

Revised Draft of Proposed Rules

January 30, 2007

This document shows and explains the substantive changes proposed for consideration at the Rulemaking Hearing on February 6, 2007.

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. Proposed deletions from current rules are shown in ~~stricken type~~. Changes to the draft of Rule 45 posted on the Department of State's web site January 12, 2007 are underlined. Annotations may be included.

COLORADO SECRETARY OF STATE

8 CCR 1505-1

ELECTION RULES

1 Rule 25.3.7 would be amended as follows:

2 25.3.7.1 The electronic transmission log as well as any other ETS or fax records
3 shall be maintained as part of the official election record.

Rule 26 would be amended as follows:

26.2 Emergency Registration and use of Provisional Ballots in the County Clerk and Recorder's Office

4 26.2.1 If the elector applies for an emergency registration that cannot be qualified in the
5 clerk's office at the time of the registration pursuant to section 1-2-217.5(4), C.R.S.,
6 the elector shall be issued a provisional ballot. The elector's registration must be
7 confirmed by the designated election official at the time that the provisional ballots are
8 verified or the provisional ballot shall not be counted.

9 26.2.2 If an elector whose name is not in the registration records, appears in person at the
10 county clerk and recorder's office and states that he or she has timely registered
11 through a ~~Voter Registration Drive ("VRD")~~ or an agency pursuant to section 1-2-504,

1 C.R.S., CAN AFFIRM TO THE NAME, LOCATION OF, AND APPROXIMATE DATE HE OR SHE
2 COMPLETED THE APPLICATION AT THE AGENCY OR PROVIDE AN APPLICATION RECEIPT,
3 and ~~has both an application receipt and~~ PROVIDES an ID as defined in section 1-1-
4 104(19.5), C.R.S., the elector shall be offered emergency registration and be offered a
5 regular ballot.

6 26.2.2.1 If the elector does not provide an ID ~~and/or an application receipt~~, the
7 elector shall be offered a provisional ballot. The county clerk and recorder shall
8 note on the provisional ballot envelope that the elector did not have an ID ~~or~~
9 ~~an application receipt~~.

10 26.2.2.2 If the elector is able to produce an application receipt from the ~~VRD or~~
11 agency registration, but does not provide an ID pursuant to section 1-1-
12 104(19.5), C.R.S., the elector shall surrender the receipt to the election judge,
13 and the county clerk and recorder shall attach the receipt to the provisional
14 ballot envelope.

15 26.2.3 IF AN ELECTOR WHOSE NAME IS NOT IN THE REGISTRATION RECORDS, APPEARS IN
16 PERSON AT THE COUNTY CLERK AND RECORDER'S OFFICE AND STATES THAT HE OR SHE
17 HAS TIMELY REGISTERED THROUGH A VOTER REGISTRATION DRIVE ("VRD") PURSUANT
18 TO SECTION 1-2-504, C.R.S., CAN AFFIRM TO THE NAME, LOCATION OF, AND
19 APPROXIMATE DATE HE OR SHE COMPLETED THE APPLICATION WITH THE VRD OR
20 PROVIDE AN APPLICATION RECEIPT, AND PROVIDES AN ID AS DEFINED IN SECTION 1-1-
21 104(19.5), C.R.S., THE ELECTOR SHALL BE OFFERED EMERGENCY REGISTRATION AND BE
22 OFFERED A REGULAR BALLOT.

23 26.2.3.1 IF THE ELECTOR DOES NOT PROVIDE AN ID THE ELECTOR SHALL BE
24 OFFERED A PROVISIONAL BALLOT. THE COUNTY CLERK AND RECORDER SHALL
25 NOTE ON THE PROVISIONAL BALLOT ENVELOPE THAT THE ELECTOR DID NOT
26 HAVE AN ID.

27 26.2.3.2 IF THE ELECTOR IS ABLE TO PRODUCE AN APPLICATION RECEIPT FROM
28 THE VRD REGISTRATION, BUT DOES NOT PROVIDE AN ID PURSUANT TO SECTION
29 1-1-104(19.5), C.R.S., THE ELECTOR SHALL SURRENDER THE RECEIPT TO THE
30 ELECTION JUDGE, AND THE COUNTY CLERK AND RECORDER SHALL ATTACH THE
31 RECEIPT TO THE PROVISIONAL BALLOT ENVELOPE.

32 26.2.2.34 If the elector's eligibility to vote cannot be verified, the provisional ballot shall
33 not count, but may constitute a registration for future elections.
34

35 Rule 30.3 would be amended as follows:

36 30.3 Voter Registration by Mail

37 30.3.1 Registering by Mail. (Including Voter Registration Drives).

38 (a) The voter must provide one of the following identification numbers:

1 (B)The person’s Colorado Driver’s License number or ID number issued by the
2 Department of Revenue; if the voter does not have a current and valid Colorado
3 Driver’s License or ID card issued by the Department of Revenue, the voter shall
4 provide the last four digits of the voter’s social security number.

5 (bC) If a voter has not been issued a Colorado Driver’s License number, ID card
6 issued by the Department of Revenue or a Social Security card, the voter must
7 provide a copy of one of the forms of identification listed in 30.1.6.

8 Authority: Sections 1-2-501(2)(bA), C.R.S. and 1-1-104(19.5), C.R.S.

9

10 Rules 38.10 and 38.12 would be emended as follows:

11 38.10 Prior to JANUARY 1, 2008~~January 1, 2006~~, election judges shall make one certificate for each
12 Vote Center in the form required by section 1-7-601, C.R.S.

13 38.12 After JANUARY 1, 2008~~January 1, 2006~~, reconciliation shall consist of race-by-race
14 comparison by precinct of the received tabulation to a tabulation report produced from the
15 original tabulations sent from the precinct to those received at the Vote Center. All tabulation
16 reconciliations must be accomplished prior to canvassing board certification of final results
17 and shall be certified by the canvassing board. This certification of reconciliation shall be
18 filed with the Secretary of State at the time the canvassing board certification of official
19 election results is filed.

20

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

22 45.1 Definitions The following definitions apply to their use in this rule only, unless otherwise
23 stated.

24 45.1.1 “Audio ballot” means a voter interface containing the list of all candidates, ballot
25 issues, and ballot questions upon which an eligible elector is entitled to vote at an
26 election and that provides the voter with audio stimuli and allows the voter to
27 communicate intent to the voting system through vocalization or physical actions.

28 45.1.2 “Audit log” means a system-generated record, in printed format, providing a record of
29 activities and events relevant to initialization of election software and hardware,
30 identification of files containing election parameters, initialization of the tabulation
31 process, processing of voted ballots, and termination of the tabulation process.

32 45.1.3 “Ballot image” or “Ballot image log” means a corresponding representation in
33 electronic form of the marks or vote positions of a cast ballot that are captured by a
34 direct recording electronic voting device.

35 45.1.4 “Ballot style assignment” means the creation of unique, specific ballots for an election

1 by the election management system based on criteria keyed into the system for
2 districts, precincts, and races to create combinations of possibilities of races for
3 individual voters to choose based on their individual precincts.

4 45.1.5 “CLOSED NETWORK” MEANS A NETWORK STRUCTURE WHERE DEVICES ARE NOT
5 CONNECTED TO ~~ANY OTHER DEVICE EITHER SUPPORTED BY OR NOT SUPPORTED BY THE~~
6 ~~VOTING SYSTEM~~ THE INTERNET OR OTHER OFFICE AUTOMATION NETWORKS.

7 45.1.56 “Communications devices” means devices that may be incorporated in or
8 attached to components of the voting system for the purpose of transmitting tabulation
9 data to another data processing system, printing system, or display device.

10 45.1.67 “DRE” means a direct recording electronic voting device. A DRE is a voting
11 device that records votes by means of ballot display provided with mechanical or
12 electro-optical components OR AN AUDIO BALLOT that can be activated by the voter;
13 that processes data by means of a computer program; and that records voting data and
14 ballot images in memory components OR OTHER MEDIA. THE DEVICE MAY produce Aa
15 tabulation of the voting data stored in a removable memory component and as printed
16 copy. The device may also provide a means for transmitting individual ballots or vote
17 totals to a central location for consolidating and reporting results from remote sites to
18 the central location.

19 45.1.78 “EAC” means the United States Elections Assistance Commission.

20 45.1.89 “Election media” means any device including a cartridge, card, memory
21 device, or hard drive used in a voting system for the purposes of programming ballot
22 image data (ballot or card styles), recording voting results from electronic vote
23 tabulating equipment, or any other data storage needs required by the voting system
24 for a particular election function. The election management system typically delivers
25 (downloads) ballot style information to the election media and receives (uploads) cast
26 ballot information in the form of a summary of results and ballot images.

27 45.1.910 “Equipment” or “device” means a complete, inclusive term to represent all
28 items submitted for certification by the voting system provider. This can include, but
29 is not limited to any voting device, accessory to voting device, DRE, touch screen
30 voting device, card programming device software, and hardware, as well as a complete
31 end to end voting system solution.

32 45.1.1011 “FEC” means the Federal Election Commission.

33 45.1.1112 “ITA” means an independent test authority that provides engineering, testing,
34 or evaluation services, and is ~~certified by the National Association of State Election~~
35 ~~Directors (NASED)~~ as qualified BY THE EAC to conduct qualification testing on a
36 voting system.

37 45.1.12 ~~“NASED” means the National Association of State Election Directors.~~

38 45.1.1313 “Remote site” means any physical location identified by a Designated Election

1 Official as a location where the jurisdiction shall be conducting the casting of ballots
2 for a given election. A remote site includes locations such as precinct polling places,
3 vote centers, early voting, absentee ballot counting, etc.

4 45.1.14 “REMOVABLE STORAGE MEDIA” MEANS ANY DEVICE THAT IS INTENDED TO BE
5 REMOVED THAT HAS THE ABILITY OF STORING OR PROCESSING DATA FOR VOTING
6 SYSTEM.

7 45.1.15 “SECURITY” MEANS THE ABILITY OF A VOTING SYSTEM TO PROTECT ELECTION
8 INFORMATION AND ELECTION SYSTEM RESOURCES WITH RESPECT TO CONFIDENTIALITY,
9 INTEGRITY, AND AVAILABILITY.

10 45.1.16 “SPLIT PRECINCT” MEANS A PRECINCT THAT HAS A GEOGRAPHICAL DIVIDE
11 BETWEEN ONE OR MORE POLITICAL JURISDICTIONS WHICH MAY CAUSE A UNIQUE BALLOT
12 STYLE TO BE CREATED FOR A SPECIFIC ELECTION.

13 45.1.17 “TEST LOG” MEANS DOCUMENTATION OF CERTIFICATION TESTING AND
14 PROCESSES WHICH IS INDEPENDENTLY REPRODUCIBLE TO RECREATE ALL TEST
15 SCENARIOS CONDUCTED BY THE TESTING BOARD. THE LOG MAY INCLUDE
16 DOCUMENTATION INCLUDING PHOTOGRAPHS, WRITTEN NOTES, VIDEO AND/OR AUDIO
17 RECORDED NOTES IN AN EFFORT TO PROVIDE DETAIL TO THE TESTING SCENARIO
18 INCLUDING OBSERVATION AND RESULTS.

19 45.1.18 “TRUSTED BUILD” MEANS THE INSTALLATION DISK FOR SOFTWARE AND
20 FIRMWARE FOR WHICH THE SECRETARY OF STATE OR HIS/HER AGENT HAS ESTABLISHED
21 THE CHAIN OF CUSTODY TO THE BUILDING OF A DISK, WHICH IS THEN USED TO ESTABLISH
22 AND/OR RE-ESTABLISH THE CHAIN OF CUSTODY AND OWNERSHIP OF ANY COMPONENT OF
23 THE VOTING SYSTEM. THE TRUSTED BUILD IS THE ORIGIN OF THE CHAIN OF CUSTODY
24 FOR ANY SOFTWARE AND FIRMWARE COMPONENT OF THE VOTING SYSTEM.

25 45.2 Introduction

26 45.2.1 Definition of voting system for certification purposes

27 45.2.1.1 The definition of a voting system for the purposes of this rule shall be as the
28 term is defined in HAVA section 301(b). For Colorado purposes, no single
29 component of a voting system, such as a precinct tabulation device, meets the
30 definition of a voting system. ~~Sufficient components shall be assembled to~~
31 ~~create a configuration that shall allow the system as a whole to meet all the~~
32 ~~requirements described for a voting system in this rule.~~

33 45.2.1.2 SUFFICIENT COMPONENTS SHALL BE ASSEMBLED TO CREATE A CONFIGURATION
34 THAT SHALL ALLOW THE SYSTEM AS A WHOLE TO MEET ALL THE
35 REQUIREMENTS DESCRIBED FOR A VOTING SYSTEM IN THIS RULE.

36 45.2.2 Authority

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

3 45.2.2.2 Certifications issued prior to this date shall be considered valid provided the
4 voting system meets the requirements of HAVA section 301(a).

5 45.3 Certification Process Overview and Timeline

6 45.3.1 The voting system shall be considered as a unit, and all components of such system
7 shall be tested at once, unless the circumstances necessitate otherwise (e.g. retrofitted
8 V-VPATs, etc.). Any change made to individual components of a voting system shall
9 require re-certification of the voting system in accordance with this rule.

10 45.3.2 For a voting system to pass certification the voting system provider shall successfully
11 complete all phases of the certification process that shall include: submitting a
12 complete application, successful review of the documentation to evaluate if the system
13 meets the requirements of this rule, successful demonstration of the system, followed
14 by successful completion of items determined mandatory in the functional testing
15 section of this rule.

16 45.3.3 The following milestones indicate the flow of the certification process – see timeline
17 below:

18 (a) Phase I – 6 days maximum. Voting system provider submits application and
19 ~~SOS~~SECRETARY OF STATE reviews for completeness. Voting system provider shall
20 have 30 days to remedy and make application complete.

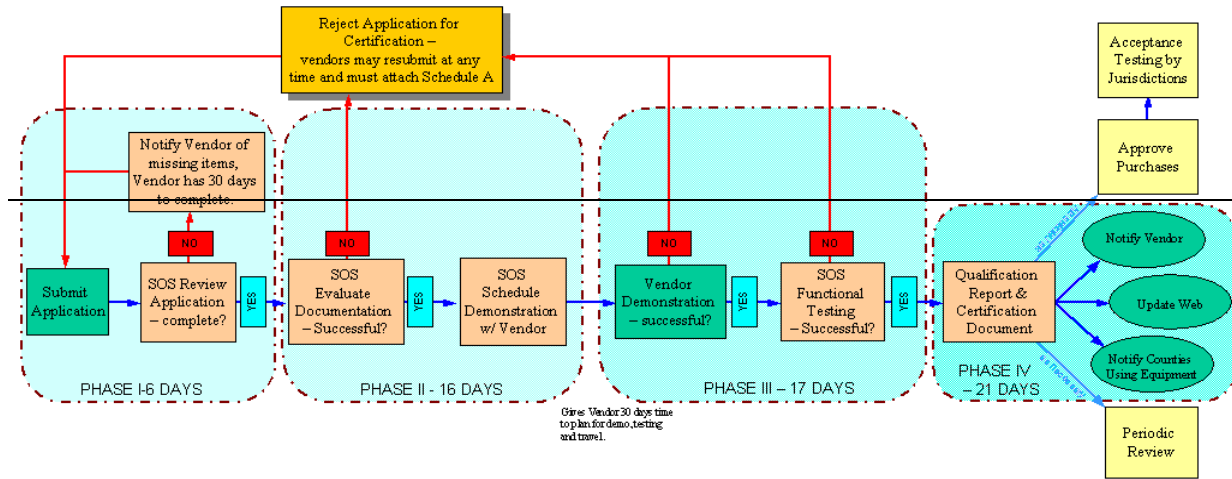
21 (b) Phase II – 16 Days maximum. ~~SOS~~SECRETARY OF STATE evaluates the
22 documentation submitted and upon successful completion makes arrangement with
23 voting system provider for demonstration.

24 (c) Phase III – ~~17~~ 36 days maximum. When demonstration is complete,
25 ~~SOS~~SECRETARY OF STATE performs the functional testing.

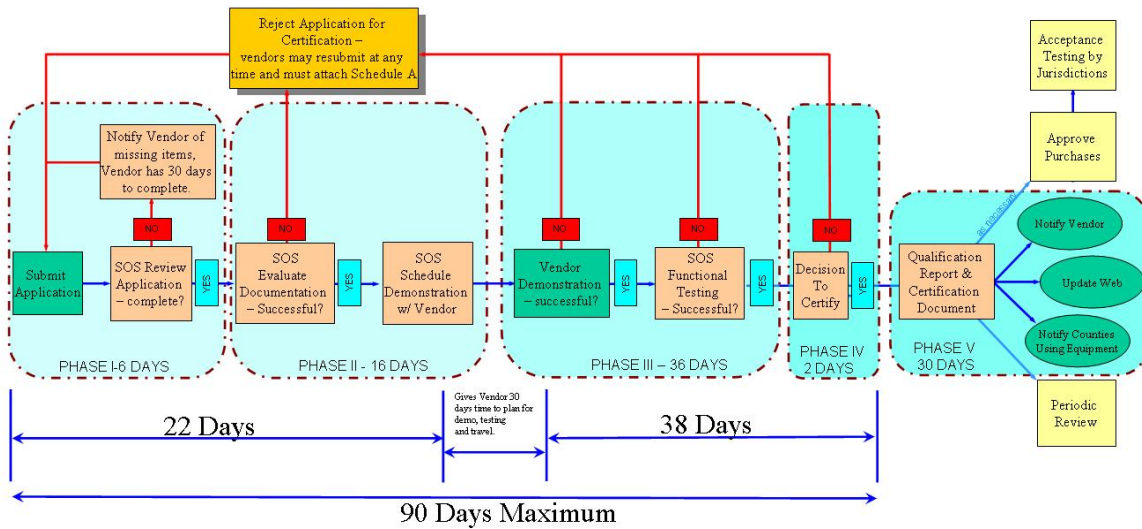
26 (d) Phase IV – ~~24~~ days maximum. Upon completion of functional testing,
27 ~~SOS~~SECRETARY OF STATE ~~produces a qualification report~~ MAKES A DECISION TO
28 CERTIFY A VOTING SYSTEM and PRODUCES applicable certification document.

29 (E) PHASE V – 30 DAYS MAXIMUM. UPON DECISION TO CERTIFY A VOTING SYSTEM,
30 ~~SOS~~SECRETARY OF STATE WILL PRODUCES A QUALIFICATION REPORT FOR THE
31 VOTING SYSTEM AND COMPONENTS CERTIFIED, WHICH SHALL BE POSTED ON THE
32 ~~SOS~~SECRETARY OF STATE WEBSITE.
33

Certification Program Overview and Timeline



Certification Program Overview and Timeline



1
2

1 45.4 Application Procedure

2 45.4.1 Any voting system provider may apply to the ~~SOS~~SECRETARY OF STATE for
3 certification at any time.

4 45.4.2 A voting system provider that submits a voting system for certification shall complete
5 the ~~SOS~~SECRETARY OF STATE'S "Application for Certification of Voting System".

6 45.4.3 THE VOTING SYSTEM PROVIDER SHALL ESTABLISH AN ESCROW ACCOUNT PURSUANT TO
7 STATE PROCUREMENT PROCESSES TO COMPENSATE THE ~~SOS~~SECRETARY OF STATE FOR
8 NECESSARY OUTSIDE COSTS ASSOCIATED WITH THE TESTING OF THE SYSTEM. THE
9 SECRETARY OF STATE SHALL PROVIDE AN ESTIMATE OF COSTS FOR CERTIFICATION
10 TESTING AT THE CONCLUSION OF PHASE II EVALUATION. ~~{CRITERIA TO BE DEVELOPED}~~

11 45.4.34 Along with the application, the voting system provider shall submit all the
12 documentation necessary for the identification of the full system configuration
13 submitted for certification. This documentation shall include information that defines
14 the voting system design, method of operation, and related resources. It shall also
15 include a system overview and documentation of the voting system's functionality,
16 accessibility, hardware, software, security, test and verification specifications,
17 operations procedures, maintenance procedures, and personnel deployment and
18 training requirements. In addition, the documentation submitted shall include the
19 voting system provider's configuration management plan and quality assurance
20 program.

21 45.4.45 Where applicable, electronic copies of documentation are preferred and may be
22 submitted in lieu of a hard copy.

23 45.4.6 THE VOTING SYSTEM PROVIDER SHALL SUBMIT ALL DOCUMENTATION AND
24 INSTRUCTIONS NECESSARY FOR THE CREATION OF AND GUIDED INSTALLATION OF FILES
25 CONTAINED IN THE "TRUSTED BUILD" WHICH WILL BE CREATED AT THE START OF
26 FUNCTIONAL TESTING AND WILL BE THE MODEL TESTED AGAINST. THE SECRETARY OF
27 STATE RESERVES THE RIGHT TO ADD ADDITIONAL INSTRUCTIONS OR GUIDANCE FOR THE
28 USE OF THE TRUSTED BUILD WHEN INITIATING THE CHAIN OF CUSTODY PROCESS FOR A
29 JURISDICTION USING THE SPECIFIED EQUIPMENT.

30 45.4.7 THE VOTING SYSTEM PROVIDERS SHALL COORDINATE THE ESTABLISHMENT OF THE
31 TRUSTED BUILD. THIS SHALL AT A MINIMUM INCLUDE A COMPILATION OF FILES PLACED
32 ON WRITE-ONCE MEDIA THAT THE SECRETARY OF STATE HAS OBSERVED THE CHAIN OF
33 CUSTODY FROM TIME OF SOURCE CODE COMPIATION THROUGH DELIVERY, AND AN
34 ESTABLISHED HASH FILE DISTRIBUTED FROM AN ITA OR THE NATIONAL SOFTWARE
35 REFERENCE LIBRARY TO COMPARE FEDERALLY CERTIFIED VERSIONS AGAINST. AFTER
36 MARCH 31, 2008 THE TRUSTED BUILD MAY BE RECEIVED THROUGH PROPER CHAIN OF
37 CUSTODY THROUGH THE EAC PROCESS FOR STATE LEVEL DISTRIBUTION OF THE
38 TRUSTED BUILD.

39 45.4.568 All materials submitted to the ~~SOS~~SECRETARY OF STATE shall REMAIN IN THE

1 CUSTODY OF THE ~~SOS~~SECRETARY OF STATE DURING THE LIFE OF THE CERTIFICATION
2 AND FOR 25 MONTHS AFTER THE LAST ELECTION IN WHICH THE SYSTEM IS USED ~~become~~
3 ~~the property of the SOS upon submission.~~

4 45.4.679 In addition to the application and the documentation specified above, the
5 ~~SOS~~SECRETARY OF STATE may request additional information from the applicant, as
6 deemed necessary by the ~~SOS~~SECRETARY OF STATE.

7 45.5 Voting System Standards

8 45.5.1 Federal Standards

9 45.5.1.1 Pursuant to section1-5-601.5, C.R.S., and Rule 37.3, any voting system and
10 voting equipment offered for sale on or after May 28, 2004 shall meet the
11 voting systems standards promulgated in 2002 by the FEC and that may
12 hereafter be promulgated by the EAC.

13 45.5.1.2 All voting system software, hardware, and firmware shall meet all
14 requirements of Federal law that address accessibility for the VOTER
15 INTERFACE OF THE voting system. These laws include, but are not necessarily
16 limited to, (a) the Help America Vote Act, (b) the Americans with
17 Disabilities Act, and (c) the Federal Rehabilitation Act. The voting system
18 provider shall acknowledge explicitly that their proposed software, hardware,
19 and firmware are all in compliance with the relevant accessibility portions of
20 these laws.

21 45.5.1.3 THE VOTING SYSTEM PROVIDER SHALL DIRECT THE ITA OR THE EAC TO
22 PROVIDE DOCUMENTATION INCLUDING APPLICABLE TEST LOGS INDICATING THE
23 SUCCESSFUL COMPLETION OF ALL NECESSARY ITA TESTING BASED ON
24 FEDERAL REQUIREMENTS. FAILURE TO PROVIDE DOCUMENTATION OF
25 INDEPENDENT TESTING AS DEFINED BY THE EAC WILL RESULT IN THE VOTING
26 SYSTEM APPLICATION BEING REJECTED.

27 45.5.2 State Standards

28 45.5.2.1 Functional requirements

29 45.5.2.1.1 Functional requirements shall address any and all detailed
30 operations of the voting system related to the management and
31 controls required to successfully conduct an election on the
32 voting system.

33 45.5.2.1.2 The Voting system shall PROVIDE FOR APPROPRIATELY
34 AUTHORIZED USERS TO ~~have the functional capabilities to:~~

- 35 (a) Prepare the system for an election;
- 36 (b) Setup and prepare ballots for an election;

- 1 (c) Lock and unlock system to prevent or allow changes to
2 ballot design;
- 3 (d) Conduct hardware and diagnostics testing as required
4 herein;
- 5 (e) Conduct logic and accuracy testing as required herein;
- 6 (f) Conduct an election and meet additional requirements as
7 identified in this section for procedures for voting,
8 auditing information, inventory control, counting ballots,
9 opening and closing polls, recounts, reporting, and
10 accumulating results as required herein;
- 11 (g) Conduct the post election audit as required herein; and
- 12 (h) Preserve the system for future election use.
- 13 45.5.2.1.3 The voting system shall ~~easily and~~ accurately integrate election
14 day voting results with absentee, early voting as well as
15 provisional ballot results.
- 16 45.5.2.1.4 The voting system shall be able to count all of an elector's votes
17 on a provisional ballot or only federal and statewide offices and
18 statewide ballot issues and questions, as provided under section
19 1-8.5-108(2), C.R.S.
- 20 45.5.2.1.5 The voting system shall ~~provide for the voting of multiple ballot~~
21 ~~styles for a single precinct and~~ shall provide for the tabulation of
22 votes cast in split precincts where all voters residing in one
23 precinct are not voting the same ballot style.
- 24 45.5.2.1.6 The voting system shall provide for the tabulation of votes cast
25 in combined precincts at remote sites, where more than one
26 precinct is voting at the same location, on either the same ballot
27 style or a different ballot style.
- 28 45.5.2.1.7 The voting system shall provide authorized users with the
29 capability to produce electronic files in ASCII (both comma-
30 delimited and fixed-width) format that shall contain (a) all data
31 or (b) any user selected data elements from the database. The
32 software shall provide authorized users with the ability to
33 generate these files on an "on-demand" basis. After creating
34 such files, the authorized users shall, at their discretion, have the
35 capability to copy the files to diskette, tape, or CD-ROM or to
36 transmit the files to another information system.

1 45.5.2.1.8 The voting system shall include hardware and software to
2 enable the closing of the voting location and disabling
3 acceptance of ballots on all vote tabulation devices to allow for
4 the following:

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

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

10 (c) Ability to print an Abstract of the count of votes to
11 contain:

12 (i) •Names of the offices

13 (ii)• Names of the candidates and party when applicable

14 (iii)•A tabulation of votes from ballots of different
15 political parties at the same voting location in a
16 primary election

17 •(iv) Ballot titles

18 •(v) Submission clauses of all initiated, referred or
19 other ballot issues

20 (vi)•The number of votes counted for or against each
21 candidate or ballot issue.

22 (d) Abstract shall include a Judge’s certificate and statement
23 that contains:

24 (i)• Date of election (day, month and year)

25 (ii)• Precinct Number (ten digit format)

26 (iii)•County or Jurisdiction Name

27 (iv)• State of Colorado

28 (v)• Count of votes as indicated in this section

29 (vi)• Area for judge’s signature with the words similar
30 to: “Certified by us”, and “Election Judges”.
31 Space should allow for a minimum of two
32 signatures.

1 (e) Votes counted by a summary of the voting location, and
2 by individual precincts.

3 (f) Allow for multiple copies of the unofficial results at the
4 close of the election.

5 (G) ALLOW FOR SITUATIONS WHERE A TWO PAGE BALLOT
6 (RACES ON FOUR FACES) IS REQUIRED

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

10 45.5.2.1.10 The system shall ensure that an election setup may not be
11 changed once ballots are printed and/or device media is
12 downloaded for votes to be conducted without proper
13 authorization and acknowledgement by ~~a—THE—~~ system
14 APPLICATION administrator ADMINISTRATIVE ACCOUNT. ~~AND (B)~~
15 ~~THAT THE~~ THE APPLICATION AND DATABASE AUDIT
16 TRANSACTION LOGS SHALL ACCURATELY REFLECT THE NAME OF
17 THE SYSTEM USER OPERATOR MAKING THE CHANGE(S), THE DATE
18 AND TIME OF THE CHANGE(S), AND THE “OLD” AND “NEW”
19 ~~values~~ VALUES OF THE CHANGE(S).

20 ~~45.5.2.1.11 The system shall be able to receive programming information~~
21 ~~from the Statewide Voter Registration System in XML format.~~

22 45.5.2.1.112 The system shall be able to export election results in either a
23 web based format, or an ASCII (COMMA DELIMITED AND FIXED-
24 WIDTH) FORMAT FOR USE IN OTHER APPLICATIONS. ~~delimited file~~
25 ~~(text, CSV, etc.) for use in other applications.~~

26 (a) Exports necessary for the ~~SOS~~ SECRETARY OF STATE shall
27 conform to ~~XML~~ AN AGREED UPON format.

28 (b) Export files shall be generated so that election results can
29 be communicated to the ~~SOS~~ SECRETARY OF STATE ON
30 ELECTION NIGHT BOTH DURING THE ACCUMULATION OF
31 RESULTS AND AFTER ALL RESULTS HAVE BEEN
32 ACCUMULATED.

33 45.5.2.2 Performance Level

34 45.5.2.2.1 Performance Level shall refer to any operation related to the
35 speed and efficiency required from the voting system to
36 accomplish the successful conduct of an election on the voting
37 system.

1 45.5.2.2.2 The voting system shall meet the following minimum
2 requirements for casting ballots. SPEED REQUIREMENTS ARE
3 BASED ON A PRINTED DOUBLE SIDED COMPLETE 18" BALLOT WITH
4 A MINIMUM OF 20 CONTESTS:

5 (a) Optical Scan Ballots at voting location(s) = 100 ballots per
6 hour

7 (b) DRE / Touch Screen = 20 ballots per hour

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

9 45.5.2.2.3 For the purposes of evaluating software, the voting system
10 provider shall be required to provide detailed information as to
11 the type of hardware required to execute the software. The
12 performance level shall be such that ~~a user~~ AN EVALUATOR of the
13 software would have ~~minimal~~ pauses EQUAL TO LESS THAN 5
14 SECONDS in the system during the ballot design and creation,
15 along with the downloading and uploading of election media
16 devices. Specifically, the following minimum standards are
17 required:

18 (a) Ballot style assignment is less than 10 seconds per ballot
19 style

20 (b) Election Media Download is less than 35 seconds per
21 media

22 (c) Election Media Upload is less than 20 seconds per media

23 (d) View Ballot image (on screen) is less than 30 SECONDS- per
24 ballot image

25 45.5.2.2.4 At no time shall third party hardware or software impact
26 performance levels, unless a voting system provider specifically
27 details through documentation the specific hardware or
28 software, the performance impact, and a workaround for the end
29 user to overcome the issue.

30 45.5.2.3 Physical and Design Characteristics

31 45.5.2.3.1 Physical and design characteristics shall address any and all
32 external or internal construction of the physical environment of
33 the voting system, or the internal workings of the software
34 necessary for the functioning of the voting system. THESE MUST
35 BE SUFFICIENT to accomplish the successful conduct of an
36 election on the voting system.

- 1 45.5.2.3.2 The physical design of the proposed system (non-software) shall
2 ~~be in a way such that it enhances or assists in the “voter~~
3 ~~friendly” aspect of voting, as well as~~ meets the requirements
4 indicated in section 4 of the “Usability and Accessibility of
5 Voting Systems and Products” study conducted by NIST. (A
6 copy of the document is located on the ~~SO~~SECRETARY OF
7 STATE web site.)
- 8 45.5.2.3.3 The voting system shall meet the following environmental
9 controls allowing for storage and operation in the following
10 physical ranges:
- 11 (a)● Operating – Max. ~~100~~-95 Degrees Fahrenheit; Min ~~40~~50
12 Degrees Fahrenheit, with max. humidity of 90%, normal
13 or minimum operating humidity of 15%.
- 14 (b)● Non-Operating – Max. ~~130~~-140 Degrees Fahrenheit; Min.
15 ~~-15~~-4 Degrees Fahrenheit. Non-operating humidity ranges
16 from 5% to 90% for various intervals throughout the day.
17 The material supplied by the voting system provider shall
18 include a statement of all requirements and restrictions
19 regarding environmental protection, electrical service,
20 telecommunications service, and any other facility or resource
21 required for the installation, operation, and storage of the voting
22 system.
- 23 45.5.2.3.4 The ballot definition subsystem of the voting system consists of
24 hardware and software required to accomplish the functions
25 outlined in this section 45.5.2.3. System databases contained in
26 the Ballot Definition Subsystem may be constructed
27 individually or they may be integrated into one database. These
28 databases are treated as separate databases to identify the
29 necessary types of data that shall be handled and to specify,
30 where appropriate, those attributes that can be measured or
31 assessed for determining compliance with the requirements of
32 this standard.
- 33 45.5.2.3.5 The Ballot Definition Subsystem shall be capable of formatting
34 ballot styles in ~~multiple languages, including~~ English and
35 ~~Spanish~~ AND ANY ADDITIONAL ALTERNATE LANGUAGES AS ARE
36 NECESSARY TO COMPLY WITH THE “VOTING RIGHTS ACT OF
37 1965” 42 U.S.C. § 1973C ET SEQ. (1965). The subsystem shall
38 be capable of being updated to format ballot styles in additional
39 languages as MAY BECOME necessary under state or federal law.
- 40 45.5.2.3.6 The voting system shall allow the ~~user~~-OPERATOR to generate
41 and maintain an administrative database containing the

- 1 definitions and descriptions of political subdivisions and offices
2 within the jurisdiction.
- 3 45.5.2.3.7 The ballot definition subsystem shall provide for the definition
4 of political and administrative subdivisions where the list of
5 candidates or contests may vary within the remote site and for
6 the activation or exclusion of any portion of the ballot upon
7 which the entitlement of a voter to vote may vary by reason of
8 place of residence or other such administrative or geographical
9 criteria. This database shall be used by the system with the
10 administrative database to format ballots or edit formatted
11 ballots within the jurisdiction.
- 12 45.5.2.3.8 For each election, the subsystem shall allow the user to generate
13 and maintain a candidate and contest database and provide for
14 the production AND/or definition of properly formatted ballots
15 and software.
- 16 ~~45.5.2.3.9 The environment in which all databases in the subsystem are~~
17 ~~maintained shall include all necessary provisions for security~~
18 ~~and access control. Any database may be generated and~~
19 ~~maintained in any file structure suitable to the requirements of~~
20 ~~the end user. It shall be the intent of the database hierarchy~~
21 ~~described herein to ensure that data entry, updating, and~~
22 ~~retrieval be effectively integrated and controlled.~~
- 23 45.5.2.3.9 The ballot definition subsystem shall be capable of handling at
24 least 500 potentially active voting positions, arranged to identify
25 party affiliations in a primary election, offices and their
26 associated labels and instructions, candidate names and their
27 associated labels and instructions, and issues or measures and
28 their associated text and instructions.
- 29 45.5.2.3.10 The ballot display may consist of a matrix of rows or columns
30 assigned to political parties or non-partisan candidates and
31 columns or rows assigned to offices and contests. The display
32 may consist of a contiguous matrix of the entire ballot or it may
33 be segmented to present portions of the ballot in succession.
- 34 45.5.2.3.11 The voting system shall provide a facility for the definition of
35 the ballot, including the definition of the number of allowable
36 choices for each office and contest, and for special voting
37 options such as write-in candidates. It shall provide for all
38 voting options and specifications as provided for in Articles 5
39 and 7, Title 1, C.R.S. The system shall generate all required
40 masters and distributed copies of the voting program in
41 conformance with the definition of the ballot for each voting

1 device and remote site. The distributed copies, resident or
2 installed in each voting device, shall include all software
3 modules required to: monitor system status and generate
4 machine-level audit reports, accommodate device control
5 functions performed by remote location officials and
6 maintenance personnel, and register and accumulate votes.

7 45.5.2.3.12 ~~ALL~~ THE TRUSTED BUILD OF THE voting system software,
8 installation programs, and third party software (such as
9 operating systems, drivers, etc.) used to install or to be installed
10 on voting system devices shall be distributed on a write-once
11 media.

12 45.5.2.3.13 The voting system shall allow the system ~~administrator~~
13 ADMINISTRATIVE ACCOUNT to verify that the software installed
14 is the certified software by comparing it to THE “TRUSTED
15 BUILD” OR OTHER reference information.

16 45.5.2.3.14 All DRE voting devices shall use touch screen technology or
17 other technology providing ~~accurate~~ accurate visual ballot display and
18 selection. The voting system provider shall include
19 documentation concerning the use of touch screen or other
20 display and selection technology, including but not limited to:

- 21 (a) Technical documentation describing the nature and
22 sensitivity of the tactile device (if the system uses touch
23 screen technology);
- 24 (b) Technical documentation describing the nature and
25 sensitivity of any other technology used to display and
26 select offices, candidates, or issues;
- 27 (c) Any mean time between failure (MTBF) data collected on
28 the vote recording devices; and
- 29 (d) Any available data on problems caused for persons who
30 experience epileptic seizures due to the DRE voting
31 devices' screen refresh rate.

32 ~~FAILURE BY THE VOTING SYSTEM PROVIDER TO PROVIDE THIS~~
33 ~~DOCUMENTATION WITHIN THE TIMELINES ESTABLISHED IN~~
34 ~~SECTION 45.3.3 SHALL DELAY THE CERTIFICATION PROCESS~~

35 45.5.2.3.15 The voting system shall contain a control subsystem that
36 consists of the physical devices and software that accomplish
37 and validate the following operations.

- 38 (a) Voting system Preparation - The control subsystem shall
39 encompass the hardware and software required to prepare

1 remote location voting devices and memory devices for
2 election use. Remote site preparation includes all
3 operations necessary to install ballot displays, software,
4 and memory devices in each voting device. The control
5 subsystem shall be designed in such a manner as to
6 facilitate the automated validation of ballot and software
7 installation and to detect errors arising from their incorrect
8 selection or improper installation.

- 9 (b) Error Detection – the voting system shall contain a
10 detailed list and description of the error messages that will
11 appear on the voting devices, the controller (if any), the
12 paper ballot printer, programmer, or any other device used
13 in the voting process to indicate that a component has
14 failed or is malfunctioning.

15 45.5.2.3.16 The voting system shall have a high level of integration between
16 the ballot layout subsystem and the vote tabulation subsystem.
17 This integration shall permit and facilitate the automatic transfer
18 of all ballot setup information from the automated ballot layout
19 module to the single ballot tabulation system that will be used in
20 a fully integrated manner for DRE, optical scan, and any other
21 voting devices included in the voting system.

22 45.5.2.3.17 The processing subsystem contains all mechanical,
23 electromechanical, and electronic devices required to perform
24 the logical and numerical functions of interpreting the electronic
25 image of the voted ballot and assigning votes to the proper
26 memory registers. Attributes of the processing subsystem that
27 affect its suitability for use in a voting system, are accuracy,
28 speed, reliability, and maintainability.

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

1 shall be one (1) part in ten million (10,000,000) ballot
2 positions.

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

8 45.5.2.3.18 The reporting subsystem contains all mechanical,
9 electromechanical, and electronic devices required to print
10 reports of the tabulation. The subsystem also may include data
11 storage media and communications devices for transportation or
12 transmission of data to other sites. ~~TELECOM~~ Communications
13 Devices shall not be used for the preparation or printing of an
14 official canvass of the vote unless they conform to a data
15 interchange and interface structure and protocol that
16 incorporates ~~some form of error checking and auditing process~~
17 ~~control~~ AUDITING AND ERROR CHECK AS REQUIRED BY 45.4.2.7.

18 45.5.2.3.19 The approach to design shall be unrestricted, and it may
19 incorporate any form or variant of technology that is capable of
20 meeting the requirements of this rule, and other attributes
21 specified herein. The frequency of voting system malfunctions
22 and maintenance requirements shall be reduced to the lowest
23 level consistent with cost constraints. Applicants are required to
24 ~~use~~ MEET OR EXCEED MIL-STD-454 MIL-HDBK-454; "Standard
25 General Requirements for Electronic Equipment" that is hereby
26 adopted and incorporated by reference, as a guide in the
27 selection and application of materials and parts.

28 45.5.2.3.20 ALL ELECTRICAL VOTING DEVICES PROVIDED BY THE VOTING
29 SYSTEM PROVIDER SHALL HAVE THE CAPABILITY TO CONTINUE
30 OPERATIONS AND PROVIDE CONTINUOUS DEVICE AVAILABILITY
31 DURING A PERIOD OF ELECTRICAL OUTAGE WITHOUT ANY LOSS OF
32 ELECTION DATA.

33 (A) FOR OPTICAL SCAN DEVICES, THIS CAPABILITY SHALL
34 INCLUDE AT A MINIMUM FOR A PERIOD OF NOT LESS THAN THREE
35 HOURS THE ABILITY TO:

36 (I) CONTINUE TO SCAN OR IMAGE VOTERS' BALLOTS;

37 (II) TABULATE ACCURATELY VOTERS' CHOICES FROM
38 THE BALLOTS,

39 (III) STORE ACCURATELY A VOTERS' BALLOT CHOICES
40 DURING A PERIOD OF ELECTRICAL OUTAGE; AND

1 (IV) TRANSMIT REQUIRED RESULTS FILES ACCURATELY
2 IF POWER FAILURE EXPERIENCED DURING TRANSMITTAL OF
3 RESULTS.

4 (B) FOR DRE DEVICES, THIS CAPABILITY SHALL INCLUDE AT A
5 MINIMUM FOR A PERIOD OF NOT LESS THAN EIGHT (8) HOURS THE
6 ABILITY TO:

7 (I) CONTINUE TO PRESENT BALLOT ACCURATELY TO
8 VOTERS;

9 (II) ACCEPT VOTERS' CHOICES ACCURATELY ON THE
10 DEVICES;

11 (iii) TABULATE VOTERS' CHOICES ACCURATELY;

12 (iv) STORE VOTERS' CHOICES ACCURATELY IN ALL
13 STORAGE LOCATIONS ON THE DEVICE; AND

14 (v) TRANSMIT REQUIRED RESULTS FILES
15 ACCURATELY IF POWER FAILURE EXPERIENCED
16 DURING TRANSMITTAL OF RESULTS.

17 (C) FOR V-VPAT DEVICES CONNECTED TO DREs, THIS
18 CAPABILITY SHALL INCLUDE AT A MINIMUM FOR A PERIOD OF NOT
19 LESS THAN EIGHT (8) HOURS THE ABILITY TO:

20 (I) CONTINUE TO PRINT VOTERS' CHOICES ON THE
21 DRE ACCURATELY AND IN A MANNER THAT IS IDENTICAL
22 TO THE MANNER OF THE PRINTERS' OPERATIONS DURING A
23 PERIOD OF NORMAL ELECTRICAL OPERATIONS; AND

24 (II) CONTINUE TO STORE THE PRINTED BALLOTS IN A
25 SECURE MANNER THAT IS IDENTICAL TO THE MANNER OF
26 THE PRINTERS' OPERATIONS DURING A PERIOD OF
27 NORMAL ELECTRICAL PROBLEMS.

28 (D) THE VOTING SYSTEM PROVIDER SHALL DELIVER TO THE
29 ~~SOS~~ SECRETARY OF STATE DOCUMENTATION DETAILING
30 ESTIMATED TIME OF OPERATION ON BATTERY FOR EACH TYPE OF
31 OPTICAL SCANNER, BALLOT IMAGER, DRE, AND V-VPAT THEY
32 PROVIDE, ASSUMING CONTINUOUS USE OF THE DEVICES BY
33 VOTERS DURING AN INTERRUPTION OF NORMAL ELECTRICAL
34 POWER.

35 (E) THE VOTING SYSTEM PROVIDER SHALL DELIVER TO THE
36 ~~SOS~~ SECRETARY OF STATE DOCUMENTATION SPECIFYING THE
37 STEPS AND TIMES REQUIRED FOR CHARGING BATTERIES FOR EACH

1 TYPE OF OPTICAL SCANNER, BALLOT IMAGER, DRE AND V-
2 VPAT THEY PROVIDE.

3 45.5.2.3.21 THE VOTING SYSTEM PROVIDER'S SOFTWARE APPLICATION SHALL
4 BE ABLE TO RECOVER OPERATIONS AFTER A POWER OUTAGE OR
5 OTHER ABNORMAL SHUTDOWN OF THE SYSTEM ON WHICH THAT
6 APPLICATION AND DATABASE ARE OPERATING WITHOUT LOSS OF
7 MORE THAN THE CURRENT TRANSACTION DATA RECORD ON
8 WHICH THE ADMINISTRATIVE ACCOUNT OR ~~USER~~AUTHORIZED
9 OPERATOR ACCOUNT IS CURRENTLY WORKING.

10 45.5.2.3.22 THE VOTING SYSTEM SHALL PROVIDE CAPABILITIES TO ENFORCE
11 CONFIDENTIALITY OF VOTERS' BALLOT CHOICES.

12 (A) ALL OPTICAL SCAN DEVICES, ASSOCIATED BALLOT BOXES
13 AND V-VPAT STORAGE DEVICES SHALL PROVIDE PHYSICAL LOCKS AND
14 PROCEDURES TO PREVENT DISCLOSURE OF VOTERS' CONFIDENTIAL BALLOT
15 CHOICES DURING AND AFTER THE VOTE CASTING OPERATION.

16 (B) ALL DRE DEVICES SHALL PROVIDE RANDOMIZATION OF
17 ALL VOTER CHOICES AND STORED, ELECTRONIC BALLOT INFORMATION,
18 REGARDLESS OF FORMAT, TO PREVENT DISCLOSURE OF VOTERS' CONFIDENTIAL
19 BALLOT CHOICES DURING AND AFTER STORAGE OF THE VOTERS' BALLOT
20 SELECTIONS.

21 45.5.2.3.23~~0~~ The voting system and all associated components shall have a
22 AN ESTIMATED useful life of at least eight (8) years. VOTING
23 SYSTEM PROVIDER SHALL PROVIDE DOCUMENTATION OF BASIS
24 FOR THE ESTIMATE.

25 45.5.2.3.24~~1~~ The voting system provider shall submit drawings, photographs,
26 and any related brochure documents to assist with the evaluation
27 of the physical design of the use of the voting system.

28 45.5.2.4 Documentation Requirements

29 45.5.2.4.1 In addition to Section 45.3 above, the voting system provider
30 shall provide the following documents:

31 (A)● Standard Issue Users/Operator Manual;

32 (B)● System Administrator's / APPLICATION ADMINISTRATION
33 Manual;

34 (C)● Training Manual (and materials);

35 (D)● Systems Programming and Diagnostics Manuals; AND

1 (E) A LIST OF MINIMUM SERVICES NEEDED FOR SUCCESSFUL,
2 SECURE AND HARDENED OPERATION OF ALL COMPONENTS
3 OF VOTING SYSTEM.

4 45.5.2.4.2 All ITA qualification reports AND TEST LOGS ~~that are material to~~
5 ~~the determination that a voting system may be certified~~ shall be
6 evaluated to determine if the test procedures, records of testing,
7 and reporting of results meet the requirements of this rule AND
8 THE APPLICABLE FEDERAL CERTIFICATION REQUIREMENTS AT THE
9 TIME OF CERTIFICATION.

10 45.5.2.4.3 AS OF MARCH 31, 2008, ANY VOTING SYSTEM PROVIDER
11 SUBMITTING A VOTING SYSTEM FOR CERTIFICATION SHALL, PRIOR
12 PRIOR TO APPLYING FOR CERTIFICATION, THE VOTING SYSTEM
13 PROVIDER—SHALL HAVE COMPLETED AND PROVIDE
14 DOCUMENTATION OF AN INDEPENDENT ANALYSIS COORDINATED
15 THROUGH THE SECRETARY OF STATE’S OFFICE OF THE SYSTEM
16 WHICH INCLUDES:

17 (A) APPLICATION PENETRATION TEST CONDUCTED TO
18 OSSTMM 2.2 STANDARDS FOR WHITE OR DOUBLE GRAY
19 BOX TESTING; ~~[ADDITIONAL DETAILS TO BE DEVELOPED]~~

20 (B) SOURCE CODE EVALUATION TO THE COMMON CRITERIA
21 CERTIFICATION AT EVALUATION ASSURANCE LEVEL 4
22 (EAL-4) FOR SOFTWARE SECURITY WEAKNESSES;
23 ~~[ADDITIONAL DETAILS TO BE DEVELOPED]~~

24 (C) A COMPLETE REVIEW OF THE SOURCE CODE FOR THESE TWO
25 TESTS SHALL BE PROVIDED AS PART OF THE CERTIFICATION
26 PROCESS;

27 (D) A COMPLETE REPORT OF ACCEPTABLE COMPENSATING
28 CONTROLS SHALL BE PROVIDED WITH THE TESTS
29 CONDUCTED FOR ITEMS (A) AND (B) OF THIS SECTION.

30 (I) INABILITY FOR THE VOTING SYSTEM VENDOR TO
31 PROVIDE ACCEPTABLE COMPENSATING CONTROLS WILL
32 REQUIRE A RETEST OF THE SYSTEM UNDER THIS SECTION
33 UNTIL ALL COMPENSATING CONTROLS HAVE A VALID
34 PROCEDURAL MITIGATION STRATEGY.

35 (E-~~ED~~) A LIST OF APPROVED CONTRACTORS WILL BE PROVIDED
36 UPON REQUEST OF THE VOTING SYSTEM PROVIDER TO
37 PERFORM THE INDEPENDENT ANALYSIS.; ~~[ADDITIONAL~~
38 ~~DETAILS TO BE DEVELOPED]~~

1 (F) THE SECRETARY OF STATE OR THE DESIGNATED AGENT
2 SHALL REVIEW ALL WORK PERFORMED BY CONTRACTOR
3 FOR QUALITY OF WORK PRODUCT UNDER THIS SECTION.
4 THE REVIEW MAY INCLUDE ANY OR ALL OF THE FOLLOWING
5 REQUIREMENTS:

6 (I) REVIEW OF RECORDS AT CONTRACTORS' SITE;

7 (II) INTERVIEWS OF EMPLOYEES WHO PERFORMED THE
8 WORK; AND

9 (III) INTERVIEWS OF ANY SUBCONTRACTORS USED.

10 (G) THE SECRETARY OF STATE HAS THE RIGHT TO REJECT
11 EVALUATIONS PERFORMED IF NOT SATISFIED WITH THE
12 WORK PRODUCT AND MAY REQUEST ADDITIONAL REVIEWS
13 OF THE VOTING SYSTEM PROVIDER.

14 ~~(C) [ADDITIONAL CRITERIA TO BE DEVELOPED]~~

15 45.5.2.4.34 Documentation submitted to the ~~SOS~~SECRETARY OF STATE shall
16 be reviewed to ensure the voting system meets the 2002 VOTING
17 SYSTEMS STANDARDS, OR THE MOST CURRENT, IMPLEMENTED
18 VOTING SYSTEM STANDARDS ENACTED BY THE EAC. ~~FEC. The~~
19 ~~submitted documentation shall include methods for~~
20 ~~implementing future releases and versions of the future~~
21 ~~standards.~~

22 (A) VENDORS SHALL PROVIDE THE ~~SOS~~SECRETARY OF STATE
23 WITH THEIR DOCUMENTED PROJECT PLANS FOR MODIFYING
24 THEIR VOTING SYSTEMS TO COMPLY WITH AND ACHIEVE
25 CERTIFICATION UNDER THE EAC'S ADOPTED 2005
26 VOLUNTARY VOTING SYSTEM GUIDELINES BY JANUARY 1,
27 2008 IF NOT CURRENTLY TESTED AND CERTIFIED TO THAT
28 STANDARD AT TIME OF APPLYING FOR CERTIFICATION.

29
30 45.5.2.4.5 FAILURE BY THE VOTING SYSTEM PROVIDER TO PROVIDE ANY
31 DOCUMENTATION WITHIN THE TIMELINES ESTABLISHED IN THIS
32 RULE SHALL DELAY THE CERTIFICATION PROCESS FOR THE
33 SPECIFIC APPLICATION.

34 45.5.2.5 Audit capacity

35 45.5.2.5.1 The voting system shall be capable of producing ELECTRONIC
36 AND PRINTED ~~paper~~-audit logs OF SYSTEM OPERATION AND
37 SYSTEM OPERATORS WHICH SHALL BE SUFFICIENT TO ALLOW ALL
38 OPERATIONS AND INPUT COMMANDS TO BE AUDITED (~~"Audits"~~;

1 “audit reports”, or “audit records”), generated by the system
2 components, or in some cases, by the system operators, from
3 which all operations may be audited. Except for the storage of
4 vote images that shall be maintained in a random sequence, the
5 audit records shall be created and maintained in the sequence in
6 which the operations were performed.

7 45.5.2.5.2 The voting systems shall include detailed documentation as to
8 the level, location, and programming of audit trail information
9 throughout the system. The Audit information shall apply to:

- 10 (a) Operating Systems (workstation, server, and/or DRE)
- 11 (b) Election Programming Software
- 12 (c) Election Tabulation devices – optical scan and DRE
- 13 (D) ELECTION RESULT CONSOLIDATION AND REPORTING

14 45.5.2.5.3 The VOTING system shall track and maintain audit information
15 of the following VOTING SYSTEM APPLICATION events:

- 16 (a) Log on and log off activity
- 17 (b) Application start and stop
- 18 (c) Printing activity (where applicable)
- 19 (d) Election events – setup, set for election, unset for election,
20 open polls, close polls, end election, upload devices,
21 download devices, create ballots, create precincts, create
22 districts, create poll places (or Vote Centers), RESET
23 DEVICES, BACKUP DEVICES, and voting activity.
- 24 (e) Hardware events – add hardware, remove hardware, RESET
25 HARDWARE, and change hardware properties.

26 45.5.2.5.4 All tabulation devices shall display the unit serial number(s)
27 both physically and within any applicable software INCLUDING
28 MAINTENANCE AND PROGRAMMING or PROM/ROM devices.

29 45.5.2.5.5 If a vote tabulation device employs the use of removable
30 memory storage devices, the devices shall allow for ~~the~~ AN
31 ALTERNATE METHOD OF transfer of audit records if the device
32 and/or memory storage device is damaged or destroyed.

33 45.5.2.5.6 ALL TRANSACTION AUDIT RECORDS OF THE DATABASE SHALL BE
34 MAINTAINED IN A FILE OUTSIDE OR SEPARATE FROM THE

1 DATABASE. ~~[CRITERIA TO BE DEVELOPED]~~ WHICH IS NOT
2 ACCESSIBLE BY USER/OPERATOR ACCOUNTS.

3 45.5.2.6 Security Requirements

4 45.5.2.6.1 ALL VOTING SYSTEMS SUBMITTED FOR CERTIFICATION SHALL
5 MEET THE FOLLOWING MINIMUM SYSTEM SECURITY
6 REQUIREMENTS:

7 (A) THE VOTING SYSTEM SHALL ACCOMMODATE A GENERAL
8 SYSTEM OF ACCESS BY LEAST PRIVILEGE ~~—OR—~~ AND ROLE
9 BASED ACCESS CONTROL. THE FOLLOWING REQUIREMENTS
10 SHALL APPLY:

11 (I) ~~●~~ THE OPERATING SYSTEM ADMINISTRATOR
12 ADMINISTRATIVE SYSTEM ACCOUNT OF SYSTEM
13 DOES NOT HAVE ACCESS TO ADMINISTRATIVE
14 RIGHTS TO THE DATABASE AND DOES NOT HAVE
15 THE ABILITY OR KNOWLEDGE OF THE DATABASE
16 ADMINISTRATOR PASSWORD;

17 (II) THE OPERATING SYSTEM ADMINISTRATIVE
18 ACCOUNT SHALL NOT BE REQUIRED TO USE ANY
19 FUNCTION OF THE VOTING SYSTEM DURING
20 NORMAL OPERATIONS.

21 (III) ~~●~~ A UNIQUE SYSTEM USER/OPERATOR ACCOUNT
22 SHALL BE CREATED FOR OPERATING SYSTEM USE
23 THAT IS RESTRICTED FROM THE FOLLOWING
24 ASPECTS OF THE OPERATING SYSTEM:

25 (A) NO ACCESS TO SYSTEM ROOT DIRECTORY;

26 (B) NO ACCESS TO OPERATING SYSTEM
27 SPECIFIC FOLDERS;

28 (C) NO ACCESS TO INSTALL OR REMOVE
29 PROGRAMS; AND

30 (D) NO ACCESS TO MODIFY OTHER USER
31 ACCOUNTS ON THE SYSTEM.

32 (HIV) A UNIQUE APPLICATION ADMINISTRATIVE
33 ACCOUNT SHALL BE CREATED WHICH HAS FULL
34 ACCESS AND RIGHTS TO THE APPLICATION AND
35 DATABASE;

- 1 (III) ~~ADMINISTRATOR OF APPLICATION; [CRITERIA TO~~
2 ~~BE DEVELOPED]~~
- 3 (IV) A UNIQUE APPLICATION USER/OPERATOR
4 ACCOUNT SHALL BE CREATED WITH LIMITED
5 RIGHTS SPECIFICALLY DESIGNED TO PERFORM
6 FUNCTIONAL OPERATION WITHIN THE SCOPE OF
7 THE APPLICATION. THIS USER/OPERATOR SHALL
8 BE RESTRICTED IN THE CREATION OR
9 MODIFICATION OF ANY USER/OPERATOR
10 ACCOUNTS-; AND
- 11 ~~ADMINISTRATOR OF DATABASE; [CRITERIA TO BE~~
12 ~~DEVELOPED]~~
- 13 (VI) VOTING SYSTEM PROVIDER SHALL NOT HAVE
14 ADMINISTRATIVE ACCOUNT, OR ADMINISTRATIVE
15 ACCOUNT ACCESS.
- 16 (B) THE VOTING SYSTEM SHALL MEET THE FOLLOWING
17 REQUIREMENTS FOR NETWORK SECURITY:
- 18 (I)● ALL COMPONENTS OF THE VOTING SYSTEM SHALL
19 ONLY BE OPERATED ON A CLOSED NETWORK ONLY
20 FOR THE USE OF THE VOTING SYSTEM;
- 21 (II)● ~~VENDOR DOCUMENTATION~~ ALL COMPONENTS OF
22 THE VOTING SYSTEM SHALL INCLUDE THE LIMITED
23 USE OF NON-ROUTABLE IP ADDRESS
24 CONFIGURATIONS FOR ANY DEVICE CONNECTED
25 TO THE CLOSED NETWORK. FOR THE PURPOSES OF
26 THIS REQUIREMENT NON-ROUTABLE IP
27 ADDRESSES ARE THOSE DEFINED IN THE RFC 1918
28 ADDRESS BASE; AND
- 29 (III) THE VOTING SYSTEM SHALL BE TESTED TO
30 CONTAIN PROVISIONS FOR UPDATING SECURITY
31 PATCHES, SOFTWARE AND/OR SERVICE PACKS
32 WITHOUT ACCESS TO THE OPEN NETWORK.
- 33 ● ~~[ADDITIONAL REQUIREMENTS TO BE DEVELOPED]~~
- 34 (C) THE VOTING SYSTEM SHALL MEET THE FOLLOWING
35 REQUIREMENTS FOR DATABASE SECURITY:
- 36 (I)● AFTER ~~JANUARY~~ MARCH 31, 2008 ALL VOTING
37 SYSTEMS DATABASE ~~DESIGNS~~ SUBMITTED FOR
38 CERTIFICATION ~~MUST~~ SHALL BE HARDENED TO THE

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~~FOLLOWING MINIMUM THE REQUIREMENTS IDENTIFIED
IN THE NSA GUIDELINES FOR DATABASE HARDENING;~~

(ii) PROVIDED THAT ITEM (I) OF THIS SUBSECTION HAS
NOT BEEN PUBLISHED BY THE DATE OF APPLICATION
FOR THE SPECIFICALLY DESIGNED SYSTEM, AFTER
MARCH 31, 2008 ALL VOTING SYSTEMS SUBMITTED
FOR CERTIFICATION SHALL HAVE THE VOTING
SYSTEMS DATABASES HARDENED TO DATABASE
MANUFACTURER’S HARDENING REQUIREMENTS; AND

(iii) PROVIDED THAT ITEM (I) AND (II) OF THIS
SUBSECTION HAS NOT BEEN PUBLISHED BY THE DATE
OF APPLICATION FOR THE SPECIFICALLY DESIGNED
SYSTEM, AFTER MARCH 31, 2008 ALL VOTING
SYSTEMS SUBMITTED FOR CERTIFICATION SHALL HAVE
THE VOTING SYSTEMS DATABASES HARDENED TO THE
DATABASE VENDORS SPECIFICATIONS.

~~1. DATABASE AUTHENTICATION FOR WINDOWS
BASED OPERATING SYSTEMS SHALL USE WINDOWS
AUTHENTICATION MODE;~~

~~2. THE “GUEST” USER ACCOUNT SHALL BE DELETED
FROM ALL OPERATING SYSTEMS AND DATABASE
ACCESS;~~

~~3. STATEMENT PERMISSIONS ARE NOT GRANTED TO
ANY USER LEVEL ACCOUNT OF THE VOTING SYSTEM~~

~~4. STORED PROCEDURES SHALL BE EXECUTED USING
ONLY ADO COMMANDS.~~

~~5. THE FOLLOWING LIST OF STORED PROCEDURES
SHALL BE DISABLED BY DENYING EXECUTE
PERMISSIONS FOR ALL DATABASE USERS AND ANY
APPLICATION ON THE HOST COMPUTER:~~

- ~~SP_OACREATE~~
- ~~SP_OASTOP~~
- ~~SP_OADESTROY~~
- ~~SP_OASETPROPERTY~~
- ~~XP_REGADDMULTISTRING~~

| | |
|----|------------------------------------|
| 1 | XP_REGDELETEKEY |
| 2 | XP_REGDELETEVALUE |
| 3 | XP_REGENUMVALUES |
| 4 | XP_REGREMOVEMULTISTRING |
| 5 | SP_BINDSESSION |
| 6 | SP_CURSOR |
| 7 | SP_CURSORCLOSE |
| 8 | SP_CURSORFETCH |
| 9 | SP_CURSOROPEN |
| 10 | SP_CURSOROPTION |
| 11 | SP_GETBINDTOKEN |
| 12 | SP_GETMBCSCHARLEN |
| 13 | SP_ISMBCSLEADBYTE |
| 14 | SP_REPLCMDS |
| 15 | SP_REPLCOUNTERS |
| 16 | SP_REPLDONE |
| 17 | SP_REPLFLUSH |
| 18 | SP_REPLSTATUS |
| 19 | SP_REPLTRANS |
| 20 | SP_SDIDEBUG |
| 21 | XP_AVAILABLEMEDIA |
| 22 | XP_CMDSHELL |
| 23 | XP_DELETEMAIL |
| 24 | XP_DIRTREE |
| 25 | XP_DROPWEBTASK |

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|----|--------------------|
| 1 | XP_DSNINFO |
| 2 | XP_ENUMDSN |
| 3 | XP_ENUMERRORLOGS |
| 4 | XP_ENUMGROUPS |
| 5 | XP_ENUMQUEUEDTASKS |
| 6 | XP_EVENTLOG |
| 7 | XP_FINDNEXTMSG |
| 8 | XP_FIXEDDRIVES |
| 9 | XP_GETFILEDETAILS |
| 10 | XP_GETNETNAME |
| 11 | XP_GRANTLOGIN |
| 12 | XP_LOGEVENT |
| 13 | XP_LOGINCONFIG |
| 14 | XP_LOGININFO |
| 15 | XP_MAKEWEBTASK |
| 16 | XP_MSVER |
| 17 | XP_PERFEND |
| 18 | XP_PERFMONITOR |
| 19 | XP_PERFSAMPLE |
| 20 | XP_PERFSTART |
| 21 | XP_READERRORLOG |
| 22 | XP_READMAIL |
| 23 | XP_REVOKELOGIN |
| 24 | XP_RUNWEBTASK |
| 25 | XP_SCHEDULERSIGNAL |

1 ~~XP_SENDMAIL~~

2 ~~XP_SERVICECONTROL~~

3 ~~XP_SNMP_GETSTATE~~

4 ~~XP_SNMP_RAISETRAP~~

5 ~~XP_SPRINTF~~

6 ~~XP_SQLINVENTORY~~

7 ~~XP_SQLREGISTER~~

8 ~~XP_SQLTRACE~~

9 ~~XP_SSCANF~~

10 ~~XP_STARTMAIL~~

11 ~~XP_STOPMAIL~~

12 ~~XP_SUBDIRS~~

13 ~~XP_UNC_TO_DRIVE;~~

14 ~~;~~ ~~[ADDITIONAL CRITERIA TO BE DEVELOPED]~~

15 ~~(HIV)~~ ● AFTER ~~JANUARY 1~~ MARCH 31, 2008. ALL VOTING

16 ~~SYSTEMS SUBMITTED FOR CERTIFICATION SHALL HAVE~~

17 ~~ALL VOTING SYSTEMS DATABASES MUST BE~~

18 ~~RESTRICTED TO ALLOWING ACCESS TO DATABASE~~

19 ~~AUTHENTICATION FROM APPLICATION ONLY (OR~~

20 ~~THROUGH APPLICATION ONLY);~~

21 ~~(HIV)~~ ● ALL DATA STORED AT REST IN ANY VOTING

22 ~~SYSTEM DATABASE SHALL BE ENCRYPTED TO 128 BIT~~

23 ~~DES; [ADDITIONAL CRITERIA TO BE DEVELOPED]~~ IN

24 ~~ACCORDANCE WITH SECTION (VII) OF THIS~~

25 ~~REQUIREMENT;~~

26 ~~(#VII)~~ ● ODBC CONNECTIONS ARE PROHIBITED FOR THE

27 ~~VOTING SYSTEM SOFTWARE. ALL OPERATING SYSTEM~~

28 ~~SERVICES RELATED TO THE USE OF THIS FEATURE~~

29 ~~SHALL BE DISABLED; [ADDITIONAL CRITERIA TO BE~~

30 ~~DEVELOPED] AND~~

31 ● ~~DATA ENCRYPTION STANDARDS AND DATA~~

32 ~~ENCRYPTION USAGE DEFINING THE ALGORITHM FOR~~

1 ENCRYPTION; ~~[ADDITIONAL CRITERIA TO BE~~
2 ~~DEVELOPED]~~

3 (VII)• ALL CRYPTOGRAPHY MODULES SHALL BE
4 DOCUMENTED BY THE VOTING SYSTEM VENDOR TO BE
5 ~~IN COMPLIANCE WITH CERTIFIED TO US FEDERAL~~
6 ~~INFORMATION PROCESSING STANDARD (FIPS-140-2),~~
7 ~~AND VALIDATED TO FIPS 180 STANDARDS.-~~
8 ~~[ADDITIONAL CRITERIA TO BE DEVELOPED]~~

9 (D) THE VOTING SYSTEM SHALL MEET THE FOLLOWING
10 REQUIREMENTS FOR OPERATING SYSTEM SECURITY:

11 (I) AFTER MARCH 1, 2008, ALL VOTING SYSTEMS BEING
12 SUBMITTED FOR CERTIFICATION SHALL HAVE ALL
13 OPERATING SYSTEMS HARDENED TO NSA GUIDELINES
14 FOR OPERATING SYSTEMS HARDENING;

15 (II) PROVIDED THAT ITEM (I) OF THIS SUBSECTION HAS
16 NOT BEEN PUBLISHED BY THE DATE OF APPLICATION
17 FOR THE SPECIFICALLY DESIGNED SYSTEM, AFTER
18 MARCH 31, 2008 ALL VOTING SYSTEMS BEING
19 SUBMITTED FOR CERTIFICATION SHALL HAVE ALL
20 OPERATING SYSTEMS HARDENED TO
21 MANUFACTURER'S HARDENING REQUIREMENTS; AND

22 (III) PROVIDED THAT ITEM (II) OF THIS SUBSECTION HAS
23 NOT BEEN PUBLISHED BY THE DATE OF APPLICATION
24 FOR THE SPECIFICALLY DESIGNED SYSTEM, AFTER
25 MARCH 31, 2008, ALL VOTING SYSTEMS BEING
26 SUBMITTED FOR CERTIFICATION SHALL HAVE ALL
27 OPERATING SYSTEMS HARDENED TO THE VENDORS
28 SPECIFICATIONS;

29 ~~THE HOST COMPUTER OPERATING SYSTEM MAY USE ANY OR~~
30 ~~ALL OF THE FOLLOWING ACCEPTABLE SERVICES:~~

- 31 _____ 1. ~~ALERTER;~~
32 _____ 2. ~~APPLICATION MANAGEMENT;~~
33 _____ 3. ~~EVENT LOG;~~
34 _____ 4. ~~INDEXING SERVICE;~~
35 _____ 5. ~~LICENSE LOGGING SERVICE;~~
36 _____ 6. ~~LOGICAL DISK MANAGER;~~

- 1 ~~7. LOGICAL DISK MANAGER~~
2 ~~ADMINISTRATIVE SERVICES;~~
- 3 ~~8. PERFORMANCE LOGS AND ALERTS;~~
- 4 ~~9. PLUG AND PLAY;~~
- 5 ~~10. PRINT SPOOLER;~~
- 6 ~~11. PROTECTED STORAGE;~~
- 7 ~~12. REMOTE PROCEDURE CALL;~~
- 8 ~~13. REMOVABLE STORAGE;~~
- 9 ~~14. SECURITY ACCOUNTS MANAGER;~~
- 10 ~~15. SIMPLE TCP/IP SERVICES;~~
- 11 ~~16. SMART CARD;~~
- 12 ~~17. SMART CARD HELPER;~~
- 13 ~~18. SYSTEM EVENT NOTIFICATION;~~
- 14 ~~19. UNINTERRUPTIBLE POWER SUPPLY;~~
- 15 ~~20. WINDOWS MANAGEMENT~~
16 ~~INSTRUMENTATION;~~
- 17 ~~21. WINDOWS MEDIA PROGRAM SERVICE;~~
- 18 ~~22. WINDOWS MEDIA STATION SERVICE;~~
- 19 ~~23. WINDOWS TIME SERVICE; AND~~
- 20 ~~24. WORKSTATION.~~
- 21
- 22 ~~(i) THE VOTING SYSTEM SHALL BE FULLY~~
23 ~~FUNCTIONAL WITH THE FOLLOWING SERVICES~~
24 ~~DISABLED (NOT TO BE TURNED ON EVEN~~
25 ~~MANUALLY) BY THE OPERATING SYSTEM:~~
- 26 ~~1I. ODBC;~~
- 27 ~~2II. MESSENGER;~~

- 1 ~~3III. AUTOMATIC UPDATES;~~
- 2 ~~4IV. DNS CLIENT;~~
- 3 ~~5V. NETMEETING REMOTE DESKTOP SHARING;~~
- 4 ~~6IV. BACKGROUND INTELLIGENT TRANSFER~~
- 5 ~~SERVICES;~~
- 6 ~~7. CLIPBOOK;~~
- 7 ~~8. FAX SERVICES;~~
- 8 ~~9. FTP PUBLISHING;~~
- 9 ~~10. NET LOGON;~~
- 10 ~~11. REMOTE DESKTOP HELP SESSION~~
- 11 ~~MANAGER;~~
- 12 ~~12. REMOTE REGISTRY SERVICE;~~
- 13 ~~13. SIMPLE MAIL TRANSFER PROTOCOL;~~
- 14 ~~14. SIMPLE NETWORK MANAGEMENT~~
- 15 ~~PROTOCOL;~~
- 16 ~~15. TELNET; AND~~
- 17 ~~16. WORLD WIDE WEB PUBLISHING~~
- 18 ~~SERVICES.~~
- 19 ~~[ADDITIONAL SERVICES THAT MUST BE DISABLED~~
- 20 ~~TO BE DEVELOPED].~~
- 21 ~~(II) THE VOTING SYSTEM SHALL BE FULLY~~
- 22 ~~FUNCTIONAL WITH THE FOLLOWING SERVICES~~
- 23 ~~DISABLED UNTIL THE ELECTION MANAGEMENT~~
- 24 ~~SOFTWARE TRUSTED ROLE/USER ENABLES THE~~
- 25 ~~SERVICE. THESE SERVICES MUST BE DISABLED BY~~
- 26 ~~THE TRUSTED ROLUE/USER WHEN THE SERVICE IS~~
- 27 ~~NO LONGER REQUIRED FOR PROGRAM EXECUTION:~~
- 28 ~~1. ALERTER;~~
- 29 ~~2. COMPUTER BROWSER;~~
- 30 ~~3. IIS ADMIN SERVICE;~~

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- ~~4. ROUTING AND REMOTE ACCESS;~~
- ~~5. TASK SCHEDULER; AND~~
- ~~6. UNIVERSAL DEVICE PLUG AND PLAY HOST.~~

~~● THE VOTING SYSTEM SHALL BE FULLY FUNCTIONAL WITH THE FOLLOWING LIST OF PROHIBITED APPLICATIONS:~~

- ~~I. ANY/ALL IRQ/IM APPLICATIONS;~~
- ~~II. [ADDITIONAL APPLICATIONS THAT ARE PROHIBITED TO BE DEVELOPED].~~

(~~HHIV~~)● THE VOTING SYSTEM PROVIDER SHALL PROVIDE DOCUMENTATION CONTAINING A LIST OF MINIMUM SERVICES AND EXECUTABLES THAT ARE REQUIRED TO RUN THE VOTING SYSTEM APPLICATION;

(~~FV~~)● THE VOTING SYSTEM PROVIDER SHALL DISABLE AUTO BOOT AND AUTO RUN FEATURES CAPABLE BY OPERATING SYSTEM. AUTO RUN MEANS FOR THE SYSTEM TO TAKE AN ACTION UPON THE INSERTING A REMOVABLE MEDIA. AUTO BOOT MEANS ANY OPERATIONS REQUIRED TO PLACE A COMPUTER INTO ITS NORMAL STARTING OPERATING CONFIGURATION AFTER POWER IS SUPPLIED TO THE HARDWARE; AND

(~~VI~~)● THE VOTING SYSTEM PROVIDER SHALL USE A VIRUS PROTECTION/PREVENTION APPLICATION ON THE ELECTION MANAGEMENT SERVER(S) /WORKSTATIONS WHICH MUST BE CAPABLE OF MANUAL UPDATES WITHOUT THE USE OF THE INTERNET.

~~● [ADDITIONAL REQUIREMENTS TO BE DEVELOPED]~~

(E) THE VOTING SYSTEM SHALL MEET THE FOLLOWING REQUIREMENTS FOR PASSWORD SECURITY:

(~~I~~)● ALL PASSWORDS SHALL BE STORED AND USED IN A NON-REVERSIBLE ~~ENCRYPTED/HARD CODED~~ FORMAT;

- 1 (II)● PASSWORDS TO DATABASE MUST NOT BE STORED
2 IN DATABASE; ~~{ADDITIONAL CRITERIA TO BE~~
3 ~~DEVELOPED}~~
- 4 (III) PASSWORD TO DATABASE SHALL BE OWNED AND
5 ONLY KNOWN BY APPLICATION;
- 6 (IV) THE APPLICATION'S DATABASE MANAGEMENT
7 SYSTEM SHALL REQUIRE SEPARATE PASSWORDS FOR
8 THE ADMINISTRATIVE AND EACH USER-OPERATOR
9 ACCOUNT WITH ACCESS TO THE APPLICATION;
- 10 (V)● THE SYSTEM SHALL BE DESIGNED IN SUCH A WAY
11 THAT THE USE OF THE ADMINISTRATORIVE
12 ACCOUNT PASSWORD SHALL NOT BE REQUIRED
13 FOR NORMAL OPERATING FUNCTIONS AT ANY
14 REMOTE LOCATION;
- 15 (VI) THE SYSTEM SHALL BE DESIGNED IN SUCH A WAY
16 TO FACILITATE THE CHANGING OF PASSWORDS
17 FOR EACH ELECTION CYCLE;
- 18 (VII) THE USE OF BLANK OR EMPTY PASSWORDS SHALL
19 NOT BE PERMITTED AT ANY TIME WITH THE
20 EXCEPTION OF A LIMITED ONE-TIME USE STARTUP
21 PASSWORD WHICH REQUIRES A NEW PASSWORD TO
22 BE ASSIGNED BEFORE THE SYSTEM CAN BE USED;
23 AND
- 24 (VIII) BY MARCH 31, 2008 ALL VOTING SYSTEMS BEING
25 SUBMITTED FOR CERTIFICATION SHALL HAVE ALL
26 COMPONENTS OF VOTING SYSTEM SHALL BE
27 CAPABLE OF SUPPORTING PASSWORDS OF A
28 MINIMUM OF 8 CHARACTERS, WHICH SHALL BE
29 CAPABLE OF INCLUDING NUMERIC, ALPHA AND
30 SPECIAL CHARACTERS IN UPPER CASE OR LOWER
31 CASE USED IN ANY COMBINATION.
- 32 (F) ALL VOTING SYSTEM SOFTWARE SHALL BE IN COMPLIANCE
33 WITH KNOWN SOFTWARE CODING STANDARDS APPLICABLE
34 TO THE BASE LANGUAGE OF THE APPLICATION. THE VOTING
35 SYSTEM SHALL MEET THE FOLLOWING MINIMUM
36 REQUIREMENTS FOR SOFTWARE SECURITY:
- 37 ● ~~ALL VOTING SYSTEM SOFTWARE SHALL BE IN~~
38 ~~COMPLIANCE WITH KNOWN SOFTWARE CODING~~
39 ~~STANDARDS APPLICABLE TO THE BASE LANGUAGE~~

1 OF THE APPLICATION MEETING THE FOLLOWING
2 MINIMUM STANDARDS: [TO BE DEVELOPED]

3 (I) SOFTWARE SHALL BE VALIDATED TO THE
4 COMMON CRITERIA CERTIFICATION AT
5 EVALUATION ASSURANCE LEVEL 4 (EAL-4) FOR
6 SOFTWARE SECURITY WEAKNESSES;

7 (II) SELF-MODIFYING, DYNAMICALLY LOADED OR
8 INTERPRETED CODE IS PROHIBITED, EXCEPT
9 UNDER THE SECURITY PROVISIONS OUTLINED IN
10 THE VVSG. EXTERNAL MODIFICATION OF CODE
11 DURING EXECUTION SHALL BE PROHIBITED.
12 WHERE THE DEVELOPMENT ENVIRONMENT
13 (PROGRAMMING LANGUAGE AND DEVELOPMENT
14 TOOLS) INCLUDES THE FOLLOWING FEATURES,
15 THE SOFTWARE SHALL PROVIDE CONTROLS TO
16 PREVENT ACCIDENTAL OR DELIBERATE ATTEMPTS
17 TO REPLACE EXECUTABLE CODE:

18 (A) UNBOUNDED ARRAYS OR STRINGS
19 (INCLUDES BUFFERS USED TO MOVE
20 DATA);

21 (B) POINTER VARIABLES; AND

22 (C) DYNAMIC MEMORY ALLOCATION AND
23 MANAGEMENT.

24
25 (III) BY MARCH 31, 2008, ALL VOTING SYSTEMS
26 SUBMITTED FOR CERTIFICATION SHALL HAVE
27 APPLICATION SOFTWARE DESIGNED IN A MODULAR
28 FASHION. COTS SOFTWARE IS NOT REQUIRED TO
29 BE INSPECTED FOR COMPLIANCE WITH THIS
30 REQUIREMENT. FOR THE PURPOSE OF THIS
31 REQUIREMENT, "MODULES" MAY BE COMPILED OR
32 INTERPRETED INDEPENDENTLY. MODULES MAY
33 ALSO BE NESTED. THE MODULARITY RULES
34 DESCRIBED HERE APPLY TO THE COMPONENT SUB-
35 MODULES OF A LIBRARY. THE PRINCIPLE TO BE
36 FOLLOWED IS THAT THE MODULE CONTAINS ALL
37 THE ELEMENTS TO COMPILE OR INTERPRET
38 SUCCESSFULLY AND HAS LIMITED ACCESS TO
39 DATA IN OTHER MODULES. THE DESIGN CONCEPT
40 IS SIMPLE REPLACEMENT WITH ANOTHER MODULE
41 WHOSE INTERFACES MATCH THE ORIGINAL
42 MODULE. ALL MODULES SHALL BE DESIGNED IN
43 ACCORDANCE WITH THE FOLLOWING

1 SINGLE FILE (CALLED HEADER FILES IN
2 SOME LANGUAGES, SUCH AS C) WHERE
3 ANY CHANGES CAN BE APPLIED ONCE AND
4 THE CHANGE AUTOMATICALLY APPLIES TO
5 ALL MODULES UPON COMPILATION OR
6 ACTIVATION.

7 (D) EACH MODULE SHALL HAVE A SINGLE
8 ENTRY POINT, AND A SINGLE EXIT POINT,
9 FOR NORMAL PROCESS FLOW. FOR
10 LIBRARY MODULES OR LANGUAGES SUCH
11 AS THE OBJECT-ORIENTED LANGUAGES,
12 THE ENTRY POINT IS TO THE INDIVIDUAL
13 CONTAINED MODULE OR METHOD
14 INVOKED. THE SINGLE EXIT POINT IS THE
15 POINT WHERE CONTROL IS RETURNED. AT
16 THAT POINT, THE DATA THAT IS EXPECTED
17 AS OUTPUT MUST BE APPROPRIATELY SET.
18 THE EXCEPTION FOR THE EXIT POINT IS
19 WHERE A PROBLEM IS SO SEVERE THAT
20 EXECUTION CANNOT BE RESUMED. IN THIS
21 CASE, THE DESIGN MUST EXPLICITLY
22 PROTECT ALL RECORDED VOTES AND
23 AUDIT LOG INFORMATION AND MUST
24 IMPLEMENT FORMAL EXCEPTION
25 HANDLERS PROVIDED BY THE LANGUAGE.

26 (E) PROCESS FLOW WITHIN THE MODULES
27 SHALL BE RESTRICTED TO COMBINATIONS
28 OF THE CONTROL STRUCTURES DEFINED
29 BELOW. THIS APPLY TO ANY LANGUAGE
30 FEATURE WHERE PROGRAM CONTROL
31 PASSES FROM ONE ACTIVITY TO THE NEXT,
32 SUCH AS CONTROL SCRIPTS, OBJECT
33 METHODS OR SETS OF EXECUTABLE
34 STATEMENTS, EVEN THOUGH THE
35 LANGUAGE ITSELF IS NOT PROCEDURAL.

36
37 (i) IN THE CONSTRUCTS, ANY
38 'PROCESS' MAY BE REPLACED BY A
39 SIMPLE STATEMENT, A
40 SUBROUTINE OR FUNCTION CALL,
41 OR ANY OF THE CONTROL
42 CONSTRUCTS.

43
44 (ii) USING THE REPLACEMENT RULE TO
45 REPLACE ONE OR BOTH OF THE

1 PROCESSES IN THE SEQUENCE
2 CONSTRUCT WITH OTHER
3 SEQUENCE CONSTRUCTS, A LARGE
4 BLOCK OF SEQUENTIAL CODE MAY
5 BE FORMED. THE ENTIRE CHAIN IS
6 RECOGNIZED AS A SEQUENCE
7 CONSTRUCT AND IS SOMETIMES
8 CALLED A BLOCK CONSTRUCT.
9 SEQUENCES SHALL BE MARKED
10 WITH SPECIAL SYMBOLS OR
11 PUNCTUATION TO DELIMIT WHERE
12 IT STARTS AND WHERE IT ENDS.
13

14 (iii) A SPECIAL CASE OF THE
15 GENERAL LOOP IS THE FOR
16 LOOP. THE FOR LOOP MAY BE
17 PROGRAMMED AS A DO-WHILE
18 LOOP. THE FOR LOOP SHALL
19 EXECUTE ON A COUNTER. THE
20 CONTROL FOR STATEMENT SHALL
21 DEFINE A COUNTER VARIABLE OR
22 VARIABLES, A TEST FOR ENDING
23 THE LOOP, AND A STANDARD
24 METHOD OF CHANGING THE
25 VARIABLE(S) ON EACH PASS SUCH
26 AS INCREMENTING OR
27 DECREMENTING.
28

29 (iv) THE USE OF THE FOR LOOP SHALL
30 AVOID COMMON ERRORS SUCH AS
31 A LOOP THAT NEVER ENDS. THE
32 GENERAL LOOP SHALL NOT BE
33 USED WHERE ONE OF THE OTHER
34 LOOP STRUCTURES WILL SERVE.
35 HOWEVER, IF DEFINED IN THE
36 LANGUAGE, IT MAY BE USEFUL IN
37 DEFINING SOME LOOPS WHERE THE
38 EXIT NEEDS TO OCCUR IN THE
39 MIDDLE. ALSO, IN OTHER
40 LANGUAGES THE GENERAL
41 LOOP LOGIC MAY BE USED TO
42 SIMULATE THE OTHER CONTROL
43 CONSTRUCTS. THE USE OF THE
44 GENERAL LOOP SHALL
45 REQUIRE THE STRICT
46 ENFORCEMENT OF CODING

CONVENTIONS TO AVOID PROBLEMS.

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4 (v) THE VOTING SYSTEM SOFTWARE
5 CODE SHALL USE UNIFORM
6 CALLING SEQUENCES. ALL
7 PARAMETERS SHALL EITHER BE
8 VALIDATED FOR TYPE AND RANGE
9 ON ENTRY INTO EACH UNIT OR THE
10 UNIT COMMENTS SHALL
11 EXPLICITLY IDENTIFY THE TYPE
12 AND RANGE FOR THE REFERENCE
13 OF THE PROGRAMMER AND TESTER.
14 VALIDATION MAY BE PERFORMED
15 IMPLICITLY BY THE COMPILER OR
16 EXPLICITLY BY THE PROGRAMMER.

17
18 (vi) THE VOTING SYSTEM SOFTWARE
19 CODE SHALL HAVE THE RETURN
20 EXPLICITLY DEFINED FOR
21 CALLABLE UNITS SUCH AS
22 FUNCTIONS OR PROCEDURES (DO
23 NOT DROP THROUGH BY DEFAULT)
24 FOR C-BASED LANGUAGES AND
25 OTHERS TO WHICH THIS APPLIES,
26 AND IN THE CASE OF FUNCTIONS,
27 HAS THE RETURN VALUE
28 EXPLICITLY ASSIGNED. WHERE
29 THE RETURN IS ONLY EXPECTED TO
30 RETURN A SUCCESSFUL VALUE,
31 THE C CONVENTION OF RETURNING
32 ZERO SHALL BE USED. IF AN
33 UNCORRECTED ERROR OCCURS SO
34 THE UNIT MUST RETURN WITHOUT
35 CORRECTLY COMPLETING ITS
36 OBJECTIVE, A NON-ZERO RETURN
37 VALUE SHALL BE GIVEN EVEN IF
38 THERE IS NO EXPECTATION OF
39 TESTING THE RETURN. AN
40 EXCEPTION MAY BE MADE WHERE
41 THE RETURN VALUE OF THE
42 FUNCTION HAS A DATA RANGE
43 INCLUDING ZERO.

44
45 (vii) THE VOTING SYSTEM SOFTWARE
46 CODE SHALL NOT USE MACROS

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(XIII) EXCLUDING CODE GENERATED BY COMMERCIAL CODE GENERATORS, THE VOTING SYSTEM SOFTWARE CODE IS WRITTEN IN SMALL AND EASILY IDENTIFIABLE MODULES, WITH NO MORE THAN 50% OF ALL MODULES EXCEEDING 60 LINES IN LENGTH, NO MORE THAN 5% OF ALL MODULES EXCEEDING 120 LINES IN LENGTH, AND NO MODULES EXCEEDING 240 LINES IN LENGTH. "LINES" IN THIS CONTEXT, ARE DEFINED AS EXECUTABLE STATEMENTS OR FLOW CONTROL STATEMENTS WITH SUITABLE FORMATTING AND COMMENTS. THE REVIEWER SHOULD CONSIDER THE USE OF FORMATTING, SUCH AS BLOCKING INTO READABLE UNITS, WHICH SUPPORTS THE INTENT OF THIS REQUIREMENT WHERE THE MODULE ITSELF EXCEEDS THE LIMITS.

(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.

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(XVI) THE VOTING SYSTEM SOFTWARE SHALL CONTAIN NO MORE THAN ONE EXECUTABLE STATEMENT AND NO MORE THAN ONE FLOW CONTROL STATEMENT FOR EACH LINE OF SOURCE CODE.

(XVII) IN LANGUAGES WHERE EMBEDDED EXECUTABLE STATEMENTS ARE PERMITTED IN CONDITIONAL EXPRESSIONS, THE SINGLE EMBEDDED STATEMENT MAY BE CONSIDERED A PART OF THE CONDITIONAL EXPRESSION. ANY ADDITIONAL EXECUTABLE STATEMENTS SHOULD BE SPLIT OUT TO OTHER LINES.

(XVIII) THE VOTING SYSTEM SOFTWARE SHALL AVOID MIXED-MODE OPERATIONS. IF MIXED MODE USAGE IS NECESSARY, 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.

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(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:

```
INT FUNCTION()  
{  
  IF (A = TRUE)  
  1 {  
    IF ( B = TRUE )  
    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 THE CODE

1 UNIT, EVEN THEY SHALL BE
2 IDENTIFIED.

3
4 (XXV) THE VOTING SYSTEM SOFTWARE
5 SHALL ONLY CONTAINS THE
6 MINIMUM IMPLEMENTATION OF
7 THE “A = B ? C : D” SYNTAX.
8 EXPANSIONS SUCH AS
9 “J=A?(B?C:D):E;” ARE PROHIBITED.

10
11 (XXVI) THE VOTING SYSTEM SOFTWARE
12 SHALL HAVE ALL ASSERT()
13 STATEMENTS CODED SUCH THAT
14 THEY ARE ABSENT FROM A
15 PRODUCTION COMPILATION. SUCH
16 CODING MAY BE IMPLEMENTED BY
17 IFDEF(S) THAT REMOVE THEM
18 FROM OR INCLUDE THEM IN THE
19 COMPILATION. IF IMPLEMENTED,
20 THE INITIAL PROGRAM
21 IDENTIFICATION IN SETUP SHOULD
22 IDENTIFY THAT ASSERT() IS
23 ENABLED AND ACTIVE AS A TEST
24 VERSION.

25
26 F. CONTROL CONSTRUCTS WITHIN THE
27 MODULES SHALL BE LIMITED TO THE
28 ACCEPTABLE CONSTRUCTS OF SEQUENCE,
29 IF-THEN-ELSE, DO-WHILE, DO-UNTIL,
30 CASE, AND THE GENERAL LOOP (INCLUDING
31 THE SPECIAL CASE FOR LOOP).

32
33 (i) IF THE PROGRAMMING LANGUAGE
34 USED DOES NOT PROVIDE THESE
35 CONTROL CONSTRUCTS, THE
36 VENDOR SHALL PROVIDE
37 COMPARABLE CONTROL
38 STRUCTURE LOGIC. THE
39 CONSTRUCTS SHALL BE USED
40 CONSISTENTLY THROUGHOUT THE
41 CODE. NO OTHER CONSTRUCTS
42 SHALL BE USED TO CONTROL
43 PROGRAM LOGIC AND EXECUTION.

44
45 (ii) WHILE SOME PROGRAMMING
46 LANGUAGES DO NOT CREATE

1 PROGRAMS AS LINEAR PROCESSES,
2 STEPPING FROM AN INITIAL
3 CONDITION THROUGH CHANGES TO
4 A CONCLUSION, THE PROGRAM
5 COMPONENTS NONETHELESS
6 CONTAIN PROCEDURES (SUCH AS
7 “METHODS” IN OBJECT-ORIENTED
8 LANGUAGES). IN THESE
9 PROGRAMMING LANGUAGES, THE
10 PROCEDURES MUST EXECUTE
11 THROUGH THESE CONTROL
12 CONSTRUCTS OR THEIR
13 EQUIVALENTS, AS DEFINED AND
14 PROVIDED BY THE VENDOR.

15
16 (iii) OPERATOR INTERVENTION OR
17 LOGIC THAT EVALUATES RECEIVED
18 OR STORED DATA SHALL NOT
19 REDIRECT PROGRAM CONTROL
20 WITHIN A PROGRAM ROUTINE.
21 PROGRAM CONTROL MAY BE
22 REDIRECTED WITHIN A ROUTINE BY
23 CALLING SUBROUTINES,
24 PROCEDURES, AND FUNCTIONS,
25 AND BY INTERRUPT SERVICE
26 ROUTINES AND EXCEPTION
27 HANDLERS (DUE TO ABNORMAL
28 ERROR CONDITIONS). DO-WHILE
29 (FALSE) CONSTRUCTS AND
30 INTENTIONAL EXCEPTIONS (USED
31 AS GOTOS) ARE PROHIBITED.

32
33 G. ALL MODULES OF THE VOTING SYSTEM
34 SOFTWARE SHALL USE THE FOLLOWING
35 NAMING CONVENTIONS:

36
37 (i) OBJECT, FUNCTION, PROCEDURE,
38 AND VARIABLE NAMES SHALL BE
39 CHOSEN TO ENHANCE THE
40 READABILITY AND
41 INTELLIGIBILITY OF THE PROGRAM.
42 NAMES SHALL BE SELECTED SO
43 THAT THEIR PARTS OF SPEECH
44 REPRESENT THEIR USE, SUCH AS
45 NOUNS TO REPRESENT OBJECTS

1 AND VERBS TO REPRESENT
2 FUNCTIONS.

3
4 (II) NAMES USED IN CODE AND IN
5 DOCUMENTATION SHALL BE CONSISTENT.

6
7 (III) NAMES SHALL BE UNIQUE WITHIN
8 AN APPLICATION. NAMES SHALL
9 DIFFER BY MORE THAN A SINGLE
10 CHARACTER. ALL SINGLE-
11 CHARACTER NAMES ARE
12 FORBIDDEN EXCEPT THOSE FOR
13 VARIABLES USED AS LOOP
14 INDEXES. IN LARGE SYSTEMS
15 WHERE SUBSYSTEMS TEND TO BE
16 DEVELOPED INDEPENDENTLY,
17 DUPLICATE NAMES MAY BE USED
18 WHERE THE SCOPE OF THE NAME IS
19 UNIQUE WITHIN THE APPLICATION.
20 NAMES SHALL ALWAYS BE UNIQUE
21 WHERE MODULES ARE SHARED.

22
23 (IV) LANGUAGE KEYWORDS SHALL NOT
24 BE USED AS NAMES OF OBJECTS,
25 FUNCTIONS, PROCEDURES,
26 VARIABLES, OR IN ANY MANNER
27 NOT CONSISTENT WITH THE DESIGN
28 OF THE LANGUAGE.

29
30 H. ALL MODULES OF THE VOTING SYSTEM
31 SOFTWARE SHALL ADHERE TO BASIC CODING
32 CONVENTIONS. THE VENDORS SHALL
33 IDENTIFY THE PUBLISHED, REVIEWED, AND
34 INDUSTRY-ACCEPTED CODING CONVENTIONS
35 USED.

36
37 I. ALL MODULES OF THE VOTING SYSTEM
38 SOFTWARE SHALL USE THE FOLLOWING
39 COMMENT CONVENTIONS:

40
41 (i). ALL MODULES SHALL CONTAIN
42 HEADERS. FOR SMALL MODULES
43 OF 10 LINES OR LESS, THE HEADER
44 MAY BE LIMITED TO
45 IDENTIFICATION OF UNIT AND
46 REVISION INFORMATION. OTHER

1 HEADER INFORMATION SHOULD BE
2 INCLUDED IN THE SMALL UNIT
3 HEADERS IF NOT CLEAR FROM THE
4 ACTUAL LINES OF CODE. HEADER
5 COMMENTS SHALL PROVIDE THE
6 FOLLOWING INFORMATION:

7
8 (A) THE PURPOSE OF THE UNIT AND
9 HOW IT WORKS;

10
11 (B) OTHER UNITS CALLED AND THE
12 CALLING SEQUENCE;

13
14 (C) A DESCRIPTION OF INPUT
15 PARAMETERS AND OUTPUTS;

16
17 (D) FILE REFERENCES BY NAME
18 AND METHOD OF ACCESS (I.E.,
19 READ, WRITE, MODIFY OR
20 APPEND);

21
22 (E) GLOBAL VARIABLES USED;
23 AND

24
25 (F) DATE OF CREATION AND A
26 REVISION RECORD.

27
28 (ii) DESCRIPTIVE COMMENTS SHALL BE
29 PROVIDED TO IDENTIFY OBJECTS
30 AND DATA TYPES. ALL VARIABLES
31 SHALL HAVE COMMENTS AT THE
32 POINT OF DECLARATION CLEARLY
33 EXPLAINING THEIR USE. WHERE
34 MULTIPLE VARIABLES THAT SHARE
35 THE SAME MEANING ARE
36 REQUIRED, THE VARIABLES MAY
37 SHARE THE SAME COMMENT.

38
39 (iii) IN-LINE COMMENTS SHALL BE
40 PROVIDED TO FACILITATE
41 INTERPRETATION OF FUNCTIONAL
42 OPERATIONS, TESTS, AND
43 BRANCHING.

44
45 (iv) ASSEMBLY CODE SHALL CONTAIN
46 DESCRIPTIVE AND INFORMATIVE

1 COMMENTS SUCH THAT ITS
2 EXECUTABLE LINES CAN BE
3 CLEARLY UNDERSTOOD.

4 (v) ALL COMMENTS SHALL BE
5 FORMATTED IN A UNIFORM
6 MANNER THAT MAKES IT EASY TO
7 DISTINGUISH THEM FROM
8 EXECUTABLE CODE.

9
10 J. ALL MODULES OF THE SYSTEM SHALL MEET
11 THE FOLLOWING REQUIREMENTS FOR
12 INSTALLATION OF SOFTWARE, INCLUDING
13 HARDWARE WITH EMBEDDED FIRMWARE.

14
15 (i) IF SOFTWARE IS RESIDENT IN THE
16 SYSTEM AS FIRMWARE, THE
17 VENDOR SHALL REQUIRE AND
18 STATE IN THE SYSTEM
19 DOCUMENTATION THAT EVERY
20 DEVICE IS TO BE RETESTED TO
21 VALIDATE EACH ROM PRIOR TO
22 THE START OF ELECTIONS
23 OPERATIONS.

24
25 (ii) TO PREVENT ALTERATION OF
26 EXECUTABLE CODE, NO SOFTWARE
27 SHALL BE PERMANENTLY
28 INSTALLED OR RESIDENT IN THE
29 VOTING SYSTEM UNLESS THE
30 SYSTEM DOCUMENTATION STATES
31 THAT THE JURISDICTION MUST
32 PROVIDE A SECURE PHYSICAL AND
33 PROCEDURAL ENVIRONMENT FOR
34 THE STORAGE, HANDLING,
35 PREPARATION, AND
36 TRANSPORTATION OF THE SYSTEM
37 HARDWARE.

38
39 THE VOTING SYSTEM BOOTSTRAP,
40 MONITOR, AND DEVICE-
41 CONTROLLER SOFTWARE MAY BE
42 RESIDENT PERMANENTLY AS
43 FIRMWARE, PROVIDED THAT THIS
44 FIRMWARE HAS BEEN SHOWN TO
45 BE INACCESSIBLE TO ACTIVATION
46 OR CONTROL BY ANY MEANS

1 OTHER THAN BY THE AUTHORIZED
2 INITIATION AND EXECUTION OF
3 THE VOTE COUNTING PROGRAM,
4 AND ITS ASSOCIATED EXCEPTION
5 HANDLERS.

6
7 (IV) THE ELECTION-SPECIFIC
8 PROGRAMMING MAY BE INSTALLED
9 AND RESIDENT AS FIRMWARE,
10 PROVIDED THAT SUCH FIRMWARE
11 IS INSTALLED ON A COMPONENT
12 (SUCH AS A COMPUTER CHIP)
13 OTHER THAN THE COMPONENT ON
14 WHICH THE OPERATING SYSTEM
15 RESIDES.

16
17 (V) AFTER INITIATION OF ELECTION
18 DAY TESTING, NO SOURCE CODE OR
19 COMPILERS OR ASSEMBLERS SHALL
20 BE RESIDENT OR ACCESSIBLE.

21
22 ~~(II)● USE OF HIGH LEVEL PROGRAMMING LANGUAGES~~
23 ~~SHALL BE LIMITED TO: PASCAL, VISUAL BASIC~~
24 ~~6.0 OR LATER, JAVA, C, C++, AND C#. THE~~
25 ~~REQUIREMENT FOR THE USE OF HIGH-LEVEL~~
26 ~~LANGUAGE FOR LOGICAL OPERATIONS DOES NOT~~
27 ~~PRECLUDE THE USE OF ASSEMBLY LANGUAGE FOR~~
28 ~~HARDWARE-RELATED SEGMENTS, SUCH AS DEVICE~~
29 ~~CONTROLLERS AND HANDLER PROGRAMS.~~

30 ~~(HIV)● INDEPENDENT ANALYSIS WILL TEST FOR THE~~
31 ~~FOLLOWING CONDITIONS AND REPORT ON~~
32 ~~ABSENCE OR PRESENCE OF THE FOLLOWING INPUT~~
33 ~~VALIDATIONS IN ACCORDANCE WITH SECTION~~
34 ~~45.5.2.4.3:THE FOLLOWING INPUT VALIDATIONS~~
35 ~~SHALL BE PROHIBITED AND VERIFIED THROUGH~~
36 ~~INDEPENDENT ANALYSIS IN ACCORDANCE WITH~~
37 ~~SECTION 45.5.2.4.3: [ADDITIONAL CRITERIA TO BE~~
38 ~~DEVELOPED]~~

- 39 1. PATH MANIPULATION;
40 2. CROSS SITE SCRIPTING.BASIC X;
41 3. RESOURCE INJECTION;

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4iv. OS COMMAND INJECTION (ALSO CALLED “SHELL INJECTION”); AND

5v. SQL INJECTION.

(iv)● INDEPENDENT ANALYSIS WILL TEST FOR THE FOLLOWING CONDITIONS AND REPORT ON ABSENCE OR PRESENCE OF THE ~~THE~~ FOLLOWING RANGE ERRORS SHALL BE PROHIBITED AND VERIFIED THROUGH INDEPENDENT ANALYSIS IN ACCORDANCE WITH SECTION 45.5.2.4.3: [ADDITIONAL CRITERIA TO BE DEVELOPED]

1i. STACK OVERFLOW;

2ii. HEAP OVERFLOW;

3iii. FORMAT STRING VULNERABILITY; AND

4iv. IMPROPER NULL TERMINATION.

(vi)● INDEPENDENT ANALYSIS WILL TEST FOR FOLLOWING CONDITIONS AND REPORT ON ABSENCE OR PRESENCE OF THE ~~THE~~ FOLLOWING API ABUSES WILL BE PROHIBITED AND VERIFIED THROUGH INDEPENDENT ANALYSIS IN ACCORDANCE WITH SECTION 45.5.2.4.3: [ADDITIONAL CRITERIA TO BE DEVELOPED]

1i. HEAP INSPECTION; AND

2ii. STRING MANAGEMENT/MANIPULATION.

(vii)● INDEPENDENT ANALYSIS WILL TEST FOR FOLLOWING CONDITIONS AND REPORT ON ABSENCE OR PRESENCE OF THE ~~THE~~ FOLLOWING TIME AND STATE CONDITIONS SHALL BE PROHIBITED AND VERIFIED THROUGH INDEPENDENT ANALYSIS IN ACCORDANCE WITH SECTION 45.5.2.4.3: [ADDITIONAL CRITERIA TO BE DEVELOPED]

1i. TIME-OF-CHECK/TIME-OF-USE RACE CONDITION; AND

2ii. UNCHECKED ERROR CONDITION.

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(VIII)● INDEPENDENT ANALYSIS WILL TEST FOR FOLLOWING CONDITIONS AND REPORT ON ABSENCE OR PRESENCE OF THE ~~THE~~ FOLLOWING CODE QUALITY CONDITIONS SHALL BE PROHIBITED AND VERIFIED THROUGH INDEPENDENT ANALYSIS IN ACCORDANCE WITH SECTION 45.5.2.4.3: [ADDITIONAL CRITERIA TO BE DEVELOPED]

- 1H. MEMORY LEAKS;
- 2H. UNRESTRICTED CRITICAL RESOURCE LOCK;
- 3H. DOUBLE FREE;
- 4H. USE AFTER FREE;
- 5H. UNINITIALIZED VARIABLE;
- 6H. UNINTENTIONAL POINTER SCALING;
- 7H. IMPROPER POINTER SUBTRACTION; AND
- 8H. NULL DEREERENCE.

(~~VIII~~X)● INDEPENDENT ANALYSIS WILL TEST FOR FOLLOWING CONDITIONS AND REPORT ON ABSENCE OR PRESENCE OF THE ~~THE~~ FOLLOWING ENCAPSULATION CONDITIONS SHALL BE PROHIBITED AND VERIFIED THROUGH INDEPENDENT ANALYSIS IN ACCORDANCE WITH SECTION 45.5.2.4.3: [ADDITIONAL CRITERIA TO BE DEVELOPED]

- 1H. PRIVATE ARRAY-TYPED FIELD RETURNED FROM A PUBLIC METHOD;
- 2H. PUBLIC DATA ASSIGNED TO PRIVATE ARRAY-TYPED FIELD;
- 3H. OVERFLOW OF STATIC INTERNAL BUFFER; AND
- 4H. LEFTOVER DEBUG CODE.

(~~VIII~~X) THE APPLICATION SHALL NOT OPEN DATABASE TABLES FOR DIRECT EDITING.

1 (G) AS OF MARCH 31 2008, THE VOTING SYSTEM SUBMITTED
2 FOR CERTIFICATION SHALL MEET THE FOLLOWING
3 MINIMUM REQUIREMENTS FOR REMOVABLE STORAGE
4 MEDIA WITH DATA CONTROLS:

5 (I) ALL VOTING DATA STORED WHICH INCLUDES
6 VOTE RECORDS, BALLOT IMAGES, TALLY DATA
7 AND CAST VOTES SHALL BE AUTHENTICATED AND
8 VALIDATED IN ACCORDANCE WITH
9 CRYPTOGRAPHY REQUIREMENTS OF SUBSECTION
10 (C)(VII) OF THIS REQUIREMENT;

11 (II) ALL NON-VOTING DATA STORED SHALL BE
12 AUTHENTICATED, ENCRYPTED, AND VALIDATED
13 IN ACCORDANCE WITH CRYPTOGRAPHY
14 REQUIREMENTS OF SUBSECTION (C)(VII) OF THIS
15 REQUIREMENT; AND

16 (II) ANTIVIRUS SOFTWARE MUST SCAN REMOVABLE
17 MEDIA UPON INSERTION OF MEDIA OR MEDIA
18 DEVICE INTO HOST COMPUTER.

19 45.5.2.6.42 The voting system provider shall provide documentation
20 detailing voting system security in the areas listed below. ~~At no~~
21 ~~time shall~~ THE SYSTEM SHALL CONTAIN DOCUMENTED
22 CONFIGURATIONS, PROPERTIES AND PROCEDURES TO PREVENT,
23 DETECT AND LOG ~~a system allow for unauthorized~~ changes to
24 system capabilities for:

- 25 (a) Defining ballot formats;
- 26 (b) Casting and recording votes;
- 27 (c) Calculating vote totals consistent with defined ballot
28 formats;
- 29 (d) Reporting vote totals;
- 30 (e) Alteration of voting system audit records;
- 31 (f) Changing, or preventing the recording of, a vote;
- 32 (g) Introducing data for a vote not cast by a registered voter;
- 33 (h) Changing calculated vote totals;
- 34 (i) Preventing access to vote data, including individual votes
35 and vote totals, to unauthorized individuals; and

1 (j) Preventing access to voter identification data and data for
2 votes cast by the voter such that an individual can
3 determine the content of specific votes cast by the voter.

4 45.5.2.6.23 The voting system provider shall submit to the ~~SOS~~SECRETARY
5 OF STATE its recommended policies or guidelines governing:

6 (a) Software access controls;

7 (b) Hardware access controls;

8 (c) Data communications;

9 (d) Effective password management;

10 (e) Protection abilities of a particular operating system;

11 (F) ~~WHAT SOFTWARE FOR VIRUS AND SPYWARE PROTECTION~~
12 ~~THE VOTING SYSTEM SHALL USE~~

13 (~~F~~G) General characteristics of supervisory access privileges;

14 (~~g~~H) Segregation of duties; and

15 (~~f~~i) Any additional relevant characteristics.

16 45.5.2.6.34 The voting system shall include detailed documentation as to
17 the security measures it has in place for all systems, applicable
18 software, devices that act as connectors (upload, download, and
19 other programming devices), and any security measures the
20 voting system provider recommends to the ~~end-users~~
21 JURISDICTIONS that purchase the voting system.

22 45.5.2.7 Telecommunications Requirements

23 45.5.2.7.1 Telecommunications includes all components of the ~~voting~~
24 system that transmit data OUTSIDE OF THE CLOSED NETWORK AS
25 DEFINED IN THIS RULE, ~~over public or private network~~
26 ~~communications. This includes wired, wireless, phone/modem,~~
27 ~~LAN, and WAN connections.~~

28 45.5.2.7.2 ALL ELECTRONIC TRANSMISSIONS FROM A VOTING SYSTEM
29 ~~ACROSS PUBLIC NETWORKS~~ SHALL MEET THE FOLLOWING
30 MINIMUM STANDARDS:

31 (A) MODEMS FROM REMOTE DEVICES SHALL BE “DIAL ONLY”
32 AND CANNOT BE PROGRAMMED TO RECEIVE A CALL;
33 [~~ADDITIONAL CRITERIA TO BE DEVELOPED~~]

- 1 (B) MODEMS FROM TALLY COMPUTER (CENTRAL SERVERS,
2 INCLUDING RALLY SERVERS) SHALL BE HARDENED TO
3 INDUSTRY STANDARDS WITH AUTHENTICATION;
4 ~~[ADDITIONAL CRITERIA TO BE DEVELOPED]~~
- 5 (C) ALL COMMUNICATIONS OF DATA IN TRANSFER SHALL BE
6 ENCRYPTED, AUTHENTICATED AND ~~AUTHORIZED-VERIFIED~~
7 TO THE ~~FIPS-FIPS~~ 140-2 STANDARD AND VERIFIED TO THE
8 FIPS 180 STANDARD. ~~ANDSHALL BE AUTHENTICATED AND~~
9 ~~ENCRYPTED TO A MINIMUM OF 128 BIT DES; [ADDITIONAL~~
10 ~~CRITERIA TO BE DEVELOPED]~~
- 11 (D) ANY MODEM IN ANY COMPONENT FAILING TO MEET THIS
12 CRITERIA SHALL NOT BE USED BY ANY VOTING SYSTEM.

13 ~~45.5.2.7.2~~ All electronic transmissions across public networks shall be
14 secured to the level and using the technologies prescribed in the
15 State of Colorado’s “Minimum IT Architecture Standards” as
16 adopted by the Information Management Commission at the
17 time of certification. The voting system provider shall provide
18 documentation describing in detail the steps and methods used
19 for those electronic transmissions. This documentation will
20 describe, at a minimum, the methods by which authentication,
21 confidentiality, integrity, and availability of the transmission
22 and verification of electronically transmitted information will be
23 performed.

24 ~~45.5.2.7.3~~ The voting system provider is required to provide to the SOS an
25 affidavit of compliance with the State’s “Minimum IT
26 Architecture Standards” and is further required to indicate to the
27 State any variance(s) between the vendor’s systems and the
28 State’s standards within the documentation submitted for
29 certification of the voting system.

30 ~~45.5.2.7.4~~ Any system that incorporates wireless transmission shall include
31 a detailed security plan specific to the wireless protocol being
32 deployed with the voting system. The detailed plan shall
33 include specific instructions for end-users of the system to allow
34 passwords and security keys to be set and/or generated by the
35 end user.

36 45.5.2.7.3 ALL WIRELESS COMPONENTS ON VOTING SYSTEMS SHALL BE
37 DISABLED WITH THE EXCEPTION OF LINE OF SIGHT INFRARED
38 TECHNOLOGY USED IN A CLOSED ENVIRONMENT WHERE THE
39 TRANSMISSION AND RECEPTION IS SHIELDED FROM EXTERNAL
40 INFRARED SIGNALS AND CAN ONLY ACCEPT INFRARED SIGNALS
41 GENERATED FROM WITHIN THE SYSTEM.

- 1 45.5.2.7.54 All systems that transmit data over public telecommunications
2 networks shall maintain a clear audit trail that can be provided
3 to the ~~SOS~~SECRETARY OF STATE when election results are
4 transmitted by telephone, microwave or any other type of
5 electronic communication.
- 6 45.5.2.7.65 Systems designed for transmission of voter information (i.e.
7 electronic pollbooks) over public networks shall meet security
8 standards that address the security risks attendant with the
9 casting of ballots at remote sites controlled by election officials
10 using the voting system configured and installed by election
11 officials and/or their voting system provider or contractor, and
12 using in-person authentication of individual voters.
- 13 45.5.2.7.76 Any voting system provider of systems that cast individual
14 ballots over a public telecommunications network shall provide
15 detailed descriptions of:
- 16 (a) All activities mandatory to ensuring effective system
17 security to be performed in setting up the system for
18 operation, including testing of security before an election.
- 19 (b) All activities that should be prohibited during system setup
20 and during the time frame for voting operations, including
21 both the hours when polls are open and when polls are
22 closed.
- 23 45.5.2.7.7 IN ANY SITUATION IN WHICH THE VOTING SYSTEM PROVIDER'S
24 SYSTEM TRANSMITS DATA THROUGH ANY TELECOMMUNICATIONS
25 MEDIUM, THE SYSTEM SHALL BE ABLE TO RECOVER, EITHER
26 AUTOMATICALLY OR WITH MANUAL INTERVENTION, FROM
27 INCOMPLETE OR FAILED TRANSMISSION SESSIONS AND RESUME
28 TRANSMISSIONS AUTOMATICALLY WHEN TELECOMMUNICATIONS
29 ARE RE-ESTABLISHED.
- 30 (A) RECOVERY OF TRANSMISSIONS SHALL INCLUDE NOTATIONS
31 OF THE INTERRUPTED TRANSMISSION SESSION AND THE
32 RESUMED TRANSMISSION SESSION IN THE SYSTEM AND
33 APPLICATION TRANSACTION LOGS.
- 34 (B) FAILURE AND RECOVERY OF TRANSMISSIONS SHALL NOT
35 CAUSE ANY ERROR IN DATA TRANSMITTED FROM THE
36 POLLING PLACE TO THE CENTRAL ELECTION SITE DURING A
37 RECOVERED TRANSMISSION SESSION.
- 38 45.5.2.7.8 VOTING SYSTEMS THAT USE PUBLIC TELECOMMUNICATIONS
39 NETWORKS SHALL USE PROTECTIVE SOFTWARE AT THE
40 RECEIVING-END OF ALL COMMUNICATIONS PATHS TO:

1 (A) DETECT THE PRESENCE OF A THREAT IN A TRANSMISSION;

2 (B) REMOVE THE THREAT FROM INFECTED FILES/DATA;

3 (C) PREVENT AGAINST STORAGE OF THE THREAT ANYWHERE ON
4 THE RECEIVING DEVICE;

5 (D) PROVIDE THE CAPABILITY TO CONFIRM THAT NO THREATS
6 ARE STORED IN SYSTEM MEMORY AND IN CONNECTED
7 STORAGE MEDIA; AND

8 (E) PROVIDE DATA TO THE SYSTEM AUDIT LOG INDICATING THE
9 DETECTION OF A THREAT AND THE PROCESSING
10 PERFORMED.

11 45.5.2.7.9 VOTING SYSTEMS THAT USE PUBLIC TELECOMMUNICATIONS
12 NETWORKS SHALL PROVIDE SYSTEM DOCUMENTATION THAT
13 CLEARLY IDENTIFIES ALL COTS HARDWARE AND SOFTWARE
14 PRODUCTS AND COMMUNICATIONS SERVICES USED IN THE
15 DEVELOPMENT AND/OR OPERATION OF THE VOTING SYSTEM,
16 INCLUDING OPERATING SYSTEMS, COMMUNICATIONS ROUTERS,
17 MODEM DRIVERS AND DIAL-UP NETWORKING SOFTWARE.
18 DOCUMENTATION SHALL IDENTIFY THE NAME, VENDOR, AND
19 VERSION USED FOR EACH SUCH COMPONENT.
20

21 45.5.2.7.10 VOTING SYSTEMS, VENDORS SHALL DOCUMENT HOW THEY PLAN
22 TO MONITOR AND RESPOND TO KNOWN THREATS TO WHICH THEIR
23 VOTING SYSTEMS ARE VULNERABLE. THIS DOCUMENTATION
24 SHALL PROVIDE A DETAILED DESCRIPTION, INCLUDING
25 SCHEDULING INFORMATION, OF THE PROCEDURES THE VENDOR
26 WILL USE TO:

27 (A) MONITOR THREATS, SUCH AS THROUGH THE REVIEW OF
28 ASSESSMENTS, ADVISORIES, AND ALERTS FOR COTS
29 COMPONENTS;

30 (B) EVALUATE THE THREATS AND, IF ANY, PROPOSED
31 RESPONSES.

32 (C) DEVELOP RESPONSIVE UPDATES TO THE SYSTEM AND/OR
33 CORRECTIVE PROCEDURES; AND

34 (D) AS PART OF CERTIFICATION REQUIREMENTS OF THE
35 PROPOSED SYSTEM, PROVIDE ASSISTANCE TO CUSTOMERS,
36 EITHER DIRECTLY OR THROUGH DETAILED WRITTEN
37 PROCEDURES, HOW TO UPDATE THEIR SYSTEMS AND/OR TO

1 IMPLEMENT THE CORRECTIVE PROCEDURES WITHIN THE
2 TIMEFRAME ESTABLISHED BY THE SECRETARY OF STATE.

3 45.5.2.8 Accessibility Requirements

4 45.5.2.8.1 Specific minimum accessibility requirements include those
5 specified in section §1-5-704 C.R.S., ~~SOS~~SECRETARY OF STATE
6 Rule 34, Rule 35 and the following:

7 (a) Buttons and controls shall be distinguishable by both
8 shape and color.

9 (b) Audio ballots shall meet the following standards:

10 1. The voting system shall allow the voter to pause
11 and resume the audio presentation.

12 2. The audio system shall allow voters to control
13 within reasonable limits, the rate of speech.

14 (c) No voting system or any of its accessible components
15 shall require voter speech for its operation.

16 (D) ALL TOUCHSCREEN TECHNOLOGY SHALL BE TESTED FOR
17 USE OF FINGERS AS WELL AS NON-HUMAN TOUCH THAT IS
18 BOTH WET AND DRY.

19 (E) VOTING SYSTEMS SHALL INCLUDE AT LEAST THE ABILITY
20 TO ACTIVATE AND NAVIGATE BY MEANS OF PUSH BUTTONS,
21 KEYPADS, AND TOUCH SCREENS. BY MARCH 31, 2008,
22 VOTING SYSTEMS SUBMITTED FOR CERTIFICATION SHALL
23 ALSO INCLUDE ANY FORM OF EITHER SWITCHES, SIP AND
24 PUFF DEVICES, OR ADDITIONAL BLINK CONTROL DEVICES.

25 (F) A MINIMUM ADJUSTABILITY BY EITHER THE POLL
26 WORKER OR VOTER OF MULTIPLE COLOR SETTINGS,
27 MULTIPLE SCREEN CONTRASTS, AND MULTIPLE SCREEN
28 ANGLES/TILT IF THE SYSTEM USES A DISPLAY SCREEN.

29 (G) ALL ACCESSIBLE SYSTEMS WILL BE TESTED TO ENSURE
30 DEVICE CAN PERFORM THE MINIMUM REQUIREMENTS OF
31 ELECTION CODE, AND SECRETARY OF STATE RULES.
32

33 45.5.2.8.2 Documentation of the accessibility of the voting system shall
34 include the following items at a minimum:

- 1 (a) If appropriate, voting booth design features that provide
- 2 for privacy for the voter while voting (if a voting booth is
- 3 not included with the system, then describe how voter
- 4 privacy is accomplished).
- 5 (b) Adaptability of the proposed system for voters with
- 6 disabilities as outlined in the Americans with Disabilities
- 7 Act guidelines.
- 8 (c) Technology used by the voting system that prevents
- 9 headset/headphone interference with hearing aids.
- 10 (d) Types and size of voice file(s) the voting system uses.
- 11 (e) Method for recording, sharing and storing voice files in
- 12 the voting system.
- 13 (f) How paginating through viewable screens is accomplished
- 14 if it is required with the voting system.
- 15 (g) Various methods of voting to ensure access by persons
- 16 with multiple disabilities. ~~Voting systems shall include~~
- 17 ~~push buttons, keypad, "puff sip" tube, touch screen,~~
- 18 ~~switches, and blink control devices.~~
- 19 (h) Capabilities of the voting system to accurately accept a
- 20 non-human touch as input on the touch screen.
- 21 (i) User adjustability of color settings, screen contrasts, and
- 22 screen angles/tilt if the system uses a display screen.

23 45.5.2.9 Voter-Verifiable Paper Record Requirements(V-VPAT)

24 45.5.2.9.1 V-VPAT shall refer to a Voter-verified paper record as defined

25 in section 1-1-104(50.6)(a), C.R.S.

26 45.5.2.9.2 Existing systems that are retrofitted to comply with this law

27 shall be certified by the ~~SO~~SECRETARY OF STATE. Any

28 retrofitted voting system shall comply with the process and

29 application for certification as identified by this rule.

30 45.5.2.9.3 The V-VPAT shall consist of the following minimum

31 components:

- 32 (a) The voting device shall contain a paper audit trail writer or
- 33 printer that shall be attached, built into, or used in
- 34 conjunction with the DRE. The printer shall duplicate a
- 35 voter's selections from the DRE onto a paper record.

- 1 (b) The unit or device shall have a paper record display unit or
2 area that shall allow a voter to view his or her paper
3 record.
- 4 (c) The V-VPAT unit shall contain a paper record storage unit
5 that shall store cast and spoiled paper record copies
6 securely.
- 7 (d) These devices may be integrated as appropriate to their
8 operation.
- 9 45.5.2.9.4 V-VPAT devices shall allow voters to verify his or her
10 selections on a paper record prior to casting ballots. The voter
11 shall either accept or reject the choices represented on the paper
12 record. Both the electronic record and the paper record shall be
13 stored and retained upon the completion of casting a ballot.
- 14 45.5.2.9.5 The V-VPAT printer connection may be any standard, publicly
15 documented printer port (or the equivalent) using a standard
16 communication protocol.
- 17 45.5.2.9.6 The printer shall not be permitted to communicate with any
18 other device than the voting device to which it is connected.
- 19 45.5.2.9.7 The printer shall only be able to function as a printer, and not
20 perform any other services or possess network capability.
- 21 45.5.2.9.8 Every electronic voting record shall have a corresponding paper
22 record.
- 23 45.5.2.9.9 The paper record shall be considered an official record of the
24 election available for recounts, and shall be sturdy, clean, and of
25 sufficient durability to be used for this purpose.
- 26 45.5.2.9.10 The V-VPAT device shall be designed to allow every voter to
27 review, and accept or reject his/her paper record in as private
28 and independent manner as possible for both disabled and non-
29 disabled voters.
- 30 45.5.2.9.11 The V-VPAT system shall be designed in conjunction with
31 State Law to ensure the secrecy of votes so that it is not possible
32 to determine which voter cast which paper record.
- 33 45.5.2.9.12 The V-VPAT printer shall print at a font size no less than ten
34 (10) points for ease of readability. Any protective covering
35 intended to be transparent shall be in such condition that it can
36 be made transparent by ordinary cleaning of its exposed surface.

- 1 45.5.2.9.13 The V-VPAT system shall be designed to allow each voter to
2 verify his or her vote on a paper record in the same language
3 they voted in on the DRE.
- 4 45.5.2.9.14 The V-VPAT system shall be designed to prevent tampering
5 with unique keys and/or seals for the compartment that stores
6 the paper record, as well as meet the security requirements of
7 this rule. Additional security measures may be in place on the
8 printer to prevent tampering with the device.
- 9 45.5.2.9.15 The V-VPAT system shall be capable of printing and storing
10 paper record copies for at least 150 ballots cast without
11 requiring the paper supply source, ink or toner supply, or any
12 other similar consumable supply to be changed during the
13 voting period, assuming a fully printed double sided eighteen
14 (18) inch ballot WITH A MINIMUM OF 20 CONTESTS.
- 15 45.5.2.9.16 The V-VPAT unit shall provide a “low supply” warning to the
16 election judge to add paper, ink, toner, ribbon or other like
17 supplies. In the event that an election judge is required to
18 change supplies during the process of voting, the voter shall be
19 allowed to reprint and review the paper audit trail without
20 having to re-mark his or her ballot, and the device shall prevent
21 the election judge from seeing any voters’ ballots.
- 22 45.5.2.9.17 AS OF MARCH 31, 2008, VOTING SYSTEMS SUBMITTED FOR
23 CERTIFICATION SHALL STOP THE V-VPAT PRINTER OF ALL
24 FORWARD OPERATIONS OF THE DRE IF THE PRINTER IS NOT
25 WORKING DUE TO PAPER JAMS, OUT OF SUPPLY OF CONSUMABLES,
26 OR OTHER ISSUE WHICH MAY CAUSE THE CORRECT READABLE
27 PRINTING OF INFORMATION ON THE V-VPAT RECORD AS
28 DESIGNED.
- 29 45.5.2.9.1718 The voting system provider shall provide procedures and
30 documentation for the use of the V-VPAT device.
- 31 45.5.2.9.1819 The printed information on the printed ballot or
32 verification portion of the V-VPAT device shall contain at least
33 the following items:
- 34 (a) Name or header information of race, question or issue
- 35 (b) Voter’s selections for the race information.
- 36 (c) Write-in candidate’s names if selected.
- 37 (d) Undervote or overvote information – this is in addition to
38 the information on the review screen of the DRE.

- 1 (e) ABILITY TO OPTIONALLY PRODUCE A UNIQUE~~Unique~~-serial
2 number (randomized to protect privacy)
- 3 (f) Identification that the ballot was cancelled or cast
- 4 45.5.2.9.19 The V-VPAT shall allow a voter to spoil his or her paper record
5 no more than two (2) times. Upon spoiling, the voter shall be
6 able to modify and verify selections on the DRE without having
7 to reselect all of his or her choices.
- 8 45.5.2.9.20 Before the voter causes a third and final record to be printed, the
9 voter shall be presented with a warning notice that the selections
10 made on screen shall be final and the voter shall see and verify a
11 printout of his or her vote, but shall not be given additional
12 opportunities to change their vote.
- 13 45.5.2.9.21 All V-VPAT components shall be capable of integrating into
14 existing state testing and auditing requirements of the voting
15 system.
- 16 45.5.2.9.22 The V-VPAT component should print a barcode with each
17 record that contains the human readable contents of the paper
18 record and digital signature information. The voting system
19 provider shall include documentation of the barcode type,
20 protocol, and/or description of barcode and the method of
21 reading the barcode as applicable to the voting system.
- 22 45.5.2.9.23 The V-VPAT component shall be designed such that a voter
23 may not be able to leave the voting area with the paper record.
- 24 45.5.2.9.24 If used for provisional ballots, the V-VPAT system shall be able
25 to count all of an elector's votes on a provisional ballot or only
26 federal and statewide offices and statewide ballot issues and
27 questions, as provided under section 1-8.5-108(2), C.R.S.
- 28 45.5.2.9.25 The ~~SOS~~SECRETARY OF STATE shall keep on file procedures
29 submitted by the voting system provider for how to investigate
30 and resolve malfunctions including, but not limited to:
31 misreporting votes, unreadable paper records, paper jams, low-
32 ink, misfeeds, preventing the V-VPAT from being a single point
33 of failure, recovering votes in the case of malfunction and
34 power failures.

35 45.6 Testing

36 45.6.1 Voting System Provider Demonstration

1 45.6.1.1 The voting system provider shall demonstrate the exact proposed voting
2 system to the ~~SOS~~SECRETARY OF STATE or his or her designee prior to any
3 functional testing. It should be expected that a minimum of 6 hours would be
4 required of the voting system provider to demonstrate and assist with
5 programming of the software as necessary.

6 45.6.1.2 The demonstration period does not have a pre-determined agenda for the
7 voting system provider to follow, however, presentations should be prepared
8 to address and demonstrate with the specific system the following items as
9 they pertain to each area and use within the voting system:

- 10 (a) System overview
- 11 (b) Verification of complete system matching EAC certification
- 12 (c) Ballot definition creation
- 13 ~~(d) Import EML file from statewide voter registration system~~
- 14 (e) Printing ballots on demand
- 15 (f) Hardware diagnostics testing
- 16 (g) Programming election media devices for various count methods:
- 17 ● Absentee
 - 18 ● Early Voting
 - 19 ● Precinct/Poll Place
 - 20 ● Provisional
 - 21 ● Vote Center
- 22 (h) Sealing and securing system devices
- 23 (i) Logic and accuracy testing
- 24 (j) Processing ballots
- 25 (k) Accessible use
- 26 (l) Accumulating results
- 27 (m) Post-election audit
- 28 (n) Canvass process handling

- 1 45.6.2.1.3 THE PROPRIETARY SOFTWARE SHALL BE INSTALLED ON THE
2 WORKSTATION BY THE TESTING BOARD FOLLOWING THE
3 DOCUMENTATION PROVIDED BY THE VOTING SYSTEM PROVIDER
4 AFTER THE ESTABLISHED “TRUSTED BUILD.”
- 5 ~~45.6.2.1.3 The voting system provider shall DEPOSIT WITH THE SECRETARY~~
6 ~~OF STATE THE “TRUSTED BUILD” provide a copy of the version~~
7 ~~being certified of software, firmware, utilities, hardware and~~
8 ~~instructions to install, operate and test the system being~~
9 ~~submitted for certification.~~
- 10 45.6.2.1.4 The test shall be performed with test ballots and an election
11 setup file, as determined by the ~~SOS~~SECRETARY OF STATE.
- 12 45.6.2.1.5 Functional testing shall be completed ~~within 17 days of the~~
13 ~~successful conclusion of the voting system provider~~
14 ~~demonstration~~ ACCORDING TO THE SCHEDULE IDENTIFIED IN
15 SECTION 45.3.3.
- 16 45.6.2.2 ~~SOS~~SECRETARY OF STATE requirements for testing
- 17 45.6.2.2.1 The ~~SOS~~SECRETARY OF STATE or the designee shall conduct
18 functional testing on the voting system based on this rule and
19 additional testing procedures as determined by the
20 ~~SOS~~SECRETARY OF STATE.
- 21 45.6.2.2.2 The voting system shall receive a pass/fail OR NOT APPLICABLE
22 for each test conducted WITH APPLICABLE NOTATION ON THE
23 TEST LOG. ~~[ADDITIONAL REQUIREMENTS TO BE DEVELOPED]~~
- 24 45.6.2.2.3 A TEST log of the testing procedure shall be maintained and
25 recorded on file with the ~~SOS~~SECRETARY OF STATE. This TEST
26 log shall identify the system and all components by voting
27 system provider name, make, model, serial number, software
28 version, firmware version, date tested, test number, test
29 description, notes of test, APPLICABLE TEST SCRIPTS, and results
30 of test. All test environment conditions shall be noted.
- 31 45.6.2.2.4 All operating steps, the identity and quantity of simulated
32 ballots, annotations of output reports, and observations of
33 performance shall be recorded.
- 34 45.6.2.2.5 In the event that a deviation to requirements pertaining to the
35 test environment, voting system arrangement and method of
36 operation, the specified test procedure, or the provision of test
37 instrumentation and facilities is required, this deviation shall be
38 recorded in the test log together with a discussion of the reason

1 for the deviation and a statement of the effect of the deviation
2 on the validity of the test procedure.

3 45.6.2.3 General Testing Procedures and Instructions

4 45.6.2.3.1 Certification tests shall be used to determine compliance with
5 applicable performance standards for the system and its
6 components. The general procedure for these tests shall:

- 7 (a) Verify, by means of applicant's standard operating
8 procedure, that the device is in a normal condition and
9 status.
- 10 (b) Establish the standard test environment or the special
11 environment required to perform the test.
- 12 (c) Invoke all operating modes or conditions necessary to
13 initiate or to establish the performance characteristic to be
14 tested.
- 15 (d) Measure and record the value or the range of values of the
16 performance characteristic to be tested.
- 17 (e) Verify all required measurements have been obtained, and
18 that the device is still in a normal condition and status.

19 45.6.2.3.2 All tests shall be conducted as described in this section 45.6.2.3
20 in regular election mode. At no point shall testing be conducted
21 in any form of test mode.

22 45.6.2.3.3 Each voting system shall be tested and examined by conducting
23 ~~a~~ TWO mock ELECTIONS – A PRIMARY, AND A coordinated
24 election.

25 45.6.2.3.4 Each component of the voting system shall contain provisions
26 for verifying it is functioning correctly and, whether operation
27 of the component is dependent upon instructions specific to that
28 election. TEST SCRIPTS SHALL BE SUBSTANTIVE AND
29 QUALITATIVE IN FORM WITH EXPECTED RESULTS LISTED FOR
30 EACH TEST.

31

32 45.6.2.3.5 Both election scenarios shall feature at least 10 districts (or
33 district types), comprised of at least 20 precincts that will result
34 in a minimum of 5 unique ballot styles or combinations.

1 45.6.2.3.6 The voting system provider is required to produce ~~a minimum~~
2 ~~of 500~~ ballots IN QUANTITIES IDENTIFIED BELOW for each of the
3 two elections. Enough ballots need to be created to conduct the
4 testing of the voting system as defined in this rule. One
5 complete set of ballots will be tested in each of the applicable
6 counter types (or groups) indicated below:

- 7 (a) Poll Place or Vote Center - ballots are flat – no score
8 marks
- 9 (b) Early Voting – ballots are flat – no score marks
- 10 (c) Absentee – ballots are scored and folded to fit in standard
11 Colorado Absentee Mailing Envelopes.
- 12 (d) Provisional – ballots are flat- no score marks

13 45.6.2.3.7 ALL BALLOTS PROVIDED SHALL BE BLANK WITH NO MARKS ON
14 THEM. THE FOLLOWING COMBINATIONS OF BALLOTS ARE
15 REQUIRED:

16 (A) THREE SEPARATE DECKS OF BALLOTS SHALL BE PROVIDED
17 CONSISTING OF 25 BALLOTS (1500 MINIMUM COMBINED) FOR
18 EACH PRECINCT/PRECINCT SPLIT GENERATED FOR EACH ELECTION
19 THAT ARE FLAT (ONE DECK WITH THE GENERAL ELECTION DATA,
20 ONE WITH THE PRIMARY ELECTION DATA) AS INDICATED IN THE
21 INSTRUCTIONS FOR VENDORS;

22 (B) THREE SEPARATE DECKS OF BALLOTS SHALL BE PROVIDED
23 CONSISTING OF 25 (1500 MINIMUM COMBINED) BALLOTS FOR
24 EACH PRECINCT/PRECINCT SPLIT GENERATED FOR EACH ELECTION
25 THAT ARE FOLDED (ONE DECK WITH THE GENERAL ELECTION
26 DATA, ONE WITH THE PRIMARY ELECTION DATA) AS INDICATED IN
27 THE INSTRUCTIONS FOR VENDORS;

28 (C) TWO SEPARATE DECKS OF BALLOTS CONSISTING OF 300
29 BALLOTS OF ANY SINGLE PRECINCT FROM EACH ELECTION;

30 (D) ONE SEPARATE DECK OF BALLOTS CONSISTING OF 200
31 BALLOTS OF ANY SINGLE PRECINCT FROM THE COORDINATED
32 ELECTION SHALL BE PROVIDED THAT CONTAINS A TWO PAGE
33 BALLOT (RACES ON FOUR FACES); AND

34 (E) ANY VENDOR THAT USES SERIAL NUMBERS PRINTED ON
35 BALLOTS FOR PROCESSING SHALL PRODUCE BALLOTS OF EACH
36 REQUIREMENT PRINTED IN BOTH FORMATS.

1 ~~45.6.2.3.7~~ The voting system provider shall pre-mark all ballots used for
2 testing, with the exception of at least 175 blank ballots that shall
3 represent 5 blank ballots for every precinct and precinct split
4 based on the programming mentioned in this section ~~45.6.2.3~~.
5 Pre-marked ballots shall also have a predetermined tally that the
6 voting system provider shall provide to the SOS for the testing
7 of the ballots. ~~Markings shall represent all of the testing~~
8 ~~scenarios as described in this rule.~~

9 45.6.2.3.8 The voting system provider shall provide 10 ballot marking
10 pens/pencils/markers as defined by their system for marking
11 ballots by the ~~SOS~~ SECRETARY OF STATE or the designee.

12 45.6.2.3.9 THE TESTING BOARD SHALL MARK A MINIMUM OF 300 BALLOTS
13 WITH MARKING DEVICES OF VARIOUS COLOR, WEIGHT, AND
14 CONSISTENCY TO DETERMINE ACCURATE COUNTING WITH A
15 VARIETY OF MARKING DEVICES.

16 45.6.2.3.910 Ballots shall be cast and counted in all applicable counter types
17 (or counter groups) as necessary based on the parts included in
18 the voting system. These are at a minimum: Poll Place (or
19 Vote Center), Absentee, Provisional, and Early Voting. Ballots
20 may be run through components 10 or more times depending on
21 components and counter group being tested to achieve a
22 minimum number of ballots cast as follows for each group:

- 23 (a) Polling Place / OS = 1,500
24 (b) Polling Place / DRE = 500
25 (c) Vote Center/ OS = 5,000
26 (d) Vote Center / DRE = 500
27 (e) Early Voting / OS = 5,000
28 (f) Early Voting / DRE = 250
29 (g) Absentee = 10,000
30 (h) Provisional = 5,000

31 45.6.2.3.1011 Ballot design shall cover the scope of allowable designs
32 for the given system. For example, if a system is capable of
33 producing 11" and 18" ballots, then both ballot styles shall be
34 tested in each of the elections above. If more sizes are
35 available, they shall also be tested. **BALLOTS MUST BE DESIGNED**

1 AND PRESENTED WITH A MAXIMUM OF FOUR (4) COLUMNS AND A
2 MINIMUM OF ONE (1) COLUMN.

3 45.6.2.3.12 Ballots shall be printed in applicable languages as
4 required by state and/or federal law.

5 45.6.2.3.13 Ballots shall include candidates to represent the
6 maximum number of political parties in the State of Colorado,
7 and shall accommodate all qualified political parties and
8 political organizations.

9 45.6.2.3.14 Ballots shall include the following minimum race
10 situations to simulate and test “real world” situations in the
11 State of Colorado:

12 (a) Parties for different races.

13 (b) Selection of a pair of candidates (i.e. president and vice
14 president)

15 (c) In a Primary Election, allow a voter to vote for the
16 candidate of the party of his or her choice and for any and
17 all non-partisan candidates and measures, while
18 preventing the voter from voting for a candidate of another
19 party.

20 (d) In a general election, allow a voter to vote for any
21 candidate for any office, in the number of positions
22 allowed for the office, and to select any measure on the
23 ballot that the candidate is allowed to vote in, regardless of
24 party.

25 (e) A minimum of 20 pairs of “yes” and “no” positions for
26 voting on ballot issues.

27 (f) Ability to contain a ballot question or issue of at least 200
28 words.

29 45.6.2.3.14 Additional tests and procedures may be requested at the
30 discretion of the ~~SOS~~SECRETARY OF STATE.

31 45.6.3 Failure Criteria

32 45.6.3.1 Voting systems MUST SUBSTANTIALLY COMPLY ~~shall successfully complete~~
33 ~~all of the~~ requirements in this rule, COLORADO ELECTION CODE, and any
34 additional testing that is deemed necessary by the ~~SOS~~SECRETARY OF STATE.

1 45.6.3.2 If any malfunction or data error is detected, its occurrence and the duration of
2 operating time preceding it shall be recorded for inclusion in the analysis and
3 the test shall be interrupted. If corrective action is taken to restore the devices
4 to a fully operational condition within 8 hours, then the test may be resumed
5 at the point of suspension.

6 45.7 Temporary Use

7 45.7.1 If a voting system provider has a system that has been approved by an ITA, but has not
8 yet been approved for certification through the SOS SECRETARY OF STATE, the voting
9 system provider or the designated election official may apply to the SOS SECRETARY
10 OF STATE for temporary approval of the system to be used for up to one year.

11 45.7.2 Upon approval of temporary use, a jurisdiction may use the voting system, or enter
12 into a contract to rent or lease the voting system for a specific election upon receiving
13 written notice from the SOS SECRETARY OF STATE'S office. At no time shall a
14 jurisdiction enter into a contract to purchase a voting system that's been approved for
15 temporary use.

16 45.7.3 The SOS SECRETARY OF STATE shall approve use of a temporarily approved voting
17 system for each election that a jurisdiction would like to conduct with the voting
18 system.

19 45.7.4 Temporary use does not supersede the certification requirements and/or process, and
20 may be revoked at any time at the discretion of the SOS SECRETARY OF STATE.

21 45.8 Periodic Review

22 45.8.1 The SOS SECRETARY OF STATE shall periodically review the voting systems in use in
23 Colorado to determine if the system(s):

24 (a) Are defective, obsolete, or unacceptable for use based on the requirements of this
25 rule.

26 (b) HAVE BEEN MODIFIED FROM C Certified and approved "TRUSTED BUILD" versions of
27 hardware or software ~~have been modified~~.

28 ~~— (c) The software matches with the software in escrow with the SOS.~~

29 45.8.2 The SOS SECRETARY OF STATE shall review a minimum of two randomly selected
30 jurisdictions and voting systems per calendar year at the choosing of the
31 SOS SECRETARY OF STATE.

32 45.8.3 THE SOS SECRETARY OF STATE SHALL CONDUCT AN ANNUAL VISUAL INSPECTION OF
33 ALL SOFTWARE INCIDENT RECORDS MAINTAINED BY EACH VENDOR CERTIFIED FOR USE
34 IN THE STATE OF COLORADO.

35 45.8.34 After such review, certification or temporary approval for use may be

1 withdrawn. Three (3) months notice shall be given prior to withdrawing certification
2 of any voting system unless the ~~SOS~~SECRETARY OF STATE shows good cause for a
3 shorter notice period.

4 45.8.45 All forms, notes and documentation from a periodic review shall be kept on
5 file with the ~~SOS~~SECRETARY OF STATE.

6 45.9 Decertification

7 45.9.1 If after any time the ~~SOS~~SECRETARY OF STATE has certified a voting system, it is
8 determined that the voting system fails to meet the standards set forth in this rule, the
9 ~~SOS~~SECRETARY OF STATE shall notify any ~~end-users~~ JURISDICTIONS in the State of
10 Colorado and the voting system provider of that particular voting system that the
11 certification of that system for future use and sale in Colorado is to be withdrawn.

12 45.9.2 Certification of a voting system may be revoked and/or suspended at the discretion of
13 the ~~SOS~~SECRETARY OF STATE based on information that may be provided after the
14 completion of the initial certification. This information may come from any of the
15 following sources:

- 16 (a) The Election Assistance Commission (EAC)
- 17 (b) Independent Testing Authorities (ITA)
- 18 (c) The Federal Election Commission (FEC)
- 19 (d) The National Software Reference Library (NSRL)
- 20 (e) National Association of State Election Directors (NASED)
- 21 (f) The National Association of Secretaries of State (NASS)
- 22 (g) Information from any state elections department or ~~SO~~SECRETARY OF STATE
- 23 (h) Information from Colorado County Clerk and Recorders or their association.

24 45.9.3 Any use of a decertified or uncertified voting system for any jurisdiction in the State of
25 Colorado shall result in possible loss of future and other existing certifications within
26 the state, at the discretion of the ~~SOS~~SECRETARY OF STATE.

27 45.9.4 Pursuant to section 1-5-621, C.R.S., the ~~SOS~~SECRETARY OF STATE shall hold a public
28 hearing to consider the decision to decertify a voting system.

29 45.10 Modifications and Re-examination

30 45.10.1 Any field modification, change, or other alteration to a voting system shall
31 require approval or certification before it may be used in any election within the State
32 of Colorado.

1 45.10.2 A voting system provider may apply to the ~~SOS~~SECRETARY OF STATE for the
2 review of a modification of an existing certified system at any time during the year.
3 ~~The voting system is required to go through the complete certification process.~~
4 SECRETARY OF STATE SHALL CONDUCT SUFFICIENT TESTING TO ENSURE THAT ALL
5 INCREMENTAL CHANGES TO ANY VOTING SYSTEM BEING SUBMITTED FOR CERTIFICATION
6 MEET ALL SECURITY REQUIREMENTS SET FORTH IN THIS RULE.

7 45.11 ACCEPTANCE TESTING BY JURISDICTIONS

8 45.11.1 WHENEVER AN ELECTION JURISDICTION ACQUIRES A NEW SYSTEM OR
9 MODIFICATION OF AN EXISTING SYSTEM CERTIFIED BY THE ~~SOS~~SECRETARY OF STATE,
10 THE ELECTION JURISDICTION SHALL PERFORM ACCEPTANCE TESTS OF THE SYSTEM
11 BEFORE IT MAY BE USED TO CAST OR COUNT VOTES AT ANY ELECTION. THE VOTING
12 SYSTEM SHALL BE OPERATING CORRECTLY, PASS ALL TESTS AS DIRECTED BY THE
13 ACQUIRING JURISDICTION'S PROJECT MANAGER OR CONTRACT NEGOTIATOR, AND SHALL
14 BE IDENTICAL TO THE VOTING SYSTEM CERTIFIED BY THE ~~SOS~~SECRETARY OF STATE.

15 45.11.2 THE VOTING SYSTEM PROVIDER SHALL PROVIDE ALL MANUALS AND TRAINING
16 NECESSARY FOR THE PROPER OPERATION OF THE SYSTEM TO THE JURISDICTION, OR AS
17 INDICATED BY THEIR CONTRACT.

18 45.11.3 THE ELECTION JURISDICTION SHALL PERFORM A SERIES OF FUNCTIONAL AND
19 PROGRAMMING TESTS THAT SHALL TEST ALL FUNCTIONS OF THE VOTING SYSTEM AT
20 THEIR DISCRETION.

21 45.11.4 THE JURISDICTION SHALL COORDINATE ACCEPTANCE TESTING WITH THE
22 ~~SOS~~SECRETARY OF STATE'S DESIGNATED AGENT AND COMPLETE A JURISDICTION
23 ACCEPTANCE TEST FORM PROVIDED BY THE ~~SOS~~SECRETARY OF STATE.

24 ~~45.11.5 ACCEPTANCE TESTING IS AT THE DISCRETION OF THE PURCHASING JURISDICTION;~~
25 ~~HOWEVER, IF THE JURISDICTION CHOOSES TO WAIVE THE OPPORTUNITY TO CONDUCT~~
26 ~~ACCEPTANCE TESTING OF THE VOTING SYSTEM THEY ARE PURCHASING, SUCH~~
27 ~~INDICATION SHALL BE MADE ON THE JURISDICTION ACCEPTANCE TEST FORM.~~

28 ~~45.11.2~~ Purchases and Contracts

29 ~~45.11.2.1~~ Any voting system that has been certified under the procedures of this Rule are
30 eligible for purchase, lease, or rent for use by jurisdictions within the State of
31 Colorado ~~upon written approval by the SOS of the contract between the jurisdiction~~
32 ~~and the voting system provider~~ PROVIDING THE CONTRACT CONTAINS THE FOLLOWING
33 ITEMS:

34 ~~45.11.2.2~~ ~~At the completion of contract negotiations, a jurisdiction entering into a~~
35 ~~contract to purchase, lease or rent a voting system for use in the State of Colorado~~
36 ~~shall request approval of the contract from the SOS prior to signing the contract.~~

37 ~~45.11.2.3~~ ~~The SOS or his or her designee shall approve the contract based on the~~
38 ~~following minimum criteria:~~

- 1 (a) The voting system is certified for use within the State.
- 2 (b) Contract contains training and maintenance costs for Jurisdiction.
- 3 (c) Contract identifies components contained in the certified voting system, and
- 4 appears complete with all accessories necessary for successfully conducting an
- 5 election within the laws and rules of the State of Colorado.
- 6 ~~(d) The voting system and associated components are purchased at or below the~~
- 7 ~~following costs:~~
- 8

| Item and Description | Maximum Contracted Cost |
|--|--------------------------------|
| Ballot Tabulation Only Software | \$48,000.00 |
| Complete Software Package | \$420,000.00 |
| DRE with V-VPAT | \$7,000.00 |
| DRE without V-VPAT | \$5,000.00 |
| DRE Card Activator or Programmer | \$3,000.00 |
| DRE Disabled Devices attachment | \$1,000.00 |
| Extended DRE Warranty Per unit Per Year | \$2,000.00 |
| Precinct/Vote Center Level Optical Scanner | \$7,000.00 |
| High Speed Absentee Scanner | \$120,000.00 |
| Card Reader/Device to complete tabulation | \$7,000.00 |
| Extended Warranty Per scanner unit Per Year | \$10,000.00 |
| Yearly Maintenance | \$108,000.00 |
| Ballot Programming Charges (complete) | \$65,000.00 |
| Memory Cards or Cartridges (each) | \$1,000.00 |

- 9 ~~45. 1112.4 The SOS shall take no more than three (3) business days FORTY EIGHT (48)~~
- 10 ~~HOURS to review the contract and return a decision to the corresponding jurisdiction.~~
- 11 ~~45. 1112.5 The SOS shall annually review the costs in the table in section 45. 1112.3 and~~
- 12 ~~update it as necessary.~~
- 13 ~~45. 1112.6 The SOS shall maintain on file a list of all components used and purchased for~~
- 14 ~~use. The list shall include at a minimum, the name of the jurisdiction, the date of~~
- 15 ~~purchase, the serial number(s) of voting devices and voting systems that was~~
- 16 ~~purchased.~~
- 17 ~~45. 1112.7 Additionally, the voting system provider shall, through the process of this rule,~~
- 18 ~~complete and negotiate with the SOS a purchase price agreement for counties to use~~
- 19 ~~when purchasing equipment in the State of Colorado. The pricing agreement shall:~~
- 20 ~~(a) Be valid for one year from the date of certification;~~
- 21 ~~(b) Require renegotiations at the end of the pricing agreement period to continue~~
- 22 ~~future sales within the state;~~

- 1 ~~———— (c) — Allow counties to purchase equipment listed on the agreement at the agreed~~
2 ~~upon price for the duration or to negotiate directly with the voting system provider for~~
3 ~~a potentially lower price; and~~
- 4 ~~———— (d) — Be inclusive of the best costs the voting system provider is willing to sell all~~
5 ~~components, including any support, warranty or maintenance costs of the system being~~
6 ~~certified through this rule.~~