

Dwight Shellman

From: Andrea Gyger
Sent: Tuesday, October 08, 2013 4:41 PM
To: Dwight Shellman
Subject: Fwd: Comments: election rule.

Sent from my iPhone

Begin forwarded message:

Resent-From: <sos.rulemaking@sos.state.co.us>
From: Al Kolwicz [REDACTED]
Date: October 8, 2013 at 4:29:08 PM MDT
To: SoS Rulemaking <SoS.Rulemaking@SOS.STATE.CO.US>
Subject: Comments: election rule.

Please accept this markup of proposed rule 45 as our input on this portion of the proposed rule.

We don't agree that this is a good time to insert a massive rewrite of this rule.

The proposal lacks meaningful standards of performance and addresses only a small fraction of the election system. It is not adequate.

Also the proposal treats components of the voting system unequally. Vast detail about vvpat and nothing about voter identity and eligibility verification.

Please let me know if you need help deciphering the handwritten comments.

Al Kolwicz
Colorado Voter Group
[REDACTED]
[REDACTED]

Submittal
complete
155 Se

(A) ~~Days~~ - Election System [|||||] State Diagram

CASI BALLOT

(B) SYSTEM DIAG (C) STANDARDS/METRICS

MIN-MAX
OUT of Range
TODD

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

45.1-21.1 Definitions. The following definitions apply to their use in this rule only, unless otherwise stated.

(D) Files + Names @ OWNER.

(E) Entity Relation Diagram (F) Threat Matrix

45.1.1-21.1.1 "Audio ballot" means a voter interface containing the list of all candidates, ballot issues, and ballot questions upon which an eligible elector is entitled to vote in an election. It also provides the voter with audio stimuli and allows the voter to communicate voting intent to the voting system through vocalization or physical actions.

45.1.2-21.1.2 "Audit log" means a system-generated record, in printed and/or electronic format, providing a record of activities and events relevant to initializing election software and hardware, the identification of files containing election parameters, initializing the tabulation process, processing voted ballots and terminating the tabulation process.

Too Restrictive
INADeg
Syslog
APP security log

(must provide minimums)
interpret / counting votes on /

45.1.3-21.1.3 "Ballot image" means a corresponding representation in electronic form of the marks or vote positions of a cast ballot that are captured by a direct recording electronic voting device-DRE OR A DIGITALLY RETAINED IMAGE OF A BALLOT.

INADeg
→ Scanned Paper.

45.1.4-21.1.4 "BALLOT MARKING DEVICE" OR "BMD" MEANS A DEVICE THAT USES ELECTRONIC TECHNOLOGY TO:

used by voter to mark an indelible, independently voter-verifiable ballot.

Too Restrictive
could be a 2 part system R+V
could be non electronic

- (A) MARK AN OPTICAL SCAN BALLOT AT VOTER DIRECTION,
- (B) INTERPRET THE BALLOT SELECTIONS,
- (C) COMMUNICATE THE INTERPRETATION FOR VOTER VERIFICATION, AND THEN
- (D) PRINT A VOTER-VERIFIED BALLOT.

A BMD INTEGRATES COMPONENTS SUCH AS AN OPTICAL SCANNER, PRINTER, TOUCH-SCREEN MONITOR, AND A NAVIGATIONAL KEYPAD.

45.1.4 21.1.5 "Ballot style" means a specific ballot layout or content for an election. The ballot style is the presentation of the unique combination of contests and candidates for which the voter is eligible to vote. It includes the order of contests and candidates, the list of ballot positions for each contest, and the binding of candidate names to ballot positions within the presentation. Multiple precincts may use a single ballot style. Multiple styles may appear in a single precinct where voters are split between two or more districts or other categories defining voter eligibility for particular contests and candidates.

* Missing Problem Reporting + Tracking System -
Governance
MUST Set Rights for SOS to Publish
certain info at certain Times

1 45.1.5 21.1.6 "Closed network" means a network structure in which devices are not
2 connected to the internet or other office automation networks, except as allowable
3 under THIS Rule 45.5.2.7-21.

4 45.1.6 "~~Communications devices~~" means ~~devices that may be incorporated in, or~~
5 ~~attached to, components of the voting system for the purpose of transmitting~~
6 ~~tabulation data between components or to another data processing system,~~
7 ~~printing system or display device.~~

8 45.1.7 21.1.7 "DRE" means a direct recording electronic voting device. A DRE is a
9 voting device that records votes by means of a ballot display OR AN AUDIO BALLOT
10 provided with mechanical or electro-optical components ~~or an audio ballot that~~
11 ~~can be activated by the voter,~~ processes data by means of a ~~computer~~ SOFTWARE
12 program and records voting data and ballot images in memory components or
13 other media. The device may produce a tabulation of the voting data stored in a
14 removable memory component and as printed copy. The device may also provide
15 a means for transmitting individual ballots or vote totals to a central location for
16 consolidating and reporting results from remote sites to the central location.

17 45.1.8 21.1.8 "EAC" means the United States Election Assistance Commission.

18 45.1.9 21.1.9 "Election management system" includes, but is not limited to, the ballot
19 definition subsystem and the election reporting subsystem. The election
20 management system may provide utilities for other election administration tasks,
21 including maintaining equipment inventories, estimating ballot printing needs and
22 maintaining information on polling places ~~VOTER SERVICE AND POLLING CENTERS~~
23 ~~VOTER SERVICE AND POLLING CENTERS.~~

*INSufficient
No Eds be
comprehensive*

24 45.1.10 21.1.10 "Election media" means any device including a cartridge, card,
25 memory device or hard drive used in a voting system for the purposes of
26 programming ballot image data (ballot or card styles), recording voting results
27 from electronic vote tabulating equipment or any other data storage required by
28 the voting system for a particular election function. The election management
29 system typically downloads ballot style information to the election media and
30 uploads results and ballot images from the election media.

*INSufficient
EXCLUDES
- Scanned Ballots
- Paper Ballots
- FAXed Ballots
- EMAIL Ballots*

31 45.1.11 21.1.11 "Equipment" or "device" means a complete, AND inclusive term to
32 represent all items submitted for certification by the voting system provider. This
33 can include, but is not limited to, any voting device, accessory to voting device,
34 DRE, touch screen voting device, card programming device, software and
35 hardware. "Equipment" may also mean a complete end to end voting system
36 solution.

*NONSense
THIS MUST
set standard*

37 45.1.12 21.1.12 "MODIFICATION" MEANS A REVISION OR A NEW RELEASE OF AN
38 ELECTRONIC OR ELECTROMECHANICAL VOTING SYSTEM.

39 21.1.13 "OPTICAL SCANNER" MEANS AN OPTICAL OR DIGITAL BALLOT SCANNER.

*MUST NOT Require
non-generic scanner -
C.O.I.T.S.*

eg Residences ??
Post Offices ??

1 45.1.12 21.1.14 "Remote site" means any physical location identified by a
2 designated election official as a location where the jurisdiction shall conducts the
3 casting of ballots for a given election. A remote site includes, but is not limited to,
4 locations such as precinct polling places, vote centers, early voting sites and mail
5 in ballot counting sites VOTER SERVICE AND POLLING CENTERS.

6 45.1.13 21.1.15 "~~Removable Storage Media~~" "REMOVABLE STORAGE MEDIA"
7 means storage devices that can be removed from the system and transported to
8 another location for readout and report generation. Examples of removable
9 storage media include, but are not limited to, programmable read-only memory
10 (PROM), random access memory (RAM) with battery backup, thumb drives,
11 magnetic media and optical media.

Too Restrictive

12 45.1.14 21.1.16 "Secretary of State" ~~within the context of this rule,~~ means the
13 Colorado Secretary of State and his or her designated agents including employees,
14 contractors and volunteers.

No -
Differential
from
Colo Dept of State

15 45.1.15 21.1.17 "Security" means the ability of a voting system to protect election
16 information and election system resources with respect to confidentiality, integrity
17 and availability.

Use State IT
Defn

18 45.1.16 21.1.18 "~~Split Precinct~~" "SPLIT PRECINCT" means a precinct that has a
19 geographical divide between one or more political jurisdictions which results in
20 each jurisdiction within the precinct to be assigned different ballot styles for a
21 specific election.

22 45.1.17 45.1.19 21.1.19 "~~Test Log~~" or "~~Test Records~~" "TEST LOG" OR "TEST
23 RECORDS" means the documentation of certification testing and processes. This
24 documentation may include, but is not limited to, certification testing reports, test
25 plans, requirements matrices, photographs, written notes, video and/or audio
26 recordings.

Must
get
new
standard -

27 45.1.18 21.1.20 "~~Trusted Build~~" "~~TRUSTED BUILD~~" means the write-once
28 installation disk or disks for software and firmware for which the Secretary of
29 State or his/her agent has established the chain of evidence to the building of a
30 disk, which is then used to establish and/or re-establish the chain of custody
31 CHAIN-OF-CUSTODY of any component of the voting system which contains
32 firmware or software. The trusted build is the origin of the chain of evidence for
33 any software and firmware component of the voting system.

Has
NOT
worked
Transparency

- ① include OS / DBM?
- ② include Microcode?
- ③ How Secure? Net DBM etc?

34 45.1.20 "VOTING SYSTEM" MEANS:
35 (A) ~~THE TOTAL COMBINATION OF MECHANICAL, ELECTROMECHANICAL, OR~~
36 ~~ELECTRONIC EQUIPMENT (INCLUDING THE SOFTWARE, FIRMWARE, AND~~
37 ~~DOCUMENTATION REQUIRED TO PROGRAM, CONTROL, AND SUPPORT THE~~
38 ~~EQUIPMENT) THAT IS USED TO:~~

What
is
this
about?

39 (1) DEFINE BALLOTS;

Verify that Rule 1.1.33
loses nothing + gains much

1 (2) — CAST AND COUNT VOTES;

2 (3) — REPORT OR DISPLAY ELECTION RESULTS; AND

3 (4) — MAINTAIN AND PRODUCE ANY AUDIT TRAIL INFORMATION; AND

4 (b) — THE PRACTICES AND ASSOCIATED DOCUMENTATION USED TO:

5 (1) — IDENTIFY SYSTEM COMPONENTS AND VERSIONS OF SUCH
6 COMPONENTS;

7 (2) — TEST THE SYSTEM DURING ITS DEVELOPMENT AND MAINTENANCE;

8 (3) — MAINTAIN RECORDS OF SYSTEM ERRORS AND DEFECTS;

9 (4) — DETERMINE SPECIFIC SYSTEM CHANGES TO BE MADE TO A SYSTEM
10 AFTER THE INITIAL QUALIFICATION OF THE SYSTEM; AND

11 (5) — MAKE AVAILABLE ANY MATERIALS TO THE VOTER (SUCH AS
12 NOTICES, INSTRUCTIONS, FORMS, OR PAPER BALLOTS).

13 [Relocated to new Rule 1.1.33]

14 45.1.19 21.1.22 21.1.21 “Voting System Test Laboratory” or “VSTL” means a
15 “Federally Accredited Laboratory” “VOTING SYSTEM TEST LABORATORY” OR
16 “VSTL” MEANS A “FEDERALLY ACCREDITED LABORATORY”, as defined in section
17 1-1-104(16.5), C.R.S., which is accredited by the EAC to conduct certification
18 testing for voting systems.

19 45.5.2.9.1 21.1.23 V VPAT shall refer to a Voter-verified “VOTER-VERIFIED PAPER
20 AUDIT TRAIL” OR “VVPAT” MEANS A DEVICE CAPABLE OF PRODUCING A VOTER-
21 VERIFIED paper record as defined in section 1-1-104(50.6)(a), C.R.S.

22 [Relocated to new Rule 1.1.39]

23 45.2 21.2 Introduction

24 45.2.1 Definition of voting system for certification purposes

25 45.2.1.1 21.2.1 The definition of a voting system for the purposes of this rule shall be as
26 the term is defined in HAVA Section 301(b). For Colorado purposes, no single
27 component of a voting system, or device, meets the definition of a voting system
28 except that nothing in this rule shall MAY be interpreted to require the testing of an
29 entire modified system if the Secretary of State determines pursuant to IN
30 ACCORDANCE WITH section 1-5-618, C.R.S., that a modification to any certified
31 voting system requires testing for security and accuracy. ~~only~~ ONLY the
32 modification shall be required to AND ANY AFFECTED FEATURES OR CAPABILITIES
33 MUST be tested to ensure compliance with this Rule 45 21.

↑
Expand this!

where?

1 45.2.1.2-21.2.2 Sufficient components ~~shall~~ MUST be assembled to create a
2 configuration that allows the system or modification as a whole to meet the
3 requirements as described for a voting system in this rule.

4 45.2.3 21.2.3 THE CERTIFICATION OF A VOTING SYSTEM ~~SHALL~~ MAY NOT BE INTERPRETED
5 AS A REQUIREMENT THAT A COUNTY PURCHASE OR LEASE ALL OF THE COMPONENTS
6 OF THE VOTING SYSTEM. COUNTIES MAY CHOOSE TO CONFIGURE AND USE A SUBSET
7 OF THE CERTIFIED VOTING SYSTEM AND MAY USE THE SERVICES OF A VENDOR OR
8 THIRD PARTY TO PROVIDE BALLOT DEFINITION AND ELECTION PROGRAMMING OF
9 MEMORY CARDS. COUNTIES ARE NOT REQUIRED TO USE A PAPER BALLOT
10 TABULATION DEVICE IF THEY CHOOSE TO MANUALLY TABULATE THE ELECTION
11 RESULTS.

But
Requires
Open Access

12 45.2.2 Authority

13 45.2.2.1 Pursuant to Articles 5 and 7 of Title 1, C.R.S., the Secretary of
14 State is expressly authorized to adopt this rule.

15 45.2.3 Documents Incorporated by Reference

16 45.2.3.1 All documents incorporated by reference in this Rule 45 do not
17 include any later amendments or editions of those documents.

18 45.2.3.2 All documents incorporated by reference in this Rule 45 may be
19 viewed on the "Voting Systems" page of the "Elections Center" on the
20 Secretary of State's website at www.sos.state.co.us, or by contacting the
21 Secretary of State Voting Equipment Certification Program/1700
22 Broadway Suite 200/Denver, CO 80290.

23 45.3 21.3 Certification Process Overview and Timeline

24 45.3.1 21.3.1 The voting system ~~shall~~ WILL be considered as a unit, and all components
25 of such system ~~shall be tested at once~~, unless the circumstances necessitate
26 otherwise. Any change made to individual components of a voting system ~~shall~~
27 WILL require the entire voting system TO be recertified ~~in accordance with this rule~~
28 unless the change is a modification that can be approved under ~~the provisions of~~
29 section 1-5-618(1.5), C.R.S.

30 45.3.2 21.3.2 For a voting system to be certified, the voting system provider ~~shall~~ MUST
31 successfully complete all phases of the certification process, ~~to include submitting~~
32 a complete application, a review of the documentation to evaluate whether the
33 system meets the requirements of this rule, a public demonstration of the system,
34 functional testing of the voting system to demonstrate substantial compliance with
35 the requirements of this rule and Colorado Election Code as well as any additional
36 testing that is ~~deemed necessary by the Secretary of State~~. THE CERTIFICATION
37 PROCESS INCLUDES: SUBMISSION OF A COMPLETE APPLICATION, A DOCUMENTATION
38 REVIEW, A PUBLIC DEMONSTRATION OF THE SYSTEM, AND FUNCTIONAL TESTING.

Process
Function
Standards
TRANSP
Anon
Secur
Account

To correct standard?

EXPAND!!

consists of the following:

- SYSTEM TESTING
- Perf TEST
- Security TEST
- Recovery TEST

1 45.3.3 21.3.3 The flow of each phase of certification is as follows:

- 2 (a) Phase I – ~~Voting~~–THE VOTING system provider ~~submits~~ MUST SUBMIT an
3 application and all documentation required in Rule ~~45.4–21.4~~. The
4 Secretary of State ~~reviews~~–WILL REVIEW the ~~application~~–APPLICATION and
5 ~~informs~~–INFORM the voting system provider whether or not the application
6 is complete. ~~If the application is complete, the Secretary of State makes~~
7 ~~arrangements with the voting system provider for a public demonstration.~~
8 If the application is incomplete, the Secretary of State ~~shall~~–WILL identify
9 the deficiencies and the voting system provider will have 30 days to
10 remedy the deficiencies and make the application complete. WHEN THE
11 APPLICATION IS COMPLETE, THE SECRETARY OF STATE WILL MAKE
12 ARRANGEMENTS WITH THE VOTING SYSTEM PROVIDER FOR A PUBLIC
13 DEMONSTRATION.
- 14 (b) Phase II – The Secretary of State ~~reviews~~–WILL REVIEW the submitted
15 documentation, ~~conducts the review of~~–VSTL REPORTS FROM PREVIOUS
16 TESTING, AND ~~or~~–evaluations provided by ~~another State under Rule~~
17 ~~45.5.1.3, prepares a certification test plan for the system and presents the~~
18 ~~test plan to the voting system provider~~ OTHER STATES.
- 19 (c) PHASE III – THE SECRETARY OF STATE WILL PREPARE A CERTIFICATION
20 TEST PLAN. IF A VSTL IS CONTRACTED TO TEST THE VOTING SYSTEM, THE
21 VSTL WILL WORK WITH THE SECRETARY OF STATE TO PREPARE A
22 CERTIFICATION TEST PLAN. THE CERTIFICATION TEST PLAN WILL BE
23 PRESENTED TO THE VOTING SYSTEM PROVIDER FOR REVIEW ~~PRIOR TO THE~~
24 ~~START OF FUNCTIONAL TESTING~~–BEFORE EXECUTION OF THE TEST PLAN.
- 25 (e)-(D) Phase III–IV– Upon receipt of the voting system provider’s agreement to
26 the CERTIFICATION test plan, the Secretary of State ~~performs~~–OR THE VSTL
27 WILL ~~PERFORM the functional tests~~–EXECUTE THE TEST PLAN.
- 28 (d) (E) Phase IV–V – The Secretary of State ~~reviews~~ WILL REVIEW the TEST results
29 ~~of the functional tests~~ and ~~decides~~–DETERMINE whether to ~~certify or not to~~
30 ~~certify~~ the voting system SUBSTANTIALLY MEETS THE REQUIREMENTS FOR
31 CERTIFICATION. Within 30 days of ~~the~~–THIS A decision, ~~to certify or not~~
32 ~~certify the voting system~~, the SECRETARY OF STATE WILL POST THE
33 certification test report for the voting system ~~shall be posted~~ on the
34 Secretary of State’s ITS website.

35 45.6.3-21.3.4 The Secretary of State ~~shall~~ WILL certify voting systems that substantially
36 comply with the requirements in this Rule 21, Colorado Election Code, and any
37 additional testing that is deemed necessary by the Secretary of State.

38 45.4-21.4 Application Procedure

39 45.4.1-21.4.1 Any voting system provider may apply to the Secretary of State for
40 certification at any time.

1 45.4.2-21.4.2 A voting system provider that ~~submits~~ DESIRES TO SUBMIT a voting system
2 for certification shall MUST complete the Secretary of State's "Application for
3 Certification of Voting System" WHICH IS AVAILABLE ON THE SECRETARY OF
4 STATE'S WEBSITE.

5 45.4.3-21.4.3 The Secretary of State, in accordance with section 24-21-104(1)(a),
6 C.R.S., shall WILL charge the voting system provider all direct and indirect costs
7 associated with the testing of a voting system submitted for certification. The
8 Secretary of State shall WILL provide, ~~upon request~~, an estimate of costs for
9 certification testing ~~at the conclusion of Phase II evaluation. PRIOR TO BEFORE THE~~
10 ~~COMMENCEMENT OF FUNCTIONAL TESTING CERTIFICATION PROCESS BEGINS. IN~~
11 ~~ORDER TO BEGIN FUNCTIONAL TESTING, THE VOTING SYSTEM PROVIDER SHALL~~
12 ~~MUST PROVIDE A WRITTEN APPROVAL OF THE COST ESTIMATE. THE VOTING SYSTEM~~
13 ~~PROVIDER All costs shall MUST PAY ALL COSTS BEFORE THE SECRETARY OF STATE~~
14 ~~WILL ISSUE be paid in full prior to the issuance of a final determination by the~~
15 ~~Secretary of State.~~

agree to pay!

searchable

16 45.4.4-21.4.4 Along with the application, the voting system provider shall MUST submit
17 all documentation required in this Rule 45-21 IN ELECTRONIC FORMAT. The
18 requirements include ~~documentation necessary for the identification of the full~~
19 ~~system configuration submitted for certification. Documentation shall include~~
20 ~~information that defines the voting system design, method of operation and~~
21 ~~related resources. It shall also include a system overview and documentation of~~
22 ~~the voting system's functionality, accessibility, hardware, software, security, test~~
23 ~~and verification specifications, operations procedures, maintenance procedures~~
24 ~~and personnel deployment and training requirements. In addition, the~~
25 ~~documentation submitted shall include the voting system provider's configuration~~
26 ~~management plan and quality assurance program.~~

*XX
No
confidential
docs
may be
submitted.
The docs will
be published on CDOS site.*

27 45.4.5 Electronic copies of documentation are preferred and shall be submitted in lieu of
28 a hard copy when possible.

29 45.4.6-21.4.5 The vendor shall MUST identify any material it asserts is exempt from
30 public disclosure under the Colorado Open Records Act, section 24-72-204, et.
31 seq., C.R.S., together with a citation to the specific grounds for exemption. ~~The~~
32 ~~request shall MUST be made prior to BEFORE BEGINNING the start of Phase III IV of~~
33 ~~the certification process.~~

*MUST
NOT
ACCEPT
Any!!!*

34 45.4.7 If the EAC has established a trusted build for the system submitted for
35 certification, the trusted build shall be provided by the EAC. The voting system
36 provider shall execute and submit to the EAC any necessary releases for the EAC
37 to provide the same and provide the Secretary of State with a copy of such
38 executed releases. The voting system provider shall pay directly to the EAC any
39 cost associated with same. In addition, the voting system provider shall submit all
40 documentation and instructions necessary for the creation and guided installation
41 of files contained in the trusted build which will be created at the start of
42 functional testing and will be the model tested. The Secretary of State reserves the

1 right to add additional instructions or guidance for the use of the trusted build
2 when initiating the chain of custody process for a jurisdiction using the specified
3 equipment.

4 45.4.8 21.4.6 If the EAC does not have a trusted build for the voting system submitted
5 for certification, the THE voting system provider shall MUST coordinate with the
6 Secretary of State for the establishment of the trusted build. THE VOTING SYSTEM
7 PROVIDER SHALL MUST SUBMIT ALL DOCUMENTATION AND INSTRUCTIONS
8 NECESSARY FOR THE CREATION AND GUIDED INSTALLATION OF FILES CONTAINED IN
9 THE TRUSTED BUILD WHICH WILL BE CREATED AT THE START OF FUNCTIONAL
10 TESTING AND WILL BE THE MODEL TESTED. At a minimum, this THE TRUSTED BUILD
11 shall MUST include a compilation of files placed on write-once media for which
12 the Secretary of State has observed the chain of evidence from the time of source
13 code compilation through delivery, and an established hash file distributed from a
14 VSTL or the National Software Reference Library to compare federally certified
15 versions. All or any part of the THE trusted build disks may be encrypted. If
16 applicable, they should all be labeled as proprietary information and with
17 identification of the voting system provider's name and release version based on
18 the voting system provider's release instructions.

19 45.4.9 21.4.7 All materials submitted to the Secretary of State shall MUST remain in the
20 custody of the Secretary of State during the life of the certification and for 25
21 months after the last election in which the system is used with the exception of
22 any equipment provided by the voting system provider for the purposes of
23 testing. AS FOLLOWS:

24 (A) FOR CERTIFIED SYSTEMS, UNTIL THE CERTIFICATION IS PERMANENTLY
25 REVOKED, OR UNTIL NO COMPONENTS OF THE CERTIFIED SYSTEM ARE USED
26 IN THE STATE OF COLORADO; AND

27 (B) FOR SYSTEMS THAT ARE NOT CERTIFIED, A PERIOD OF 25 MONTHS.

28 45.4.10 21.4.8 In addition to the application and the documentation specified above, the
29 THE APPLICANT MUST PROVIDE ALL ADDITIONAL INFORMATION REQUESTED BY THE
30 Secretary of State may request additional information from the applicant, as
31 deemed necessary.

32 45.5-21.5 Voting System Standards

33 45.5.1 Federal Standards

34 45.5.1.1 21.5.1 All voting systems shall MUST meet the voting systems standards
35 pursuant to section 1-5-601.5, C.R.S., and Secretary of State Rule 37.3-2002
36 VOTING SYSTEM STANDARDS.

37 45.5.1.2 21.5.2 THE VOTING SYSTEM PROVIDE MUST DOCUMENT THAT All ALL voting
38 system software, hardware, and firmware shall MUST meet all requirements of

is this still true?

1 federal law that address accessibility for the voter interface of the voting system.
2 These laws include, ~~but are not limited to~~:

- 3 (a) ~~the~~ THE Help America Vote Act,
4 (b) ~~the~~ THE Americans with Disabilities Act, and
5 (c) ~~the~~ THE Federal Rehabilitation Act. ~~The voting system provider shall~~
6 ~~MUST explicitly acknowledge that their proposed software, hardware and~~
7 ~~firmware are all in compliance with the relevant accessibility portions of~~
8 ~~these laws.~~

9 45.5.1.3 — The Secretary of State may use and rely upon the testing of a
10 voting system performed by a VSTL or by another state upon satisfaction
11 of the following conditions:

- 12 (a) — The Secretary of State has complete access to any documentation,
13 data, reports or similar information upon which the VSTL or
14 another state relied in performing its tests and will make such
15 information available to the public subject to any redaction
16 required by law; and
17 (b) — The Secretary of State makes written findings and certifies that he
18 or she has reviewed such information and determines that the tests
19 were conducted in accordance with appropriate engineering
20 standards in use when the tests were conducted and the extent to
21 which the tests satisfy the requirements of sections 1-5-615 and 1-
22 5-616, C.R.S., and all rules promulgated under those sections.

23 [Current rule 45.5.1.3 is mended and moved to Rule 21.5.12(a).]

24 45.5.2 State Standards

25 45.5.3 21.5.3 INDEPENDENT ANALYSIS

26 45.5.2.4.3 (A) ~~Prior to~~ BEFORE completion of functional testing, all voting system
27 providers submitting a voting system shall MUST COMPLETE an
28 independent analysis of the system, WHICH SHALL INCLUDES:

29 (a) — The independent analysis shall include:

30 (i)(1) An application penetration test conducted to analyze the system for
31 any potential vulnerabilities that may result from poor or improper
32 system configuration, known and/or unknown hardware or software
33 flaws, or operational weaknesses in process or technical
34 countermeasures. The test shall MUST involve active exploitation of
35 security vulnerabilities of the voting system, whether or not the
36 vulnerabilities can be mitigated through compensating controls.

1 (ii)(2) A source code evaluation conducted pursuant to the requirements

*These must be free,
Timely Public Records*

- Coverage
- INPUTS
- OUTPUTS
- Results - analysis

2 identified in Rule 45.5.2.6.1(f), requiring compliance with the 2002
3 voting system standards IN ACCORDANCE WITH SOFTWARE DESIGN
4 AND CODING STANDARDS OF THE 2002 VOTING SYSTEM STANDARD
5 OR THE MOST CURRENT VERSION OF THE VOLUNTARY VOTING
6 SYSTEM GUIDELINES ~~THAT HAS BEEN~~ APPROVED AFTER JANUARY 1,
7 2008.

8 (b)(3) A complete report detailing all findings and recommended
9 compensating controls for vulnerabilities and deficiencies identified.

10 (e)(4) The ~~vendor~~ VOTING SYSTEM PROVIDER ~~shall~~ MUST use an
11 ~~EAC approved VSTL~~ AT LEAST ONE OF THE FOLLOWING to perform
12 the independent analysis, ~~or submit the results of testing conducted in~~
13 ~~another state, or some combination of such VSTL and state testing~~
14 ~~that meets the requirements of this rule.:~~

15 (i) (A) AN EAC APPROVED VSTL;

16 (ii) (B) TESTING CONDUCTED IN ANOTHER STATE; OR

17 (iii) (C) SOME COMBINATION OF SUCH VSTL AND STATE TESTING THAT
18 MEETS THE REQUIREMENTS OF THIS RULE.

19 (d)(5) The Secretary of State OR VSTL ~~shall~~ WILL conduct a
20 quality review of all work under this section. The review may include
21 an examination of the testing records, interviews of the individuals
22 who performed the work, or both. Review of testing records may be
23 conducted at the VSTL, the state in which the testing was conducted,
24 or at the site of any contractor or subcontractor utilized by another
25 state to conduct the testing.

26 (e)(6) ~~When an analysis performed by another state is used, the~~
27 ~~THE~~ Secretary of State ~~has the right to~~ MAY reject any evaluation if
28 not satisfied with the work product and to require additional analysis
29 to meet the requirements of section 1-5-608.5, C.R.S., and this Rule.

30 [Rule 45.5.2.4.3 is amended and moved to New Rule 21.5.3(a). Amendments are shown above.]

31 45.5.2.1-21.5.4 Functional requirements REQUIREMENTS

32 45.5.2.1.1(A) Functional requirements ~~shall~~ MUST address ~~any and~~ all detailed
33 operations of the voting system related to the management and controls
34 required to successfully conduct an election ~~on the voting system.~~

35 45.5.2.1.2(B) The voting system ~~shall~~ MUST provide for appropriately authorized
36 users to:

Is there a functional EAC?

Public objection to analysis - How? what?

State Metrics Min-MAX et al
Include Non-operation functional like "transparency" requirements standards + verification

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- (a) — Prepare the system for an election;
- (b) (1) Setup-SET UP and prepare ballots for an election;
- (c) (2) Lock and unlock system to prevent or allow changes to ballot design;
- (d) (3) Conduct hardware and diagnostic testing as required herein;
- (e) (4) Conduct logic and accuracy testing as required herein;
- (f) (5) Conduct an election and meet additional requirements as identified in this section—RULE 45 21 for procedures for voting, auditing information, inventory control WHERE APPLICABLE, counting ballots, opening and closing polls, recounts, reporting and accumulating results as required herein;
- (g) (6) Conduct the post-election audit as required herein; and
- (h) (7) Preserve the system for future election use.

INCLUDE ALL Elected State Funct.

NO "TEST" MODE
Also need
INCLUDE
• Ems
• sil ver, etc
include
2HR No Power

45.5.2.1.3 (C) The voting system shall MUST integrate Election Day—ELECTION DAY voting results with mail in, early voting MAIL, and provisional ballot results.

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

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

45.5.2.1.6 (D) The voting system shall MUST provide for the tabulation of votes cast in combined precincts at remote sites, where more than one precinct is voting at the same location, on either the same ballot style or ON a different ballot style.

45.5.2.1.7 (E) The ~~voting system application~~ ELECTION MANAGEMENT SYSTEM shall MUST provide authorized users with the capability to produce electronic files including election results in either ASCII (both comma-delimited and fixed-width) or web-based format that shall contain (a) all data or (b) any user selected data elements from the database. The software shall MUST provide authorized users with the ability to generate these files on an "on-demand" basis. After creating such files, the authorized users shall MUST, at their discretion, have the capability to copy

and Election Definition

Where went Early Voting?
Should NOT separate Ballots by origin—only by style

LIST MINING

What is this? PDF NOT Adequate. Tabulation Data must export to EXCEL.

1 the files to diskette, tape, CD-ROM or ~~to transmit the files to another~~
2 ~~information system~~ OTHER MEDIA TYPE.

3 (a) (1) Exports necessary for the Secretary of State shall MUST conform to
4 a format agreed upon by the Secretary of State and the voting
5 system provider. If the voting system provider and the Secretary of
6 State have not previously agreed upon a format, the voting system
7 provider shall MUST provide the Secretary of State with
8 specifications for all available export file formats. As part of the
9 certification test, the voting system provider will demonstrate that
10 preliminary and canvassing level election result data, using one or
11 more of the provided formats, can be imported to a commercially
12 available data management program such as a spreadsheet,
13 database, or report generator which can accept that format and
14 which is used and selected by the Secretary of State's office. Using
15 the imported data, the Secretary of State's test team shall confirm
16 that the election results data may be consolidated with results from
17 one or more additional election jurisdictions, searched, selected,
18 sorted, generate totals from selected subsets of the data, and
19 formatted for reporting.

Whereas this provision must verify all files exported in Pub. Demo.

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

24 [Current Rule 45.2.1.7(b) is amended and moved to Rule 11]

25 (2) THE VOTING SYSTEM PROVIDER SHALL MUST DEMONSTRATE THAT
26 PRELIMINARY AND CANVASSING LEVEL ELECTION RESULT DATA CAN
27 BE IMPORTED TO A COMMERCIALY AVAILABLE DATA MANAGEMENT
28 PROGRAM SUCH AS A SPREADSHEET, DATABASE, OR REPORT
29 GENERATOR.

All Election DATA - List Min files

30 45.5.2.1.8(F) The voting system shall MUST include hardware and OR software to
31 enable the closing of the remote voting location and disabling the
32 acceptance of ballots on all vote tabulation devices to allow for the
33 following:

incl Cast Vote Records, Sig Ver Proof, Scanned Ballot Im, etc

34 (a) (1) ~~Machine-generated paper record~~ PRINTOUT of the time the voting
35 system was closed.

36 (b) (2) ~~Readings~~ PRINTOUT of the public counter and protective counter
37 shall become a part of the paper audit record upon CLOSING THE
38 BALLOT CASTING FUNCTIONALITY ~~disabling the voting system to~~
39 ~~prevent further voting.~~

and export to EXCEL-
IN MEANINGFUL
FORMAT

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(e) (3) Ability to print an abstract of the count of votes ~~A REPORT~~ which shall MUST contain:

(i) (A) Names of the offices; *Contests*

(ii) (B) Names of the candidates and party, when applicable; *contestants*

(iii) (C) A tabulation of votes from ballots of different political parties at the same voting location in a primary election; *including over/under per contest.*

(iv) (D) Ballot titles;

(v) (E) Submission clauses of all initiated, referred or other ballot issues or questions; and

(vi) (F) The number of votes counted for or against each candidate or ballot issue. *and all over, all under for contest.*

(d) ~~Abstract shall include an election judge's certificate and statement that contains:~~

(i) (G) Date of election (day, month and year);

(ii) (H) Precinct Number NUMBER (ten digit format);

(iii) (I) County or Jurisdiction Name JURISDICTION NAME;

(iv) (J) State of Colorado AREA FOR "STATE OF COLORADO";

CONTESTANT?
(v) (K) ~~Count of votes as indicated in this section FOR EACH CONTEST; and~~ *Count of votes as indicated in this section FOR EACH CONTEST; and over/under per contest*

(vi) (L) ~~Area~~ AN ELECTION JUDGE'S CERTIFICATE WITH AN AREA for judges' signatures with the words similar to: "Certified by us", and "Election Judges". Space ~~should~~ MUST allow for a minimum of two signatures.

By what?

(e) (4) Votes counted by a *summary of the voting location* and by individual precincts. *??*

(f) (5) Ability to produce multiple copies of the unofficial results at the close of the election.

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

[Current Rule 45.5.2.1.8(g) is amended and moved to new Rule 21.5.6(c).]

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

45.5.2.1.10(G) The voting system application ELECTION MANAGEMENT SYSTEM shall MUST ensure that an election setup may not be changed once ballots are printed and/or election media devices are downloaded for votes to be conducted without proper authorization and acknowledgement by the application administrative account. The application and database audit transaction logs shall MUST accurately reflect the name of the system operator making the change(s), the date and time of the change(s), and the "old" and "new" values of the change(s).

Bole Violated This

45.5.2.1.11 — The voting system shall ensure that all tabulated results will be accurately captured, interpreted, and reported to the level of accuracy required in the 2002 Voting System Standards.

where is this done?

45.5.2.3.13(H) All DRE OR BMD voting devices shall MUST use touch screen technology or other technology providing visual ballot display and selection.

45.5.2.3.14(I) All electronic voting devices supplied by the voting system provider AND USED AT VOTER SERVICE AND POLLING CENTERS shall MUST have the capability to continue ALL NORMAL VOTING operations and provide continuous device availability during a 2-HOUR period of electrical outage without any loss of election data.

45.5.2.3.16(J) The voting system shall MUST provide capabilities to protect the confidentiality of voters' ballot choices.

Wrong WORDS

(a) (1) All optical scan devices, associated ballot boxes and V-VPAT storage devices shall MUST provide physical locks and procedures to prevent disclosure of voters' confidential ballot choices during and after the vote casting operation.

How about VVPAT?

(b) (2) All DRE devices shall MUST provide randomization of all voter choices and stored electronic ballot information, regardless of format, to prevent disclosure of voters' confidential ballot choices during and after storage of the voters' ballot selections.

45.5.2.2 — Performance Level

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

1 ~~45.5.2.2.2 — The voting system shall meet the requirements for casting~~
2 ~~ballots as detailed in the vendor documentation required for~~
3 ~~certification.~~

4
5 ~~45.5.2.2.3 — The voting system provider shall publish and specify~~
6 ~~processing standards for each component of the voting system as~~
7 ~~part of the documentation required for certification.~~

8 *[Current Rule 45.5.2.2.3 is amended and moved to new Rule 21.5.12(l)]*

9 ~~45.5.2.2.4 — For the purpose of evaluating software, the voting system~~
10 ~~provider shall be required to provide detailed information as to the~~
11 ~~type of hardware required to execute the software.~~

12 *[Current Rule 45.5.2.2.4 is amended and moved to new Rule 21.5.12(m)]*

13 ~~45.5.2.2.5 — At no time shall third party hardware or software have a~~
14 ~~negative effect on performance levels of the voting system~~
15 ~~application, unless, through documentation, a voting system~~
16 ~~provider specifically details the specific hardware or software, the~~
17 ~~performance effect and a workaround for the end user to overcome~~
18 ~~the issue.~~

19 *[Rule 45.5.2.1 is amended and moved to New Rule 21.5.4. Amendments are shown above.]*

20 ~~45.5.2.3-21.5.5~~ Physical and ~~Design Characteristics~~-DESIGN CHARACTERISTICS

21 45.5.2.3.1(A) Physical and design characteristics shall **MUST** address any and all
22 external or internal construction of the physical environment of the voting
23 system or the internal workings of the software necessary for the voting
24 system to function. The voting system shall **MUST** substantially comply
25 with these requirements to be considered successful in the conduct of an
26 election on the voting system.

27 45.5.2.3.2 — The voting system shall meet the following environmental controls
28 allowing for storage and operation in the following physical ranges:

29 (a) — Operating Temperature — Maximum 95 Degrees Fahrenheit;
30 Minimum 50 Degrees Fahrenheit, with maximum humidity of
31 90%, normal or minimum operating humidity of 15%.

32 (b) — Non Operating Temperature — Maximum 140 Degrees Fahrenheit;
33 Minimum minus 4 Degrees Fahrenheit. Non operating humidity
34 ranges from 5% to 90% for various intervals throughout the day.

*NO
we specify
hardware*

?
STANDARD?

1 ~~The documentation supplied by the voting system provider shall include a~~
2 ~~statement of all requirements and restrictions regarding environmental~~
3 ~~protection, electrical service, telecommunications service and any other~~
4 ~~facility or resource required for the installation, operation and storage of~~
5 ~~the voting system.~~

6 *[Part of current Rule 45.5.2.3.2 is relocated to new Rule 21.5.12(n)]*

7 45.5.2.3.17(B) The voting system provider shall MUST submit drawings,
8 photographs and any related brochures or documents to assist with the
9 evaluation of the physical design of the use of the voting system.

10 45.5.6 21.5.6 BALLOT DEFINITION SUBSYSTEM

11 *Part of*
12 *"Voting*
13 *SYSTEM"*
14 45.5.2.3.3 (A) ~~The ballot definition subsystem of the voting system application~~
15 ~~consists of hardware and software required to accomplish the functions~~
16 ~~outlined in this Rule 45.5.2.3-21.5.6. System databases contained in the~~
17 ~~ballot definition subsystem may be constructed individually or they may~~
18 ~~be integrated into one database. These databases are treated as separate~~
19 ~~databases to identify the necessary types of data to be handled and to~~
specify, where appropriate, those attributes that can be measured or
assessed for determining compliance with the requirements of this
standard.

20 45.5.2.3.4 ~~The ballot definition subsystem shall be capable of formatting~~
21 ~~ballot styles in English and any alternate languages as are necessary to~~
22 ~~comply with The "Voting Rights Act of 1965" 42 U.S.C. § 1973c et seq.~~
23 ~~(1965).~~

24 45.5.2.3.5 ~~The voting system application shall allow the operator to generate~~
25 ~~and maintain an administrative database containing the definitions and~~
26 ~~descriptions of political subdivisions and offices within the jurisdiction.~~

27 45.5.2.3.6 ~~The ballot definition subsystem shall provide for the definition of~~
28 ~~political and administrative subdivisions where the list of candidates or~~
29 ~~contests may vary within the remote site and for the activation or~~
30 ~~exclusion of any portion of the ballot upon which the entitlement of a~~
31 ~~voter to vote may vary by reason of place of residence or other such~~
32 ~~administrative or geographical criteria. This database shall be used by the~~
33 ~~system with the administrative database to format ballots or edit formatted~~
34 ~~ballots within the jurisdiction.~~

35 45.5.2.3.7 ~~For each election, the subsystem shall allow the user to generate~~
36 ~~and maintain a candidate and contest database and provide for the~~
37 ~~production and/or definition of properly formatted ballots and software.~~

38 45.5.2.3.8(B) The ballot definition subsystem shall MUST be capable of handling
39 at least 500 200 potentially active voting positions, arranged to identify

1 party affiliations in a primary election, offices with their associated labels
2 and instructions, candidate names with their associated labels and
3 instructions and ballot issues or questions with their associated text and
4 instructions.

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

10 ~~45.5.2.1.8(g)~~ (C) Ability to—THE VOTING SYSTEM MUST accommodate a
11 SINGLE PAGE BALLOTS (RACES ON ONE FACE OR BOTH FACES) AND two page
12 ballot PAPER BALLOTS (races on THREE OR four faces) is required.

13
14 ~~45.5.2.3.10~~ (D) The voting system application shall BALLOT DEFINITION
15 SUBSYSTEM MUST:
16
17 *Verify ID ballot*
18 *Remove STUB*
19 *Preserve Pic Perfect Sample of all styles*
20 *EXPORT TO EXCEL*

13 ~~45.5.2.3.10~~ (D) The voting system application shall BALLOT DEFINITION
14 SUBSYSTEM MUST:

(1) ~~provide~~ PROVIDE a facility for the definition of the ballot, including
the definition of the number of allowable choices for each office
and contest and for special voting options such as write-in
candidates. It shall provide for all voting options and specifications
as provided for in Articles 5 and 7, Title 1, C.R.S.;

(2) ~~The system shall generate~~ GENERATE all required masters and
distributed copies of the voting program in conformance with the
definition of the ballot for each voting device and remote site
ELECTION MANAGEMENT SOFTWARE. The distributed copies,
resident or installed, in each voting device shall include all
software modules required to monitor system status and generate
machine level audit reports, accommodate device control functions
performed by remote location officials and maintenance personnel
and register and accumulate votes.

29 45.5.7 21.5.7 TRUSTED BUILD

30 ~~45.5.2.3.11~~ The trusted build of the voting system software, installation
31 programs and third party software used to install or to be installed on
32 voting system devices shall be distributed on a write once media.

33 *EXPAND TO IT Standard*

34 ~~45.5.2.3.12~~ The voting system shall MUST allow the system administrative
35 account to verify that the software installed is the certified software by
comparing it to the trusted build or other reference information.

36 ~~45.5.2.3.13~~ All DRE voting devices shall use touch screen technology or other
37 technology providing visual ballot display and selection. The voting
38 system provider shall provide documentation concerning the use of touch

1 screen or other display and selection technology including, but not limited
2 to:

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

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

8 [Current Rule 45.5.2.3.13 is amended and moved to new Rule 21.5.4(h).
9 Current Rule 45.5.2.3.13(a)-(b) are amended and moved to new Rule
10 21.5.12(c).]

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

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

16 [Current Rule 45.5.2.3.13(d) amended and moved to new Rule
17 21.5.12(o).]

18 45.5.2.3.14 ~~All electronic voting devices supplied by the voting system~~
19 ~~provider shall have the capability to continue operations and~~
20 ~~provide continuous device availability during a period of electrical~~
21 ~~outage without any loss of election data.~~

22 [Current Rule 45.5.2.3.14 amended and moved to new Rule 21.5.4(i)]

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

26 (i) ~~Continue to scan or image voters' ballots;~~

27 (ii) ~~Accurately tabulate voters' choices from the ballots;~~

28 (iii) ~~Accurately store voters' ballot choices; and~~

29 (iv) ~~Transmit required results files accurately if power~~
30 ~~failure occurs during transmittal of results.~~

31 (b) ~~For DRE devices, this capability shall include, at a~~
32 ~~minimum, for a period of not less than two hours the ability~~
33 ~~to:~~

NO TAB-
"INTERPRET"
NO
XMIT CVRS

+ STORE
image

- 1 (i) — Continue to present ballots accurately to voters;
2 (ii) — Accept voters' choices accurately on the devices;
3 ~~(iii) — Tabulate voters' choices accurately;~~
4 (iv) — Store voters' choices accurately in all storage
5 locations on the device; and
6 (v) — ~~Transmit required results files accurately if power~~
7 ~~failure is experienced during transmittal of results.~~

8 (e) — For V-VPAT devices connected to DREs, this capability
9 shall include, at a minimum, for a period of not less than
10 two hours the ability to:

- 11 ~~(i) — Continue to print voters' choices on the DRE~~
12 ~~accurately and in a manner that is identical to the~~
13 ~~manner of the printers' operations during a period~~
14 ~~of normal electrical operations; and~~
15 ~~(ii) — Continue to store the printed ballots in a secure~~
16 ~~manner that is identical to the manner of the~~
17 ~~printers' operations during a period of normal~~
18 ~~electrical operations.~~

19 (d) — The voting system provider shall deliver to the Secretary of
20 State documentation detailing estimated time of battery
21 operation for each type of optical scanner, ballot imager,
22 DRE and V-VPAT they provide, assuming continuous use
23 of the devices by voters during an interruption of normal
24 electrical power.

25 (e) — The voting system provider shall deliver to the Secretary of
26 State documentation specifying the steps and times
27 required for charging batteries for each type of optical
28 scanner, ballot imager, DRE and V-VPAT they provide.

29 [Current 45.5.2.3.14 (d) and (e) are amended and moved to new rule
30 21.5.12(e) and (p) and (q).]

31 45.5.2.3.15 — The voting system provider's software application shall be
32 able to recover operations after a power outage or other abnormal
33 shutdown of the system on which that application and database are
34 operating without loss of more than the current transaction data
35 record on which the administrative account or authorized operator
36 account is currently working.

Interp

NOT
Sequential
Roll.

CVR

Must state
How
quickly?

1 [Current 45.5.2.3.15 is amended and moved to new Rule 21.5.4(j)]

2 45.5.2.3.16 — The voting system shall provide capabilities to protect the
3 confidentiality of voters' ballot choices.

NOT even capture confid info!

4 (a) — All optical scan devices, associated ballot boxes and V-
5 VPAT storage devices shall provide physical locks and
6 procedures to prevent disclosure of voters' confidential
7 ballot choices during and after the vote casting operation.

8 (b) — All DRE devices shall provide randomization of all voter
9 choices and stored electronic ballot information, regardless
10 of format, to prevent disclosure of voters' confidential
11 ballot choices during and after storage of the voters' ballot
12 selections.

13 [Current 45.5.2.3.16 is amended and moved to new Rule 21.5.4(j)]

14 45.5.2.3.17 — The voting system provider shall submit drawings,
15 photographs and any related brochures or documents to assist with
16 the evaluation of the physical design of the use of the voting
17 system.

How about logical Designs?

18 [Current 45.5.2.3.17 is moved to new Rule 21.5.5(b).]

19 45.5.2.4 — Documentation Requirements

+ Dates forms?

20 45.5.2.4.1 — In addition to other documentation requirements in this
21 rule, the voting system provider shall provide the following
22 documents:

23 (a) — Standard Issue Users/Operator Manual;

who is "user"? Voter Judge Admin?

24 (b) — System Administrator's/Application Administration
25 Manual;

Security Admin? system Election " ?

26 (c) — Training Manual and related materials;

27 (d) — Systems Programming and Diagnostics Manuals; and

28 (e) — A list of minimum services needed for the successful,
29 secure and hardened operation of all components of voting
30 system.

31 [Current Rule 45.5.2.4 amended and moved to new rule 21.5.12.]

32 45.5.2.4.2 — For the review of VSTL or other state testing in Rule
33 45.5.1.3 copies of all VSTL or state qualification reports, test logs

1 and technical data packages shall be provided to the Secretary of
2 State.

3 (a) — The voting system provider shall execute and submit any
4 necessary releases for the applicable VSTL, state and/or
5 EAC to discuss any and all procedures and findings
6 relevant to the voting system submitted for certification
7 with the Secretary of State and allow the review by the
8 Secretary of State of any documentation, data, reports or
9 similar information upon which the VSTL or other state
10 relied in performing its testing. The voting system provider
11 shall provide a copy of the same to the Secretary of State.

12 (b) — The voting system provider, the VSTL, the state and/or the
13 EAC will identify to the Secretary of State any specific
14 sections of documents for which they assert a legal
15 requirement for redaction.

16 } [Current Rule 45.5.2.4.2 amended and moved to new rule 21.5.12(d).]

17 45.5.2.4.3 — Prior to completion of functional testing, all voting system
18 providers submitting a voting system shall have completed an
19 independent analysis of the system.

20 (a) — The independent analysis shall include:

21 (i) — An application penetration test conducted to analyze
22 the system for any potential vulnerabilities that may
23 result from poor or improper system configuration,
24 known and/or unknown hardware or software flaws,
25 or operational weaknesses in process or technical
26 countermeasures. The test shall involve active
27 exploitation of security vulnerabilities of the voting
28 system, whether or not the vulnerabilities can be
29 mitigated through compensating controls.

30 (ii) — A source code evaluation conducted pursuant to the
31 requirements identified in Rule 45.5.2.6.1(f),
32 requiring compliance with the 2002 voting system
33 standards.

34 (b) — A complete report detailing all findings and recommended
35 compensating controls for vulnerabilities and deficiencies
36 identified.

37 (c) — The vendor shall use an EAC approved VSTL to perform
38 the independent analysis, or submit the results of testing
39 conducted in another state, or some combination of such

AVAIL
TO PUBLIC
via sos web.
- INPUTS
- EXPECTED Results
- ACTUAL Results.

add
Process
Flaws

1 ~~VSTL and state testing that meets the requirements of this~~
2 ~~rule.~~

3 (d) ~~The Secretary of State shall conduct a quality review of all~~
4 ~~work under this section. The review may include an~~
5 ~~examination of the testing records, interviews of the~~
6 ~~individuals who performed the work, or both. Review of~~
7 ~~testing records may be conducted at the VSTL, the state in~~
8 ~~which the testing was conducted, or at the site of any~~
9 ~~contractor or subcontractor utilized by another state to~~
10 ~~conduct the testing.~~

include
Public
in this
Quality
Review

11 (e) ~~When an analysis performed by another state is used, the~~
12 ~~Secretary of State has the right to reject any evaluation if~~
13 ~~not satisfied with the work product and to require~~
14 ~~additional analysis to meet the requirements of section 1-5-~~
15 ~~608.5, C.R.S., and this Rule.~~

16 *[Current Rule 45.5.2.4.3 amended and moved to New Rule 21.5.3.]*

17 ~~45.5.2.4.4 — Documentation submitted to the Secretary of State shall be~~
18 ~~reviewed to determine the extent to which the voting system has~~
19 ~~been tested to federal standards.~~

20 *[Current Rule 45.5.2.4.4 amended and moved to new rule 21.5.12(f)]*

21 ~~45.5.2.4.5 — Documentation shall include the financial statements set~~
22 ~~forth in Rule 45.13, which shall be for the prior fiscal year, and any~~
23 ~~quarterly financial statements for the period following the prior~~
24 ~~fiscal year and preceding the date of application for certification.~~

25 *[Current Rule 45.5.2.4.5 amended and moved to new rule 11]*

26 ~~45.5.2.4.6 — Failure by the voting system provider to provide any~~
27 ~~documentation with their application for certification will delay~~
28 ~~processing the application until the documentation is provided.~~

29 *[Current Rule 45.5.2.4.6 amended and moved to new rule 21.5.12 (g)]*

30 ~~45.5.2.5 45.5.8 21.5.8~~ Audit capacity CAPACITY

31 ~~45.5.2.5.1 — The voting system shall be capable of producing electronic and~~
32 ~~printed audit logs of system operation and system operators' actions which~~
33 ~~shall be substantially compliant to allow operations and input commands~~
34 ~~to be audited.~~

Expand

Need explicit STDS.

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

- (a) Operating Systems (workstation, server and/or DRE);
- (b) Election Programming Software;
- (c) Election Tabulation Devices—optical scan and DRE; and
- (d) Election Reporting Subsystem.

[Current Rule 45.5.2.5.2 amended and moved to new rule 21.5.12 (h)]

45.5.2.5.3 (A) The voting system shall MUST track and maintain audit information of the following voting system application—ELECTION MANAGEMENT SYSTEM events:

- (a) (1) Log on and log off activity;
- (b) (2) Application start and stop;
- (c) (3) Printing activity, where applicable;
- (d) (4) Election events – setup, set for election, unset for election, open polls, close polls, end election, upload devices, download devices, create ballots, create precincts, create districts, create poll places (or Vote Centers) VOTER SERVICE AND POLLING CENTERS, initialize devices, backup devices and voting activity; and
- (e) (5) Hardware events – add hardware, remove hardware, initialize hardware and change hardware properties.

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13 This integrated address all devices on per device?
2 Reports screens - peaks -
3 Voter ID/ELIG voter
4 Vote interP
5 vote count
6

7 TEST
8. ADJUST sensitivity
9 Change paramet
10 etc.
11 security
12 OUTSIDE INPUTS eg BIRTH STAT'S etc.
13 Change Data Track
14 create data track

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

45.5.2.5.5 (C) Vote tabulation devices shall MUST allow for an alternate method of transfer of audit records if the device or a memory storage device is damaged or destroyed.

45.5.2.5.6 (D) All transaction audit records of the voting system application ELECTION MANAGEMENT SYSTEM database shall MUST be maintained in a file outside of or separate from the database IN A READ-ONLY FORMAT, which is not accessible by user/operator accounts.

~~Read~~

in Read-Only TIME

45.5.2.6 45.5.9-21.5.9 Security Requirements REQUIREMENTS

45.5.2.6.1 (A) All voting systems submitted for certification shall MUST meet the following minimum system security requirements:

*See
State
Security
Roots
gov office*

1 ~~(a)~~ (1) The voting system shall MUST MEET THE FOLLOWING
2 REQUIREMENTS TO accommodate a general system of access by
3 least privilege and ~~role-based~~ ROLE-BASED access control. ~~The~~
4 following requirements shall apply:

5 ~~(i)~~ (A) ~~The operating~~ OPERATING system administrative account
6 ACCOUNTS shall MAY not have access to read or write data
7 to the database ~~and shall not have the ability or knowledge~~
8 ~~of the database administrator password;~~

9 ~~(ii)~~ ~~The operating system administrative account shall not be~~
10 ~~required to use any function of the voting system during~~
11 ~~normal operations;~~

12 ~~(iii)~~ (B) A ~~unique~~ OPERATING system user/operator account
13 ACCOUNTS shall MUST be ABLE TO BE created ~~for operating~~
14 ~~system use that is~~ ARE restricted from the following aspects
15 of the operating system:

- 16 ~~a.~~ (I) No access to system root directory;
- 17 ~~b.~~ (II) No access to operating system specific folders;
- 18 ~~c.~~ (III) No access to install or remove programs; and
- 19 ~~d.~~ (IV) No access to modify other user accounts on the
20 system.

21 ~~(iv)~~ (C) A ~~unique application~~ APPLICATION administrative account
22 ACCOUNTS shall MUST ~~be created which has~~ HAVE full
23 access and rights to the application and database;

24 ~~(v)~~ (D) A ~~unique application~~ APPLICATION user/operator account
25 ACCOUNTS shall MUST ~~be created with~~ HAVE limited rights
26 specifically designed to perform functional operation
27 within the scope of the application. This user/operator shall
28 MUST be restricted in the creation or modification of any
29 user/operator accounts.; and

30 ~~(vi)~~ ~~The voting system provider shall not have an administrative~~
31 ~~account or administrative account access.~~

32 *[Current Rule 45.5.2.6.1(a)(vi) Moved to Rule 20]*

33 ~~(b)~~ (2) The voting system shall MUST meet the following requirements for
34 network security:

1 (i) (A) All components of the voting system shall MUST have the
2 ability to operate on a closed network dedicated to the
3 voting system;

4 (ii) (B) All components of the voting system shall MUST include the
5 limited use of non-routable IP address configurations, for
6 any device connected to the closed network. For the
7 purposes of this requirement, non-routable IP addresses are
8 those defined in the RFC 1918 Address base; and

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

12 (e) (3) All voting systems submitted for certification THAT USE
13 DATABASES shall MUST meet the following requirements for
14 database security:

15 (i) ~~All voting systems submitted for certification shall have~~
16 HAVE databases hardened to specifications developed by
17 the voting system provider. Documentation included with
18 the application shall MUST provide a detailed prescription
19 PROCEDURE for hardening and the procedure used to harden
20 the system. Any government or industry guidelines adopted
21 in whole, or in part, are to be identified in the
22 documentation.

23 (d) (4) The voting system shall MUST meet the following requirements for
24 operating system security:

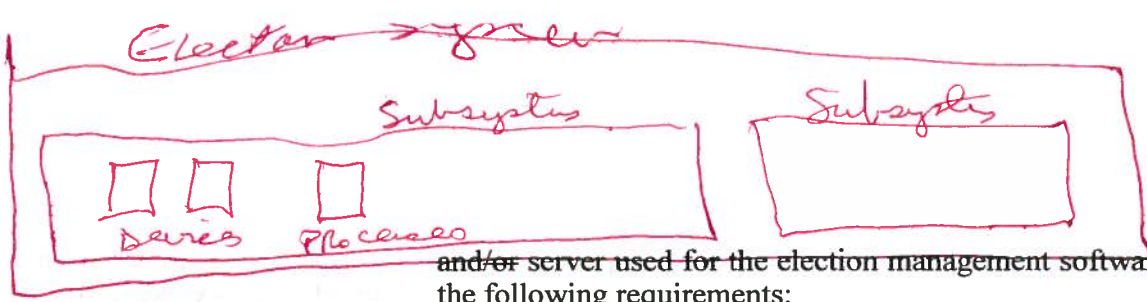
25 (i) (A) All voting systems submitted for certification shall MUST
26 have all operating systems hardened to specifications
27 developed by the voting system provider. Documentation
28 included with the application shall MUST provide a detailed
29 prescription PROCEDURE for hardening and the procedure
30 used to harden the system. Any government or industry
31 guidelines adopted in whole, or in part, are to be identified
32 in the documentation.

33 (ii) ~~The voting system provider shall submit documentation~~
34 containing a list of minimum services and executables
35 required to run the voting system application.

36 [Current Rule 45.5.2.6.1(d)(ii) is amended and moved to new Rule 21.5.12
37 (r)]

38 (iii) (B) The voting system provider shall MUST configure
39 the voting system operating system of the workstation

MUST ADD Physical Security
Chain of Custody
verified standards



and/or server used for the election management software to the following requirements:

a: (I) The ability for the system to take an action upon inserting a removable media (Auto-AUTO run) shall MUST be disabled; and

b: (II) The ~~voting~~ OPERATING system shall MUST only boot from the drive or device identified as the primary drive. ~~The voting system shall not boot from any alternative device.~~

MUST HAVE
Real Time -
- Detection -
- Reporting -
- Prevention -
- AMMATS
- Recovery
see
INTERMITTENT
Report

(iv) (C) The voting system provider shall MUST use a virus protection/prevention application on the election management server(s)/workstations which shall MUST be capable of manual updates without the use of DIRECT CONNECTION TO the internet.

(e) (5) The voting system shall MUST meet the following requirements for password security:

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

(ii) (E) Passwords to THE database shall MUST not be stored in THE database;

(iii) (F) Password to THE database shall MUST be owned and only known by the application;

Password
ISSUANCE
1 Key of clock
2 User chosen PW.
2 part.

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

(v) (H) The system shall MUST be designed in such a way to ensure THAT the use of the administrative account password shall IS not be required for normal operating functions ~~at any remote location;~~

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

Broken
TEXT

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

what happens when I build?

1 (viii) (K) All voting systems submitted for certification shall
2 MUST have all components of THE voting system capable of
3 supporting passwords of a minimum of eight characters,
4 ~~which AND shall~~ MUST be capable of including numeric,
5 alpha and special characters in upper case or lower case
6 used in any combination.

7 ~~(f) All voting system software submitted for certification shall be in~~
8 ~~compliance with the Software Design and Coding Standards of the~~
9 ~~Voting System Standards adopted in Rule 37.3.~~

10 ~~(g) (6) All modules of the system shall~~ MUST meet the following—2002
11 VOTING SYSTEM STANDARDS requirements for installation of
12 software, including hardware with embedded firmware:

13 (i) ~~If software is resident in the system as firmware, the voting~~
14 ~~system provider shall provide documentation that describes~~
15 ~~how devices may be retested to validate each ROM prior to~~
16 ~~the start of elections operations.~~

17 (ii) ~~No software shall be permanently installed or resident in~~
18 ~~the voting system unless the system documentation states~~
19 ~~that the jurisdiction shall provide a secure physical and~~
20 ~~procedural environment for the storage, handling,~~
21 ~~preparation and transportation of the system hardware.~~

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

28 (iv) ~~The election specific programming may be installed and~~
29 ~~resident as firmware, provided that such firmware is~~
30 ~~installed on a component (such as a computer chip) other~~
31 ~~than the component on which the operating system resides.~~

32 (v) ~~After initiation of Election Day testing under Rule 11.5.3,~~
33 ~~no source code, compilers or assemblers shall be resident or~~
34 ~~accessible.~~

35 (vi) (A) Where the system includes a feature to interpret and
36 control execution using data from a script, code tokens, or
37 other form of control data file separate from the source
38 code, the human-readable source information shall MUST be
39 made available as part of the A source code review and the

READ ONLY
NO EXTERNAL I/O to modify behaviour of the system
audit script including code generation code modifications
? Defeat audit trail?

1 data files used shall be defined and controlled as part of the
2 Trusted Build as if it were part of the executable code.

3 (vii) (B) Security features and procedures shall MUST be
4 defined and implemented to prevent any changes of
5 interpreted data files after the initial election testing of the
6 final election definition and only allow authorized
7 replacement REPLACEMENT of the data files with tested and
8 approved files from the Trusted Build TRUSTED BUILD
9 SHALL MUST BE by authorized personnel before the election
10 definition is finalized for an election.

11 (viii) (C) The introduction of interpreted data during
12 execution shall MUST not be permitted unless defined as a
13 pre-defined PREDEFINED set of commands or actions subject
14 to security review and the interpretation function provides
15 security edits on input to prevent the introduction of other
16 commands or the modification or replacement of existing
17 code.

18 (ix) Independent analysis will test for the following conditions
19 and report on absence or presence of the following input
20 validations in accordance with Rule 45.5.2.4.3:

- 21 a. Path manipulation;
- 22 b. Cross Site Scripting;
- 23 c. Resource Injection;
- 24 d. OS Command Injection (also called "Shell
25 Injection"); and
- 26 e. SQL Injection.

27 (x) Independent analysis will test for the following conditions
28 and report on their absence or presence of the following
29 range errors in accordance with Rule 45.5.2.4.3:

- 30 a. Stack Overflow;
- 31 b. Heap Overflow;
- 32 c. Format string vulnerability; and
- 33 d. Improper Null Termination.

- 1 ~~(xi) Independent analysis will test for the following conditions~~
2 ~~and report on their absence or presence of the following~~
3 ~~Application Programming Interface (API) abuses in~~
4 ~~accordance with Rule 45.5.2.4.3:~~
5 ~~a. Heap Inspection; and~~
6 ~~b. String Management/Manipulation.~~
7 ~~(xii) Independent analysis will test for the following conditions~~
8 ~~and report on the absence or presence of the following time~~
9 ~~and state conditions in accordance with Rule 45.5.2.4.3:~~
10 ~~a. Time of check/Time of use race condition; and~~
11 ~~b. Unchecked Error Condition.~~
12 ~~(xiii) Independent analysis will test for the following conditions~~
13 ~~and report on the absence or presence of the following code~~
14 ~~quality conditions accordance with Rule 45.5.2.4.3:~~
15 ~~a. Memory Leaks;~~
16 ~~b. Unrestricted Critical Resource Lock;~~
17 ~~c. Double Free;~~
18 ~~d. Use After Free;~~
19 ~~e. Uninitialized variable;~~
20 ~~f. Unintentional pointer scaling;~~
21 ~~g. Improper pointer subtraction; and~~
22 ~~h. Null Dereference.~~
23 ~~(xiv) Independent analysis will test for the following conditions~~
24 ~~and report on the absence or presence of the following~~
25 ~~encapsulation conditions in accordance with Rule~~
26 ~~45.5.2.4.3:~~
27 ~~a. Private Array Typed Field Returned from a Public~~
28 ~~Method;~~
29 ~~b. Public Data Assigned to Private Array Typed Field;~~
30 ~~e. Overflow of static internal buffer; and~~

1 confirm?
2 this means
3 "Does not HAVE
4 CAPABILITY"
5 vs
6 "will NOT PERMIT"

d. — Leftover Debug Code.

(xv) (D) The application shall MUST not open database tables for direct editing.

(h) All voting systems submitted for certification shall MUST meet the following minimum requirements for removable storage media with data controls:

(i) All voting data stored that includes ~~vote records~~, ballot images, tally data and cast ~~votes~~-VOTE RECORDS shall MUST be authenticated and validated.

(ii) All non-voting data stored shall MUST be authenticated, encrypted, and validated.

(iii) All removable media, upon insertion of ~~media or media device~~ on server and/or workstations hosting the elections management software, shall MUST AUTOMATICALLY be scanned by antivirus software.

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

- (a) — Defining ballot formats;
- (b) — Casting and recording votes;
- (c) — Calculating vote totals consistent with defined ballot formats;
- (d) — Reporting vote totals;
- (e) — Altering of voting system audit records;
- (f) — Changing or preventing the recording of a vote;
- (g) — Introducing data for a vote not cast by a registered voter;
- (h) — Changing calculated vote totals;
- (i) — Preventing access to vote data, including individual votes and vote totals, to unauthorized individuals; and
- (j) — Preventing access to voter identification data and data for votes cast by the voter such that an individual can determine the content of specific votes cast by the voter.

define -
Needs to be generic)
Aut Encapsulating
including
- Docs
- Processes
- Files
- Aging

[Current Rule 45.5.2.6.2 amended and moved to new Rule 21.5.12(i)]

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

- (a) — Software access controls;
- (b) — Hardware access controls;
- (c) — Data communications;
- (d) — Effective password management;
- (e) — Protection abilities of a particular operating system;
- (f) — General characteristics of supervisory access privileges;
- (g) — Segregation of duties; and
- (h) — Any additional relevant characteristics.

INCLUDING

- Detect
- Report
- Prevent
- Recover

45.5.2.6.4 — ~~The voting system shall include detailed documentation regarding the security measures it has in place for all systems, applicable software, devices that act as connectors (upload, download, and other programming devices) and any security measures the voting system provider recommends to the jurisdictions that purchase the voting system.~~

[Current Rule 45.5.2.6.4 amended and moved to New Rule 21.5.12(j).]

Part of VS
to be
cont'd.

NO

OK yet

45.5.2.7-21.5.10 Telecommunications Requirements-REQUIREMENTS

45.5.2.7.1(A) Telecommunications includes all components of the system that transmit data outside of the closed network as defined in this Rule 45-21.

45.5.2.7.2(B) All electronic transmissions from a voting system shall MUST meet the following minimum standards—2002 VOTING SYSTEM STANDARDS.

(a)(C) Modems from remote devices shall MUST be PROGRAMMED TO BE “dial only” and cannot be programmed to NOT receive a call;

(b) — Use an encryption standard currently documented and validated for use by an agency of the United States Federal Government; and

(c) — Provide a means to detect the presence of an intrusive process, such as an Intrusion Detection System.

45.5.2.7.3(D) Any modem in any component failing THAT FAILS to meet these criteria—THE REQUIREMENTS OF THIS RULE shall MAY not be used by any voting system.

*Newly
to
Monitor*

1 ~~45.5.2.7.4 (E) All wireless components in voting systems shall be disabled with~~
2 ~~the exception of line-LINE of sight infrared technology SHALL MAY ONLY~~
3 ~~BE used in a closed environment where the transmission and reception is~~
4 ~~shielded from external infrared signals and can only accept infrared~~
5 ~~signals generated from within the system.~~

6 ~~45.5.2.7.5 (F) All systems that transmit data over public telecommunications~~
7 ~~networks shall MUST maintain a clear audit trail that can be provided to the~~
8 ~~Secretary of State when election results are transmitted by telephone,~~
9 ~~microwave or other type of electronic communication.~~

10 ~~45.5.2.7.6 — Systems designed for transmission of voter information over public~~
11 ~~networks shall meet security standards that address the security risks~~
12 ~~attendant with the casting of ballots at remote sites controlled by election~~
13 ~~officials using the voting system configured and installed by election~~
14 ~~officials and/or their voting system provider or contractor, and using in-~~
15 ~~person authentication of individual voters.~~

16 ~~45.5.2.7.7 — Any voting system provider of systems that cast individual ballots~~
17 ~~over a public telecommunications network shall provide detailed~~
18 ~~descriptions of:~~

19 ~~(a) — All activities mandatory to ensure effective system security to be~~
20 ~~performed in setting up the system for operation, including testing~~
21 ~~security before an election.~~

22 ~~(b) — All activities that should be prohibited during system setup and~~
23 ~~during the time frame for voting operations, including the hours~~
24 ~~when polls are open and when polls are closed.~~

25 ~~45.5.2.7.8 (G) In any situation in which the voting system provider's system~~
26 ~~transmits VOTING SYSTEMS THAT TRANSMIT data through any~~
27 ~~telecommunications medium, the system shall MUST be able to recover,~~
28 ~~either automatically or with manual intervention, from incomplete or~~
29 ~~failed transmission sessions and resume transmissions automatically when~~
30 ~~telecommunications are re-established-REESTABLISHED.~~

31 ~~(a) (1) Recovery of transmissions shall MUST include notations of the~~
32 ~~interrupted transmission session and the resumed transmission~~
33 ~~session in the system and application transaction logs.~~

34 ~~(b) (2) Failure and recovery of transmissions shall MUST not cause any~~
35 ~~error in data transmitted from the polling place VOTER SERVICE AND~~
36 ~~POLLING CENTERS to the central election site during a recovered~~
37 ~~transmission session.~~

38 ~~45.5.2.7.9 — Voting systems that use public telecommunications networks shall~~
39 ~~provide system documentation that clearly identifies all COTS hardware~~

1 ~~and software products and communications services used in the~~
2 ~~development and/or operation of the voting system, including operating~~
3 ~~systems, communications routers, modem drivers and dial-up networking~~
4 ~~software. Documentation shall identify the name, voting system provider~~
5 ~~and version used for each such component.~~

6 ~~45.5.2.7.10 — Voting systems providers shall document how they plan to monitor~~
7 ~~and respond to known threats to which their voting systems are vulnerable.~~
8 ~~This documentation shall provide a detailed description, including~~
9 ~~scheduling information, of the procedures the voting system provider will~~
10 ~~use to:~~

- 11 ~~(a) — Monitor threats, such as through the review of assessments,~~
12 ~~advisories and alerts for COTS components;~~
- 13 ~~(b) — Evaluate the threats and, if any, proposed responses;~~
- 14 ~~(c) — Develop responsive updates to the system and/or corrective~~
15 ~~procedures; and~~
- 16 ~~(d) — As part of the certification requirements of the proposed system,~~
17 ~~provide assistance to customers, either directly or through detailed~~
18 ~~written procedures, how to update their systems and/or to~~
19 ~~implement the corrective procedures within the timeframe~~
20 ~~established by the Secretary of State.~~

21 ~~45.5.2.8 — Repealed.~~

22 ~~45.5.2.9-21.5.11 Voter-Verifiable Paper Record Requirements (V-VPAT) VOTER-~~
23 ~~VERIFIABLE PAPER RECORD REQUIREMENTS~~

24 ~~45.5.2.9.1 — V-VPAT shall refer to a Voter-verified paper record as defined in~~
25 ~~section 1-104(50.6)(a), C.R.S.~~

26 *[Current Rule 45.5.2.9.1 is amended and moved to New Rule 21.1.22.]*

27 ~~45.5.2.9.2 (A) Existing systems that are retrofitted to comply with this law~~
28 ~~SECTION 1-5-802(1), C.R.S., shall MUST be examined for certification by~~
29 ~~the Secretary of State. Any retrofitted voting system shall MUST comply~~
30 ~~with the process and application for certification as identified by this Rule~~
31 ~~45-21.~~

32 ~~45.5.2.9.3 (B) The V-VPAT-VVPAT shall consist of MUST INCLUDE the following~~
33 ~~minimum components:~~

- 34 ~~(a)(1) The voting device shall contain a A paper audit trail writer or~~
35 ~~printer that shall MUST be attached, built into or used in~~

① Must Not Be a "Log"
② Must Not Be a Roll - Print To A Ballot.
③ PREFER

1 conjunction with the DRE, ~~The printer~~ AND shall MUST duplicate a
2 voter's selections from the DRE onto a paper record;

3 (b)(2) ~~The unit or device shall have a~~ A paper record display unit or area
4 that shall MUST allow a voter to view his or her paper record; AND

5 (e)(3) ~~The V-VPAT unit shall contain a~~ A paper record storage unit that
6 shall MUST store cast and spoiled paper record copies securely; and

7 (d) ~~These devices may be integrated as appropriate to their operation.~~

8 45.5.2.9.4 ~~V-VPAT devices shall allow voters to verify his or her selections~~
9 ~~on a paper record prior to casting ballots. The voter shall either accept or~~
10 ~~reject the choices represented on the paper record. Both the electronic~~
11 ~~record and the paper record shall be stored and retained when the ballot is~~
12 ~~cast.~~

13 45.5.2.9.5 ~~The V-VPAT printer connection may be any standard, publicly~~
14 ~~documented printer port (or the equivalent) using a standard~~
15 ~~communication protocol.~~

16 (C) THE VVPAT SHALL MUST MEET THE FOLLOWING FUNCTIONAL
17 REQUIREMENTS:

18 45.5.2.9.6(1) ~~The printer shall not be permitted to~~ MAY ONLY
19 ~~communicate with any device other than the voting device to~~
20 ~~which it is connected;~~

21 45.5.2.9.7(2) ~~The printer shall only be able to~~ MAY ONLY function as a
22 ~~printer, and not perform any other non-printer related services;~~

23 45.5.2.9.8(3) ~~Every electronic voting record shall have a corresponding~~
24 ~~paper record. PRODUCE A PAPER RECORD FOR EVERY~~ separate
25 ~~CORRESPONDING ELECTRONIC VOTING RECORD;~~ EACH

26 45.5.2.9.9 ~~The paper record shall be considered an official record of~~
27 ~~the election available for recounts, and shall be sturdy, clean, and~~
28 ~~of sufficient durability to be used for this purpose.~~

29 45.5.2.9.16(4) ~~The V-VPAT unit shall provide~~ PROVIDE a "low supply"
30 ~~warning to the election judge~~ OFFICIAL to add paper, ink,
31 ~~toner, ribbon or other like supplies. In the event that an election~~
32 ~~judge~~ OFFICIAL is required to change supplies during the process of
33 ~~voting, the voter shall~~ MUST be allowed to reprint and review the
34 ~~paper audit trail~~ RECORD without having to ~~re-mark~~ MARK his or
35 ~~her ballot, and the. The device shall~~ MUST prevent the election
36 ~~judge~~ OFFICIAL from seeing ~~any voters' ballots~~ A VOTER'S BALLOT.

Expand to Ballot

White The Record
Can be associated with The Voter.

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~~45.5.2.9.17(5) All voting systems submitted for certification shall stop the V-VPAT printer of all forward operations of the DRE STOP ALL OPERATIONS if the printer is not working due to paper jams, out of other consumables or any other issue which may cause the correct readable printing of information on the V-VPAT record as designed.~~

~~45.5.2.9.20(6) The V-VPAT shall allow ALLOW a voter to spoil his or her paper record no more than two times. Upon spoiling, the voter shall MUST be able to modify and verify selections on the DRE without having to reselect all of his or her choices.~~

~~45.5.2.9.21(7) Before the voter causes a third and final record to be printed, the voter shall be presented THE VVPAT MUST PRESENT THE VOTER with a warning notice that the selections made on screen shall be final and the voter shall MAY see and verify a printout of his or her vote, but shall MAY not be given additional opportunities to change their vote.~~

~~45.5.2.9.22(8) When V-VPAT-VVPAT components are integrated into A PREVIOUSLY CERTIFIED voting systems—SYSTEM the new configuration of the VOTING system must comply with existing state testing and auditing requirements.~~

NO!
NOT Verifiable

~~45.5.2.9.23(9) The V-VPAT component should print PRINT a barcode with each record that contains the human readable contents of the paper record and digital signature information. The voting system provider SHALL MUST include documentation of the barcode type, protocol, and/or description of barcode and the method of reading the barcode as applicable to the voting system.~~

~~45.5.2.9.25(10) If used for provisional ballots, the V-VPAT system VVPAT shall MUST be able to mark paper records as a provisional ballot through the use of human readable text and optionally printing barcode and/or serial number information, which SHALL MUST provide for mapping the record back to the electronic record and the provisional voter for processing after verification in accordance with Article 8.5 of Title 1, C.R.S.~~

(D) THE VVPAT SHALL MUST MEET THE FOLLOWING DESIGN REQUIREMENTS:

~~45.5.2.9.10(1) The V-VPAT device shall be designed to allow ALLOW every voter to review and accept or reject his/her paper record in as private and independent manner as possible for both disabled and non-disabled voters REGARDLESS OF WHETHER THE VOTER HAS DISABILITY.~~

MUST
Keep →

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~~45.5.2.9.11 — The V VPAT system shall be designed in conjunction with state law to ensure the secrecy of votes so that it is not possible to determine which voter cast which paper record.~~

~~45.5.2.9.12(2) The V VPAT printer shall print PRINT at a font size no less than ten-point 14-POINT SANS-SERIF ARIAL for ease of readability. Any protective covering intended to be transparent shall be in such condition that it can be made transparent by ordinary cleaning of its exposed surface.~~

~~45.5.2.9.13(3) The V VPAT system shall be designed to allow ALLOW each voter to verify his or her vote on a paper record in the same language THAT they voted in on the DRE.~~

~~45.5.2.9.14(4) The V VPAT system shall be designed to prevent PREVENT tampering with unique keys and/or seals for the compartment that stores the paper record as well as meet the security requirements of this rule. Additional security measures may be in place on the printer to prevent tampering with the device.~~

~~45.5.2.9.15(5) The V VPAT system shall be capable of printing and storing PRINT AND STORE paper record copies for at least 75 ballots cast without requiring the paper supply source, ink or toner supply, or any other similar consumable supply to be changed, assuming a fully printed double sided 18 inch ballot with a minimum of 20 contests.~~

~~45.5.2.9.16 — The V VPAT unit shall provide a “low supply” warning to the election judge to add paper, ink, toner, ribbon or other like supplies. In the event that an election judge is required to change supplies during the process of voting, the voter shall be allowed to reprint and review the paper audit trail without having to re-mark his or her ballot, and the device shall prevent the election judge from seeing any voters’ ballots.~~

[Current Rule 45.5.2.9.16 is amended and moved to New Rule 21.5.11(c)(4).]

~~45.5.2.9.17 — All voting systems submitted for certification shall stop the V VPAT printer of all forward operations of the DRE if the printer is not working due to paper jams, out of other consumables or any other issue which may cause the correct readable printing of information on the V VPAT record as designed.~~

1 [Current Rule 45.5.2.9.17 amended and moved to New Rule
2 21.5.11(c)(5).]

3 ~~45.5.2.9.18 — The voting system provider shall provide procedures and~~
4 ~~documentation for the use of the V-VPAT device.~~

5 [Current Rule 45.5.2.9.18 amended and moved to New Rule 21.5.12(k).]

6 ~~45.5.2.9.19~~ (6) The printed information on the ~~printed ballot or verification~~
7 ~~portion of the V-VPAT device~~ PAPER RECORD SHALL MUST contain
8 at least the following items:

9 (a)-(A) Name or header information of race, question or issue;

10 (b)-(B) Voter's selections for the race information;

11 (c)-(C) Write-in candidate's names if selected;

12 (d)-(D) Undervote or overvote information—~~this is in addition to~~
13 ~~the information on the review screen of the DRE;~~

14 (e)-(E) Ability to optionally produce a unique serial number
15 (randomized to protect privacy); and

16 (f)-(F) Identification that the ballot was cancelled or cast.

17 ~~45.5.2.9.20 — The V-VPAT shall allow a voter to spoil his or her paper~~
18 ~~record no more than two times. Upon spoiling, the voter shall be~~
19 ~~able to modify and verify selections on the DRE without having to~~
20 ~~reselect all of his or her choices.~~

21 [Current Rule 45.5.2.9.20 amended and moved to New Rule
22 21.5.11(c)(6).]

23 ~~45.5.2.9.21 — Before the voter causes a third and final record to be~~
24 ~~printed, the voter shall be presented with a warning notice that the~~
25 ~~selections made on screen shall be final and the voter shall see and~~
26 ~~verify a printout of his or her vote, but shall not be given additional~~
27 ~~opportunities to change their vote.~~

28 [Current Rule 45.5.2.9.21 amended and moved to New Rule
29 21.5.11(c)(7).]

30 ~~45.5.2.9.22 — When V-VPAT components are integrated into voting~~
31 ~~systems the new configuration of the system must comply with~~
32 ~~existing state testing and auditing requirements.~~

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[Current Rule 45.5.2.9.22 amended and moved to New Rule 21.5.11(c)(8).]

No →

~~45.5.2.9.23 — The V VPAT component should print a barcode with each record that contains the human readable contents of the paper record and digital signature information. The voting system provider shall include documentation of the barcode type, protocol, and/or description of barcode and the method of reading the barcode as applicable to the voting system.~~

[Current Rule 45.5.2.9.23 amended and moved to New Rule 21.5.11(c)(9).]

~~45.5.2.9.24 (7) The V VPAT component shall be designed such that a voter shall not be able to leave PROHIBIT THE VOTER FROM LEAVING the voting area with the paper record.~~

*This repeats
See
page
194 of 214*

~~45.5.2.9.25 — If used for provisional ballots, the V VPAT system shall be able to mark paper records as a provisional ballot through the use of human readable text and optionally printing barcode and/or serial number information which shall provide for mapping the record back to the electronic record and the provisional voter for processing after verification in accordance with Article 8.5 of Title 1, C.R.S.~~

[Current Rule 45.5.2.9.25 amended and moved to New Rule 21.5.11(c)(10).]

~~45.5.2.9.26 (8) The voting system provider SHALL MUST provide procedures to the Secretary of State with the application for certification which describe DOCUMENTATION DESCRIBING how to investigate and resolve malfunctions including, but not limited to the following: misreporting votes, unreadable paper records, paper jams, low ink, misfeeds, preventing the V VPAT from being a single point of failure, recovering votes in the case of malfunction and power failures.~~

- (A) MISREPORTING VOTES;
- (B) UNREADABLE PAPER RECORDS;
- (C) PAPER JAMS;
- (D) LOW-INK;
- (E) MISFEEDS;
- (F) LOST VOTES; AND

1 (G) POWER FAILURES.

2 45.5.2.4 21.5.12 Documentation ~~Requirements~~ REQUIREMENTS

3 45.5.1.3(A) The Secretary of State may ~~use and~~ rely upon the testing of a
4 voting system performed by a VSTL or by another state upon satisfaction
5 of the following conditions:

6 (a)-(1) The Secretary of State has ~~complete~~ access to any
7 documentation, data, reports or similar information upon
8 which the VSTL or another state relied in performing its
9 tests and will make such information available to the public
10 subject to any redaction required by law; and

11 (b)-(2) The Secretary of State ~~makes written findings and certifies~~
12 ~~that he or she has reviewed such information and~~
13 ~~determines~~ HAS DETERMINED that the tests were conducted
14 in accordance with appropriate engineering standards ~~in use~~
15 ~~when the tests were conducted~~, and the extent to which the
16 tests satisfy the requirements of sections 1-5-615 and
17 1-5-616, C.R.S., and all rules promulgated under those
18 sections.

19 45.5.2.4.1(B) In addition to other documentation requirements in this rule, the
20 voting system provider ~~SHALL~~ MUST provide the following documents:

21 (a)(1) Standard ~~Issue~~ ~~Users/Operator~~ ~~Manual~~ ~~ISSUE~~
22 ~~USERS/OPERATOR~~ MANUAL;

23 (b)(2) System ~~Administrator's/Application~~ ~~Administration~~
24 ~~Manual~~ ~~ADMINISTRATOR'S/APPLICATION~~ ~~ADMINISTRATION~~
25 ~~MANUAL~~;

26 (c)(3) Training ~~Manual~~ ~~MANUAL~~ and related materials;

27 (d)(4) Systems ~~Programming~~ ~~PROGRAMMING~~ and ~~Diagnostics~~
28 ~~Manuals~~ ~~DIAGNOSTICS~~ ~~MANUALS~~; and

29 (e)(5) A list of minimum services needed for the successful,
30 secure and hardened operation of all components of THE
31 voting system.

32 45.4.2.13(C) The voting system provider ~~SHALL~~ MUST provide documentation
33 concerning the use of touch screen or other display and selection
34 technology including, but not limited to:

*- Files / logs
- DB
- Security
- Prob Report*

*Must
Report to
GOS w/in
24 HRS.*

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(a)(1) Technical documentation describing the nature and sensitivity of the tactile device (if the system uses touch screen technology);

(b)(2) Technical documentation describing the nature and sensitivity of any other technology used to display and select offices, candidates or issues;

45.5.2.4.2-(D) For the review of VSTL or other state testing in Rule 45.5.1.3 21.5.12(A) copies of all VSTL or state qualification reports, test logs and technical data packages shall MUST be provided to the Secretary of State.

*MUST
Be
Open
Process
Governance
Standard*

(a)(1) The voting system provider SHALL MUST execute and submit any necessary releases for the applicable VSTL, state and/or EAC to discuss any and all procedures and findings relevant to the voting system submitted for certification with the Secretary of State and allow the review by the Secretary of State of any documentation, data, reports or similar information upon which the VSTL or other state relied in performing its testing. The voting system provider SHALL MUST provide a copy of the same to the Secretary of State.

(b)(2) The voting system provider, the VSTL, the state and/or the EAC will identify to the Secretary of State any specific sections of documents for which they assert a legal requirement for redaction.

45.5.2.3.14(d)(E) The voting system provider SHALL MUST deliver to the Secretary of State documentation detailing estimated time of battery operation for each type of optical scanner, ballot imager, DRE and VVPAT they provide, assuming continuous use of the devices by voters during an interruption of normal electrical power. 45.5.2.3.14(e) The voting system provider shall deliver PROVIDE to the Secretary of State documentation specifying the steps and times required for charging batteries, AND THE TIME OF BATTERY OPERATION for each type of optical scanner, ballot imager, DRE and VVPAT DEVICE they provide, ASSUMING CONTINUOUS USE OF THE DEVICES BY VOTERS DURING AN INTERRUPTION OF NORMAL ELECTRICAL POWER.

Public

45.5.2.4.4-(F) Documentation submitted to the THE Secretary of State shall be reviewed WILL REVIEW SUBMITTED DOCUMENTATION to determine the extent to which the voting system has been tested to federal standards.

45.5.2.4.6-(G) Failure by the voting system provider to provide any documentation with their application for certification will delay processing

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the application ~~until the documentation is provided~~ AND MAY BE CAUSE FOR DENIAL OF CERTIFICATION.

45.5.2.5.2-(H) The voting system ~~shall~~ MUST include detailed documentation, WHICH INCLUDES ~~as to the level, location and programming-~~A DESCRIPTION OF THE CONTENT OF THE of audit trail information throughout the system. The audit information ~~shall apply~~ APPLIES to:

- (a)-(1) Operating Systems (workstation, server, OPTICAL SCANNER, BDM, and ~~or~~ DRE);
- (b)-(2) Election ~~Programming Software~~ MANAGEMENT SYSTEM; AND
- (c)-(3) Election Tabulation Devices – optical scan and DRE.; and
- (d) ~~Election Reporting Subsystem.~~

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

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

Specification of each item in log!

Must collect/Record Process Data Too!

INCOMPLETE

- 1 45.5.2.6.4(J) The voting system PROVIDER shall MUST include detailed PROVIDE
2 documentation regarding DETAILING the security measures it has in place
3 for all systems, applicable software, devices that act as connectors
4 (upload, download, and other programming devices) and any
5 RECOMMENDED security measures the voting system provider recommends
6 to the jurisdictions that purchase the voting system.
- 7 45.5.2.9.18(K) The voting system provider shall MUST provide procedures and
8 documentation for the use of the ~~V-VPAT device~~ VVPAT.
- 9 45.5.2.2.3(L) The voting system provider shall MUST publish and specify
10 processing standards for each component of the voting system as part of
11 the documentation required for certification.
- 12 45.5.2.2.4(M) For the purpose of evaluating software, the voting system provider
13 shall MUST be required to provide detailed information as to the type of
14 hardware required to execute the software.
- 15 45.5.2.3.2(N) The documentation supplied by the voting system shall MUST
16 include a statement of all requirements and restrictions regarding
17 environmental protection, electrical service, telecommunications service
18 and any other facility or resource required for the installation, operation
19 and storage of the voting system.
- 20 45.5.2.3.13(d)(O) ~~Any~~ THE VOTING SYSTEM PROVIDER SHALL MUST PROVIDE
21 ANY available data on problems caused for persons who experience
22 epileptic seizures due to the DRE voting device's screen refresh rate.
- 23 45.5.2.3.14(d)(P) The voting system provider shall MUST deliver to the
24 Secretary of State documentation detailing estimated time of battery
25 operation for each type of ~~optical scanner, ballot imager, DRE and V-~~
26 ~~VPAT they provide~~ DEVICE SUBMITTED FOR CERTIFICATION, assuming
27 continuous use of the devices by voters during an interruption of normal
28 electrical power.
- 29 45.5.2.3.14(e)(Q) The voting system provider shall MUST deliver to the
30 Secretary of State documentation specifying the steps and times required
31 for charging batteries for each type of ~~optical scanner, ballot imager, DRE~~
32 ~~and V-VPAT they provide~~ DEVICE SUBMITTED FOR CERTIFICATION.
- 33 45.5.2.6.1(d)(ii)(R) The voting system provider shall MUST submit
34 documentation containing a list of minimum services and executables
35 required to run the ~~voting system application~~ ELECTION MANAGEMENT
36 SYSTEM.
- 37 45-6 21.6 Testing PREPARATION PROCEDURES

MUST include E.O.S.
MUST State Purpose
MUST Define EXIT CRITERIA

45.6.1-21.6.1 Voting System Provider Demonstration SYSTEM PROVIDER DEMONSTRATION

45.6.1.1(A) The voting system provider shall MUST demonstrate the exact proposed SUBMITTED voting system to the Secretary of State prior to any functional testing.

45.6.1.2(B) The demonstration period does not have a pre-determined PREDETERMINED agenda for the voting system provider to follow; however, presentations should be prepared to address and demonstrate, within the specific system, the following items as they pertain to each area and use within the voting system, IF APPLICABLE:

- (a)-(1) System overview;
- (b)-(2) Verification of complete system matching EAC certification;
- (c)-(3) Ballot definition creation;
- (d)-(4) Printing ballots on demand;
- (e)-(5) Hardware ~~diagnostics~~ DIAGNOSTIC testing;
- (f)-(6) Programming election media devices for various count COUNTING methods INCLUDING:
 - (i)-(A) Mail-in Ballots-BALLOTS;
 - (ii)-(B) Early Voting IN-PERSON BALLOTS; AND
 - (iii)-(C) ~~Precinct/Poll Place~~ ;
 - (iv)-(D) Provisional BALLOTS.; and
 - (v)-(D) Vote Center.
- (g)-(7) Sealing and securing system devices;
- (h)-(8) Logic and accuracy testing;
- (i)-(9) Processing ballots;
- (j)-(10) Accessible use;
- (k)-(11) Accumulating results;
- (l)-(12) Post-election audit;
- (m)-(13) Canvass process handling;

MUST
Revise
for
PUBLIC
PARTIC
Audiences
Casual viewers
Technical
ANALYSTS
-Pre-Post spaces
See + Hear
all
copies
All

FAX
DRE
etc

acceptance
Test

✓ Problem Report

- 1 (n)-(14) Audit steps and procedures throughout all processes;
- 2 (o)-(15) Certification of results; and
- 3 (p)-(16) Troubleshooting.

4 45.6.1.3(C) The voting system provider ~~shall~~ WILL have access to the
5 demonstration room for one day prior to the start of the demonstration to
6 provide time for setup of the voting system.

7 45.6.1.4(D) A maximum of one business day is normally allowed for the
8 demonstration. If the voting system provider requests more time for the
9 demonstration or, if the Secretary of State finds that the complexity of the
10 system is such that more time is needed for a demonstration, more time
11 may be granted.

12 45.6.1.5(E) The demonstration ~~shall~~ WILL be open to representatives of the
13 press and the public to the extent allowable. The Secretary of State may
14 limit the number of representatives from each group to accommodate
15 space ~~limitations and other considerations~~.

16 45.6.1.6(F) The Secretary of State ~~shall~~ WILL post notice of the fact that the
17 demonstration will take place in the designated public place for posting
18 such notices for at least seven days prior to the demonstration. The notice
19 ~~shall~~ MUST indicate the general time frame during which the demonstration
20 may take place and the manner in which members of the public may
21 obtain specific information about the time and place of the test.

22 45.6.1.7(G) The voting system provider ~~shall~~ MUST provide the same class of
23 workstation and/or server for testing the voting system as the normal
24 production environment for the State of Colorado.

25 45.6.2 Functional Testing

26 45.6.2.1 ~~————~~ Voting system provider requirements for testing

27 45.6.2.1.1(H) Based upon the review of VSTL or other state reports and test
28 records, the Secretary of State will prepare a test plan. The test plan ~~shall~~
29 WILL be designed to test for any requirements specific to Colorado law
30 which were not addressed in prior testing and for any federal or Colorado
31 requirements which were not addressed to the satisfaction of the Secretary
32 of State in the reports and records from prior testing.

33 45.6.2.1.2(I) The test plan ~~shall~~ MUST include the election definitions to be used
34 in testing and specifications for test ballots. Test ballots and election
35 definitions ~~shall~~ MUST generally follow all requirements for election
36 definitions, ballot layout and printing to verify the system's ability to meet

The Public will have ...
insufficient
more time must post specs

Matrix
PUBLIC
APPROVAL
REGS (participation)

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those requirements. Some election definitions and ballots may depart from the requirements in order to test specific functions.

MUST INCLUDE
- ANONY
- TRANSPY
- security
- Accu
- verify

45.6.2.1.3 (J) For each system tested, a requirements matrix shall MUST be prepared to identify those requirements satisfied by the review of VSTL or other state reports and test data and how those requirements not satisfied are to be tested or otherwise satisfied. If during test planning or testing one of the requirements in the voting systems standards or in this rule are determined to be not applicable to the system under test, the reason for the determination will be documented.

45.6.2.1.4 (K) The voting system provider shall MUST submit for testing the specific system configuration that will be offered to jurisdictions including the components with which the voting system provider recommends the system be used.

45.6.2.1.5 (L) The voting system provider is not required to have a representative present during the functional testing, but shall MUST provide a point of contact for technical support. After the delivery, unpacking and initial inspection of the equipment for shipping damage and missing components, a vendor representative shall WILL only be allowed to operate or touch the equipment when approved by the Secretary of State. All such activity by a vendor representative shall MUST be documented on video and OR in writing.

in Plain
view of
PUBLIC

45.6.2.1.6 (M) The proprietary software shall MUST be installed on the workstation/server and all applicable voting system components by the Secretary of State OR THE VSTL using the trusted build and the installation procedures provided by the voting system provider. After installation, hash values for the software and firmware shall MUST be compared to any published hash values of the trusted build. Any mismatches in hash values will be investigated and resolved before proceeding with testing.

45.6.2.1.7 (N) All equipment shall MUST be hardened using the voting system provider's procedures and specifications.

45.6.2.1.8 (O) Testing shall MUST be performed with test election definitions and test ballots as required in the test plan.

X

45.6.2.1.9 (P) The results of all testing shall MUST be recorded in the requirements matrix. The requirements matrix shall WILL be the primary record describing which requirements were met and specifying which were not. It shall MUST be supplemented as necessary to support the findings with test team notes and system reports. Supplemental information may include photographs and audio or video recordings.

45.6.2.1.10 (Q) Functional testing shall MUST be completed according to the phases identified in Rule 45.3.3 21.3.3.

X X X TEST INPUT + OUTPUTS Must be Elec For Rec
X X X Rqts MTX Must be Electronic For Rec
NOT PNF

TESTS MUST INCLUDE Trained Judges and Trainers • SIV User etc • Paper Records

1 45.6.2.2 Secretary of State requirements for testing

2 45.6.2.2.1(R) The Secretary of State OR THE VSTL shall MUST conduct functional
3 testing on the voting system based on this Rule 45 and additional testing
4 procedures as determined by the Secretary of State.

5 45.6.2.2.2 (S) The voting system shall MUST receive a pass, fail or not applicable
6 for each requirement with appropriate notation in the requirements matrix.

7 45.6.2.2.3 (T) Records of the test procedures shall MUST be maintained and
8 recorded on file with the Secretary of State IN ACCORDANCE WITH RULE
9 45.4.7 21.4.7. The records shall MUST identify the system and all
10 components by voting system provider name, make, model, serial number,
11 software version, firmware version, date tested, test number, test plan,
12 requirements matrix, test team notes and other supplemental information,
13 and results of test. The test environment conditions shall MUST be
14 described.

15 45.6.2.2.4 (U) In the event that a deviation from the test plan is required, it shall
16 MUST be documented in a test team note. The note shall MUST provide a
17 description of the deviation, the reason for the deviation and effect of the
18 deviation on testing and determining compliance with requirements.

19 45.6.2.3-21.6.2 General Testing Procedures and Instructions TESTING PROCEDURES
20 PROCEDURES AND INSTRUCTIONS

21 45.6.2.3.1 (A) Certification tests shall MUST be used to determine compliance
22 with applicable performance standards for the system and its components.
23 The general procedure for these tests shall WILL:

24 (a)-(1) Verify, by means of the applicant's VOTING SYSTEM PROVIDER'S
25 standard operating procedure, that the device is in a normal
26 condition and status;

27 (b)-(2) Establish the standard test environment or the special environment
28 required to perform the test;

29 (c)-(3) Invoke all operating modes or conditions necessary to initiate or to
30 establish the performance characteristic to be tested;

31 (d)-(4) Measure and record the value or the range of values of the
32 performance characteristic to be tested; and

33 (e)-(5) Verify all required measurements have been obtained, and that the
34 device is still in a normal condition and status.

MUST INCLUDE INPUT EXPECTED ACTUAL

Test decks
must be
Realistic
N2T perfect

NO test mode

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45.6.2.3.2 (B) All tests ~~shall~~ **WILL** be generally conducted in regular election mode. Tests of test mode and diagnostic functions may be conducted in the appropriate test mode.

45.6.2.3.3 (C) The voting system provider ~~is required to~~ **MUST** produce ballots and assemble marked test decks and spare ballots as specified in the test plan.

45.6.2.3.4 ~~The voting system provider shall provide a minimum of ten ballot marking pens/pencils/markers as defined by their system for marking ballots by the Secretary of State.~~

45.6.2.3.5 (D) For mark-sense or optical scan devices, the Secretary of State OR THE VSTL will prepare 100 or more test ballots with marking devices of various color, weight and consistency to determine the range of marks that can be read and the range and consistency of reading marginal marks.

45.6.2.3.6 (E) Ballots ~~shall~~ **MUST** be cast and counted in all applicable counter types (or counter groups) as necessary based on the parts included in the voting system. These are, at a minimum, ~~Poll Place (or Vote Center), Mail-in, Provisional and Early Voting POLLING PLACE (OR VOTE CENTER), MAIL-IN IN-PERSON, MAIL, AND PROVISIONAL AND EARLY VOTING BALLOTS.~~ Ballots may be run through components more than one time depending on components and counter group being tested to achieve a minimum number of ballots cast as follows for each group:

DRE
Fax
etc

(a) Polling Place ~~PLACE-LOCATION~~ / OS = 1,000;

(b) Polling Place ~~PLACE-LOCATION~~ / DRE = 500;

~~(c) Vote Center CENTER and Early Voting EARLY VOTING / OS = 2,500;~~

~~(d) Vote Center CENTER and Early Voting EARLY VOTING / DRE = 500;~~

~~(e-c)~~ Mail-in-MAIL = 1, 500; and

~~(f-d)~~ Provisional = 500.

45.6.2.3.7 ~~(FE)~~ Ballot design ~~shall~~ **MUST** be sufficient to verify the scope of allowable ballot designs for the given system under Colorado election law.

45.6.2.3.8 ~~Ballots shall be printed in applicable languages as required by state or federal law, or both.~~

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

1 45.6.2.3.10 (G-F) The requirements matrix shall MUST include the following
2 requirements for election definitions and ballots to simulate and test "real
3 world" situations in the State of Colorado. Election definitions and ballots
4 shall MUST include the following minimum contest criteria:

- 5 (a) (1) Parties for different races; contests
- 6 (b) (2) Selection of a pair of candidates;
- 7 (c) (3) In a ~~Primary Election~~ PRIMARY ELECTION, allow voters to vote for
8 the candidates of the party for which they are eligible and for any
9 and all non-partisan candidates and measures, while preventing
10 them from voting on candidates of another party;
- 11 (d) (4) In a general election, allow a voter to vote for any candidate for
12 any office, in the number of positions allowed for the office, and to
13 vote for any measure on the ballot that the voter is allowed to vote
14 in, regardless of party;
- 15 (e) (5) Allow for programming to accommodate Colorado recall questions
16 as prescribed in Article 12 of Title 1, C.R.S.;
- 17 (f) (6) A minimum of 20 pairs of "yes" and "no" positions for voting on
18 ballot issues; and
- 19 (g) (7) Ability to contain a ballot question or issue of at least 200 words.

20 45.6.2.3.11 — Additional tests and procedures may be requested at the discretion
21 of the Secretary of State.

22 ~~45.6.2.3.12 (H-G) A county clerk and recorder OR HIS/ OR HER designated~~
23 ~~representative may observe the functional testing of a voting system. The~~
24 ~~representative may assist at the request of the Secretary of State. All such~~
25 ~~activity by a county representative shall be documented on video and in~~
26 ~~writing.~~

The Public "All" FS.

27 45.6.2.3.13 (H) ~~The public shall MUST be allowed to view all functional~~
28 ~~testing conducted by the Secretary of State. However, legal limitations~~
29 ~~may require that certain testing, including but not limited to proprietary~~
30 ~~information and system security, be done outside the view of the public. If~~
31 ~~the functional testing is outsourced to a testing lab or contractor, public~~
32 ~~viewing shall be IS subject to limitations set forth by the testing lab or~~
33 ~~contractor.~~

PROVE WHY?

This is SOS ONLY.

34 45.6.2.3.14 (J-I) If any malfunction or data error is detected, its occurrence
35 and the duration of operating time preceding it shall MUST be recorded for
36 inclusion in the analysis ~~and the test shall be interrupted.~~ If corrective

~~XXX~~
SUB Comps
NOT
Defined

1 action is taken to restore the devices to a fully operational condition within
2 eight hours, then the test may be resumed at the point of suspension.

3 ~~45.6.3 The Secretary of State shall certify voting systems that substantially comply with~~
4 ~~the requirements in this Rule 45, Colorado Election Code, and any additional~~
5 ~~testing that is deemed necessary by the Secretary of State.~~

6 [Current Rule 45.6.3 moved to New Rule 21.3.4]

7 45.7 21.7 Temporary Use USE Time limit

~~XXX~~ STRICT
comply
w/
statute
- const

8 45.7.1 21.7.1 If a voting system provider has a system that has not yet been approved for
9 certification through the Secretary of State, the voting system provider or the
10 designated election official may apply to the Secretary of State for temporary
11 approval of the system to be used for up to one year.

12 Governance 45.7.2 21.7.2 Upon approval of temporary use, a jurisdiction may use the voting system,
13 PUBLIC or enter into a contract to rent or lease the voting system for a specific election
14 Approval upon receiving written notice from the Secretary of State's office. At no time shall
15 MAY a jurisdiction enter into a contract to purchase a voting system that has been
16 approved for temporary use.

17 45.7.3 The Secretary of State shall approve use of a temporarily approved voting system
18 for each election that a jurisdiction requests permission to conduct with the voting
19 system.

20 45.7.4 21.7.3 Temporary use does not supersede the certification requirements and/or
21 process, and may be revoked at any time at the discretion of the Secretary of
22 State.

23 45.8 Periodic Review

24 45.8.1 The Secretary of State shall periodically review the voting systems in use in
25 Colorado to determine if the system(s):

- 26 PUBLIC (a) Are defective, obsolete or unacceptable for use based on the requirements
27 of this Rule 45; and
28 (b) Have been modified from certified and trusted build versions of hardware
29 or software;

30 45.8.2 The Secretary of State shall review a minimum of two randomly selected
31 jurisdictions and voting systems per calendar year at the choosing of the Secretary
32 of State.

33 45.8.3 The Secretary of State shall conduct an annual visual inspection of all software
34 incident records maintained by each voting system provider certified for use in the
35 State of Colorado.

1 ~~45.8.4 After such review, certification or temporary approval for use may be withdrawn.~~
2 ~~Three months notice shall be given prior to withdrawing certification of any~~
3 ~~voting system unless the Secretary of State shows good cause for a shorter notice~~
4 ~~period.~~

5 ~~45.8.5 All forms, notes and documentation from a periodic review shall be kept on file~~
6 ~~with the Secretary of State.~~

7 *[Current Rule 45.8 amended and moved to New Rule 11]*

8 45.9 21.8 Decertification

9 ~~45.9.1~~ 21.8.1 If, after any time the Secretary of State has certified a voting system, it is
10 determined that the voting system fails to substantially meet the standards set
11 forth in this Rule 45-21, the Secretary of State ~~shall~~ *will* notify any jurisdictions
12 in the State of Colorado and the voting system provider of that particular voting
13 system that the certification of that system for future use and sale in Colorado is
14 to be withdrawn.

15 ~~45.9.2~~ 21.8.2 Certification of a voting system may be revoked and/or suspended at the
16 discretion of the Secretary of State based on information that may be provided
17 after the completion of the initial certification. This information may come from
18 any of the following sources:

- 19 (a) The Election Assistance Commission (EAC);
20 (b) Voting System Test Laboratory (VSTL);
21 (c) The Federal Election Commission (FEC);
22 (d) The National Software Reference Library (NSRL);
23 (e) National Association of State Election Directors (NASED);
24 (f) The National Association of Secretaries of State (NASS);
25 (g) Information from any state elections department or Secretary of State;
26 ~~Information from Colorado County Clerk and Recordors~~ COUNTY CLERKS
27 ~~AND RECORDERS RECORDS~~ or their association;
28 (i) *→ The PUBLIC* Any other source the Secretary of State deems reliable.

29 ~~45.9.3~~ 21.8.3 If any voting system provider, provides for use, ~~or~~ installs, or causes to be
30 installed an uncertified or decertified voting system or component, the Secretary of
31 State may suspend use of the component or the voting system. [~~Section 1-5-~~
32 ~~618(6), C.R.S.~~]

1 ~~45.9.4~~ 21.8.4 Pursuant to ~~IN ACCORDANCE WITH~~ section 1-5-621, C.R.S., the Secretary OK
2 of State shall WILL hold a public hearing to consider the decision to decertify a
3 voting system.

4 ~~45.10~~ 21.9 Modifications and ~~Re-examination~~ REEXAMINATION.

EXPAND! X/X

5 45.10.1 ~~Any modification, change or other alteration to a certified voting system~~
6 shall require certification ~~REQUIRES CERTIFICATION~~ or review of the modification
7 under section 1-5-618, C.R.S., unless the voting system provider decides to
8 present the modified system for certification under this Rule 45 21.

9 ~~45.11~~ 21.10 Acceptance Testing by Jurisdictions

10 45.11.1-21.10.1 Whenever an ~~election~~ A jurisdiction acquires a new system or
11 modification of an existing system certified by the Secretary of State ~~VOTING~~
12 EQUIPMENT, the election jurisdiction shall MUST perform acceptance tests of the
13 system before it may be used to cast or count votes at any election. The voting
14 system shall MUST be operating correctly, pass all tests as directed by the
15 acquiring jurisdiction's project manager or contract negotiator and shall MUST be
16 identical to the voting system certified by the Secretary of State.

Is sufficient
must integrate
into E.S.

17 45.11.2-21.10.2 The voting system provider shall MUST provide all manuals and
18 training necessary for the proper operation of the system to the jurisdiction, ~~or as~~
19 indicated by their contract.

20 45.11.3-21.10.3 The election jurisdiction shall MUST perform a series of functional
21 and programming tests that shall test FOR all functions of the voting system at
22 their discretion.

Standard?
6

23 45.11.4 ~~The jurisdiction shall coordinate acceptance testing with the Secretary of~~
24 State and complete a Jurisdiction Acceptance Test form provided by the Secretary
25 of State.

26 [Current Rule 45.11.4 amended and moved to New Rule 11]

27 ~~45.12~~ Purchases and Contracts

28 45.12.1 ~~Any voting system that has been certified under the procedures of this~~
29 Rule 45 are eligible for purchase, lease, or rent for use by jurisdictions within the
30 State of Colorado providing the contract contains the following items:

- 31 (a) ~~The voting system is certified for use within the state;~~
- 32 (b) ~~Contract contains training and maintenance costs for jurisdiction; and~~
- 33 (c) ~~Contract identifies components contained in the certified voting system~~
34 ~~and appears complete with all accessories necessary for successfully~~
35 ~~conducting an election within the laws and rules of the State of Colorado.~~

publish on web

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

5 ~~45.13~~ Financial Statements of Voting System Providers

6 ~~45.13.1~~ All voting system providers applying for certification in the State of
7 Colorado, or doing business in the State of Colorado, shall provide quarterly
8 financial statements and an annual auditor's report to the Secretary of State. All
9 financial statements and reports shall be due:

10 (a) ~~Prior to the completion of functional testing for any voting system being~~
11 ~~submitted for certification;~~

12 (b) ~~At the conclusion of each accounting quarter for providers with equipment~~
13 ~~certified for use in the State of Colorado; and~~

14 (c) ~~Upon issuance of a final auditor's report after the completion of each~~
15 ~~annual audit.~~

16 ~~45.13.2~~ Financial statements submitted to the Secretary of State shall include a
17 Statement of Cash Flow, Statement of Retained Earnings, Balance Sheet, and
18 Income Statement.

19 [*Current Rule 45.13 amended and moved to New Rule 11*]

20 ~~11.8-21.11~~ Escrow of ~~Voting System Software by Voting System Provider~~ VOTING SYSTEM
21 SOFTWARE AND FIRMWARE BY VOTING SYSTEM PROVIDER. THE VOTING SYSTEM PROVIDER
22 MUST MEET THE REQUIREMENT FOR SOFTWARE ESCROW PER THE FOLLOWING:

23 ~~11.8.1 21.11.1 Voting System Providers~~ THE VOTING SYSTEM PROVIDER must place in
24 escrow a copy of the election software, FIRMWARE, and supporting documentation
25 being certified with either the Secretary of State or an independent escrow agent
26 approved by the Secretary of State. ~~See section~~ [SECTION 1-7-511, C.R.S.]

27 ~~11.8.2 21.11.2~~ Within ten days of the ~~Voting System~~ VOTING SYSTEM provider receiving
28 notification of examination of voting equipment as part of the certification
29 process, the ~~Voting System Provider shall~~ VOTING SYSTEM PROVIDER MUST
30 arrange for the completion of escrow requirements as indicated by this rule.

31 ~~11.8.3 21.11.3 Voting System Provider shall~~ THE VOTING SYSTEM PROVIDER MUST sign a
32 sworn affidavit that the election software in escrow is the same as the election
33 software used in its voting systems in this state. An annual update of the affidavit
34 will be on file in a secured location with the Secretary of State's office.

35 ~~11.8.4 21.11.4~~ A complete copy of the certified election software including any and all
36 subsystems of the certified software ~~shall~~ WILL be maintained in escrow.

- 1 ~~11.8.5~~21.11.5 Any changes to current configurations or new installations must be
2 approved through the certification program of the Secretary of State.
- 3 ~~11.8.6~~21.11.6 In addition to the requirements listed below, the ~~Voting System Provider~~
4 VOTING SYSTEM PROVIDER must include a cover/instructions sheet for any escrow
5 material to include the ~~Voting System Provider Name, Address~~ VOTING SYSTEM
6 PROVIDER, ADDRESS and pertinent contact information, ~~Software Version,~~
7 ~~Hardware Version, Firmware Revision Number~~ SOFTWARE VERSION, HARDWARE
8 VERSION, FIRMWARE REVISION NUMBER, and other uniquely identifying numbers of
9 the software submitted for certification.
- 10 ~~11.8.7~~21.11.7 Election ~~Software Source Code~~ SOFTWARE SOURCE CODE, maintained in
11 escrow, ~~shall~~ MUST contain internal documentation such that a person reasonably
12 proficient in the use of the programming language can efficiently use the
13 documentation to understand the program structure, control techniques, and error
14 processing logic in order to maintain the ~~Source Code~~ SOURCE CODE should it be
15 removed from escrow for any reason.
- 16 ~~11.8.8~~21.11.8 System documentation ~~shall~~ WILL include instructions for converting the
17 escrowed ~~Source Code~~ SOURCE CODE into ~~Object Code~~ OBJECT CODE, organized
18 and configured to produce an executable system, if warranted.
- 19 ~~11.8.9~~1.11.9 System documentation ~~shall~~ WILL include technical architecture design,
20 analysis, detail design, testing and an installation and configuration guide.
- 21 ~~11.8.10~~21.11.10 A set of schematics and drawings on electronic vote casting and counting
22 equipment purchased or in use by the county clerk ~~and recorder~~ shall MUST be on
23 file FILED with the Secretary of State.
- 24 ~~11.8.11~~21.11.11 All parties ~~shall~~ MUST treat as confidential the terms of this ~~Section~~
25 RULE including all escrow materials and any other related information that comes
26 into their possession, control or custody ~~pursuant to~~ IN ACCORDANCE WITH this
27 section.
- 28 ~~11.8.12~~21.11.12 Copies of ~~Electronic~~ ELECTRONIC media and supporting
29 documentation for ~~Eserow~~ ESCROW within the Secretary of State ~~shall~~ WILL be
30 sent to:
31 Colorado Secretary of State
32 Attn: Voting Systems Specialist
33 1700 Broadway – Suite 270-200
34 Denver, CO 80290
- 35 ~~11.8.13~~21.11.13 Any cost of using an alternative third party escrow agent ~~shall~~
36 MUST be borne by the ~~Voting System~~ VOTING SYSTEM provider

1 [Current Rule 11.8 is amended and moved to New Rule 21.11. Modifications are shown
2 above.]

3 **Rule 51. Rule 22. Use of approved and recommended election forms**

4 ~~51.1~~ 22.1 Where the Secretary of State ~~has issued~~ ISSUES an approved election form,
5 notice, application, or correspondence ~~provided for by the "Uniform Election Code~~
6 ~~of 1992"~~, all designated election officials and registration offices ~~shall~~ MUST use
7 the approved form.

8 ~~51.1.1~~ 22.1.1 A designated election official or registration office that wishes to
9 SUBSTANTIVELY modify the content of any form approved ~~or recommended~~
10 by the Secretary of State ~~shall~~ MUST submit a written request via email to
11 the Secretary of State's office stating the requested modification and the
12 reasons it is needed.

13 (a) The Secretary of State ~~shall have~~ WILL APPROVE OR DENY A
14 REQUEST TO MODIFY AN APPROVED FORM WITHIN five business days.
15 ~~in which to approve or deny the modification request.~~ Failure of the
16 Secretary of State to issue a decision within five business days ~~shall~~
17 DOES not constitute an approval of the request. If the modification
18 request is denied, the Secretary of State will ~~provide an explanation~~
19 ~~stating the basis~~ EXPLAIN THE REASON for denying the request.

20 (b) A non-substantive customization OF AN APPROVED FORM, such as
21 placing the form on county letterhead or language translation, ~~shall~~
22 DOES not require THE SECRETARY OF STATE'S approval.

23 ~~51.2~~ 22.2 The Secretary of State ~~shall~~ WILL approve standard voter registration and
24 ballot application forms ~~recommended~~ for use by political parties and organizations
25 that provide such forms to the public. The Secretary of State will PUBLISH ON THE
26 DEPARTMENT'S WEBSITE ~~ensure that the current approved REGISTRATION forms for~~
27 ~~registration and ballot request are publicly available on its the website.~~

28 ~~51.2.1~~ 22.2.1 Political parties and organizations may also use the National Mail
29 Voter Registration form. Because the forms approved by the Secretary of
30 State contain all ~~of the~~ information ~~specific to~~ SPECIFICALLY REQUIRED BY
31 Colorado law, the applicants and the organization are afforded greater
32 protection ~~when~~ BY DISTRIBUTING OR USING the ~~standard~~ STATE forms
33 approved by the Secretary of State ~~are used~~.

34 ~~51.2.2~~ 22.2.2 All political parties and organizations that conduct a mass mailing
35 of either registration or ballot request forms to the public ~~shall~~ MUST
36 identify ~~the party or organization conducting the mailing~~ THEMSELVES by
37 printing the organization name and contact information on the form.

1 ~~51.2.3~~ 22.2.3 Any political party or organization may contact the Secretary of
2 State ~~prior to~~ BEFORE sending a mailing to request a review of the form and
3 information to be mailed.

4 ~~51.3~~ 22.3 ~~In accordance with~~ UNDER section 1-1-107(2)(d), C.R.S., the Secretary of State
5 ~~may~~ WILL seek injunctive action or other ~~penalties as a remedy to~~ REMEDIES FOR
6 violations of this Rule.

7 *[Current Rule 51 is amended and moved to new Rule 22. Amendments are shown above.]*

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No STANDARDS —
see Judge Manyanary decision

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Votes Ident/ELIG verif

Canvass

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TESTS

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