

Voting System Testing and Certification Program Manual Version 3.1

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1. Introduction

- 1.1. **Background.** In late 2002, Congress passed the Help America Vote Act of 2002 (HAVA), which created the U.S. Election Assistance Commission (EAC) and vested it with the responsibility of setting voting system standards and for providing for the testing and certification of voting systems. This mandate represented the first time the Federal government provided for the voluntary testing, certification, and decertification of voting systems nationwide. In response to this HAVA requirement, the EAC has developed the Voting System Testing and Certification Program (Program).
- 1.2. **Authority.** HAVA requires that the EAC certify and decertify voting systems. Section 231(a)(1) of HAVA specifically requires the EAC to "... provide for the certification, decertification and re-certification of voting system hardware and software by accredited laboratories." The EAC has the sole authority to grant certification or withdraw certification at the federal level, including the authority to grant, maintain, extend, suspend, and withdraw the right to retain or use any certificates, marks, or other indicators of certification.
- 1.3. **Scope.** This manual provides the procedural requirements of the Program. Participation in the Program is voluntary, but if voting system manufacturers decide to participate then they must conform to the Program's procedural requirements. The procedural requirements of this manual supersede any prior voting system certification requirements issued by the EAC.
- 1.4. **Purpose.** The primary purpose of this manual is to provide clear procedures to manufacturers for the testing and certification of voting systems to the Voluntary Voting System Guidelines (VVSG) consistent with the requirements of HAVA Section 321(a)(1). The Program also serves to:
 - support state certification programs,
 - support local election officials in the areas of acceptance testing and pre-election system verification and validation,
 - increase quality control and quality assurance in voting system manufacturing, and
 - increase voter confidence in the use of voting systems.
- 1.5. **Manual.** This manual establishes the Program's operations and administrative requirements for voting system testing and certification.
 - 1.5.1. Maintenance and Revision. The manual will continue to be

improved and expanded as experience and circumstances dictate. The manual will be reviewed periodically and updated to meet the needs of the EAC, manufacturers, voting system test laboratories (VSTLs), election officials, and the greater election community. The EAC is responsible for revising this manual, and all revisions will be made consistent with federal law. Changes in policy requiring immediate implementation will be noticed via policy memoranda and will be issued to each registered manufacturer and VSTL, and will also be posted on www.eac.gov.

1.5.2. Contents. The contents of the manual serve as an overview of the program and contains the following chapters:

1. *Introduction*. This chapter serves as an overview to the program itself.

2. *Manufacturer Registration*. This chapter provides the requirements and procedures for manufacturer registration. This registration provides the EAC with needed information and requires the manufacturer to agree to the requirements of the Program.

3. *Application Process*. This chapter describes the application process for submitting a voting system for EAC certification.

4. *Certification Testing and Test Review*. This chapter describes the required steps for voting system testing and review.

5. *Grant of Certification*. This chapter outlines the actions that a manufacturer must take to receive a certificate and the manufacturer's post-certification responsibilities.

6. *Denial of Certification*. This chapter contains procedures for requesting reconsideration, opportunity to cure defects, and appeal.

7. *Decertification*. This chapter sets procedures for decertification and explains the manufacturer's rights and responsibilities during that process.

8. *Quality Monitoring Program*. This chapter sets forth the requirements of the Quality Monitoring Program.

9. *Requests for Interpretations*. This chapter outlines the policy,

requirements, and procedures for requesting an interpretation.

10. Release of Certification Program Information. This chapter outlines the Program's policies, procedures, and responsibilities associated with the public release of potentially protected commercial information.

- 1.6. **Program Description.** The Program is one part of the overall conformity assessment process that includes companion efforts at state and local levels. The process to ensure voting systems meet technical requirements is a distributed, cooperative effort of federal, state, and local officials in the United States. Working with manufacturers, each of these officials has a unique responsibility for ensuring that voting systems meet specific requirements.
 - 1.6.1. The Program has the primary responsibility of ensuring voting systems tested and certified under this program conform to the VVSG.
 - 1.6.2. State officials have responsibility for testing voting systems to ensure the system will support the specific requirements of each individual state. States may use EAC-accredited VSTLs to perform testing of voting systems to unique state standards while the systems are being tested to the VVSG. However, the EAC does not certify voting systems to state standards.
 - 1.6.3. State or local officials are responsible for deciding if an EAC-certified voting system complies with state laws and making the final acquisition decision based on which voting system offers the best fit and value for their specific state or local jurisdiction.
- 1.7. **Conformity Assessment, Generally.** According to ISO/IEC 17000, conformity assessment is the "demonstration that specified requirements relating to a product, process, system, person or body are fulfilled." Conformity assessments exist to protect the quality and ensure compliance with standards of products and services, and attempt to answer a variety of questions:
 - 1.7.1. *What specifications need to be met for a system to be in compliance?* For voting systems, the VVSG and its associated test assertions need to be met. States and local jurisdictions also have supplemental standards and legislative requirements.
 - 1.7.2. *How are systems tested against required specifications?* The Program is a central element of the larger conformity assessment and

provides for the testing and certification of voting systems to versions of the VVSG adopted by EAC Commissioners and deemed current.

1.7.3. *Are the testing authorities qualified to make an accurate evaluation?* The EAC accredits VSTLs, after the National Institute of Standards and Technology (NIST) National Voluntary Lab Accreditation Program (NVLAP) has reviewed, and approved, their technical competence and lab practices to ensure the test authorities are fully qualified. Furthermore, the EAC reviews and approves all test plans and test reports from VSTLs to ensure an accurate and complete evaluation.

1.7.4. *Will manufacturers deliver units within manufacturing tolerances equivalent to those tested?* This manual requires manufacturers to have appropriate change management and quality control processes to monitor the quality and configuration of their products. The Program provides mechanisms for the EAC to verify manufacturer quality processes through field system testing and manufacturing site audits. States have implemented policies for acceptance of delivered units.

1.8. **Test Assertions.** Many of the VVSG requirements focus on design at a high level and may be open to interpretation. In order to thoroughly test these requirements, manufacturers and VSTLs need the ability to break down each VVSG requirement into unambiguous, specific, and testable conditions. Test assertions are a method to accomplish this. The test assertions contain granular conditions that must be tested to determine conformance to specific VVSG requirements. The overall goal of the assertions is to ensure that the VSTLs test each requirement in the VVSG correctly and comprehensively. EAC staff will regularly review and revise the test assertions with feedback from VSTLs, manufacturers, election officials, NIST, and other stakeholders and will make recommendations to the Executive Director for final approval.

1.9. **Program Personnel.** All EAC personnel and contractors associated with this program are held to the highest ethical standards. All agents of the EAC involved in the Program are subject to conflict-of-interest reporting and ethics review, consistent with federal law and regulation.

1.10. **Program Records.** The Program Director is responsible for maintaining accurate records to demonstrate that the Program procedures have been effectively fulfilled and to ensure the traceability, repeatability, and reproducibility of testing. All records are maintained, managed, secured, stored, archived, and disposed of in accordance with federal law, federal

regulations, and procedures of the EAC.

1.11. **Submission of Documents.** Any documents submitted pursuant to the requirements of this manual must be submitted:

- In a secured PDF file, formatted to protect the document from alteration with a proper signature when required by this manual. Documents requiring an authorized signature may be signed with an electronic representation or image of the signature of an authorized management representative and must meet any and all subsequent requirements established by the Program Director regarding security.
- Via secure e-mail or other secure file transfer methods, if sent electronically, or physical delivery of a compact disk or other digital media deemed acceptable by the EAC, unless otherwise specified.
- By certified mail or similar means with tracking. If sent via physical delivery, to the following address:
U.S. Election Assistance Commission
Attn: Testing and Certification Program Director
633 3rd Street NW, Suite 200
Washington, DC 20001

1.12. **Receipt of Documents – Manufacturer.** For purposes of this manual, a document, notice, or other communication is considered received by a manufacturer upon its physical or electronic arrival at the manufacturer's main office.

1.13. **Receipt of Documents – EAC.** For purposes of this manual, a document, notice, or other communication is considered received by the EAC upon its physical or electronic arrival at the agency. All documents received by the agency will be physically or electronically date stamped and this stamp will serve as the date of receipt.

1.14. **EAC Response Timeframes.** In recognition of the responsibilities and challenges facing manufacturers as they work to meet the requirements imposed by this Program, state certification programs, customers, state law and production schedules, the EAC will publish timeframes for its response to significant program elements.

1.15. **Records Retention – Manufacturers.** The manufacturer is responsible for ensuring all documents submitted to the EAC, or that otherwise serve as the basis for the certification of a voting system, are retained. A copy of all such records must be retained if a voting system is offered for sale or supported by a manufacturer and for five years thereafter.

1.16. **Record Retention – EAC.** The EAC retains all records associated with the certification of a voting system if such system is fielded in a state or local election jurisdiction for use in federal elections. The records will otherwise be retained or disposed of consistent with federal statutes and regulations.

1.17. **Publication and Release of Documents.** The EAC releases documents consistent with the requirements of federal law. It is EAC policy to make the certification process as transparent as possible. Any documents (or portions thereof) submitted under this Program are made available to the public unless specifically protected from release by law. All submitted documentation must utilize the least restrictive markings possible. The primary means for making this information available is through www.eac.gov.

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2. Manufacturer Registration

- 2.1. Overview.** Manufacturer registration is the process by which manufacturers make initial contact with the EAC, provide essential information, and agree to requirements in order to participate in the Program. The manufacturer must be registered before it can submit an application to have a voting system tested by the EAC. The manufacturer will receive an identification code after successfully registering. Registration does not constitute an EAC endorsement of the manufacturer or its products nor is it a certification of that manufacturer's products.
- 2.2. Registration Requirements.** The registration process requires the manufacturer to provide information to the EAC, which is necessary to enable the EAC to administer the program and communicate effectively with the manufacturer. The registration process also requires the manufacturer to agree to Program requirements, which relate to the manufacturer's duties and responsibilities under the Program.

~~Manufacturing facilities for commercial off the shelf (COTS) components, software, and plastic modeling facilities are not included in this definition and need not be reported to the EAC. The EAC reserves the right to request additional information from manufacturers related to the manufacturing process, including manufacturing facilities for the benefit of the Program.~~

Manufacturers must report all current facilities. If manufacturing is not in progress at the time of a manufacturer's submission of their registration package to the EAC, the manufacturer must report the last manufacturing facility which meets the definitions in this section.

Manufacturing facilities for commercial off-the-shelf (COTS) components, software, and plastic modeling facilities are not included in this definition and need not be reported to the EAC. The EAC reserves the right to request additional information from manufacturers related to the manufacturing process, including manufacturing facilities for the benefit of the Program. Manufacturers should also be aware that the reporting requirement is continuous and that when new manufacturing facilities are engaged, the registration package submitted to the EAC must be updated to reflect the new facilities as required by Section 2.5.2 of this manual.

Manufacturers are required to provide the following information.

- 2.2.1. The official name of the manufacturer.

- 2.2.2. The address of the manufacturer's official place of business.
 - 2.2.3. A description of how the manufacturer is organized (i.e., type of corporation or partnership).
 - 2.2.4. Names of officers and/or members of the board of directors.
 - 2.2.5. Names of all partners and members (if organized as a partnership or limited liability corporation).
 - 2.2.6. Identification of any individual, organization, or entity with a controlling ownership interest (51% or more) in the manufacturer.
 - 2.2.7. The name and contact information (telephone number, email address, and manufacturer's physical address) of the manufacturer's management representative.
 - 2.2.8. The name and contact information (telephone number, email address, and manufacturer's physical address) of the manufacturer's technical representative.
 - 2.2.9. The manufacturer's written policies regarding its quality assurance system, consistent with guidance provided by this manual.
 - 2.2.10. The manufacturer's written policies regarding internal procedures for controlling and managing changes to, and versions of, its voting systems., consistent with guidance provided by this manual.
 - 2.2.11. The manufacturer's written policies on document retention, consistent with guidance provided by this manual.
 - 2.2.12. A list of all manufacturing facilities and the name and contact information of a person at each facility.
- 2.3. **Agreements.** Manufacturers are required to take or abstain from certain actions to protect the integrity of the certification program and promote quality assurance, and are required to agree to the following program requirements:
- 2.3.1. Adhere to all procedural requirements of this manual.
 - 2.3.2. Participate in a kick-off meeting at the beginning of a new

certification effort. The purposes of these meetings are to have an in-depth discussion of the candidate voting system and allow both the EAC and VSTL staff to have a live, hands-on demonstration of the voting system. The duration of this meeting will be mutually agreed upon by all parties.

- 2.3.3. Represent a voting system as certified only when it is authorized by the EAC, marketed and deployed in an EAC-certified configuration, and is consistent with the procedures and requirements of this manual.
- 2.3.4. Produce and affix an EAC certification label to all production units of the certified system that must meet the requirements set forth in [Section 5.10](#)~~Chapter 5~~ of this manual.
- 2.3.5. Notify the EAC of changes to any system previously certified by the EAC pursuant to the requirements of this manual (see [Section 3.5 and 3.6](#)~~Chapter 3~~ of this manual). Such systems must be submitted for testing and additional certification when required.
- 2.3.6. Permit an EAC representative to verify the manufacturer's quality control by cooperating with EAC efforts to test and review fielded voting systems consistent with Section 8.6 of this manual.
- 2.3.7. Permit an EAC representative to verify the manufacturer's quality control by conducting periodic inspections of manufacturing facilities consistent with [Section 8.5](#)~~Chapter 8~~ of this manual.
- 2.3.8. Cooperate with any EAC inquiries and investigations into a certified system's compliance with the VVSG or the procedural requirements of this manual consistent with Chapter 7 [of this manual](#).
- 2.3.9. Report to the Program Director all malfunctions of a fielded voting system. A malfunction is a failure of a voting system, not caused solely by operator or administrative error, which impairs the confidentiality, integrity, or availability of the voting system. Initial malfunction reports must identify the location, nature, date, impact, and status of resolution (if any) of the malfunction and be filed within ~~15 business days~~[48 hours](#) of occurrence. Final malfunction reports must be submitted to the EAC after the root cause of the malfunction has been determined and a permanent fix developed.

2.3.10. Report to the Program Director the names of each state and local jurisdiction using a voting system, EAC certified or otherwise, within five business days of delivery of the first production unit of the voting system to the jurisdiction.

2.3.11. Certify the entity is not barred or otherwise prohibited by statute, regulation, or ruling from doing business in the United States.

2.4. **Registration Process.** Registration is accomplished through use of the EAC registration form. After the EAC has received a registration form and other required registration documents, the Program Director must review the information for completeness before approval.

2.4.1. Application Process. To become a registered manufacturer, interested parties must apply by submitting a Manufacturer Registration Application form that can be found at www.eac.gov. This form is used as the means for the manufacturer to provide the information and agree to the responsibilities required in Section 2.3 of this manual.

2.4.1.1. *Application Form.* In order for the EAC to accept and process the registration form, the applicant must adhere to the following requirements:

- All fields must be completed by the manufacturer.
- All required attachments prescribed by the form and this manual must be identified, completed, and forwarded within 30 business days to the EAC (e.g., manufacturer's quality control and system change policies).
- The application form must be affixed with the handwritten signature (or a digital representation of the handwritten signature) of the authorized manufacturer representative.

2.4.1.2. *Availability and Use of the Form.* The manufacturer Registration Application Form may be accessed at www.eac.gov. Instructions for completing and submitting the form are included on the website along with contact information regarding questions about the form or the application process.

2.4.2. EAC Review Process.

- 2.4.2.1. After the application form and required attachments have been submitted, the applicant will receive an acknowledgement that the EAC has received the submission and that the application will be processed.
 - 2.4.2.2. If an incomplete form is submitted, or an attachment is not provided, the EAC will notify the manufacturer and request the omitted information. Registration applications will not be processed until they are deemed complete.
 - 2.4.2.3. Upon receipt of the completed registration form and accompanying documentation, the EAC will review the information for sufficiency. If the EAC requires clarification or additional information, the EAC will contact the manufacturer and request the needed information.
 - 2.4.2.4. Upon the determination that an application has been satisfactorily completed, the Program Director will notify the manufacturer that it has been registered.
- 2.5. **Registered Manufacturers.** After a manufacturer has received notice that it is registered, it is eligible to participate in the program. Manufacturers will be issued a unique, three-letter identification code that is used to identify the manufacturer and its products. Manufacturers are required to keep all registration information up to date. Manufacturers must submit a revised application form to the EAC within 30 days of any changes to the information required on the application form. Manufacturers will remain registered participants in the program during this update process. The EAC will add the manufacturer to the EAC's listing of registered manufacturers that is publicly available at www.eac.gov.
- 2.6. **Suspension of Registration.** Manufacturers are required to establish policies and operate within the Program consistent with the procedural requirements presented in this manual. If manufacturers violate the Program's requirements by engaging in activities inconsistent with this manual or failing to cooperate with the EAC, their registration may be suspended until such time as the issue is remedied as determined by the Program Director.
 - 2.6.1. Procedures. If a manufacturer's activities violate the procedural requirements of this manual, the Program Director must notify the manufacturer of its violations, give the manufacturer an opportunity to respond, and provide the recommendations to

bring the manufacturer into compliance.

2.6.1.1. *Notice.* Manufacturers will be provided written notice that they have taken action inconsistent with or acted in violation of the requirements of this manual. The notice will state the violations and the specific steps required to cure them and will provide manufacturers with 30 calendar days to respond to the notice and/or cure the defect.

2.6.1.2. *Manufacturer Action.* The manufacturer is required to either respond within 10 business days to the notice (demonstrating it was not in violation of Program requirements) or cure the identified violations within a time frame prescribed by the Program Director. The steps required to cure a violation include addressing the direct violation and the underlying root cause. In any case, the manufacturer's action must be approved by the Program Director to prevent suspension.

2.6.1.3. *Suspension.* If the manufacturer fails to respond within 10 business days, is unable to provide a cure or response that is acceptable to the Program Director, or refuses to cooperate, the Program Director must issue a notice of suspension. The suspension must be provided in writing and must inform the manufacturer of the steps available to remedy the violations and lift the suspension.

2.6.2. Effect of Suspension. A suspended manufacturer may not submit a voting system for certification under this Program. This prohibition includes a ban on the submission of modifications and changes, including minor changes, to a certified system. A suspension remains in effect until lifted by the Program Director. Suspended manufacturers will have their registration status reflected on www.eac.gov. Manufacturers have the right to remedy a noncompliance issue at any time and lift a suspension consistent with EAC guidance. Failure of a manufacturer to follow the requirements of this section may also result in decertification of voting systems consistent with Chapter 7 of this manual.

3. Application Process

- 3.1. **Overview.** An EAC certification signifies that a voting system has been tested and determined to conform to the VVSG. Voting systems must be submitted for testing under this program to receive EAC certification. Systems may be submitted when (1) they are new and ready for the marketplace, (2) they have never received EAC certification, (3) they are a modified version of a previously certified system, or (4) the manufacturer wishes to test a previously certified system to a newer standard. This chapter discusses the submission of minor change orders, which may not require additional testing and certification, and outlines pre-election emergency waivers.
- 3.2. **EAC Certification.** Certification is the process by which the EAC, through testing and evaluation conducted by an accredited VSTL, validates that a voting system meets the requirements set forth in the VVSG, and performs according to the manufacturer's specifications for the system. An EAC certification may be issued only by the EAC in accordance with the procedures presented in this manual. Certifications issued by other bodies (e.g., NASED and State certification programs) and state certification authorities (e.g., State Board of Elections) are not EAC certifications.

The Program is designed to test and certify electromechanical and electronic voting systems to the VVSG that are available at www.eac.gov. The EAC must communicate which version(s) of the VVSG it accepts as the basis for testing and certification. This effort may be accomplished through the setting of a date for a particular version's applicability, the setting of a date by which testing to a particular version is mandatory, or the setting of a date by which the EAC will no longer test to a particular standard. This date may differ between new systems and those being modified. The EAC only certifies those voting systems tested to the VVSG that the EAC has identified as valid for certification.

When the EAC has authorized the option of certification to more than one version of the VVSG, the manufacturer must choose which version to have its voting system tested against, subject to EAC agreement. The voting system will then be certified to that version of the VVSG upon successful completion of testing. Manufacturers must ensure all applications for certification identify a particular version of the VVSG.

- 3.3. **Emerging Technologies.** If a voting system or component is eligible for a certification under this program and employs technology that is not addressed by a currently accepted version of the VVSG, the relevant technology will be subjected to full integration testing and will be tested

to ensure that it operates to the manufacturer's specifications and that the proper security risk assessments and quality assurance processes are in place. The Technology Testing Agreement (TTA) process described below is intended to provide additional clarification and guidance to enhance the testing and certification process for voting systems incorporating new or emerging technology. The remainder of the system must be tested to the applicable VVSG requirements.

3.3.1. TTA Process

The manufacturer must contact the Program Director as early as possible in their design and development process to have a general discussion regarding new or emerging technology in any voting system product. A formal request for a TTA Meeting must be (1) clearly identified as such and (2) submitted electronically or physically via secure means to the Program Director. The EAC expects that the submission will be as detailed as design and development allow, but must include the following items:

- Description of the product, highlighting elements involving new technologies, testable requirements, and other testing protocol issues. This description should include, at a minimum:
 - General product description
 - Engineering drawing(s)
 - Product composition/key components/materials
- Device specifications
- Analysis of potential failure modes and threat model/risk analysis
- Outline of the proposed conditions of use
- Summary of instructions for use of the product (voter and poll worker/election official)
- Relevant performance information on the product, especially if routinely used in other industries. This information may include:
 - Published and/or unpublished data
 - Summary of test data
 - Summary of prior user experience.

3.3.2. Prior to the formal TTA Meeting, the manufacturer must arrange for a preliminary meeting to review the submitted information and discuss any additional questions that may arise prior to the actual formal TTA Meeting. The manufacturer may then submit any additional information as required and finalize the date and time for formal TTA Meeting with the EAC and VSTL.

3.3.3. TTA Meetings should be scheduled for approximately four hours or longer depending on the complexity of the issues to be discussed. The EAC and VSTL staff may raise any questions for the manufacturer about the product but should be focused on the key issues of the product's test plan development and testing that ultimately leads to the TTA.

3.3.3.1. Post TTA Meeting Activities

- At the end of the meeting, the Program Director will summarize the agreement(s) or explain any reasons for tabling the agreement(s), including the date of any follow-up meeting, if appropriate, and action items determined during the meeting. A record of attendees and minutes of the meeting will be kept by both a designated EAC staff member and manufacturer representative.
- The Program Director will prepare a memorandum outlining the TTA. Within 10 business days of the meeting, a draft of the memorandum will be circulated for comment among all TTA Meeting participants. The final memorandum will be signed by the Program Director and conveyed to the applicant and VSTL within five business days of the receipt of final comments.

3.3.3.2. Significance of an EAC Certification. An EAC certification is an official recognition that a voting system (in a specific configuration or configurations) has been tested by a VSTL to be in conformance with an identified set of VVSG requirements. An EAC certification is not:

- An official endorsement of a manufacturer, voting system, or any of the system's components.
- A federal warranty of the voting system or any of its components.
- A substitute for state or local certification and testing. State and local voting system certification activities play a major role in ensuring voting equipment adheres to state and local election law.
- A determination that any component of a certified system is itself certified for use outside

the certified configuration.

- 3.4. **Voting System Certification.** Manufacturers must submit a voting system for testing under this program to obtain EAC certification. Such action is usually required for:
- (1) new systems not previously tested to any version of the VVSG;
 - (2) existing systems not previously certified by the EAC;
 - (3) previously certified systems that have been modified;
 - (4) systems or technology specifically identified as requiring retesting by the EAC; or
 - (5) previously certified systems that the manufacturer seeks to upgrade to a newer version of the VVSG.
- 3.4.1. New System Certification. For purposes of this manual, new systems are defined as voting systems that have not been previously tested to the VVSG version(s) currently accepted for testing and certification by the EAC. New voting systems must be fully tested and submitted to the EAC according to the requirements of Chapter 4 of this manual.
- 3.4.2. System Not Previously EAC-Certified. This term describes any voting system not previously certified by the EAC, including systems tested by EAC-accredited VSTLs outside of the EAC's certification program, or systems previously tested and denied certification by the EAC. Such systems must be fully tested and submitted to the EAC according to the requirements of Chapter 4 of this manual.
- 3.4.3. Modification. A modification is any change to a previously EAC-certified voting system's hardware, software, or firmware that is not a minor change and does not add or remove components of the system. For example, replacing a precinct count scanner with an updated or new model would be considered a modification but adding central count scanner to a system configuration that did not previously contain it would not. Any modification to a voting system requires testing and review by the EAC according to the requirements listed in Chapter 4 of this manual.
- 3.4.4. EAC Identified Systems. Manufacturers may be required to submit systems previously certified by the EAC for re-testing.

This may occur when the EAC determines that the original tests conducted on the voting system are now insufficient to demonstrate compliance with federal standards considering newly discovered threats or information.

3.5. **Changes to Voting Systems in the EAC Certification Program – Change Order.**

A change order is a change to a previously EAC-certified voting system's hardware, software, documentation, or data. Such changes require VSTL review and endorsement and EAC approval. Any proposed change that does not meet this definition is a modification and must be submitted for testing and review consistent with the requirements of this manual.

A change order does not apply to a system under test. Any changes made to a system under test are considered part of the test campaign. A single change order can be applied to multiple systems if a VSTL reviews and approves the change order for each EAC-certified system.

3.5.1. Minor Change – Defined. A minor change is a change to a certified voting system's hardware, software, technical data package (TDP), or data, the nature of which does not alter the system's reliability, functionality, capability, or operation as detailed ~~in below section 3.5.1~~. Under no circumstance is a change considered minor if it has reasonable and identifiable potential to impact the system's performance and compliance with the applicable VVSG.

- *General Characteristics of minor software changes.* Minor software changes should have the following general characteristics:
 - update a discrete component of the system and do not impact overall system functionality,
 - do not modify the counting or tally logic of a component or the system,
 - do not affect the accuracy of the component or system,
 - do not negatively impact the functionality, performance, accessibility, usability, safety, or security of a component or system,
 - do not alter the overall configuration of the certified system (e.g. adding ballot marking device functionality to a previously certified direct recording electronic (DRE) component), and
 - can be reviewed and/or tested by VSTL personnel

in a short amount of time (approximately less than 100 hours).

3.5.2. Minor Change – Procedure. Manufacturers who wish to implement a proposed minor change must submit it for VSTL review and endorsement and EAC approval. A proposed minor change may not be implemented as such until it has been approved in writing by the EAC.

3.5.2.1. *VSTL Review.* Manufacturers must submit any proposed minor change to a VSTL and the EAC for review and endorsement. The manufacturer must provide the VSTL:

- a detailed description of the change,
- a description of the facts giving rise to or necessitating the change,
- the basis for its determination that the change does not alter the system's reliability, functionality, or operation,
- upon request of the VSTL, a sample voting system at issue or any relevant technical information needed to make the determination,
- documentation of any potential impact to election officials currently using the system and any required notifications to those officials,
- a description of how this change impacts any relevant system documentation, and
- any other information the EAC or VSTL needs to make a determination.

The VSTL must review the proposed minor change and make an independent determination as to whether the change meets the definition of minor change or requires the voting system to undergo additional testing as a system modification. If the VSTL determines that a minor change is appropriate, it must endorse the proposed change as a minor change. If the VSTL determines that modification testing and certification should be performed, it must reclassify the proposed change as a modification. Endorsed minor changes must be forwarded to the Program Director for final approval. Rejected changes must be returned to the manufacturer for

resubmission as system modifications.

3.5.2.2. *VSTL Endorsed Changes.* The VSTL must forward any change it has endorsed as minor to the EAC in a package that includes:

- The manufacturer's initial description of the minor change, a narrative of facts giving rise to, or necessitating, the change, and the determination that the change does not alter the system's reliability, functionality, or operation.
- The written determination of the VSTL's endorsement of the minor change. The endorsement document must explain why the VSTL, in its engineering judgment, determined that the proposed minor change met the definition in this section and otherwise does not require additional testing and certification.
- The validated hashes, trusted builds, and version listing for all software modules changed.

3.5.2.3. *EAC Action.* The EAC must review all proposed minor changes endorsed by a VSTL. The EAC has sole authority to determine whether any VSTL endorsed change constitutes a minor change under this section. The EAC must inform the manufacturer and VSTL of its determination in writing.

- If the EAC approves the change as a minor change, it must provide written notice to the manufacturer and VSTL. The EAC must track and maintain copies of all approved minor changes.

If the EAC determines that a proposed minor change cannot be approved, it must inform the VSTL and manufacturer of its decision. The proposed change is considered a modification and require testing and certification consistent with this manual. Minor changes cannot be made to voting systems currently undergoing testing; these changes are merely adjustments to an uncertified system.

3.6. Changes to Voting Systems in the EAC Certification Program - Modification.

3.6.1. Modification Procedure. Once a manufacturer has submitted a modification application, a test plan must be created and submitted to the EAC for the test plan review process. Any modification is subject to full testing of the modifications (delta testing) and those systems or subsystems altered or impacted by the modification (regression testing). The system is also subject to system integration testing to ensure overall functionality. Once testing is completed, a test report must be generated by the VSTL and submitted to the EAC for approval.

3.6.2. EAC Approval. If the EAC approves the change as a modification, it must provide written notice to the manufacturer and VSTL and generate a Certificate of Conformance. The EAC must track and maintain copies of all approved modifications.

3.6.3. EAC Denial. If the EAC determines that a modification cannot be approved, it must inform the VSTL and manufacturer of its decision. The Denial of Certification appeals process would govern this testing campaign.

3.6.4. Modification Change – Effect of EAC Approval. EAC approval of a modification permits the manufacturer to implement the proposed change. Fielding a change not approved by the EAC is a basis for system decertification and suspension of manufacturer registration.

3.7. **Provisional, Pre-Election Emergency Modification.** The EAC has developed a provisional modification process to address extraordinary pre-election emergency situations. This process is to be used only for the emergency situations indicated and only when there is a clear and compelling need for temporary relief until the regular certification process can be followed.

3.7.1. Purpose. The purpose of this section is to allow for a mechanism within the Program for manufacturers to modify EAC-certified voting systems in emergency situations immediately before an election. This situation arises when a modification to a voting system is required and an election deadline is imminent, preventing the completion of the full certification process (and state and/or local testing process) prior to Election Day. In such situations, the EAC may issue a waiver to the manufacturer authorizing it to make the modification without submission for

modification testing and certification. The modification must be tested after the election.

3.7.2. General Requirements. A request for an emergency modification waiver must be made by a manufacturer only in conjunction with the state election official whose jurisdiction(s) would be adversely affected if the requested modification were not implemented before Election Day. ~~Requests must be submitted at least five calendar days before an election.~~ To receive a waiver, a manufacturer must demonstrate the following:

- The modification is functionally or legally required; that is, the system cannot be fielded in an election without the change.
- The voting system requiring modification is needed by state or local election officials to conduct a pending federal election.
- The voting system to be modified has previously been certified by the EAC.
- The modification cannot be tested by a VSTL and submitted to the EAC for certification, consistent with the procedural requirements of this manual, ~~at least 60 days~~ before the pending federal election.
- Relevant state law requires federal certification of the requested modification.
- The manufacturer must provide an attestation stating that the modification properly functions as designed, is suitably integrated with the system, and does not negatively affect system reliability, functionality, or accuracy.
- The manufacturer (through a VSTL) has completed as much of the evaluation testing as possible for the modification and has provided the results of such testing to the EAC.
- The emergency modification is required and supported by a state's chief election official seeking to field the voting system in an impending federal election.

3.7.3. Request for Waiver. A manufacturer's request for waiver must be made in writing to the Decision Authority and must include the following elements:

- A signed statement providing sufficient description, background, information, documentation, and other evidence necessary to demonstrate that the request for a

waiver meets each of the requirements stated in Section [3.7.2 of this manual](#)⁶.

- A signed statement from a state's chief election official requiring the emergency modification. This signed statement must identify the pending election creating the emergency situation and attest that (1) the modification is required to field the system, (2) state law (citation) requires EAC action to field the system in an election, and (3) normal timelines required under the Program cannot be met.
- A signed statement from a VSTL stating there is insufficient time to perform [the](#) necessary testing and complete the certification process [prior to the jurisdiction's need for the system](#). The statement must ~~also statel~~^{ist} what testing the VSTL has performed on the modification to date, provide the results of such tests, [why the testing cannot be completed by the designated date](#), and state the schedule for the completion of testing.
- A detailed description of the modification, the need for the modification, how it was developed, how it addresses the need for which it was designed, its impact on the voting system, and how the modification will be fielded or implemented in a timely manner consistent with the manufacturer's quality control program.
- All documentation of tests performed on the modification by the manufacturer, a laboratory, or other third party.
- A written agreement signed by the manufacturer's representative agreeing to take the following action:
 - Submit for testing and certification, consistent with Chapter 4 of this manual, any voting system receiving a waiver under this section that has not already been submitted. This action must be taken immediately.
 - Abstain from representing the modified system as EAC-certified. The modified system has not been certified; rather, the originally certified system has received a waiver providing the manufacturer a temporary exemption allowing its modification. States must determine if this meets state and local law.
 - Submit a report to the EAC regarding the performance of the modified voting system within 60 days of the federal election that served as the

basis for the waiver. This report must, at a minimum, identify and describe any performance failures, technical failures, security failures, and/or accuracy problems.

- 3.7.4. EAC Review. The EAC must review all waiver requests submitted in a timely manner and make determinations regarding the requests. Incomplete requests will be returned for resubmission with a written notification regarding its deficiencies.
- 3.7.5. Letter of Approval. If the EAC approves the modification waiver, the Decision Authority must issue a letter granting the temporary waiver within five business days of receiving a complete request.
- 3.7.6. Effect of Grant of Waiver. An EAC grant of waiver for an emergency modification is not an EAC certification of the modification. Waivers under this program grant manufacturers leave to only temporarily amend previously certified systems without testing and certification for the specific election noted in the request. Without such a waiver, such action would ordinarily result in decertification of the modified system (See Chapter 7 [of this manual](#)). Systems receiving a waiver must satisfy any state requirement that a system be nationally or federally certified.
 - 3.7.6.1. All waivers are temporary and expire sixty (60) days after the Federal election for which the system was modified, and the waiver granted.
 - 3.7.6.2. Any system granted a waiver must be submitted for testing and certification. This must be accomplished as soon as possible.
 - 3.7.6.3. The grant of a waiver does not predispose the modified system to being granted a certification.
- 3.7.7. Denial of Request for Waiver. A request for waiver may be denied by the EAC if the request does not meet the requirements noted above, fails to follow the procedure established by this section, or otherwise fails to sufficiently support a conclusion that the modification at issue is needed, functions properly, and is in the public interest. A denial of a request for an emergency modification by the EAC is final and not subject to appeal. Manufacturers may submit for certification, consistent with

Chapter 4 of this manual, modifications for which emergency waivers were denied.

- 3.7.8. Publication Notice of Waiver. The EAC must post relevant information relating to the temporary grant of an emergency waiver on www.eac.gov including information concerning the limited nature and effect of the waiver. This information will be removed upon the waiver's expiration.

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4. Certification Testing and Technical Review

- 4.1. **Overview.** This chapter discusses the procedural requirements for submitting a voting system to the EAC for testing and review. In order to receive EAC certification for a voting system, a registered manufacturer must: (1) submit an application for certification, (2) have a VSTL submit an EAC-approved test plan, (3) have a VSTL test a voting system to the VVSG, and (4) have a VSTL submit a test report to the EAC for technical review and approval. The result of this process is a final decision on certification.

- 4.2. **Certification Application.** Manufacturers must submit an application package that designates if the application is for a new or modified voting system. EAC approval is required prior to conducting any testing. Any testing occurring after the execution of a contract or agreement for certification testing (not including the Test Readiness Review) between a VSTL and a registered manufacturer is presumed to be certification testing. The application information includes:
 - 4.2.1. Voting system designation. The manufacturer must designate if the voting system is a new or modified system.
 - 4.2.2. Manufacturer information. Identification of the manufacturer (name and three-letter identification code).
 - 4.2.3. Selection of accredited laboratory. Selection and identification of the VSTL that will perform voting system testing and other prescribed laboratory action consistent with the requirements of this manual. Once selected, a manufacturer may not replace the selected VSTL without the express written consent of the Program Director. Such permission is granted solely at the discretion of the Program Director and only upon demonstration of good cause.
 - 4.2.4. VVSG information. Identification of the VVSG version to which the manufacturer wishes to have the identified voting system tested and certified.
 - 4.2.5. Voting system identification. Manufacturers must identify the system submitted for testing by providing its name and version number. Separate identification of each device that is part of the voting system including all COTS components. A keyboard, mouse, accessibility peripheral, or printer connected to a programmed voting device, as well as any optical drive, hard drive or similar component installed within it, are considered

components of the voting device, not separate devices.

- 4.2.6. Voting variations. The manufacturer must identify the voting variations supported by the voting system. These variations are listed in the applicable VVSG documentation.
- 4.2.7. Language support. The electronic display or printed document on which the user views the ballot must be capable of rendering an image of the ballot in any of the languages required by the Voting Rights Act of 1965, as amended.
- 4.2.8. List of accessibility capabilities. The manufacturer must provide a detailed explanation of the accessibility capabilities present in their system beyond those required by the version of VVSG the system is being evaluated against and that the manufacturer wishes to include as part of the certified configuration.
- 4.2.9. Device capacities and limits. For each voting system component, capacities and limitations must be listed such as:
- Size of ballots readable by optical scan components
 - Scan rate for each size of ballot readable by optical scan components
 - Total number of precincts and/or precinct splits programmable for each device
- 4.2.10. Coding convention. Each voting system component must have a single coding convention selected for every programming language used in the voting system. This information must include:
- System Component
 - Language Used
 - Specified Coding Convention
 - Source of Coding Convention
- 4.2.11. Functional diagrams. Diagram(s) that display all components and how the components relate and interact in each configuration.
- 4.2.12. Modification (only). An application for modification must include:
- Modified system components
 - Component version numbers

- Detailed description of the change(s)
- Listing of all TDP documents impacted by the change
- Usability impact
- Functional diagram(s) that display all components and how the components relate and interact in each configuration if impacted by modification.

4.2.13. Certification number. The manufacturer must provide the desired EAC certification number.

4.2.14. Date submitted. The manufacturer must note the date the application was submitted for EAC approval.

4.2.15. Signature. The manufacturer must affix the signature of the authorized management representative.

4.3. **Submission of the Application Package.** The manufacturer must submit the application form and the required additional information to the Program Director. Applications and accompanying documentation must be submitted in PDF or another electronic format as prescribed by the Program Director. Applications must pass all accessibility checks prior to acceptance by the EAC.

4.4. **EAC Review.** Upon receipt of a manufacturer's application package, the EAC must review the submission for completeness and accuracy. The manufacturer must be notified of acceptance or rejection of the application package within five business days of the EAC's receipt of the application. If the application package is incomplete or inaccurate, the EAC must return it to the manufacturer with instructions for resubmission. If the form submitted is acceptable, the manufacturer will be notified and assigned a unique application number.

4.5. **Penetration Testing.**

4.5.1. Overview: The EAC recognizes the need for robust voting system security testing in its Testing and Certification Program. To meet this goal, penetration testing is used to help assess the security posture of voting systems entering the EAC's Testing & Certification program.

4.5.2. Purpose: The purpose of EAC's new penetration testing efforts are:

- Identify architecture, design and implementation flaws that may not be detected using the conformance testing

required by the VVSG. This includes identifying:

- Systemic functional, reliability, and security flaws can be exploited to change the outcome of an election, provide erroneous results for an election, cause an unacceptable denial of service, compromise ballot secrecy, or modify the audit trail.
- Malicious software or firmware that may have been introduced in order to change the outcome of an election, to provide erroneous results for an election or to deny services to voters.
- Penetration testing can be resource intensive, and the penetration test must not be open ended nor introduce unacceptable delays into the certification process.
 - Ensure the security testing performed as part of the EAC's Voting System Testing and Certification Program is utilizing a standardized security analysis methodology approved by the EAC.
 - Recognize that cybersecurity is a process that requires regular review to ensure new flaws do not surface or are newly introduced. Regular assessment can leverage the minor change process for software updates and patches.

4.5.3. General Requirements: The following are a list of requirements for the penetration testing performed under the Testing & Certification Program:

- All submitted voting systems are subject to penetration testing.
 - The scope is limited to voter facing devices and vote tabulation software and hardware.
 - Unmodified components of a voting system may not be subject to penetration testing at the discretion of the EAC.
- The VSTL must develop a team based on the personnel qualifications and requirements introduced below.

4.5.4. Qualifications for Individuals Performing Testing: To perform testing, a team of penetration testers with knowledge in specific areas is required. All teams must have expertise in 3 distinct disciplines: penetration testing, software testing, and election technology and administration.

4.5.4.1. *Penetration Testing Personnel.* The following education and experience requirements must be met:

- *Certifications:* Holds a penetration testing related industry certification.
- *Skills:*
 - Familiarity with penetration testing methodologies,
 - Hands-on knowledge of vulnerability scanning, system exploitation, reconnaissance, hardware exploitation, and wireless tools, and
 - Ability to design/run tests and evaluate/report findings.

4.5.5. Prerequisites

- The testers must have voting system hardware and documentation available.
- The voting system must be configured exactly how it is documented by the manufacturer in how it is to be used in elections. The impact of accidental misconfiguration is outside the scope of penetration testing. This should be analyzed as part of security configuration and vulnerability analysis as mandated by VVSG 2.0 14.2-~~KN~~ (Known vulnerabilities) and 14.2-~~FG~~ (Secure configuration and hardening).

4.5.6. Procedure. The penetration testing report must be submitted by the ~~manufacturer~~ VSTL to the EAC ~~will need to have approved of prior to the execution of the penetration test~~ as part of the ~~Test Readiness Review- application procedure, as described in Section 4.6 of this manual.~~ In general, penetration testing will occur in two phases:

4.5.7. Phase I – Pre-Testing Assessment
Phase II – Penetration Testing

4.5.8. Pre-Testing Assessment. The purpose of the pre-testing assessment is to allow VSTLs to develop a detailed vulnerability and threat analysis plan that will be used to guide future testing by prioritizing tasks to test in a resource efficient manner.

4.5.8.1. *Pre-Testing Assessment Process.* The VSTL ~~or subcontractor~~ must coordinate the penetration testing process. The primary goal of

the pre-testing assessment is to prioritize threats and minimize level of effort throughout the penetration testing process.

- The manufacturer must submit relevant system hardware, software, and technical documentation to the VSTL as well as notification to the Program Director of their intention to have the VSTL perform penetration testing as outlined in this manual.
- The VSTL develops a vulnerability and threat analysis document based on a standard/methodology (e.g., OWASP, NIST, etc.) containing detailed vulnerability and threat information on potential ways to subvert the voting system's security. This must be submitted to the EAC for approval.
- The Program Director must approve or reject the vulnerability and threat analysis.
- Upon approval, the VSTL will move into Phase II testing.

4.5.9. **Penetration Testing:** The purpose of this phase is to conduct penetration testing using the vulnerability and threat analysis developed and approved during Phase I. Voting systems must be tested in an environment simulating real-world usage, according to the manufacturer's documentation, and include physical security seals, system hardening, and other procedures documented by the manufacturer.

4.5.9.1. **Penetration Testing Process:** The VSTL must conduct penetration testing and submit the report to EAC for approval.

- The VSTL must conduct penetration testing guided by the vulnerability and threat analysis.
- The VSTL must submit the security audit report to the manufacturer and the Program Director. The report must contain vulnerability information prioritized by likelihood and impact, supported by other relevant comments and information.
- The Program Director must approve or reject the report based in part on the VSTL's engineering judgement. The manufacturer must submit an attestation that all critical vulnerabilities have been addressed that must

be submitted with the final certification testing report and made available on www.eac.gov.

4.6. **Test Readiness Review.** The Test Readiness Review (TRR) is the mechanism used by the EAC to ensure that test and evaluation resources are not committed to a voting system that is not ready for testing by a VSTL. The TRR determines if the submitted voting system and documentation are ready to enter certification testing. The TRR must be completed by the VSTL, and the subsequent test readiness acknowledgement must be received by the EAC prior to the initiation of any certification testing. To assess the readiness of a voting system for certification testing, the VSTL must review:

- **System Technical Data Package:** The TDP must be reviewed to ensure all elements required by the VVSG are present.
- **System Components:** The VSTL must review the submitted voting system to ensure all components required to configure the voting system as defined in the system TDP are delivered to the VSTL and appear to be operational and in good working order. System Component information must match the manufacturer's application submitted to the EAC. All components submitted for testing must be equivalent to the final production model of the voting system in fit, form, and function. Any component not available at the time of this review must be delivered to the VSTL by the manufacturer within 30 days of the initial TRR or testing of the system must be halted and the EAC notified that the system is not ready for testing.
- **Preliminary Source Code Review:** The VSTL must conduct a preliminary review of no less than 1% of the total lines of code of every software package or product submitted prior to, or during, testing in order to ensure that the code is mature and does not contain any systematic non-conformities. If the application is for a system modification, the VSTL is responsible for reviewing no less than 1% of code that has changed in every software package, module or product.
- **Limited System Integration:** The VSTL must conduct a limited system integration test that consists of:
 - General and primary election
 - A minimum of three contests: straight party, partisan, and referendum. If straight party is not supported then utilize partisan, non-partisan, and referendum contests.
 - Determine the number of ballots (5-10) using at least one ballot for each peripheral device.
 - Include a minimum of one ballot for Spanish and ideographic language.

- All results shall be tabulated and verified.
 - For the purposes of this section, the voting system manufacturer may provide the election definition to the VSTL.
- **Mark Reading:** The system must be able to read a fully filled mark if it is an optical scan system.
 - **Summary of COTS components.** This summary should outline which components of the voting system are COTS products and must be updated with each test campaign.
- 4.6.1. Test Readiness Notification. Upon completion of the TRR, the VSTL must submit a document to the EAC summarizing the actions performed during the TRR. ~~statement to the EAC~~ This document will confirming that the completion of the TRR ~~voting system completed the TRR~~ and the VSTL's determinationed that the system is ready for certification testing to the applicable VVSG.
- 4.6.2. Test Readiness Acknowledgement. Upon receipt of the test readiness notification from the VSTL, the EAC must issue a written acknowledgement within three business days of receipt stating that the VSTL and manufacturer may commence certification testing. Systems not passing the TRR must be remanded to the manufacturer for additional work as noted in the test readiness notification.
- 4.7. **Test Plan.** The manufacturer must authorize its designated VSTL to submit a test plan directly to the EAC. The test plan must document the strategy and plan for testing each section of the applicable version of the VVSG and is to be used as a key tool to manage the test campaign and to verify that a voting system or component meets all ~~of~~ the VVSG and Program requirements. The test plan must be written with completeness and clarity that allows all stakeholders to understand the testing that will be conducted and to assess each section of the VVSG. The objective is to address each section of the VVSG in detail, and to clearly and succinctly describe the strategy and/or approach for testing each section.
- 4.7.1. Development. A VSTL must develop test plans that use appropriate test protocols, standards, or test suites developed by the VSTL, and must use all applicable protocols, standards, or test assertions issued by the EAC. Care should be taken to clearly communicate the scope and requirements of testing, the test strategies, and the resource needs. This information identifies the purpose and boundaries of the test campaign: what will be tested and how it will be tested.

Because future events in any test campaign cannot be 100% predicted and controlled, the initial submission of the test plan is viewed as a baseline that enables periodic updates as events cause the plan to change. The VSTL is expected to update specific sections of the plan and resubmit as necessary to enable all stakeholders to understand and use the test plan. As the voting system changes via change orders, component changes, or COTS products change, the test plan must be updated since these changes may significantly impact the testing. These test plan changes might also alter the original schedule and may require an updated schedule be submitted with the revised test plan. The following are examples of instances that would likely require updating the test plan:

- Changes to the manufacturer's application for testing.
- Engineering changes that alter the scope or function of the voting system.
- Information discovered during testing that changed the strategy on how best to test the voting system.

For the test plan to be an effective, living document it needs to be clear and complete so stakeholders can review the plan and understand what needs to be done to complete the project. In order to accomplish these goals, the following general topics must be included in the test plan:

- A comprehensive scope of evaluation that each requirement or set of requirements is going to be evaluated for compliance, and that all features, interfaces, and characteristics of the individual devices and the system are evaluated to applicable requirements.
- The names and titles of VSTL personnel who will be responsible for each aspect of the test campaign.
- A detailed project schedule including the critical path for project completion.
- The test methods that will be used to validate compliance to the VVSG.

- 4.7.2. Required Testing. Test plans must be developed to ensure a voting system is functional and meets all-~~of~~ the requirements of the VVSG. A test plan must ensure the test results, and other factual evidence of the testing, are clearly documented. System testing must meet all-~~of~~ the requirements of the VVSG.

4.7.2.1. *New Voting System.* A new system is subject to full testing of all hardware and software.

4.7.2.2. *Modified Voting System.* A modified system must be tested in a manner necessary to ensure all changes meet the VVSG and that the modified system will function properly and reliably. Any modified system is subject to testing of the modifications (delta testing) and those systems or subsystems altered or impacted by the modification (regression testing). The system is also subject to system integration testing to ensure overall functionality.

4.7.2.3. *Modification Test Plans.* Test plans submitted for modified systems must be brief and structured to minimize test plan development and review. The test plan must concisely document the strategy and plan for testing the sections of the VVSG applicable to the modification(s) including clearly communicating the scope of testing, test strategies, and the resources needed. Modification test plans must include:

- A comprehensive scope of evaluation that each requirement or set of requirements is going to be evaluated for compliance, and that all features, interfaces, and characteristics of the individual devices and the system are evaluated to applicable requirements.
- The names and titles of VSTL personnel who will be responsible for each aspect of the test campaign.
- A detailed project schedule including the critical path for project completion.
- The test methods that will be used to validate compliance to the VVSG.
- A complete definition of the baseline certified system.
- A detailed description of all modifications to the certified system and why the modification was implemented.
- A citation of the VVSG version to which the original system was certified.
- A citation of the VVSG version to which the modified system is to be tested.
- A detailed description of the specific components, including versions.

- An initial assessment of the impact the changes have on the current system and any previous certification.
- An initial assessment of the impact the changes have on TDP documents.
- A table indicating how each of the existing NOCs/RFIs will be addressed.
- A description of what will be tested (regression) to establish assurance that the change(s) have no adverse impact on the compliance, integrity, or the performance of the equipment.
- A description of what will be tested (regression) to establish assurance that the change(s) create no inconsistencies with the TDP and are correctly documented and reflected in the TDP.

4.7.2.4. *EAC Identified Systems.* Previously certified systems identified for retesting by the EAC must be tested as directed by the Program Director.

4.7.2.5. *Modular Testing.* If the system has been previously certified to a VVSG version deemed acceptable by the EAC, it may retain that level of certification with only the modification being tested to the current VVSG version(s).

4.7.3. Format. VSTLs must issue test plans consistent with the format outlined in Appendix C of this document and any applicable EAC guidance. All submitted documents must pass accessibility checks prior to acceptance by the EAC.

4.7.4. EAC Approval. All test plans are subject to EAC approval. A test report will not be accepted for technical review unless the test plan on which it is based has been approved by the Program Director.

4.7.4.1. *Review.* All test plans must be reviewed for adequacy by Program staff. The Program Director must determine whether the test plan is acceptable or unacceptable. Unacceptable plans must be returned to the VSTL for further action. Acceptable plans must be approved by the Program Director and appropriate notifications made. Although manufacturers may direct VSTLs to begin testing before approval of a test plan, the manufacturer bears the full risk that the test plan (and thus any

tests performed) may be deemed unacceptable.

4.7.4.2. *Rejected Plans.* If a test plan is rejected, the Program Director must return the submission to the manufacturer's identified VSTL for additional action. A written notice of rejection must be sent to the VSTL and manufacturer and must include a description of the deficiencies identified and steps required to remedy the test plan. Rejected test plans may be resubmitted for review after remedial action is taken.

4.8. **Trusted Build.** A software build is the process whereby source code is converted to machine-readable binary instructions (executable code) for the computer. A trusted build is a build performed with adequate security measures implemented to give confidence that the executable code is a verifiable and faithful representation of the source code. The primary function of a trusted build is to create a chain of evidence that allows stakeholders to have an approved model to use for verification of a voting system. Specifically, the build must:

- Demonstrate that the software was built as described in the TDP.
- Show that the tested and approved source code was used to build the executable code used on the system.
- Demonstrate that no elements other than those included in the TDP were introduced in the software build. The manufacturer or source from which each COTS product was procured must be included in the TDP.
- Document the configuration of the system certified.
- Demonstrate that all COTS products are unmodified.

4.8.1. **Trusted Build Procedure.** A trusted build is a ~~four~~three-step process: (1) the build environment is constructed, (2) the executable code and installation disks are created, (3) the VSTL verifies that the trusted build was created and functions properly, and (4) a copy of the trusted build must be submitted to the EAC.

The process may be simplified for a modification to a previously certified system. Before creating the trusted build, the VSTL must complete the source code review of the software delivered from the manufacturer for compliance with the VVSG and must produce and record cryptographic hashes of all source code modules. Hashes must use a current FIPS 140-~~2~~ level 1 or higher validated cryptographic module. After the trusted build is completed, there is no other "final" build.

4.8.1.1. *Constructing the Build Environment.* The VSTL must construct the build in an environment controlled by the VSTL but that allows manufacturer observation, as follows:

- The device that holds the build environment must be completely erased, in accordance with Department of Defense or NIST approved methods. The VSTL must ensure a complete erasure of the device.
- The VSTL must construct the build environment.
- After construction of the build environment, the VSTL must produce and record a file signature of the build environment.
- A clone of the build environment computer's main storage media must be created. File signatures must be created by the VSTL for verification purposes.

4.8.1.2. *Creating the Executable Code and Installation Disks.* After successful source code review the VSTL must:

- Check the file signatures of the source code modules and build environment to ensure they are unchanged from their original form.
- Load the source code onto the build environment and produce and record the file signature of the resulting combination.
- Produce the executable code and produce and record file signatures of the executable code. A clone of the computer's main storage on which the executable code was created must be created, with the file signatures verified by the VSTL.
- The VSTL must create installation disk(s) from the executable code and produce and record file signatures of the installation disk(s).

4.8.1.3. *Verification of the Created Media.* Upon completion of all the tasks outlined above, the VSTL must perform the following tasks:

- Install the executable code onto the system submitted for testing and certification before the completion of system testing.

- Produce and record file signatures of each voting system file resident on each device.
- Verify that all media to be included in the Trusted Build and submitted to the EAC functions properly.

4.8.1.4. *Trusted Build for Modifications.* The process of building new executable code when a previously certified system has been modified can be somewhat simplified, if the build environment of the modification's original certification can be obtained.

- The build environment used in the original certification is removed from storage and its file signature verified.
- After source code review, the modified files are placed onto the verified build environment and new executable files are produced.
- If the original build environment is unavailable or its file signatures cannot be verified against those recorded from the original certification, then the full process of creating the build environment must be performed. Further source code review may be required to validate that files are unmodified from the originally certified versions.

4.9. **Testing.** During testing, VSTLs must report any changes to a voting system or an approved test plan, and all test failures or anomalies directly to the EAC.

4.9.1. Changes. Any changes to a voting system, initiated as a result of the testing process, requires submission of an updated implementation statement, functional diagram, and system overview document and, potentially, an updated test plan. Test plans must be updated whenever a change to a voting system requires deviation from the test plan originally approved by the EAC. Changes requiring alteration or deviation from the originally approved test plan must be submitted to the EAC for approval before the completion of testing.

4.9.2. Test Anomalies or Failures. The VSTLs must ensure all anomalies or failures are addressed and resolved before testing is completed. All test failures and anomalies, as well as the actions taken to resolve such failures and anomalies must be documented by the VSTL in an appendix to the test report. These

matters must be reported in a format that identifies the failure or anomaly, the applicable VVSG, and a description of how the failure or anomaly was resolved. The manufacturer must conduct a root cause analysis for each failure and anomaly following the format provided by the EAC. This analysis must be provided to the VSTL and the EAC prior to the beginning the test report phase of the test campaign.

4.9.3. Deficiency Criteria. Voting systems must be returned to a manufacturer for further readiness review and/or QA testing if any of the following conditions occur:

- Testing continues for more than 18 months without a test report being issued.
- Inactivity that exceeds 90 calendar days, as a result of a manufacturer's decision or lack of action, which hinders the progression of the test campaign.
- A significant deficiency caused by one or more major architectural flaws, requiring significant redesign to adequately eliminate the deficiency. Two factors will be considered in determining the significance of a deficiency:
 - the consequences of the deficiency with respect to proper voting system function, and
 - the extent of redesign necessary to fully remedy the deficiency. A full remedy goes beyond a superficial response to the symptoms, which leaves an underlying architectural flaw unaddressed, creating the potential for other manifestations of the deficiency to reoccur. A full remedy addresses the root cause of the deficiency and removes the cause of the problem that created the deficiency.

The following categories of deficiencies are used to determine when to remove a voting system from the Program:

- **Major:** A major deficiency adversely effects the accuracy, reliability, usability, security, or accessibility of a voting system. -Examples of major deficiencies are misreported results or consistent hardware failures.
- Voting systems must be returned to a manufacturer if one or more major deficiencies are discovered during a test campaign for root cause analysis, or if

the same deficiency occurs after root cause analysis and remediation.

- **Minor:** A minor deficiency does not adversely affect the accuracy, reliability, usability, security, or accessibility of a voting system. Examples of a minor deficiency include typographical errors, documentation deficiencies, or source code coding convention deficiencies (e.g., coding or comment convention deficiency).
- Voting systems must be returned to a manufacturer if the VSTL or Program Director determine that multiple minor deficiencies are causing significant delays in the test campaign.

Two or more instances of a deficiency are considered to be the same unique deficiency if: (1) the outputs of each instance are identical; and (2) the same, specific remedy cures all instances of the deficiency. If a second deficiency is discovered that results in the same output as the first deficiency, but requires a different remedy to cure it, it is considered a second unique deficiency. Two similar deficiencies that require a modification within different areas of the source code to remedy the deficiency are to be considered separate and unique deficiencies.

The VSTL must make the initial assignment for each deficiency into one of the categories described above. The VSTL must ensure that each deficiency is described and documented accurately in order to ensure the correct categorization of each deficiency. The EAC must review the categorizations of the VSTL and make the final determinations as to the categorization of deficiencies. All deficiencies must be corrected before a voting system is approved for certification.

When a voting system is returned to a manufacturer for reasons described in this section, the manufacturer must review its quality process and perform an analysis of how the identified deficiencies passed through its quality system. The manufacturer must perform a quality review to determine the extent of the QA issues and document the appropriate measures

that are implemented to ensure that similar deficiencies do not occur again. Specifically, the manufacturer must detail the specific changes made to its quality process and then the voting system to remedy the failures in the design and the quality process. All such documentation must be submitted to the EAC for review. The manufacturer may re-apply for certification only after the EAC makes the determination that the QA analysis/review and the measures put in place, in both the quality system and the voting system design, are deemed adequate.

4.10. **Test Report.** VSTLs must submit test reports to the EAC after the voting system has been tested and all tests identified in the test plan have been successfully performed.

4.10.1. Submission. The test reports must be submitted to the Program Director. The Program Director must review the submission for completeness. Any reports showing incomplete or unsuccessful testing must be returned to the VSTL for action and resubmission. Notice of this action must be provided to the manufacturer. Test reports must be submitted in PDF or other electronic formats as prescribed by the Program Director. Test reports submitted to the EAC must pass all accessibility checks before being accepted.

4.10.2. Format. VSTLs must submit reports consistent with the requirements in the VVSG and in the format outlined in Appendix D of this manual. All information provided in the test report must be provided in a clear, complete, and unambiguous manner, so that a wide range of readers and users of the document can understand the evaluation supporting a system's certification. In addition, the test report must show that all ~~of the~~ requirements of the VVSG have been tested and successfully completed by the voting system as a prerequisite to certification. Documentation of test cases executed during the testing must be attached to the test report.

4.10.3. Technical Review. A technical review of the test plan, test cases, test report, and any other technical documentation must be conducted by the EAC. The EAC may require the submission of additional information from the VSTL or manufacturer if deemed necessary to complete the review. Program staff must submit findings to the Program Director, providing an assessment of the completeness and adequacy of the VSTL's

testing as documented in the test report.

4.10.4. Program Director's Recommendation. The Program Director must review the report and take one of the following actions:

- Provide a written approval of the test report to the manufacturer and VSTL; or
- Refer the report back to the VSTL for additional, specified action and resubmission.

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5. Grant of Certification

- 5.1. **Overview.** The grant of certification is the formal process through which the EAC acknowledges that a voting system has successfully completed conformance testing to a current version of the VVSG. The granting of certification begins with the approval of the test report. The voting system will be certified after the manufacturer confirms that the final version of the software that was tested has been subject to a trusted build, placed in an EAC-approved repository, and can be verified using the manufacturer's system identification tools. The manufacturer must provide the EAC documentation demonstrating compliance with these requirements.
- 5.2. **Pre-certification approval.** The Program Director must inform the manufacturer of the steps that must be taken to receive a certification including providing the manufacturer with specific instructions for confirming and documenting that the final certified version of the software meets the requirements for depositing software in an approved repository, and creating and making available system verification tools.
- 5.3. **Depositing Software in the EAC Repository.** Before final certification is granted, the VSTL must deliver the following elements into the EAC repository:
 - Description of items located on the deposit media, including a description of items to be deposited. The description must include utilities or third-party applications used to create the deposit such as OS utilities or third-party software, and encryption information required for passwords and/or crypto-keys or software programs required to access the deposited materials.
 - Source code used for the trusted build and its file signatures.
 - The final TDP of the voting system submitted for testing including all product bills of material, assembly drawings and schematics for the version being certified.
 - A detailed description of the Build Environment including setup and configuration, configuration settings for all compilers and third-party components and whether the build process requires source code to be loaded to a specific location.
 - Build control files and/or scripts that control the build process.
 - Executable code produced by the trusted build and the file signatures of all files produced.
 - Installation device(s) and the file signatures of the installation devices.
 - Build instructions describing how to compile the escrow deposit

and build executable code. (Include hardware descriptions and OS system requirements, particularly any custom settings required. Voting systems are often needed to function for well over a decade. This is necessary for long term maintainability of the voting system.

- Names of all required applications necessary to compile and build executable code, objects, dynamic libraries, etc.
- An installation copy of the certified version of the EMS for the voting system.
- The computer on which the trusted build was created must have applicable storage media that contained the trusted build, removed, and submitted to the EAC. The EAC may receive Virtual Machines (appliances) from the VSTL for the trusted build. Trusted builds must include this virtual machine and any related items, so that the system can be constructed or restored on another machine. Trusted builds must be in the Open Virtualization Format.
- The manufacturer must provide system identification tools through which a fielded voting system may be identified and demonstrated to be unmodified from the system that was certified. The purpose of this requirement is to make such tools available to federal, state, and local officials to identify and verify that the equipment used in elections is unmodified from its certified version. The EAC may review the system identification tools developed by the manufacturer to ensure compliance. VSTLs must test system identification tools during the test campaign to make sure they function properly and as intended. System identification tools include the following examples:
 - Hardware is commonly identified by a model number and revision number on the unit, its printed wiring boards (PWBs), printed circuit boards (PCBs), and major subunits. Typically, hardware is verified as unmodified by providing detailed photographs of the PWBs, PCBs, and internal construction of the unit. These images ~~should~~may be used to compare to the unit being verified.
 - Software operating on a host computer will typically be verified by providing self-booting removable media or similar device that verifies the file signatures of the voting system application files and the signatures of all nonvolatile files the application files access during their operation. Note that the creation of such ~~media~~CD requires having a file map of all nonvolatile files used by the voting system. Such a tool must be provided for

verification using the file signatures of the original executable files provided for testing. If during the certification process modifications are made and new executable files created, then the tool must be updated to reflect the file signatures of the final files to be distributed for use. ~~For software operating on devices in which a self booting CD or similar device cannot be used, a procedure must be provided to allow identification and verification of the software that is being used on the device.~~

- The system identification tools shall:
 - Create hashes of the static and semi-static files of all voting system components, including EMS components, COTS components, and software for each device in the certification program.
 - Automatically ~~e~~Have the capability to ~~e~~Compare all the static and semi-static hashes of voting system components to a trusted list of hashes.
 - Be easily accessible and usable by election officials. Manufacturers shall assume a limited working knowledge of computer hardware and software when developing these tools.
 - ~~Have the capability to e~~Obtain the post-install hashes without using software installed on the voting system.
 - ~~Any hashing algorithm shall be~~Utilize a FIPS validated hashing algorithm.

All methods of voting system software validation provided by the manufacturer must be fully conformant with requirements set forth by this manual and the VVSG.

These attributes of the system identification tools shall be verified by the VSTL during each test campaign. Additionally, the list of trusted hashes shall be produced and validated by the VSTL; and provided to the EAC in a usable format (e.g., csv, excel, xml).

- 5.4. **Documentation.** Manufacturers must provide documentation to the Program Director verifying the trusted build has been performed, software has been deposited in an approved repository, and system identification tools are available to election officials. The manufacturer must submit a letter, signed by both its management representative and a VSTL official, stating (under penalty of law) that it has (1) performed a trusted build consistent with the requirements of this manual, (2) deposited software consistent with the requirements of this manual, and

(3) created and made available system identification tools consistent with the requirements of this manual. This letter must also include (as attachments) a copy and description of the system identification tool.

5.5. **Final Decision.** Upon receipt of documentation demonstrating the successful completion of the requirements above and recommendation of the Program Director, the Decision Authority must issue a final decision granting certification and providing the manufacturer with a certification number and Certificate of Conformance.

5.6. **Certification Document.** The Certificate of Conformance, which includes the scope of certification, serves as the manufacturer's evidence that a particular system is certified to a particular version of the VVSG and only applies only to the specific voting system configuration(s) identified, submitted, and evaluated under the Program. Any modification to the system not authorized by the EAC voids the certificate. The certificate must include the voting system name, the specific model or version of the product tested, the name of the VSTL that conducted the testing, identification of the VVSG version to which the system was tested, the EAC certification number for the product, and the signature of the Decision Authority. The certificate must also identify each of the various configurations of the voting system's components that may be represented as certified.

5.7. **Certification Number and Version Control.** Each system certified by the EAC receives a certification number unique to the system that will remain with the system until such time as the system is decertified, sufficiently modified, or tested and certified to newer standards. When a previously certified system is issued a new certification number, the manufacturer is required to change the system's name or version number.

5.7.1. New Voting Systems and Those Not Previously Certified by the EAC. All systems receiving their first certification from the EAC will receive a new certification number. Manufacturers must provide the EAC with the voting system's name and version number during the application process ([Section 4.2 Chapter 34 of this manual](#)). Systems previously certified by another body may retain the previous system name and version number unless the system was modified before its submission to the EAC. Such modified systems must be submitted with a new naming convention (i.e., a new version number).

5.7.2. Modifications. Voting systems previously certified by the EAC and submitted for certification of a modification will receive a

new voting system certification number. Such modified systems must be submitted with a new naming convention.

5.7.3. Certification Upgrade. Voting systems previously certified and submitted (without modification) for testing to a new version of the VVSG will receive a new certification number. In such cases, however, the manufacturer is not required to change the system name or version number.

5.7.4. Minor Change. Voting systems previously certified and implementing an approved minor change order (~~per Chapter 3~~Section 3.5 of this manual) will not be issued a new certification number and are not required to implement a new naming convention.

5.8. **Publication of EAC Certification**. The EAC must publish and maintain a list of all certified voting systems, including copies of all Certificates of Conformance, supporting test reports, and voting system and manufacturer information at www.eac.gov. Such information must be posted immediately following the manufacturer's receipt of the Final Decision. Manufacturers with certified voting systems are responsible for ensuring that each system it produces is properly labeled as certified.

5.9. **Representation of EAC Certification**. Manufacturers may not represent or imply a voting system is EAC-certified unless it has received a Certificate of Conformance for the system. Statements regarding EAC certification in brochures, on websites, on displays, and in advertising/sales literature must be made solely in reference to specific systems. Any action by a manufacturer to suggest EAC endorsement of its product or organization is strictly prohibited and may result in a manufacturer's suspension or other action pursuant to Federal civil and criminal law. Manufacturers must provide a copy of the Certificate and Scope of Certification document (found at www.eac.gov) to any jurisdiction purchasing an EAC-certified system.

5.10. **Mark of Certification Requirements**. Manufacturers must post a mark of certification on all EAC-certified voting systems produced. This mark must be securely attached to the system before sale, lease, or release to third parties. A mark of certification must be made using an EAC-mandated template. These templates identify the version of the VVSG to which the system is certified. Use of this template is mandatory and the EAC will provide the mark as a template in .jpg, .pdf, and .tif formats. Manufacturers who need access to the mark pursuant to labeling an EAC-certified voting system should send a formal request, via email or letter, to the Program Director. The request must include the specific

voting system and version number(s), indication of where the mark will be displayed on the voting system, and specification of the format in which the mark will be reproduced.

- The certification of individual components or modifications must be independently represented by a mark of certification. In the event a system has components or modifications tested to various (later) versions of the VVSG, the system must bear only the mark of the VVSG to which the system (as a whole) was tested and certified. Ultimately, a voting system must only display the mark of the oldest version of the VVSG to which any of its components are certified.
- The mark must be placed on the outside of a unit of voting equipment in a place readily visible to election officials. The mark need not be affixed to each of the voting system's components. The mark must be affixed to either each unit that is used to cast ballots or each unit that is used to tabulate ballots.
- All labels bearing the mark must be designed and applied to voting equipment so that the labels will remain in place and be clear and legible during the customary conditions of distribution, storage, voting and routine testing and maintenance. The materials used for the label, printing and adhesives must be reasonably expected to last the normal and projected lifespan of the voting system. If using an adhesive type of label for the mark, the label stock material must be such that the label cannot be removed intact and reapplied. The label must also be designed to resist the effects of cleaning agents specified by the manufacturer. The mark must remain clear and legible after the use of any recommended cleaning agents as specified by the manufacturer and adhesive labels, if used, must not have become loose or curled at the edges. If a mark has become degraded to the effect that it is illegible, it must be replaced with an exact copy.
- If the EAC determines a voting system is not in compliance with the VVSG, and the system has already been sold or otherwise distributed bearing the mark, the EAC must provide written notice to the manufacturer. If the manufacturer fails to take corrective action within 15 calendar days of receipt of such notice, the EAC has the right to announce publicly, and to directly inform jurisdictions that use the system, that the voting system may no longer comply with its original certification and may choose to initiate decertification actions as outlined in Chapter 7 of this manual, and/or suspension of manufacturer registration as outlined in [Chapter 2 Section 2.6](#) of this manual. Corrective action may include modification of the voting system

to bring it into compliance with the VVSG, or removal of the mark from the product.

- 5.11. **Information to Election Officials Purchasing Voting Systems.** The user's manual or instruction manual for a certified voting system must warn jurisdictions that any changes or modifications to the system not tested and certified by the EAC voids the EAC certification of the voting system. In cases in which the manual is only provided in an electronic format, the information required in this section must be included in the same format.

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6. Denial of Certification

- 6.1. **Overview.** When the Decision Authority issues an initial decision denying certification, the manufacturer has certain rights and responsibilities. The manufacturer may request an opportunity to cure the defects identified by the Decision Authority. In addition, the manufacturer may request that the Decision Authority reconsider the initial decision after the manufacturer has had the opportunity to review the record and submit supporting written materials, data, and the rationale for its position. Finally, in the event reconsideration is denied, the manufacturer may appeal the decision to the Appeal Authority as described in [Section 6.11 of this manual](#).
- 6.2. **Applicability of This Chapter.** This chapter applies when the Decision Authority makes an initial decision to deny voting system certification, including a modification, based on the materials and recommendation provided by the Program Director.
- 6.3. **Form of Decisions.** All agency determinations must be made in writing.
- 6.4. **Effect of Denial of Certification.** Upon receipt of the agency's decision denying certification— or in the event of an appeal, subject to the decision on appeal—the manufacturer's application for certification will be denied. Such systems will not be reviewed again by the EAC for certification unless the manufacturer alters the system, retests it, and submits a new application for system certification.
- 6.5. **Record Retention.** The Program Director must maintain all documents related to a denial of certification. Such documents constitute the procedural and substantive record of the decision-making process. Records may include the following:
 - The Program Director's report and recommendation to the Decision Authority.
 - The Decision Authority's final decision.
 - Any materials gathered by the Decision Authority that serve as a basis for a certification determination.
 - All relevant and allowable materials submitted by the manufacturer upon request for reconsideration or appeal.
- 6.6. **Initial Decision.** The Decision Authority must make and issue a written decision for voting systems submitted for certification. When such decisions result in a denial of certification, the decision is considered preliminary and referred to as an initial decision. Initial decisions must be in writing and contain the Decision Authority's basis and explanation

for the decision and notice of the manufacturer's rights in the denial of certification process.

6.6.1. Basis and Explanation. The initial decision of the Decision Authority must clearly state the agency's decision on certification, state the actions the manufacturer must take to cure all defects in the voting system and obtain a certification, and explain the basis for the decision, including:

- the relevant facts,
- the applicable VVSG,
- the relevant analysis in the Program Director's recommendation, and
- the reasoning behind the decision.

6.6.2. Manufacturer's Rights. The written initial decision must also inform the manufacturer of its procedural rights under the certification program, including the following:

- The manufacturer will be informed of its right to request a timely reconsideration (see Section 6.9 of this manual). Such a request must be made within 10 calendar days of the manufacturer's receipt of the initial decision.
- The right to request a copy or have access to the information that served as the basis of the initial decision.
- The right to cure system defects prior to the final decision (see Section 6.8 of this manual). A manufacturer may request an opportunity to cure. This request must be made within 10 calendar days of its receipt of the initial decision.

6.7. **No Manufacturer Action on Initial Decision**. If a manufacturer takes no action (by either failing to request an opportunity to cure or request reconsideration) within 10 calendar days of its receipt of the initial decision, the initial decision will become the agency's final decision on certification. In such cases, the manufacturer is determined to have foregone its right to reconsideration, cure, and appeal. The certification application will be denied.

6.8. **Opportunity to Cure**. Within 10 calendar days of receiving the EAC's final decision on certification, a manufacturer may request an opportunity to cure the defects identified in the EAC's initial decision. If the request is approved, a compliance plan must be created, approved,

and followed. If this cure process is successfully completed, a voting system denied certification in an initial decision may receive a certification without resubmission.

- 6.8.1. EAC Action on Request. The Decision Authority must review the request and notify the manufacturer in writing if the request to cure is approved or denied. The Decision Authority will deny a request to cure only if the proposed plan to cure is inadequate or does not present a viable way to remedy the identified defects. If the manufacturer's request to cure is denied, it will have 10 calendar days from the date it received such notice to request reconsideration of the initial decision.
- 6.8.2. Manufacturer's Compliance Plan. Upon approval of the manufacturer's request for an opportunity to cure, the manufacturer must submit a compliance plan to the Decision Authority for approval. This compliance plan must set forth steps to be taken to cure all identified defects. It must include the proposed changes to the system, updated technical information (as required by Section 4.2 of this manual), and a new test plan created and submitted directly to the EAC by the VSTL. The plan must provide for the testing of the amended system and submission of a test report by the VSTL to the EAC for approval. It must provide an estimated date for receipt of this test report and include a schedule of periodic VSTL progress reports to the Program Director.
- 6.8.3. EAC Action on the Compliance Plan. The Decision Authority must review and approve the compliance plan. The Decision Authority may require the manufacturer to provide additional information and modify the plan as required. If the manufacturer is unable or unwilling to provide a compliance plan acceptable to the Decision Authority, the Decision Authority will provide written notice terminating the cure process. The manufacturer will have 10 calendar days from the date it receives such notice to request reconsideration of the initial decision.
- 6.8.4. Compliance Plan Test Report. The VSTL must submit the test report created pursuant to its EAC-approved compliance plan. The EAC must review the test report, along with the original test report and other materials originally provided, consistent with the procedures laid out in Chapter 4 of this manual.
- 6.8.5. EAC Decision on the System. After receipt of the test plan, the Decision Authority must issue a decision on a voting system

amended pursuant to an approved compliance plan in the same manner and with the same process and rights as a final decision on certification.

6.9. **Requests for Reconsideration.** Manufacturers may request reconsideration of an initial decision.

6.9.1. Submission of Request. -A request for reconsideration must be made within 10 calendar days of the manufacturer's receipt of an initial decision. The request must be made and sent to the Decision Authority.

6.9.2. Acknowledgment of Request. The Decision Authority must acknowledge receipt of the manufacturer's request for reconsideration. This acknowledgment must either enclose all information that served as the basis for the initial decision or provide a date by which the record will be forwarded to the manufacturer.

6.9.3. Manufacturer's Submission. Within 30 calendar days of receipt of the record, a manufacturer may submit written materials in support of its position, including the following:

- a written argument responding to the conclusions in the initial decision, or
- documentary evidence relevant to the issues raised in the initial decision.

6.9.4. Decision Authority's Review of Request. The Decision Authority must review and consider all relevant submissions of the manufacturer. In making a decision on reconsideration, the Decision Authority must also consider all documents that make up the record and any other documentary information he or she determines relevant.

6.10. **Agency Final Decision.** The Decision Authority must issue a written final decision after review of the manufacturer's request for reconsideration. This decision will be the decision of the agency and must include:

- The agency's determination on the application for certification.
- The issues raised by the manufacturer in its request for reconsideration.
- All facts, evidence, and EAC voting system standards that serve as the basis for the decision.

- The reasoning behind the determination.
- Any additional documentary information identified and provided as an attachment that serves as a basis for the decision and was not part of the manufacturer's submission or the prior record.
- The manufacturer notice of its right to appeal.

6.11. **Appeal of Agency Final Decision.** Within 20 calendar days of receipt of a final decision denying certification, a manufacturer may issue a written request for appeal. The appeal must be submitted to the Decision Authority and addressed to the Chair of the EAC. Any submission after 20-day period will not be considered. The request must clearly state the specific conclusions of the final decision it wishes to appeal. The request cannot reference or include any factual material that is not in the record.

6.11.1. Consideration of Appeal. All timely appeals will be considered by the Appeal Authority.

- The Appeal Authority consists of two or more EAC Commissioners or other individuals appointed by the Commissioners who have not previously served as the initial or reconsideration authority on the matter. If the Appeal Authority does not reach consensus, the appeal will be denied.
- All decisions on appeal must be based on the record.
- The determination of the Decision Authority will be given deference by the Appeal Authority. Although it is unlikely that the certification process will produce factual disputes, in such cases, the burden of proof belongs to the manufacturer to demonstrate by clear and convincing evidence that its voting system met all substantive and procedural requirements for certification. The determination of the Decision Authority may be overturned only when the Appeal Authority finds the ultimate facts in controversy highly probable.

6.12. **Decision on Appeal.** The Appeal Authority must make a written, final decision on appeal and provide it to the manufacturer. The Appeal Authority must make one of two determinations.

6.12.1. Grant of Appeal. The appeal will be granted if the Appeal Authority determines that the conclusions of the Decision Authority should be overturned in full. In such cases, certification will be approved subject to the requirements of

Chapter 5 [of this manual](#).

6.12.2. Denial of Appeal. The appeal will be denied if the Appeal Authority determines that the Decision Authority's determination should be upheld. In such cases, the application for appeal is denied.

The following are required to be contained in the Decision on Appeal:

- The final determination of the agency.
- The matters raised by the manufacturer on appeal.
- The reasoning behind the decisions.
- Statement that the decision on appeal is final and that no additional appeal will be granted.

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7. Decertification

- 7.1. **Decertification Policy.** Decertification is the process by which the EAC revokes a certification previously granted to a voting system. It is an important part of the program because it serves to ensure the VVSG and requirements of the Program are followed and that certified voting systems maintain the same level of quality as those presented for testing. Its use will significantly affect manufacturers, state and local governments, the public, and the administration of elections.

Decertification is initiated when the EAC receives information from a source that has used, tested, or observed that a voting system may not be in compliance with the VVSG or the procedural requirements of this manual. Upon receipt of this information, the Program Director must initiate an informal inquiry to determine if the reported information is accurate. If the information is accurate and suggests the system is non-compliant, a formal investigation will be initiated. If the results of the formal investigation demonstrate noncompliance, the manufacturer will be provided a notice of noncompliance. Before a final decision on decertification is made, the manufacturer will have the opportunity to remedy any defects identified in the voting system and present information for consideration by the Decision Authority. A decertification may be appealed within 20 business days of receipt.

Systems will be decertified if:

- they do not to meet applicable VVSG,
- they have been modified or changed without following the requirements of this manual, or
- the manufacturer has failed to follow the procedures outlined in this manual and the quality, configuration, or compliance of the system is in question.

- 7.2. **Informal Inquiry.** An informal inquiry is the first step taken when information is presented to the EAC that suggests a voting system may not be in compliance with the VVSG requirements or the procedural requirements of this manual. The sole purpose of the informal inquiry is to determine whether a formal investigation is warranted. The outcome of an informal inquiry is limited to a decision on referral for investigation.

7.2.1. Procedure. Informal inquiries do not follow a formal process.

- 7.2.1.1. *Initiation.* Informal inquiries are initiated at the discretion of the Program Director. They may be initiated any time the Program Director receives attributable, relevant information that

suggests a certified voting system may require decertification. The information must come from a source that has used, tested, or observed the reported occurrence. Such information may be a product of the Certification Quality Monitoring Program (see Chapter 8 [of this manual](#)). The Program Director must notify the manufacturer that an informal inquiry has been initiated. Initiation of an inquiry must be documented through the creation of a memorandum for the record.

7.2.1.2. *Inquiry.* The informal inquiry process is limited to inquiries necessary to determine whether a Formal Investigation is required. The Program Director must conduct such inquiry necessary to determine the accuracy of the information obtained, and if the information, if true, would serve as a basis for decertification. The nature and extent of the inquiry process will vary depending on the source of the information. For example, an informal inquiry initiated as a result of action taken under the Certification Quality Monitoring Program will often require the Program Director to review the report issued as a result of the quality monitoring action. On the other hand, information provided by election officials or by voters who have used a voting system may require the Program Director (or assigned EAC staff) to perform an in-person inspection or make inquiries of the manufacturer.

7.2.1.3. *Conclusion.* An informal inquiry will be concluded after the Program Director determines the accuracy of the information that initiated the inquiry and whether that information, if true, would warrant decertification. The Program Director may make only two conclusions: (1) refer the matter for a formal investigation, or (2) close the matter without additional action or referral.

7.2.2. Closing the Matter without Referral. If the Program Director determines a matter does not require a formal investigation, the Program Director must close the inquiry by filing a memorandum for the record and notifying the manufacturer. This document must state the focus of the inquiry, the findings of the inquiry, and the reasons a formal investigation was not warranted.

7.2.3. Referral. If the Program Director determines a matter requires a formal investigation, the Program Director must refer the matter in writing to the Decision Authority. In preparing this referral, the Program Director must:

- state the facts that served as the basis for the referral,
- state the findings of the Program Director,
- attach all documented evidence that served as the basis for the conclusion, and
- recommend a formal investigation, specifically stating the system to be investigated and the scope and focus of the proposed investigation.

7.3. **Formal Investigation.** A formal investigation is an official investigation to determine whether a voting system warrants decertification. The end result of a formal investigation is an investigation report. The purpose of a formal investigation is to gather and document relevant information sufficient to make a determination on whether an EAC-certified voting system warrants decertification consistent with the policy put forth in Section 7.2 [of this manual](#).

7.3.1. Initiation of Investigation. The Decision Authority must authorize the initiation of a formal investigation.

7.3.1.1. *Scope.* The Decision Authority must clearly set the scope of the investigation by identifying (in writing) the voting system and specific procedural or operational non-conformance to be investigated. The non-conformance to be investigated must be set forth in the form of numbered allegations.

7.3.1.2. *Investigator.* The Program Director (or Decision Authority appointee) is responsible for conducting the investigation. The Program Director (or Decision Authority appointee) may assign staff or technical experts, as required, to investigate the matter.

7.3.2. Notice of Formal Investigation. Upon initiation of a formal investigation, the EAC must notify the manufacturer of the scope of the investigation, which must include:

- Identification of the voting system and specific procedural or operation non- conformance being investigated (scope of investigation).
- An opportunity for the manufacturer to provide relevant information in writing.
- An estimated timeline for the investigation.

7.3.3. Investigation. Investigations must be conducted impartially, diligently, promptly, and confidentially and must utilize

appropriate techniques to gather the necessary information.

7.3.3.1. *Conflicts of Interest.* All individuals assigned to an investigation must be free from any financial conflicts of interest.

7.3.3.2. *Diligent Collection of Information.* All investigations must be conducted in a meticulous and thorough manner. Investigations will gather all relevant information and documentation that is available.

7.3.3.3. *Prompt Collection of Information.* Determinations that may affect the administration of federal elections must be made in an expedited manner. The EAC's determinations on decertification may affect the actions of state and local election officials conducting elections and as such, all investigations regarding decertification must proceed with a sense of urgency.

7.3.3.4. *Confidential Collection of Information.* Consistent with federal law, information pertaining to a formal investigation will not be made public until the investigation report is complete. The release of incomplete and unsubstantiated information, or pre-decisional opinions, that may be contrary or inconsistent with the final determination of the EAC could cause public confusion or negatively affect public confidence in active voting systems. Such actions could serve to impermissibly affect election administration and voter turnout. All pre-decisional investigative materials must be safeguarded.

7.3.3.5. *Methodologies.* Investigators must gather information by means consistent with the four principles noted above. Investigative tools include (but are not limited to) the following:

- Investigators may interview individuals (such as state and local election officials, voters, or manufacturer representatives). All interviews must be reduced to written form; each interview must be summarized in a statement that is reviewed, approved, and signed by the interviewee.
- Field audits.
- Manufacturing site audits.
- Investigators may pose specific, written questions to the manufacturer for the purpose of gathering information relevant to the

investigation. The manufacturer must respond to the queries within timeframe as specified in the request.

- Testing may be performed in an attempt to reproduce a condition or failure that has been reported. This testing must be conducted at a VSTL as designated by the EAC.

7.3.4. Investigation Report. The investigation report serves to document: (1) all relevant and reliable information gathered in the course of the investigation; and (2) the conclusion reached by the Decision Authority.

7.3.4.1. The report is complete and final when certified and signed by the Decision Authority. The final report will be publicly available at www.eac.gov. The following must be included in the written report:

- The scope of the investigation, identification of the voting system, and specific matter investigated.
- Description of the investigative process employed.
- Summary of the relevant and reliable facts and information gathered in the course of the investigation.
- All relevant and reliable evidence collected in the course of the investigation that documents the facts must be documented and attached.
- Analysis of the information gathered.
- Statement of the findings of the investigation.

7.3.4.2. *Findings.* The investigation report must state one of two conclusions: substantiated allegation or unsubstantiated allegation.

7.3.4.3. *Substantiated Allegation.* An allegation is substantiated if a preponderance of the relevant and reliable information gathered requires the voting system in question to be decertified. A notice of noncompliance must be issued if an allegation is substantiated.

7.3.4.4. *Unsubstantiated Allegation.* An allegation is unsubstantiated if the preponderance of the relevant and reliable information gathered does not warrant decertification. If all allegations are

unsubstantiated, the matter will be closed, and a copy of the report forwarded to the manufacturer.

7.4. **Effect of Informal Inquiry or Formal Investigation on Certification.** A voting system's EAC certification is not affected by the initiation or conclusion of an informal inquiry or formal investigation. Systems under investigation remain certified until a final decision on decertification is issued by the EAC.

7.5. **Notice of Noncompliance.** The notice of noncompliance is not a decertification of the voting system. The purpose of the notice is to notify the manufacturer of the noncompliance and the EAC's intent to decertify the system and inform the manufacturer of its procedural rights so that it may be heard prior to decertification.

The following must be included in a notice of noncompliance:

- A copy of the investigation report to the manufacturer.
- The noncompliance, consistent with the investigation report.
- Notification to the manufacturer that if the voting system is not made compliant, the voting system will be decertified.
- State the actions the manufacturer must take to bring the voting system into compliance and avoid decertification.
- The manufacturer's procedural rights under the program, which include the following:
 - the manufacturer's right to present information to the Decision Authority prior to a determination of decertification,
 - the investigation report and any other materials that serve as the basis of an agency decision on decertification, and
 - the manufacturer's right to cure within 15 business days of its receipt of the notice of noncompliance.

7.6. **Procedure for Decision on Decertification.** The Decision Authority must make and issue a written decision on decertification after the manufacturer has had a reasonable opportunity to cure the noncompliance and submit information for consideration.

7.6.1. Opportunity to Cure. The manufacturer will have an opportunity to cure a nonconformant voting system 30 business days prior to decertification.

7.6.1.1. *Manufacturer's Request to Cure.* Within 10 business days of receiving the EAC's notice of noncompliance, a manufacturer

may request an opportunity to cure all defects identified in the notice of noncompliance. The request must be sent to the Decision Authority and outline how the manufacturer intends to modify the system, update the technical information, have a VSTL create a test plan and test the system.

7.6.1.2. *EAC Action on Request.* The Decision Authority must review the request and approve it if the defects identified in the notice of noncompliance may reasonably be cured before the next federal election.

7.6.1.3. *Manufacturer's Compliance Plan.* Upon approval of the manufacturer's request for an opportunity to cure, the manufacturer must submit a compliance plan to the Decision Authority for approval. This compliance plan must describe the steps to be taken (including time frames) to cure all identified defects. The plan must describe the proposed changes to the system, provide for modification of the system, update the technical information required by Section 4.2 [of this manual](#), include a test plan delivered to the EAC by the VSTL, and provide for the VSTL's testing of the system and submission of the test report to the EAC for approval. The plan must include a schedule of periodic progress reports to the Program Director.

7.6.1.4. *EAC Action on the Compliance Plan.* The Decision Authority must review and approve the compliance plan. The Decision Authority may require the manufacturer to provide additional information and modify the plan as required. If the manufacturer is unable or unwilling to provide a compliance plan acceptable to the Decision Authority, the Decision Authority must provide written notice terminating the "opportunity to cure" process.

7.6.1.5. *VSTL's Submission of the Compliance Plan Test Report.* The VSTL must submit the test report created pursuant to the manufacturer's EAC-approved compliance plan. The EAC must review the test report and any other necessary or relevant materials. The report will be reviewed by the EAC in a manner similar to the procedures described in [Section 4.10](#) [Chapter 4](#) of this manual.

7.6.1.6. *EAC Decision on the System.* After receipt of the VSTL's test report, the Decision Authority must issue a decision within 20 business days.

7.6.2. Decision on Decertification. The Decision Authority must make and issue an agency determination on decertification after the manufacturer has provided all of its written materials for consideration or the time allotted for submission has expired. A decertification is effective upon the EAC's publication of the decision. This decision must include the following:

- The agency's determination on the decertification, specifically addressing the areas of noncompliance investigated.
- The issues raised by the manufacturer in the materials it submitted for consideration.
- Facts, evidence, procedural requirements, and/or VVSG requirements that served as the basis for the decision.
- The reasoning for the decision.
- Documentation that served as a basis for the decision and that was not part of the manufacturer's submission or the investigation report.
- Notification to the manufacturer of its right to appeal.

7.7. **Appeal of Decertification**. A manufacturer may request an appeal of the decision. The manufacturer must submit a request in writing to the Chair of the EAC within 20 calendar days of receipt of the decision on decertification. The manufacturer must clearly state the specific conclusions of the decision that the manufacturer wishes to appeal including any additional written arguments. The initiation of an appeal does not affect the decertified status of a voting system.

7.7.1. Consideration of Appeal. All timely appeals will be considered by the Appeal Authority. The Appeal Authority consists of two or more EAC Commissioners or other individual(s) designated by the Commissioners who have not previously served as an investigator, advisor, or decision maker in the decertification process. All decisions on appeal must be on the record.

The decision of the Decision Authority will be given deference by the Appeal Authority. The burden of proof belongs to the manufacturer to demonstrate by clear and convincing evidence that its voting system met all substantive and procedural requirements for certification. The determination of the Decision Authority will only be overturned if the Appeal Authority finds the ultimate facts in controversy highly probable.

7.7.2. Decision on Appeal. The Appeal Authority must issue a written

decision on appeal to the manufacturer that either grants or denies the appeal. If a manufacturer's appeal is granted in whole, the decision of the Decision Authority will be reversed, and the voting system will have its certification reinstated. For purposes of this Program, the system will be treated as though it was never decertified. If a manufacturer's appeal is denied in whole or in part, the decertification decision of the Decision Authority will be upheld. The voting system will remain decertified, and no additional appeal will be available. The decision on appeal is final and binding and no additional appeal will be granted. The following must be included in a decision on appeal:

- The final determination of the agency.
- The matters raised by the manufacturer on appeal.
- The reasoning behind the decision.
- Statement that the decision on appeal is final.

7.8. **Effect of Decertification.** A decertified voting system no longer holds an EAC certification. For purposes of this manual and the program, a decertified system will be treated as any other uncertified voting system. As such, the effects of decertification are as follows:

- The manufacturer must not represent the voting system as certified.
- The voting system must not be labeled with a Mark of Certification.
- The voting system will be removed from the EAC's list of certified systems.
- The EAC must notify state and local election officials of the decertification.

7.9. **Recertification.** A decertified system may be resubmitted for certification and will be treated as any other system seeking certification. The manufacturer must submit an application for certification consistent with the instructions of this manual.

8. Quality Monitoring Program

- 8.1. **Overview.** The quality of any product, including a voting system, depends on two specific elements: (1) the design of the product or system; and (2) the consistency of the manufacturing process. The EAC's testing and certification process focuses on voting system design by ensuring that a representative sample of a system meets the technical specifications of the applicable VVSG requirements. The quality of the manufacturing is the responsibility of the manufacturer.

After a system is certified, the manufacturer assumes primary responsibility for compliance of the products produced. This level of compliance is accomplished by the manufacturer's configuration management and quality control processes. The EAC's Quality Monitoring Program, as outlined in this chapter, provides an additional layer of quality control by allowing the EAC to perform manufacturing site audits, carry out fielded system reviews, and gather information on voting system anomalies from [manufacturers and](#) election officials. These additional tools help ensure that voting systems continue to meet the VVSG requirements as the systems are manufactured, delivered, and used in federal elections. These aspects of the program enable the EAC to independently monitor the continued compliance of fielded voting systems.

- 8.2. **Purpose.** The purpose of the Quality Monitoring Program is to:
- ensure systems used by election jurisdictions are identical to those tested and certified by the EAC,
 - monitor the completeness and adequacy of testing with the desired performance in fielded voting systems, and
 - monitor the effectiveness of the VVSG.

This level of quality control is accomplished primarily by identifying potential quality problems in manufacturing, uncertified voting system configurations, and field performance issues with certified systems.

- 8.3. **Manufacturer's Quality Control.** The EAC's Quality Monitoring Program is not a substitute for the manufacturer's own quality control program. As stated in Chapter 2 of this manual, all manufacturers must have an acceptable quality control program in place before they may be registered. The EAC's program serves as an independent and complementary process of quality control that works in tandem with the manufacturer's efforts.

- 8.4. **Quality Monitoring Methodology.** The EAC utilizes four primary tools

for assessing the level of effectiveness of the certification process and the compliance of fielded voting systems:

- manufacturing site audits,
- fielded system reviews,
- a means for receiving anomaly or malfunction reports from manufacturers, election officials, or state certification offices~~the field~~, and
- technical bulletins or product advisories created by the manufacturer.

8.5. **Manufacturing Site Audit.** Facilities that produce certified voting systems must be reviewed periodically, at the discretion of the EAC, to verify that the system being manufactured, shipped, and sold is the same as the certified system. All registered manufacturers must cooperate with such site reviews as a condition of program participation.

8.5.1. Notice. The site review may be conducted as either a pre-scheduled or as an impromptu visit, at the discretion of the EAC; however, a manufacturer must be given at least 24 hours' notice. Scheduling and notice of site reviews must be coordinated with, and provided to, the manufacturing facility's representative and the manufacturer's representative.

8.5.2. Frequency. All manufacturing facilities are subject to a site review at least once every two years during odd years.

8.5.3. The Review. The production facility and production test records must be made available for review. When requested, production schedules must be provided to the EAC. Production or production testing may be witnessed by EAC representatives. If equipment is not being produced during the inspection, the review may be limited to production records. During the inspection, the manufacturer must provide the EAC's representative the manufacturer's quality manual and other documentation sufficient to enable the representative to evaluate the following factors of the facility's production:

- Manufacturing quality controls.
- Final inspection and testing.
- History of deficiencies or anomalies and corrective actions taken.
- Equipment calibration and maintenance.
- Corrective action program.
- Policies on product labeling and the application of the

EAC mark of certification.

- 8.5.4. Exit Briefing. EAC representatives must provide the manufacturing facility's representative a verbal exit briefing regarding the preliminary observations of the review.
- 8.5.5. Written Report. A written report documenting the review must be drafted by the EAC and provided to the manufacturer. The report must detail the findings of the review and identify actions that are required to correct any identified deficiencies.

8.6. **Fielded System Review and Testing**. Upon invitation, or with the permission of a state or local election authority, the EAC may conduct a review of fielded voting systems. Such reviews will be conducted to ensure that a fielded system is comprised of the same configuration as what was certified by the EAC and that the proper mark of certification has been applied. This review may include the testing of a fielded system, if deemed necessary. Any anomalies found during this review must be provided to the appropriate election jurisdiction(s) and the manufacturer. In addition, this review will evaluate the correspondence of the actual configuration and use of the voting system in the field with the VSTL-tested system. If anomalies occur, these reviews seek to determine the direct cause, underlying root cause and appropriate remedial and/or preventative actions.

8.7. **Field Anomaly Reporting**. The EAC will collect information from registered manufacturers and election officials with fielded EAC-certified voting systems. Information on the actual field performance of a voting system is used as a means for assessing the effectiveness of the program and the manufacturing quality and version control. The EAC must provide a mechanism for registered manufacturers and election officials to provide input related to voting system anomalies.

- 8.7.1. Anomaly Report. Election officials may submit notices of voting system anomalies directly to the EAC in PDF format consistent with the requirements below. EAC staff will reach out to state certification and election offices to identify anomalies after federal elections.

Voting system manufacturers must report voting system anomalies to the EAC.

- 8.7.2. Who May Report? State or local election officials, or state certification offices who have experienced voting system anomalies in their jurisdiction are encouraged to may file

anomaly reports. The individuals reporting must identify themselves and have firsthand knowledge of, or official responsibility over, the anomaly being reported. Anonymous or hearsay reporting will not be accepted.

Voting system manufacturers must report voting system anomalies to the EAC within 48-hours of occurrence, or in accordance with the parameters of any EAC request.

8.7.3. What Is Reported? ~~Election officials may report voting system anomalies.~~ An anomaly is defined as an irregular or inconsistent action or response from the voting system, or system component, which resulted in the system or component not functioning as intended or expected. Anomalies resulting from administrator error or procedural deficiencies are not considered anomalies for purposes under this chapter. The report must include:

- The ~~official's~~ reporter's name, title, contact information, and jurisdiction.
- A description of the voting system that experienced the anomaly.
- The date and location of the reported occurrence.
- The type of election.
- A description of the anomaly witnessed with applicable supporting documentation, if available.

8.7.4. Distribution of Reports. Reports which are deemed to contain credible information must be distributed to state and local election jurisdictions with similar systems, to the manufacturer of the voting system, and to the VSTLs. Reports are deemed credible if:

- the definition of an anomaly is met;
- a complete report is submitted based on the requirements of Section 8.7.3 of this manual;
- information contained within the report was confirmed by others present at the time of the anomaly; and
- was verified by the relevant state's chief election official.

8.8. **Manufacturer Created Technical Bulletins or Product Advisories.**

Manufacturers are required to provide any technical bulletins or product advisories issued on EAC-certified voting systems to the EAC at the time they are issued to jurisdictions impacted by the advisory. EAC must receive these via email within 24 hours of issuance.

8.9. **Use of Quality Monitoring Information.** Ultimately, the information the EAC gathers from manufacturing site audits, fielded system reviews, and field anomaly reports is used to improve the program and ensure the quality of voting systems. The Quality Monitoring Program is not designed to be punitive but to be focused on improving the process. Information gathered is used to accomplish the following:

- 8.9.1. Identify areas for improvement in the EAC's Testing and Certification Program.
- 8.9.2. Improve the manufacturing quality and change control processes.
- 8.9.3. Increase voter confidence in voting technology.
- 8.9.4. Inform manufacturers, election officials, and the EAC of issues associated with voting systems in a real-world environment.
- 8.9.5. Share information among jurisdictions that use similar voting systems.
- 8.9.6. Resolve problems associated with voting technology or manufacturing by involving manufacturers, election officials, and the EAC.
- 8.9.7. Strengthen the coordination between certification testing and the desired performance in deployed voting systems.
- 8.9.8. Adopt a yearly VVSG review process where proposed changes and/or additions are considered by the TGDC and determinations are sent to the EAC Executive Director (or a person operating in that capacity) to begin the adoption process and that whenever possible, review processes (such as Board of Advisor review, Standards Board Review, and public comment periods) run concurrently to ensure timely adoption of changes and/or additions.
- 8.9.9. Initiate an investigation when information suggests decertification is warranted (see Chapter 7 [of this manual](#)).

9. Vulnerability Disclosure

9.1. Introduction. The EAC's Testing and Certification program provides an extensive security assessment of each voting system through penetration testing and conformance evaluation to VVSG requirements by accredited test laboratories. However, new cybersecurity vulnerabilities applicable to voting systems may be discovered by parties outside the program at any time.

The National Institute of Standards and Technology's (NIST) Computer Security Resource Center defines vulnerability as a weakness in an information system, system security procedures, internal controls, or implementation that could be exploited or triggered by a threat source. It is critical to the security of our nation's voting systems, and the objective of the EAC, that vulnerabilities discovered are mitigated or remediated appropriately, and in a timely manner. The EAC is not a regulatory agency and therefore may not enforce remediation, though manufacturers registered within the program must adhere to the Quality Monitoring Program (chapter 8) to ensure the integrity of their certified systems is maintained.

The intent of this section is to inform stakeholders regarding how the EAC will handle voting system vulnerabilities reported to the agency.

9.2. Who May Report. Security researchers should directly communicate their findings with manufacturers. The individuals reporting must identify themselves and have firsthand knowledge of the vulnerability being reported. If the manufacturer does not respond within the timeframe specified in their published vulnerability disclosure policy, researchers may report voting system vulnerabilities directly to the EAC. Anonymous or hearsay reporting will not be accepted.

Additionally, voting system manufacturers that are registered with the program should report vulnerabilities they discover in EAC certified systems directly to the EAC within the timeframes defined in their published vulnerability disclosure program.

9.3. Process. When a voting system vulnerability is discovered, the following steps should be taken:

- The reported information must be shared with the affected manufacturer(s) to validate and determine the scope of applicable systems and jurisdictions.
- The EAC may facilitate coordination between the reporter and the affected manufacturer(s) only in the event one or more parties is

not being responsive or cooperative. In general, coordination should remain between the reporter and the affected manufacturer(s).

- Determination of vulnerability severity and action(s) necessary to address vulnerabilities should be made between the reporter and the manufacturer whenever possible. Whether it be mitigation via processes described in voting system technical documentation, or changes to voting system hardware or software to remediate the vulnerability. If disagreement occurs between the reporter and a manufacturer either party may ask the EAC to participate in the determination.
- The vulnerability disclosure process should not be used to identify or report VVSG non-conformances or other functional anomalies (see chapter 8). Vulnerability disclosures will not be used to initiate the decertification process unless a manufacturer is unresponsive to the EAC, and this is the only remaining course of action.
- The EAC will coordinate mitigation or remediation of the vulnerability with the manufacturer(s) through the testing and certification program.

9.4. Vulnerability Testing and Certification. Mitigation or remediation to address vulnerabilities found in voting systems may be submitted to the EAC for testing and certification by registered manufacturers. These may be either as a minor change order to a certified voting system, or as a modified voting system, in accordance with the procedures in section 3.5 or section 3.6 of this manual respectively.

9.10. Requests for Interpretations

9.1.10.1. Overview. A request for interpretation (RFI) is a means by which manufacturers and VSTLs may request the EAC to provide a definitive interpretation of VVSG requirements when, in the course of developing or testing a voting system, the meaning of a particular requirement is ambiguous. The EAC may self-initiate such a request when its agents identify a need for interpretation within the program. An interpretation issued by the EAC serves to clarify what a given standard requires and how to properly evaluate compliance. An interpretation does not amend VVSG requirements but serves only to clarify existing requirements. Suggestions or requests for modifications to the VVSG are provided by other processes. This chapter outlines the requirements and procedures for submitting an RFI.

9.2.10.2. Requirements for Submitting a Request for Interpretation. An interpretation is limited in scope. An RFI must:

- be submitted by a registered manufacturer or VSTL,
- request interpretation of an applicable VVSG requirement,
- present an actual controversy, and
- seek clarification on a matter of unsettled ambiguity.

9.2.1.10.2.1. Applicable VVSG Requirements. An RFI is limited to queries regarding requirements contained in a version of EAC VVSG to which the EAC currently offers certification.

9.2.2.10.2.2. Existing Factual Controversy. To submit an RFI, a manufacturer or VSTL must present a question relative to a specific voting system or technology proposed for use in a voting system. An RFI on hypothetical issues will not be addressed by the EAC, and the EAC will not accept an RFI when the issue has previously been clarified. A factual controversy exists when an attempt to apply a specific section of the VVSG to a specific system or piece of technology creates ambiguity.

9.2.2.1.10.2.2.1. Actual Ambiguity. An RFI must contain an actual ambiguity. The interpretation process is not a means for challenging a clear VVSG requirement or to recommend changes to requirements. An ambiguity arises when one of the following occurs:

- The language of a requirement or its test assertions is unclear on its face.
- One requirement or its test assertions seems to

contradict another.

- The language of the requirement or its test assertions, though clear on its face, lacks sufficient detail or breadth to determine its proper application to a particular technology.
- The language of a particular requirement or its test assertions, when applied to a specific technology, conflicts with the established purpose or intent of the requirement.
- The language of the requirement or its test assertions is clear, but the proper means to assess compliance is unclear.

9.3.10.3. Procedure for Submitting a Request for Interpretation. An RFI must be made in writing to the Program Director. EAC interpretations are based upon, and limited to, the facts presented; therefore, all requests should be complete and as detailed as possible. Failure to provide complete information may result in an interpretation that is non-applicable and ultimately immaterial to the issue at hand. The following must be included in an RFI:

9.3.1.10.3.1. Establish standing to make the request. The written request must provide sufficient information for the Program Director to conclude that the requestor is:

- a proper requestor,
- requesting an interpretation of an applicable voting system standard,
- presenting an actual factual controversy, and
- seeking clarification on a matter of unsettled ambiguity.

9.3.2.10.3.2. Identify the VVSG requirement to be clarified. The request must identify the specific VVSG requirement or requirement(s) to which the requestor seeks clarification. The request must state the version of the VVSG at issue and quote and correctly cite the applicable requirement(s).

9.3.3.10.3.3. State the facts resulting in ambiguity. The request must provide the facts associated with the voting system technology that resulted in the ambiguity. The requestor must provide all necessary information in a clear, concise manner. Any interpretation issued by the EAC must be based on the facts provided.

9.3.4.10.3.4. Identify the ambiguity. The request must identify the

ambiguity it seeks to resolve and must:

- Clearly state a concise question.
- Be related to, and reference, the voting system standard and voting system technology.
- Be limited to a single issue. Each question or issue arising from an ambiguous requirement, or its test assertions must be stated separately. Compound questions are unacceptable. If multiple issues exist, they should be presented as individual, numbered questions.
- Be stated in a way that can ultimately be answered yes or no.

9.3.5.10.3.5. **Provide a Proposed Interpretation.** An RFI must propose an answer to the question posed. The answer must interpret the requirement or its test assertions in the context of the facts presented and must provide the basis and reasoning behind the proposed interpretation.

9.4.10.4. **EAC Action on an RFI.** Upon receipt of an RFI, the Program Director must review the request to ensure it is complete, clear, and meets the requirements of Section 910.3 of this manual. Upon review, the Program Director must do one of the following:

- Request Clarification. If the RFI is incomplete, or additional information is required, the Program Director may request the manufacturer or VSTL clarify its RFI and identify any additional information required.
- Reject the Request for Interpretation. If the RFI does not meet the requirements of Section 910.3 of this manual, the Program Director may reject it. The rejection must be provided in writing to the manufacturer or VSTL and must state the basis for the rejection.
- Notify Acceptance of the Request. If the RFI is accepted, the Program Director must notify the manufacturer or VSTL in writing. An RFI may be accepted in whole or in part and the notice of acceptance must state the issues accepted for interpretation.

The Program Director is responsible for making determinations on an RFI. After this determination has been made, a written interpretation must be sent to the manufacturer or VSTL. The following actions must be included in the interpretation:

- The question(s) investigated.

- The relevant facts that served as the basis of the interpretation.
- The VVSG requirement(s) interpreted.
- The conclusion reached.
- The effect of an interpretation.

9.5.10.5. Effect of Interpretation. Interpretations are fact specific and case specific. They are not tools of policy, but specific, fact-based guidance useful for resolving a particular problem. Ultimately, an interpretation is determinative and conclusive only with regard to the case presented. Nevertheless, interpretations do have some value as precedent. Interpretations published by the EAC serve as reliable guidance and authority over identical or similar questions of interpretation. These interpretations will help users understand and apply the individual requirements of the VVSG and will be incorporated into the requirement's test assertions, where possible.

9.6.10.6. Library of Interpretations. To better serve manufacturers, VSTLs, and other stakeholders, the Program Director will publish RFIs on www.eac.gov. All proprietary information contained in an interpretation must be redacted before publication consistent with Chapter 11~~0~~ of this manual.

10.11. Release of Certification Program Information

10.1.11.1. Overview. Manufacturers participating in the program are required to provide the EAC with a variety of documents. In general, these documents are releasable to the public and, in many cases, the information provided will be published by the EAC. In limited cases, documents may not be released if they include trade secrets, confidential commercial information, or personal information. While the EAC is ultimately responsible for determining which documents, federal law protects from release, manufacturers must identify the information they believe is protected and ultimately provide substantiation and a legal basis for withholding. This chapter discusses the EAC's general policy on the release of information and provides manufacturers with standards, procedures, and requirements for identifying documents as trade secrets or confidential commercial information.

10.2.11.2. EAC Policy on the Release of Certification Program

Information. The EAC seeks to make its Voting System Testing and Certification Program as transparent as possible. The agency believes such action benefits the program by increasing public confidence in the process and creating a more informed and involved public. As such, it is the policy of the EAC to make all documents, or severable portions thereof, available to the public consistent with federal law (e.g. Freedom of Information Act and the Trade Secrets Act).

10.2.1.11.2.1. Requests for Information. As in any federal program, members of the public may request access to Program documents under FOIA (5 U.S.C. §552). The EAC must promptly process such requests per the requirements of the Act.

10.2.2.11.2.2. Publication of Documents. Beyond the requirements of FOIA, the EAC intends to publish program documents (or portions of documents) it believes are of interest to the public at www.eac.gov. The published documents will cover the full spectrum of the program, including information pertaining to:

- registered manufacturers;
- VSTL test plans;
- VSTL test reports;
- agency decisions;
- denials of certification;
- issuance of certifications;
- information on a certified voting system's operation, components, features or capabilities;
- appeals;

- reports of investigation and notice of noncompliance;
- decertification actions;
- manufacturing facility reports;
- official interpretations; and
- other topics as determined by the EAC.

10.2.3.11.2.3. **Trade Secret and Confidential Commercial Information.**

Federal law places a number of restrictions on a federal agency's authority to release information to the public. Two such restrictions are particularly relevant to the program: trade secrets information and privileged or confidential commercial information. Both types of information are explicitly prohibited from release by the FOIA and the Trade Secrets Act (18 U.S.C. §1905).

10.3.11.3. **Trade Secrets.** A secret, commercially valuable plan, process, or device used for the making or processing of a product and that is the end result of either innovation or substantial effort. It relates to the productive process itself, describing how a product is made. It does not relate to information describing end product capabilities, features, or performance. The following examples illustrate productive processes that may be trade secrets:

- Plans, schematics, and other drawings useful in production.
- Specifications of materials used in production.
- Voting system source code used to develop or manufacture software where release would reveal actual programming.
- Technical descriptions of manufacturing processes and other secret information relating directly to the production process.

The following examples are likely not trade secrets:

- Information pertaining to a finished product's capabilities or features.
- Information pertaining to a finished product's performance.
- Information regarding product components that would not reveal any commercially valuable information regarding production.

10.4.11.4. **Privileged or Confidential Commercial Information.** Privileged or confidential commercial information is information submitted by a manufacturer that is commercial or financial in nature and privileged or confidential.

10.4.1.11.4.1. **Commercial or Financial Information.** The terms

“commercial” and “financial” should be given their ordinary meanings. They include records in which a submitting manufacturer has any commercial interest.

10.4.2.11.4.2. Privileged or Confidential Information. Commercial or financial information is privileged or confidential if its disclosure would likely cause substantial harm to the competitive position of the submitter. The concept of harm to one’s competitive position focuses on harm flowing from a competitor’s affirmative use of the proprietary information. It does not include incidental harm associated with upset customers or employees.

10.5.11.5. EAC’s Responsibilities. The EAC is ultimately responsible for determining whether or not a document (in whole or in part) may be released pursuant to federal law. However, the EAC may require information and input from the manufacturer submitting the documents. This requirement is essential for the EAC to identify, track, and make determinations on the large volume of documentation it receives. The EAC has the following responsibilities:

10.5.1.11.5.1. Managing Documentation and Information. The EAC controls the documentation it receives by ensuring that documents are secure and released to third parties only after the appropriate review and determination.

10.5.2.11.5.2. Contacting Manufacturer on Proposed Release of Potentially Protected Documents. In the event a member of the public submits a FOIA request for documents provided by a manufacturer or the EAC otherwise proposes the release of such documents, the EAC must take the following action:

- Review the documents to determine if they are potentially protected from release as trade secrets or confidential commercial information. The documents at issue may have been previously identified as protected by the manufacturer when submitted (see Section 101.6 of this manual below) or identified by the EAC on review.
- Grant the submitting manufacturer an opportunity to provide input. In the event the information has been identified as potentially protected from release as a trade secret or confidential commercial information, the EAC must notify the submitter and allow them an opportunity to submit their position on the issue prior to release of the information. The submitter must

respond consistent with Section 101.6 of this manual below.

10.5.3-11.5.3. **Final Determination on Release.** After providing the submitter of the information an opportunity to be heard, the EAC will make a final decision on release and inform the submitter of this decision.

10.6-11.6. **Manufacturer's Responsibilities.** The manufacturer is responsible for identifying documents, or portions of documents, it believes warrant such protection, and is responsible for providing the legal basis and substantiation for their determination regarding the withholding of a document. This responsibility arises upon the initial submission of information and upon notification by the EAC that it is considering the release of potentially protected information.

10.6.1-11.6.1. **Initial Submission of Information.** When a manufacturer submits documents to the EAC as required by the program, it is responsible for identifying any document or portion of a document that it believes is protected from release by federal law. Manufacturers must identify protected information by the following:

10.6.1.1-11.6.1.1. **Submitting a Notice of Protected Information.** This notice must identify the document, document page, or portion of a page that the manufacturer believes should be protected from release. This identification must be done with specificity. For each piece of information identified, the manufacturer must state the legal basis for its protected status.

- Cite the applicable law that exempts the information from release.
- Clearly discuss why that legal authority applies and why the document must be protected from release.
- If necessary, provide additional documentation or information. For example, if the manufacturer claims a document contains confidential commercial information, it must also provide evidence and analysis of the competitive harm that would result upon release.

10.6.1.2-11.6.1.2. **Label Submissions.** Label all submissions identified in the notice as "Proprietary Commercial Information." Label

only those submissions identified as protected. Attempts to indiscriminately label all materials as proprietary render the markings moot.

~~10.6.2.11.6.2.~~ **Notification of Potential Release.** In the event a manufacturer is notified that the EAC is considering the release of information that may be protected, the manufacturer must:

~~10.6.2.11.6.2.1.~~ Respond to the notice within 10 business days. If additional time is needed, the manufacturer must promptly notify the Program Director. Requests for additional time may be granted only for good cause and must be made before the deadline. Manufacturers that do not respond before the deadline will be viewed as not objecting to release.

~~10.6.2.2.11.6.2.2.~~ Clearly state one of the following in the response:

- There is no objection to release, or
- The manufacturer objects to release. In this case, the response must clearly state which portions of the document the manufacturer believes should be protected from release. The manufacturer must follow the procedures discussed in Section ~~101.6 of this manual~~[7.1](#).

~~10.7.11.7.~~ **Personal Information.** Certain personal information is protected from release under FOIA and the Privacy Act (5 U.S.C. §552a). This information includes private information about a person that, if released, would cause the individual embarrassment, or constitute an unwarranted invasion of personal privacy. The EAC does not require the submission of private, individual information and the incidental submission of such information should be avoided. If a manufacturer believes it is required to submit such information, it should contact the Program Director. Examples of such information include:

- Social security number
- Bank account numbers
- Home address
- Home phone number

Appendix A – Glossary

Definitions. For purposes of this manual, the terms listed below have the following definitions.

Appeal. A formal process by which the EAC is petitioned to reconsider a decision.

Appeal Authority. The individual or individuals appointed to serve as the determination authority on appeal.

Build Environment. The disk or other media that holds the source code, compiler, linker, integrated development environments (IDE), and/or other necessary files for the compilation and on which the compiler stores the resulting executable code.

Certificate of Conformance. The certificate issued by the EAC when a system has been found to meet the requirements of the VVSG. This document indicates that the system has been certified.

Certification Program. The EAC Voting System Testing and Certification Program.
Commercial Off-the-Shelf (COTS). Any software, firmware, device or component that is used in the United States by many different people or organizations for many different applications other than certified voting systems and that is incorporated into the voting system with no manufacturer- or application-specific modification.

Commission (EAC). The U.S. Election Assistance Commission, as an agency.

Commissioners. The serving commissioners of the U.S. Election Assistance Commission.

Compiler. A computer program that translates programs expressed in a high-level language into machine language equivalents.

Component. An identifiable and discrete part of the larger voting system essential to the operation of the voting system, and an immediate subset of the system to which it belongs.

Days. The term days refers to calendar days, unless otherwise noted. When counting days, for the purpose of submitting or receiving a document, the count begins on the first full calendar day after the day the document was received.

Decision Authority. The EAC Executive Director or Executive Director's designee.

Deficiency. A deficiency is considered a non-conformity to the voting standard to which the voting system is being certified.

Election Official. A State or local government employee who has as one of his or her primary duties the management or administration of a Federal election.

Federal Election. Any primary, general, runoff, or special election in which a candidate for Federal office (President, Senator, or Representative) appears on the ballot. In addition, for the purposes of this manual, the term includes any and all Pre-Election Testing and Post-Election Testing and/or auditing done in conjunction with any primary, general, runoff, or special election involving a candidate for Federal office.

Fielded Voting System. A voting system purchased or leased by a State or local government that is used in a Federal election.

File Signature. A file signature, sometimes called a cryptographic hash value, creates a value that is computationally infeasible of being produced by two similar but different files. File signatures, a set of files produced using a hash algorithm, are used to verify that files are unmodified from their original version.

Hash Algorithm. An algorithm that maps a bit string of arbitrary length to a shorter, fixed-length bit string. The hash algorithm used for this Program is the Secure Hash Algorithm (SHA-2) specified in Federal Information Processing Standard (FIPS) 180-4.

Installation Device. A device containing program files, software, and installation instructions for installing an application (program) onto a computer. Examples of such devices include installation disks, compact flash memory cards, and USB memory drives.

Integration Testing. The end-to-end testing of a full system configured for use in an election to assure that all legitimate configurations meet applicable standards.

Lines of Code. Any executable statements, flow control statements, formatting (e.g., blank lines) and comments.

Linker. A computer program that takes one or more objects generated by compilers and assembles them into a single executable program.

Management Representative. An individual authorized to represent and make binding commitments and management determinations for the manufacturer.

Manufacturer. The entity with ownership and control over a voting system submitted for certification.

Manufacturing Facility. A manufacturing facility that provides:

- final system configuration and loading of programs for customer delivery,
- manufacturing of component units of the voting system, and
- manufacturing of major sub-assemblies of the voting system.

Mark of Certification. A uniform notice permanently posted on a voting system signifying it is EAC-certified.

Minor Change Order. A minor change order is a change to a certified voting system's hardware, software, technical data package, or data, the nature of which does not materially alter the system's reliability, functionality, capability, or operation. Any changes made to a system under test results in the manufacturer supplying a list and detailed description of all changes.

Modification. Any change to a previously EAC-certified voting system's hardware, software, or firmware that is not classified as a minor change order or new system.

Program Director. The individual responsible for administering and managing the Testing and Certification Program. In the event of a vacancy in this position, the EAC Executive Director will designate staff to temporarily assume these duties.

Proprietary Information. Commercial information or trade secrets protected from release under the Freedom of Information Act and the Trade Secrets Act.

Scope of Certification. A document attached to the Certificate of Conformance. The scope of certification describes the system and includes, but is not limited to, the following:

- A system overview that briefly describes each major component of the system. It includes a high-level system diagram showing these components and how they relate and interact in each configuration.
- Languages supported by the system.
- In the event of a modification, a description of the change(s) made to each component of the system.
- Proprietary components, including hardware and software included in the system. This will detail the model name/number and version.
- COTS components, including software and hardware, included in the

system. This will detail the model name/number and version.

- The system and component limitations and capacities that the system has been tested and certified to meet.
- The declared supported functionality of the system.
- All engineering change orders certified with the system.

Sub-assembly. A major functional piece of equipment essential to the operational completeness of a component of a voting system. Examples of major sub-assemblies for voting systems include, but are not limited to:

- Printers
- Touch screen terminals
- Scanners/Tabulators
- Card readers
- Ballot boxes
- Keyboards
- Memory modules, USB drives, and other portable memory devices
- External data storage devices, external hard drives, etc.
- Motherboards, processor board and other PWB assemblies, when supplied separately from a complete unit

System Identification Tools. Tools created by a manufacturer of voting systems which allow elections officials to verify that the hardware and software of systems purchased are identical to the systems certified by the EAC.

Technical Representative. An individual authorized to provide technical information on behalf of the manufacturer.

Test Assertion. Test assertions contain granular conditions that must be tested to determine conformance to a specific VVSG requirement. The intent is to break down requirements that are open to interpretation, into unambiguous, specific, and testable conditions.

Trusted Build. A software compilation process where source code is converted into machine- readable binary instructions (executable code) in a manner providing security measures which help ensure that the executable code is a verifiable and faithful representation of the source code.

Voting System. The total combination of mechanical, electromechanical, and electronic equipment (including the software, firmware, and documentation required to program, control, and support the equipment) used to define ballots; cast and count votes; report or display election results; connect the voting system to the voter registration system; and maintain and produce any audit trail information.

Voting System Test Laboratories (VSTL). Independent testing laboratories accredited by the EAC to test voting systems to EAC-approved voting system standards. Each VSTL must be accredited by NVLAP) and recommended by the NIST before it may receive an EAC accreditation. NVLAP provides third party accreditation to testing and calibration laboratories. NVLAP is in full conformance with the standards of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC), including ISO/IEC Guide 17025 and 17011.

Voluntary Voting System Guidelines (VVSG). Voluntary voting system guidelines developed, adopted, and published by the EAC. The guidelines are identified by version number and date.

Vulnerability. A weakness in an information system, system security procedures, internal controls, or implementation that could be exploited or triggered by a threat source.

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Appendix B – Voting System Test Plan Outline

This outline is provided solely as an aid to test plan development. Note that these items may change significantly, depending on the specific project planned.

1. Introduction

1.1. References

1.2. Terms and Abbreviations

1.3. Testing Responsibilities

1.3.1. Project schedule with

1.3.1.1. Owner assignments

1.3.1.2. Test case development

1.3.1.3. Test procedure development and validation

1.3.1.4. 3rd party tests

1.3.1.5. EAC and manufacturer dependencies

1.4. Target of Evaluation Description

1.4.1. System Overview

1.4.2. Block diagram

1.4.3. System Limits

1.4.4. Supported Languages

1.4.5. Supported Functionality

1.4.5.1. Standard VVSG Functionality

1.4.5.2. Manufacturer Extensions

2. Pre-Certification Testing and Issues

2.1. Evaluation of prior VSTL testing

2.1.1. Reason for testing and results, listing of modifications from the previous system to the system to be tested

2.2. Evaluation of prior non-VSTL testing

2.2.1. Reason for testing and results, states, other 3rd party entities

2.3. Known Field Issues

2.3.1. Listing of relevant issues uncovered during field operations

3. Materials Required for Testing

3.1. Software

3.2. Equipment

3.3. Test Materials

3.4. Deliverable Materials

4. Test Specifications

4.1. Requirements

4.1.1. Mapping of requirements to equipment type and features

4.1.2. Rationale for why some requirements are not applicable for this campaign

4.2. Hardware Configuration and Design

4.3. Software System Functions

4.4. Test Case Design

4.4.1. Hardware Qualitative Examination Design

4.4.1.1. Mapping of requirements to specific interfaces

4.4.2. Hardware Environmental Test Case Design

4.4.3. Software Module Test Case Design and Data

4.4.4. Software Functional Test Case Design and Data

4.4.5. System-level Test Case Design

4.5. Security functions

4.6. TDP evaluation

4.7. Source Code review

4.8. QA & CM system review

5. Test Data

5.1. Data Recording

5.2. Test Data Criteria

5.3. Test Data Reduction

6. Test Procedure and Conditions

6.1. Facility Requirements

6.2. Test Set-up

6.3. Test Sequence

7. Test Operations Procedures

Appendix C – Voting System Modification Test Plan Outline

Test plans submitted for modifications to previously EAC-certified voting systems should be brief and structured to minimize test plan development and review, while enabling the EAC to maintain solid control of the certification process. The test plan must concisely document the strategy and plan for testing those sections of the VVSG applicable to the modification or modifications submitted. The test plan must be written with clarity that all constituents can understand what testing will be conducted, to verify compliance to VVSG requirements, and to assure that the test plan will remain a living document throughout the life of the test campaign for the modification.

This outline is provided solely as an aid to test plan development. Note that these items may change significantly, depending on the specific project planned.

1. Introduction

1.1 Description and Overview of EAC-certified system being modified

- 1.1.1 Complete definition of the baseline certified system.
- 1.1.2 Detailed description of the engineering changes and/or modifications to the certified system and why the modification was implemented.
- 1.1.3 An initial assessment of the impact that the modifications have on the system and past certification.
- 1.1.4 Description of what will be regression tested to establish assurance that the modifications have no adverse impact on the compliance, integrity or performance of the system.

1.2 References

1.3 Terms and Abbreviations

1.4 Project Schedule

1.5 Scope of testing

- 1.5.1 Block diagram (if applicable)
- 1.5.2 System limits (if applicable)
- 1.5.3 Supported Languages
- 1.5.4 Supported Functionality
- 1.5.5 VVSG
- 1.5.6 RFIs
- 1.5.7 NOCs

2. Pre-Certification Testing and Issues

- 2.1 Evaluation of prior VSTL testing
- 2.2 Evaluation of prior non-VSTL testing (if applicable)
- 2.3 Known Field Issues (if applicable)

3. Materials Required for Testing

- 3.1 Software
- 3.2 Equipment
- 3.3 Test Materials
- 3.4 Deliverables
- 3.5 Proprietary Data

4. Test Specifications

- 4.1 Requirements
 - 4.1.1 Mapping of requirements to equipment type and features
 - 4.1.2 Rationale for why some requirements are NA for this campaign
- 4.2 Hardware Configuration and Design (if applicable)
- 4.3 Software System Functions (if applicable)
- 4.4 Test Case Design
 - 4.4.1 Hardware Qualitative Examination Design (if applicable)
 - 4.4.2 Hardware Environmental Test Case Design (if applicable)
 - 4.4.3 Software Module Test Case Design and Data (if applicable)
 - 4.4.4 Software Functional Test Case Design and Data (if applicable)
 - 4.4.5 System-level Test Case Design
- 4.5 Security functions (if applicable)
- 4.6 TDP evaluation
- 4.7 Source Code review (if applicable)
- 4.8 QA & CM system review

5. Test Data

- 5.1 Test Data Recording
- 5.2 Test Data Criteria

6. Test Procedure and Conditions

- 6.1 Test Facilities
- 6.2 Test Set-up

6.3 Test Sequence

6.4 Test Operations Procedure

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Appendix D – Voting System Test Report Outline

Test Reports produced by VSTLs must follow the format outlined below. Deviations from this format may be used upon prior written approval of the Program Director.

1. System Identification and Overview

2. Certification Test Background

2.1 Revision History

2.2 Implementation Statement

3. Test Findings and Recommendation

3.1 Summary Finding and Recommendation

3.2 Reasons for Recommendation to Reject

3.3 Anomalies

3.4 Correction of Deficiencies

Appendix A. Additional Findings

Appendix B. Warrant of Accepting Change Control Responsibility

Appendix C. Trusted Build

Appendix D. Test Plan

Appendix E. State Test Reports

Appendix E – Voting System Modification Test Report Outline

Test Reports produced by VSTLs must follow the format outlined below. Deviations from this format may be used upon prior written approval of the Program Director.

1. Introduction

- 1.1 Description of EAC-certified system being modified
- 1.2 References
- 1.3 Terms and Abbreviations

2. Certification Test Background

- 2.1 Revision History
- 2.2 Scope of testing
 - 2.2.1 Modification Overview
 - 2.2.1.1 Detailed list of changes
 - 2.2.2 Block diagram (if applicable)
 - 2.2.3 Supported Languages
 - 2.2.4 VVSG
 - 2.2.5 RFIs
 - 2.2.6 NOCs

3. Test Findings and Recommendation

- 3.1 Summary Finding and Recommendation
 - 3.1.1 Hardware Testing
 - 3.1.2 System Level Testing
 - 3.1.3 Source code review
- 3.2 Anomalies and Resolutions
- 3.3 Deficiencies and Resolutions

4. Recommendation for Certification

- Appendix A. Additional Findings
- Appendix B. Deficiency report (if applicable)
- Appendix C. Anomaly report (if applicable)
- Appendix D. Test Plan
- Appendix E. State Test Reports (if applicable)

Appendix F – Pilot Program for Component Testing

Introduction

VVSG 2.0 introduces the principle of interoperability and defines requirements for voting systems to adhere to common data formats (CDFs) defined by NIST. The CDFs may, for the first time, allow existing or specialty component manufacturers to create novel devices that can be integrated into certified voting systems without needing to process data from proprietary interchange formats. The EAC is introducing a component testing pilot program to evaluate the feasibility of these types of integrations while maintaining the security, accuracy, and integrity of certified voting systems.

The component testing pilot program proposes additions to the EAC's Testing and Certification Program that will allow election officials to acquire solutions that meet their needs without the requirement for a single voting system manufacturer to provide all functionality. Manufacturers will be able to focus their resources on creating best in breed components that reflect their strengths.

Pilot Program

The EAC will conduct a voluntary pilot program to test and certify voting system components outside of the context of full voting system certification. Testing will be conducted by EAC-accredited VSTLs and the program has the following goals:

1. Develop a process to conduct integration testing of voting system components from different manufacturers.
2. Validate that the CDFs are functioning as intended.
3. Develop processes to document the addition of components from different manufacturers to a certified voting system configuration.
4. Develop new guidelines for inclusion in future updates to the Testing and Certification program.

Manufacturers wishing to participate in the component testing pilot program must register with the EAC's Testing and Certification Program as defined in Chapter 2 of this manual. Additionally, the manufacturer must identify specific EAC-certified voting system(s) against which the component should be evaluated. Finally, the manufacturer should submit a certification application, to the extent possible, as defined in Chapter 3 of this manual.

Submitted components should be discrete or stand-alone components that only require information available through the CDFs. Full or partial voting systems (multiple components) will not be considered as part of this pilot program.