider shall submit to the Secretary of
2 State its recommended policies or guidelines governing:
- 3 (a) Software access controls;
 - 4 (b) Hardware access controls;
 - 5 (c) Data communications;
 - 6 (d) Effective password management;
 - 7 (e) Protection abilities of a particular operating system;
 - 8 (f) General characteristics of supervisory access
9 privileges;
 - 10 (g) Segregation of duties; and
 - 11 (h) Any additional relevant characteristics.

12 45.5.2.6.4 The voting system shall include detailed documentation
13 REGARDING ~~as to~~ the security measures it has in place for
14 all systems, applicable software, devices that act as
15 connectors (upload, download, and other programming
16 devices); and any security measures the voting system
17 provider recommends to the jurisdictions that purchase the
18 voting system.

19 45.5.2.7 Telecommunications Requirements

20 45.5.2.7.1 Telecommunications includes all components of the system
21 that transmit data outside of the closed network as defined
22 in this Rule 45.

23 45.5.2.7.2 All electronic transmissions from a voting system shall
24 meet the following minimum standards:

- 25 (a) Modems from remote devices shall be “dial only” and
26 cannot be programmed to receive a call;
- 27 (b) ~~All communications of data in transfer shall be~~
28 ~~encrypted, authenticated and verified to the FIPS 140-~~
29 ~~2 standard and verified to the FIPS 180 standard USE~~
30 AN ENCRYPTION STANDARD CURRENTLY DOCUMENTED

1 AND VALIDATED FOR USE BY AN AGENCY OF THE
2 UNITED STATES FEDERAL GOVERNMENT; and

3 (C) PROVIDE A MEANS TO DETECT THE PRESENCE OF AN
4 INTRUSIVE PROCESS, SUCH AS AN INTRUSION
5 DETECTION SYSTEM.

6 45.5.2.7.3 Any modem in any component failing to meet these criteria
7 shall not be used by any voting system.

8 45.5.2.7.4 All wireless components ~~on~~IN voting systems shall be
9 disabled with the exception of line of sight infrared
10 technology used in a closed environment where the
11 transmission and reception is shielded from external
12 infrared signals and can only accept infrared signals
13 generated from within the system.

14 45.5.2.7.5 All systems that transmit data over public
15 telecommunications networks shall maintain a clear audit
16 trail that can be provided to the Secretary of State when
17 election results are transmitted by telephone, microwave or
18 ~~any~~ other type of electronic communication.

19 45.5.2.7.6 Systems designed for transmission of voter information
20 (~~i.e. electronic pollbooks~~) over public networks shall meet
21 security standards that address the security risks attendant
22 with the casting of ballots at remote sites controlled by
23 election officials using the voting system configured and
24 installed by election officials and/or their voting system
25 provider or contractor, and using in-person authentication
26 of individual voters.

27 45.5.2.7.7 Any voting system provider of systems that cast individual
28 ballots over a public telecommunications network shall
29 provide detailed descriptions of:

30 (a) All activities mandatory to ensure~~ing~~ effective system
31 security to be performed in setting up the system for
32 operation, including testing ~~of~~ security before an
33 election.

1 (b) All activities that should be prohibited during system
2 setup and during the time frame for voting operations,
3 including ~~both~~ the hours when polls are open and
4 when polls are closed.

5 45.5.2.7.8 In any situation in which the voting system provider's
6 system transmits data through any telecommunications
7 medium, the system shall be able to recover, either
8 automatically or with manual intervention, from incomplete
9 or failed transmission sessions and resume transmissions
10 automatically when telecommunications are re-established.

11 (a) Recovery of transmissions shall include notations of
12 the interrupted transmission session and the resumed
13 transmission session in the system and application
14 transaction logs.

15 (b) Failure and recovery of transmissions shall not cause
16 any error in data transmitted from the polling place to
17 the central election site during a recovered
18 transmission session.

19 45.5.2.7.9 Voting systems that use public telecommunications
20 networks shall provide system documentation that clearly
21 identifies all COTS hardware and software products and
22 communications services used in the development and/or
23 operation of the voting system, including operating
24 systems, communications routers, modem drivers and dial-
25 up networking software. Documentation shall identify the
26 name, voting system provider, and version used for each
27 such component.

28 45.5.2.7.10 Voting systems providers shall document how they plan to
29 monitor and respond to known threats to which their voting
30 systems are vulnerable. This documentation shall provide a
31 detailed description, including scheduling information, of
32 the procedures the voting system provider will use to:

33 (a) Monitor threats, such as through the review of
34 assessments, advisories, and alerts for COTS
35 components;

- (b) Evaluate the threats and, if any, proposed responses.
- (c) Develop responsive updates to the system and/or corrective procedures; and
- (d) As part of THE certification requirements of the proposed system, provide assistance to customers, either directly or through detailed written procedures, how to update their systems and/or to implement the corrective procedures within the timeframe established by the Secretary of State.

~~45.5.2.8 Accessibility Requirements REPEALED~~

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

- ~~(a) Buttons and controls shall be distinguishable by both shape and color;~~
- ~~(b) Audio ballots shall meet the following standards:
 - ~~(i) The voting system shall allow the voter to pause and resume the audio presentation.~~
 - ~~(ii) The audio system shall allow voters to control within reasonable limits, the rate of speech.~~~~
- ~~(c) No voting system or any of its accessible components shall require voter speech for its operation;~~
- ~~(d) All Touchscreen technology shall be tested for use of fingers as well as non human touch that is both wet and dry;~~
- ~~(e) Voting systems shall include at least the ability to activate and navigate by means of push buttons, dials, wheels, keypads, and/or touch screens. All voting systems submitted for certification after March 31, 2008, shall also include any form of either switches, sip and puff devices, or additional blink control devices; and~~

1 ~~(f) Adjustability of color settings, screen contrasts and/or~~
2 ~~screen angles/tilt may be made by either the poll~~
3 ~~worker or voter if the system uses a display screen.~~
4 ~~A minimum of two color settings, two contrast~~
5 ~~settings and two angles shall be available for all~~
6 ~~display screens.~~

7 ~~45.5.2.8.2 Documentation of the accessibility of the voting system~~
8 ~~shall include the following items at a minimum:~~

9 ~~(a) If appropriate, voting booth design features that~~
10 ~~provide for privacy for the voter while voting (if a~~
11 ~~voting booth is not included with the system, then~~
12 ~~describe how voter privacy is accomplished);~~

13 ~~(b) Adaptability of the proposed system for voters with~~
14 ~~disabilities as outlined in the Americans with~~
15 ~~Disabilities Act guidelines;~~

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

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

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

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

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

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

27 ~~(i) Method for adjusting color settings, screen contrasts,~~
28 ~~and screen angles/tilt if the system uses a display~~
29 ~~screen.~~

30 *[Note: This rule 45.5.2.8 is relocated to rule 35.2 as it deals with the requirements for*
31 *accessibility of voting equipment. The relocation was based on feedback received*

1 *during public meetings that consolidation of the accessibility requirements would*
2 *create efficiency in referencing requirements.]*

3 45.5.2.98 Voter-Verifiable Paper Record Requirements (V-VPAT)

4 45.5.2.98.1 V-VPAT shall refer to a Voter-verified paper record as
5 defined in Ssection1-1-104(50.6)(a), C.R.S.

6 45.5.2.98.2 Existing systems that are retrofitted to comply with this law
7 shall be examined for certification by the Secretary of
8 State. Any retrofitted voting system shall comply with the
9 process and application for certification as identified by this
10 Rrule 45.

11 45.5.2.98.3 The V-VPAT shall consist of the following minimum
12 components:

13 (a) The voting device shall contain a paper audit trail
14 writer or printer that shall be attached, built into, or
15 used in conjunction with the DRE. The printer shall
16 duplicate a voter's selections from the DRE onto a
17 paper record;

18 (b) The unit or device shall have a paper record display
19 unit or area that shall allow a voter to view his or her
20 paper record;

21 (c) The V-VPAT unit shall contain a paper record storage
22 unit that shall store cast and spoiled paper record
23 copies securely; and

24 (d) These devices may be integrated as appropriate to
25 their operation.

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

- 1 45.5.2.98.5 The V-VPAT printer connection may be any standard,
2 publicly documented printer port (or the equivalent) using a
3 standard communication protocol.
- 4 45.5.2.98.6 The printer shall not be permitted to communicate with any
5 ~~other~~ device OTHER than the voting device to which it is
6 connected.
- 7 45.5.2.98.7 The printer shall only be able to function as a printer, and
8 not perform any other non-printer related services.
- 9 45.5.2.98.8 Every electronic voting record shall have a corresponding
10 paper record.
- 11 45.5.2.98.9 The paper record shall be considered an official record of
12 the election available for recounts, and shall be sturdy,
13 clean, and of sufficient durability to be used for this
14 purpose.
- 15 45.5.2.98.10 The V-VPAT device shall be designed to allow every voter
16 to review, and accept or reject his/her paper record in as
17 private and independent manner as possible for both
18 disabled and non-disabled voters.
- 19 45.5.2.98.11 The V-VPAT system shall be designed in conjunction with
20 ~~S~~State ~~L~~Law to ensure the secrecy of votes so that it is not
21 possible to determine which voter cast which paper record.
- 22 45.5.2.98.12 The V-VPAT printer shall print at a font size no less than
23 ten (10) points for ease of readability. Any protective
24 covering intended to be transparent shall be in such
25 condition that it can be made transparent by ordinary
26 cleaning of its exposed surface.
- 27 45.5.2.98.13 The V-VPAT system shall be designed to allow each voter
28 to verify his or her vote on a paper record in the same
29 language they voted in on the DRE.
- 30 45.5.2.98.14 The V-VPAT system shall be designed to prevent
31 tampering with unique keys and/or seals for the
32 compartment that stores the paper record, as well as meet
33 the security requirements of this rule. Additional security

1 measures may be in place on the printer to prevent
2 tampering with the device.

3 45.5.2.98.15 The V-VPAT system shall be capable of printing and
4 storing paper record copies for at least ~~seventy five (75)~~
5 ballots cast without requiring the paper supply source, ink
6 or toner supply, or any other similar consumable supply to
7 be changed, assuming a fully printed double sided ~~eighteen~~
8 (~~18~~) inch ballot with a minimum of 20 contests.

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

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

23 45.5.2.98.18 The voting system provider shall provide procedures and
24 documentation for the use of the V-VPAT device.

25 45.5.2.98.19 The printed information on the printed ballot or verification
26 portion of the V-VPAT device shall contain at least the
27 following items:

- 28 (a) Name or header information of race, question or
29 issue;
- 30 (b) Voter’s selections for the race information;
- 31 (c) Write-in candidate’s names if selected;
- 32 (d) Undervote or overvote information – this is in
33 addition to the information on the review screen of
34 the DRE;

1 (e) Ability to optionally produce a unique serial number
2 (randomized to protect privacy); and

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

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

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

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

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

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

28 45.5.2.98.25 If used for provisional ballots, the V-VPAT system shall be
29 able to mark paper records as a provisional ballot through
30 the use of human readable text and optionally printing
31 barcode and/or serial number information which shall
32 provide for mapping the record back to ~~both~~ the electronic
33 record and the provisional voter for processing after
34 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
2 PROCEDURES TO THE Secretary of State WITH THE
3 APPLICATION FOR CERTIFICATION WHICH DESCRIBE ~~shall~~
4 ~~keep on file procedures submitted by the voting system~~
5 ~~provider for~~ how to investigate and resolve malfunctions
6 including, but not limited to, misreporting votes,
7 unreadable paper records, paper jams, low-ink, misfeeds,
8 preventing the V-VPAT from being a single point of
9 failure, recovering votes in the case of malfunction and
10 power failures.

11 45.6 Testing

12 45.6.1 Voting System Provider Demonstration

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

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

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

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

13 45.6.1.3 The voting system provider shall have access to the demonstration room
14 for one DAY ~~hour~~ prior to the start of the demonstration to provide time
15 for setup of the voting system.

16 45.6.1.4 A maximum of ONE ~~3-business days~~ IS NORMALLY ~~—24 hours total shall~~
17 ~~be allowed for the demonstration.~~ —IF THE VOTING SYSTEM PROVIDER
18 REQUESTS MORE TIME FOR THE DEMONSTRATION OR, IF THE SECRETARY
19 OF STATE FINDS THAT THE COMPLEXITY OF THE SYSTEM IS SUCH THAT
20 MORE TIME IS NEEDED FOR A DEMONSTRATION, MORE TIME MAY BE
21 GRANTED.

22 45.6.1.5 The demonstration shall be open to representatives of the press and the
23 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 demonstration
27 will take place in the designated **public place** ~~LEGAL INSTRUMENT~~ for
28 posting SUCH notices for at least seven ~~(7)~~ days ~~before~~ PRIOR TO the
29 demonstration. The notice shall indicate the general time frame during

1 which the demonstration may take place and the manner in which
2 members of the public may obtain specific information about the time
3 and place of the test.

4 45.6.1.7 The voting system provider shall provide the same class of workstation
5 and/or server for testing the voting system as the normal production
6 environment for the State of Colorado.

7 45.6.2 Functional Testing

8 45.6.2.1 Voting system provider requirements for testing

9 45.6.2.1.1 BASED UPON THE REVIEW OF VSTL OR OTHER STATE
10 REPORTS AND TEST RECORDS, THE SECRETARY OF STATE
11 WILL PREPARE A TEST PLAN. THE TEST PLAN SHALL BE
12 DESIGNED TO TEST FOR ANY REQUIREMENTS SPECIFIC TO
13 COLORADO LAW WHICH WERE NOT ADDRESSED IN PRIOR
14 TESTING AND FOR ANY FEDERAL OR COLORADO
15 REQUIREMENTS WHICH WERE NOT ADDRESSED TO THE
16 SATISFACTION OF THE SECRETARY OF STATE IN THE REPORTS
17 AND RECORDS FROM PRIOR TESTING.

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

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

- 1 45.6.2.1.4~~4~~ 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 45.6.2.1.5~~2~~ 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
10 OF THE EQUIPMENT FOR SHIPPING DAMAGE AND MISSING
11 COMPONENTS, A VENDOR REPRESENTATIVE SHALL ONLY BE
12 ALLOWED TO OPERATE OR TOUCH THE EQUIPMENT WHEN
13 APPROVED BY THE SECRETARY OF STATE. ALL SUCH
14 ACTIVITY BY A VENDOR REPRESENTATIVE SHALL BE
15 DOCUMENTED ON VIDEO AND IN WRITING.
- 16 45.6.2.1.6~~3~~ The proprietary software shall be installed on the
17 workstation/server and all applicable voting system
18 components by the ~~testing board~~ SECRETARY OF STATE
19 USING THE ~~following the verification of the~~ trusted build,
20 and ~~using the~~ INSTALLATION procedures provided by the
21 voting system provider. After installation, HASH VALUES
22 FOR the software and firmware shall be COMPARED TO ANY
23 PUBLISHED HASH VALUES OF THE TRUSTED BUILD. ANY
24 MISMATCHES IN HASH VALUES WILL BE INVESTIGATED AND
25 RESOLVED BEFORE PROCEEDING WITH TESTING. ~~verified to~~
26 ~~the trusted build hash values.~~
- 27 45.6.2.1.7 ALL EQUIPMENT SHALL BE HARDENED USING THE VOTING
28 SYSTEM PROVIDER'S PROCEDURES AND SPECIFICATIONS.
- 29 45.6.2.1.8~~4~~ TESTING ~~The test~~ shall be performed with TEST ELECTION
30 DEFINITIONS AND test ballots ~~and~~ AS REQUIRED IN THE TEST
31 PLAN. ~~an election setup file, as determined by the Secretary~~
32 ~~of State.~~
- 33 45.6.2.1.9 THE RESULTS OF ALL TESTING SHALL BE RECORDED IN THE
34 REQUIREMENTS MATRIX. THE REQUIREMENTS MATRIX
35 SHALL BE THE PRIMARY RECORD DESCRIBING WHICH
36 REQUIREMENTS WERE MET AND SPECIFYING WHICH WERE
37 NOT. IT SHALL BE SUPPLEMENTED AS NECESSARY TO

1 SUPPORT THE FINDINGS WITH TEST TEAM NOTES AND SYSTEM
2 REPORTS. SUPPLEMENTAL INFORMATION MAY INCLUDE
3 PHOTOGRAPHS AND AUDIO OR VIDEO RECORDINGS.

4 45.6.2.1.10~~5~~ Functional testing shall be completed according to the
5 PHASES ~~schedule~~-identified in ~~section~~ RULE 45.3.3.

6 45.6.2.2 Secretary of State requirements for testing

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

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

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

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

29 45.6.2.2.4~~5~~ In the event that a deviation FROM THE TEST PLAN IS
30 REQUIRED, IT SHALL BE DOCUMENTED IN A TEST TEAM NOTE.
31 THE NOTE SHALL PROVIDE A DESCRIPTION OF THE
32 DEVIATION, THE REASON FOR THE DEVIATION AND EFFECT OF
33 THE DEVIATION ON TESTING AND DETERMINING COMPLIANCE
34 WITH REQUIREMENTS. ~~to requirements pertaining to the test~~
35 ~~environment, voting system arrangement and method of~~

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

6 45.6.2.3 General Testing Procedures and Instructions

7 45.6.2.3.1 Certification tests shall be used to determine compliance
8 with applicable performance standards for the system and
9 its components. The general procedure for these tests shall:

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

13 (b) Establish the standard test environment or the special
14 environment required to perform the test;

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

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

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

23 45.6.2.3.2 All tests shall be GENERALLY conducted as described in this
24 ~~section 45.6.2.3~~ in regular election mode. TESTS OF TEST
25 MODE AND DIAGNOSTIC FUNCTIONS MAY BE CONDUCTED IN
26 THE APPROPRIATE TEST MODE. ~~At no point shall testing be~~
27 ~~conducted in any form of test mode.~~

28 ~~45.6.2.3.3 Each voting system shall be tested and examined by~~
29 ~~conducting at least three mock elections which shall~~
30 ~~include voting scenarios that exist within a primary, a~~
31 ~~coordinated election, and a recall election.~~

32 ~~45.6.2.3.4 Each component of the voting system shall contain~~
33 ~~provisions for verifying it is functioning correctly and,~~

1 ~~whether operation of the component is dependent upon~~
2 ~~instructions specific to that election. Test scripts shall be~~
3 ~~substantive and qualitative in form with expected results~~
4 ~~listed for each test.~~

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

9 ~~45.6.2.3.63 The voting system provider is required to produce ballots~~
10 ~~AND ASSEMBLE MARKED TEST DECKS AND SPARE BALLOTS~~
11 ~~AS SPECIFIED IN THE TEST PLAN. in quantities identified~~
12 ~~below for each of the elections. Enough ballots need to be~~
13 ~~created to conduct the testing of the voting system as~~
14 ~~defined in this rule. One complete set of ballots will be~~
15 ~~tested in each of the applicable counter types (or groups)~~
16 ~~indicated below:~~

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

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

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

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

23 ~~45.6.2.3.7 All ballots provided shall be blank with no marks on them.~~
24 ~~The following combinations of ballots are required:~~

25 ~~(a) Four separate decks of ballots shall be provided~~
26 ~~consisting of 25 ballots for each precinct/precinct split~~
27 ~~generated for each election that are flat (1500~~
28 ~~minimum combined). At least one deck shall have~~
29 ~~the General Election data, and at least one shall have~~
30 ~~the Primary election data as indicated in the~~
31 ~~instructions for voting system providers;~~

32 ~~(b) Four separate decks of ballots shall be provided~~
33 ~~consisting of 25 ballots for each precinct/precinct split~~
34 ~~generated for each election that are folded (1500~~

1 ~~minimum combined). At least one deck shall have~~
2 ~~the General Election data, and at least one shall have~~
3 ~~the Primary election data as indicated in the~~
4 ~~instructions for voting system providers;~~

5 ~~(c) Four separate decks of ballots consisting of 300~~
6 ~~ballots of any single precinct from each election.~~
7 ~~Two of these decks shall be printed in all alternative~~
8 ~~languages as required for the State of Colorado~~
9 ~~pursuant to section 45.5.2.3.5;~~

10 ~~(d) One separate deck of ballots consisting of 200 ballots~~
11 ~~of any single precinct from the Coordinated election~~
12 ~~shall be provided that contains a two page ballot~~
13 ~~(faces on four faces);~~

14 ~~(e) One separate deck of ballots consisting of 10 ballots~~
15 ~~for each precinct generated for the Recall election that~~
16 ~~are flat as indicated in the instructions for voting~~
17 ~~system providers; and~~

18 ~~(f) Any voting system provider that uses serial numbers~~
19 ~~printed on ballots for processing shall produce ballots~~
20 ~~of each requirement above printed both with and~~
21 ~~without serial numbers.~~

22 45.6.2.3.48 The voting system provider shall provide A MINIMUM OF
23 TEN ~~10~~ ballot marking pens/pencils/markers as defined by
24 their system for marking ballots by the Secretary of State ~~or~~
25 ~~the designee.~~

26 45.6.2.3.59 FOR MARK-SENSE OR OPTICAL SCAN DEVICES, THE
27 SECRETARY OF STATE WILL PREPARE ONE OR MORE TEST
28 BALLOTS WITH ~~The testing board shall mark a minimum of~~
29 ~~300 ballots with~~ marking devices of various color, weight
30 and consistency to determine THE RANGE OF MARKS THAT
31 CAN BE READ AND THE RANGE AND CONSISTENCY OF
32 READING MARGINAL MARKS. ~~accurate counting with a~~
33 ~~variety of marking devices.~~

34 45.6.2.3.610 Ballots shall be cast and counted in all applicable counter
35 types (or counter groups) as necessary based on the parts

1 included in the voting system. These are, at a minimum,;
2 Poll Place (or Vote Center), Mail-in, Provisional, and Early
3 Voting. ~~Ballots may be run through components 10 or~~
4 ~~more times depending on components and counter group~~
5 ~~being tested to achieve a minimum number of ballots cast~~
6 ~~as follows for each group:~~

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

8 ~~(b) Polling Place / DRE = 500;~~

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

10 ~~(d) Vote Center / DRE = 500~~

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

12 ~~(f) Early Voting / DRE = 250;~~

13 ~~(g) Mail in = 10,000; and~~

14 ~~(h) Provisional = 5,000.~~

15 45.6.2.3.7~~11~~ Ballot design shall BE SUFFICIENT TO VERIFY THE ~~cover the~~
16 scope of allowable BALLOT designs for the given system
17 UNDER COLORADO ELECTION LAW. ~~For example, if a~~
18 ~~system is capable of producing 11" and 18" ballots, then~~
19 ~~both ballot styles shall be tested in each of the elections~~
20 ~~above. If more sizes are available, they shall also be tested.~~
21 ~~Ballots shall be designed and presented with a maximum of~~
22 ~~four (4) columns and a minimum of one (1) column.~~

23 45.6.2.3.8~~12~~ Ballots shall be printed in applicable languages as required
24 by sState and/or federal law.

25 45.6.2.3.9~~13~~ Ballots shall include candidates to represent the maximum
26 number of political parties in the State of Colorado, and
27 shall accommodate all qualified political parties and
28 political organizations.

29 45.6.2.3.10~~14~~ THE REQUIREMENTS MATRIX SHALL INCLUDE THE
30 FOLLOWING REQUIREMENTS FOR ELECTION DEFINITIONS AND
31 BALLOTS ~~Ballots shall include the following minimum race~~

1 ~~situations~~ to simulate and test “real world” situations in the
2 State of Colorado. ELECTION DEFINITIONS AND BALLOTS
3 SHALL INCLUDE THE FOLLOWING MINIMUM ~~face~~ CONTEST
4 ~~situations~~ CRITERIA.

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

26 45.6.2.3.115 Additional tests and procedures may be requested at the
27 discretion of the Secretary of State.

28 45.6.2.3.12 A COUNTY CLERK AND RECORDER DESIGNATED
29 REPRESENTATIVE MAY OBSERVE THE FUNCTIONAL TESTING
30 OF A VOTING SYSTEM. THE REPRESENTATIVE MAY ASSIST AT
31 THE REQUEST OF THE SECRETARY OF STATE. ALL SUCH
32 ACTIVITY BY A VENDOR REPRESENTATIVE SHALL BE
33 DOCUMENTED ON VIDEO AND IN WRITING.

1 45.6.2.3.13 THE PUBLIC SHALL BE ALLOWED TO VIEW ALL FUNCTIONAL
2 TESTING CONDUCTED BY THE SECRETARY OF STATE.
3 HOWEVER, LEGAL LIMITATIONS MAY REQUIRE THAT
4 CERTAIN TESTING, INCLUDING BUT NOT LIMITED TO
5 PROPRIETARY INFORMATION AND SYSTEM SECURITY, BE
6 DONE OUTSIDE THE VIEW OF THE PUBLIC. IF THE FUNCTIONAL
7 TESTING IS OUTSOURCED TO A TESTING LAB OR
8 CONTRACTOR, PUBLIC VIEWING SHALL BE SUBJECT TO
9 LIMITATIONS SET FORTH BY THE TESTING LAB OR
10 CONTRACTOR.

11 45.6.3 Certification

12 45.6.3.1 The Secretary of State shall certify voting systems that substantially
13 comply with the requirements in this Rule 45, Colorado Election Code,
14 and any additional testing that is deemed necessary by the Secretary of
15 State.

16 45.6.3.2 If any malfunction or data error is detected, its occurrence and the
17 duration of operating time preceding it shall be recorded for inclusion in
18 the analysis and the test shall be interrupted. If corrective action is taken
19 to restore the devices to a fully operational condition within EIGHT (8)
20 hours, then the test may be resumed at the point of suspension.

21 45.7 Temporary Use

22 45.7.1 If a voting system provider has a system that has ~~been TESTED approved by an~~
23 ~~VSTL, but has~~ not yet been approved for certification through the Secretary of
24 State, the voting system provider or the designated election official may apply to
25 the Secretary of State for temporary approval of the system to be used for up to
26 one year.

27 45.7.2 Upon approval of temporary use, a jurisdiction may use the voting system, or
28 enter into a contract to rent or lease the voting system for a specific election upon
29 receiving written notice from the Secretary of State's office. At no time shall a
30 jurisdiction enter into a contract to purchase a voting system that's HAS been
31 approved for temporary use.

32 45.7.3 The Secretary of State shall approve use of a temporarily approved voting system
33 for each election that a jurisdiction ~~would like~~ REQUESTS PERMISSION to conduct
34 with the voting system.

- 1 (a) The Election Assistance Commission (EAC);
- 2 (b) Voting Systems Testing Laboratories (VSTL);
- 3 (c) The Federal Election Commission (FEC);
- 4 (d) The National Software Reference Library (NSRL);
- 5 (e) National Association of State Election Directors (NASED);
- 6 (f) The National Association of Secretaries of State (NASS);
- 7 (g) Information from any state elections department or Secretary of State; and/or
- 8 (h) Information from Colorado County Clerk and Recorders or their association.

9 45.9.3 Any use of a decertified or uncertified voting system for any jurisdiction in the
10 State of Colorado shall result in possible loss of future and other existing
11 certifications within the sState, at the discretion of the Secretary of State.

12 45.9.4 Pursuant to section 1-5-621, C.R.S., the Secretary of State shall hold a public
13 hearing to consider the decision to decertify a voting system.

14 45.10 Modifications and Re-examination

15 45.10.1 Any ~~field~~-modification, change, or other alteration to a CERTIFIED voting
16 system shall require CERTIFICATON OR REVIEW UNDER SECTION 1-5-618 C.R.S.
17 UNLESS THE VOTING SYSTEM PROVIDER DECIDES TO PRESENT THE MODIFIED SYSTEM
18 FOR CERTIFICATION UNDER THIS RULE 45 approval or certification before it may be
19 used in any election within the State of Colorado.45.10.2 A voting system
20 provider may apply to the Secretary of State for the review of a modification of an
21 existing certified system at any time during the year. Secretary of State shall
22 conduct sufficient testing to ensure that all incremental changes to any voting
23 system being submitted for certification meet all security requirements set forth in
24 this rule.

25 45.11 Acceptance Testing by Jurisdictions

26 45.11.1 Whenever an election jurisdiction acquires a new system or modification
27 of an existing system certified by the Secretary of State, the election jurisdiction
28 shall perform acceptance tests of the system before it may be used to cast or count
29 votes at any election. The voting system shall be operating correctly, pass all tests
30 as directed by the acquiring jurisdiction's project manager or contract negotiator,
31 and shall be identical to the voting system certified by the Secretary of State.

1 45.11.2 The voting system provider shall provide all manuals and training
2 necessary for the proper operation of the system to the jurisdiction, or as indicated
3 by their contract.

4 45.11.3 The election jurisdiction shall perform a series of functional and
5 programming tests that shall test all functions of the voting system at their
6 discretion.

7 45.11.4 The jurisdiction shall coordinate acceptance testing with the Secretary of
8 State's ~~designated agent~~ and complete a Jurisdiction Acceptance Test form
9 provided by the Secretary of State.

10 45.12 Purchases and Contracts

11 45.12.1 Any voting system that has been certified under the procedures of this
12 Rule 45 are eligible for purchase, lease, or rent for use by jurisdictions within the
13 State of Colorado providing the contract contains the following items:

14 (a) The voting system is certified for use within the State;

15 (b) Contract contains training and maintenance costs for Jurisdiction; and

16 (c) Contract identifies components contained in the certified voting system; and
17 appears complete with all accessories necessary for successfully conducting
18 an election within the laws and rules of the State of Colorado.

19 45.12.2 The SECRETARY OF STATE shall maintain on file a list of all
20 components used and purchased for use. The list shall include, at a minimum, the
21 name of the jurisdiction, the date of purchase, the serial number(s) of voting
22 devices and NAME OF THE voting systems that was purchased.

23 45.13 FINANCIAL STATEMENTS OF VOTING SYSTEM PROVIDERS

24 45.13.1 ALL VOTING SYSTEM PROVIDERS APPLYING FOR CERTIFICATION IN THE
25 STATE OF COLORADO OR DOING BUSINESS IN THE STATE OF COLORADO SHALL
26 PROVIDE QUARTERLY FINANCIAL STATEMENTS AND AN ANNUAL AUDITOR'S REPORT
27 TO THE SECRETARY OF STATE. REPORTS SHALL BE DUE:

28 (A) PRIOR TO THE COMPLETION OF FUNCTIONAL TESTING FOR ANY VOTING
29 SYSTEM BEING SUBMITTED FOR CERTIFICATION;

30 (B) AT THE CONCLUSION OF EACH ACCOUNTING QUARTER FOR PROVIDERS
31 WITH EQUIPMENT CERTIFIED FOR USE IN THE STATE OF COLORADO;

1 (C) UPON ISSUANCE OF A FINAL AUDITOR'S REPORT AFTER THE COMPLETION
2 OF EACH ANNUAL AUDIT.

3 45.13.2 FINANCIAL STATEMENTS SUBMITTED TO THE SECRETARY OF STATE SHALL
4 INCLUDE A STATEMENT OF CASH FLOW, STATEMENT OF RETAINED EARNINGS,
5 BALANCE SHEET, AND INCOME STATEMENT.