This document details the VotingWorks 4.0 functionality that is covered by VVSG 2.0 requirements and are to be verified within the scope of this certification.

Requirement	Guideline or Requirement Title	Implemented
1.1	The voting system is designed using commonly-accepted election process specifications.	
1.1.1	Election definition	
1.1.1-A	Election definition	Yes
1.1.1-B	Serve multiple or split precincts and election districts	Yes
1.1.1-C	Multiple identifiers	Yes
1.1.1-D	Definition of parties and contests	Yes
1.1.1-E	Voting variations	Yes
1.1.1-F	Confirm recording of election definition	Yes
1.1.1-G	Election definition distribution	Yes
1.1.1-H	Jurisdiction-dependent content	Yes
1.1.1-I	Include contests	Yes
1.1.1-J	Exclude contests	Yes
1.1.1-K	Primary elections, associate contests with parties	Yes
1.1.1-L	Ballot rotation, Election definition	Yes
1.1.1-M	Ballot configuration in combined or split precincts	Yes
1.1.1-N	Ballot style identification	Yes
1.1.2	Pre-election testing	
1.1.2-A	Built-in self-test and diagnostics	Yes
1.1.2-B	Installation of software and ballot styles	Yes
1.1.2-C	Use of test ballots	Yes
1.1.2-D	Testing all ballot positions	Yes
1.1.2-E	Testing cast vote record creation	Yes
1.1.2-F	Testing codes and image creation	Yes
1.1.2-G	Testing equipment calibration	Yes
1.1.2-H	No side-effects from pre-election testing	Yes
1.1.2-I	Equipment status and readiness reports	Yes
1.1.2-J	Ballot style readiness reports	Yes
1.1.2-K	Precinct-based voting devices readiness reports	Yes
1.1.2-L	All vote-capture devices readiness reports	Yes

1.1.3	Opening the polls	
1.1.3-A	Opening the polls	Yes
1.1.3-B	Non-zero totals	Yes
1.1.4	Casting	
1.1.4-A	Voting and casting the ballot	Yes
1.1.4-B	Control ballot configuration	Yes
1.1.4-C	Precinct splits, Casting	Yes
1.1.4-D	Ballot rotation, Casting	Yes
1.1.4-E	Partisan closed primary ballot	Yes
1.1.4-F	Partisan open primary ballot	Yes
1.1.4-G	Indicate party affiliations and endorsements	Yes
1.1.4-H	Write-in contest options	Yes
1.1.4-I	Write-in reconciliation	Yes
1.1.4-J	N-of-M contest, Casting	Yes
1.1.4-K	Straight-party voting, Casting	N/A - Not included in implementation statement.
1.1.4-L	Cumulative voting contest, Casting	N/A - Not included in implementation statement.
1.1.4-M	Ranked choice voting contest, Casting	N/A - Not included in implementation statement.
1.1.4-N	Party preference contest	N/A - Not included in implementation statement.
1.1.4-O	Top-2 primary contest (blanket primary contest)	N/A - Not included in implementation statement.
1.1.4-P	Presidential delegate contest, Casting	N/A - Not included in implementation statement.
1.1.4-Q	Proportional voting contest (equal-and-even cumulative voting contest), Casting	N/A - Not included in implementation statement.
1.1.4-R	Group voting contest, Casting	N/A - Not included in implementation statement.

1.1.4-S	Top-2 IRV contest (supplementary or contingent vote contest)	N/A - Not included in implementation statement.
1.1.5	Recording voter choices	
1.1.5-A	Casting and recording	Yes
1.1.5-B	Ballot orientation	Yes
1.1.5-C	Record contest selection information	Yes
1.1.5-D	Record write-in information	Yes
1.1.5-E	Record election and contest information	Yes
1.1.5-F	Record ballot selection override information	Yes
1.1.5-G	Record audit information	Yes
1.1.5-H	Store and link corresponding image	Yes
1.1.6	Ballot handling for vote-capture devices	
1.1.6-A	Detect and prevent ballot style mismatches	Yes
1.1.6-B	Detect and reject ballots that are oriented incorrectly	Yes
1.1.6-C	Ballot separation when batch feeding	Yes
1.1.6-D	Overvotes, undervotes, blank ballots	Yes
1.1.6-E	Write-ins, Ballot handling for vote-capture devices	Yes
1.1.6-F	Ability to clear mis-fed ballots	Yes
1.1.6-G	Scan to manufacturer specifications	Yes
1.1.6-H	Accurately detect imperfect marks	Yes
1.1.6-I	Ignore extraneous marks inside voting targets	Yes
1.1.6-J	Marginal marks, without bias	Yes
1.1.6-K	Repeatability	Yes
1.1.7	Exiting or suspending voting	
1.1.7-A	Exiting or suspending election mode	Yes
1.1.7-B	No voting when voting is stopped	Yes
1.1.7-C	Voting stop integrity check	Yes
1.1.7-D	Report on voting stop process	Yes
1.1.7-E	Prevent re-entering election mode	Yes
1.1.8	Tabulation	
1.1.8-A	Tabulation	Yes
1.1.8-B	Partisan primary elections	Yes
1.1.8-B.1	Tabulation of a closed primary ballot	Yes
1.1.8-B.2	Tabulation of an open primary ballot	Yes
1.1.8-B.3	Open primary ballot with party preference contest	N/A - Not included in implementation statement.
1.1.8-C	Write-ins, Tabulation	Yes

1.1.8-D	Ballot rotation, Tabulation	Yes
1.1.8-E	Straight-party voting, Tabulation	N/A - Not included in implementation statement.
1.1.8-F	Cross-party endorsement with straight-party voting	N/A - Not included in implementation statement.
1.1.8-G	Precinct splits, Tabulation	Yes
1.1.8-H	N-of-M contest, Tabulation	Yes
1.1.8-I	Cumulative voting contest, Tabulation	N/A - Not included in implementation statement.
1.1.8-J	Ranked choice voting contest, Tabulation	N/A - Not included in implementation statement.
1.1.8-K	Group voting contest, Tabulation	N/A - Not included in implementation statement.
1.1.8-L	Presidential delegate contest, Tabulation	N/A - Not included in implementation statement.
1.1.8-M	Recall contest pair	N/A - Not included in implementation statement.
1.1.8-N	Proportional voting contest (equal-and-even cumulative voting contest), Tabulation	N/A - Not included in implementation statement.
1.1.9	Reporting results	
1.1.9-A	Post-election reports	Yes
1.1.9-B	Report categories of cast ballots	Yes
1.1.9-C	Report categories of votes	Yes
1.1.9-D	Reporting combined or split precincts	Yes
1.1.9-E	Report counted ballots by contest	Yes
1.1.9-F	Report votes for each contest option	Yes
1.1.9-G	Report overvotes for each contest	Yes
1.1.9-H	Report undervotes for each contest	Yes

1.1.9-I	Ranked choice voting, report results	N/A - Not included in implementation statement.
1.1.9-J	Precinct reporting devices, reporting device consolidation	Yes
1.1.9-K	Precinct reporting devices, no tallies before polls close	Yes
1.1.9-L	Report read ballots by party	Yes
1.1.9-M	Reports are time stamped	Yes
1.2	The voting system is designed to function correctly under real- world operating conditions. - Requirements in this section deal with voting system accuracy and reliability.	
1.2-A	Assessment of accuracy	Yes
1.2-B	Reliably detectable marks	Yes
1.2-C	Minimum ballot positions	Yes
1.2-D	Handle maximum volume	Yes
1.2-E	Respond gracefully to stress of system limits	Yes
1.2-F	No single point of failure	Yes
1.2-G	Misfeed rate benchmark	Yes
1.2-H	Protect against failure of input and storage devices	Yes
1.2-I	FCC Part 15 Class A and B conformance	Yes
1.2-J	Power supply from energy service provider	Yes
1.2-K	Power port connection to the facility power supply	Yes
1.2-L	Leakage from grounding port	Yes
1.3	Voting system design supports evaluation methods enabling testers to clearly distinguish systems that correctly implement specified properties from those that do not.	
1.3-A	Reporting of manufacturer-performed tests	Yes
1.3-B	Coverage of manufacturer-performed tests	Yes
2.1	The voting system and its software are implemented using trustworthy materials and best practices in software development.	
2.1-A	Acceptable programming languages	Yes
2.1-B	COTS language extensions are acceptable	N/A -meet requirement 2.1-A
2.1-C	Acceptable coding conventions	Yes
2.1-D	Records last at least 22 months	Yes
2.1.1	Workmanship	
2.1.1-A	General build quality	Yes
2.1.1-B	Durability estimation	Yes

2.1.1-C	Durability of paper	Yes
2.1.1-D	Ensure compatibility of specified paper and ink	Yes
2.1.2	Maintainability	
2.1.2-A	Electronic device maintainability	Yes
2.1.2-B	System maintainability	Yes
2.1.2-C	Nameplate and labels	Yes
2.2	The voting system is implemented using best practice user-centered design methods that consider a wide range of representative voters, including those with and without disabilities, and election workers.	
2.2-A	User-centered design process	Yes
2.3	Voting system logic is clear, meaningful, and well-structured.	
2.3-A	Block-structured exception handling	Yes
2.3-B	Legacy library units	Yes
2.3-C	Separation of code and data	Yes
2.3-D	Hard-coded passwords and keys	Yes
2.3.1	Software flow	
2.3.1-A	Unstructured control flow	Yes
2.3.1-B	Goto	Yes
2.3.1-C	Intentional exceptions	Yes
2.3.1-D	Unstructured exception handling	Yes
2.4	Voting system structure is modular, scalable, and robust.	
2.4-A	Modularity	Yes
2.4-B	Module testability	Yes
2.4-C	Module size and identification	Yes
2.4-D	Large data structures in separate files	Yes
2.5	The voting system supports system processes and data with integrity.	
2.5-A	Self-modifying code	Yes
2.5-B	Unsafe concurrency	Yes
2.5.1	Code integrity	
2.5.1-A	COTS compilers	Yes
2.5.1-B	Interpreted code, specific COTS interpreter	Yes
2.5.1-C	Prevent tampering with code	Yes
2.5.1-D	Prevent tampering with data	Yes
2.5.2	Input/output errors	
2.5.2-A	Input validation and error defense	Yes
2.5.3	Output protection	
2.5.3-A	Escaping and encoding output	Yes

2.5.3-B	Sanitize output	Yes
2.5.3-C	Stored injection	Yes
2.5.4	Error handling	
2.5.4-A	Mandatory internal error checking	Yes
2.5.4-B	Array overflows	Yes
2.5.4-C	Buffer overflows	Yes
2.5.4-D	CPU traps	Yes
2.5.4-E	Garbage input parameters	Yes
2.5.4-F	Numeric overflows	Yes
2.5.4-G	Uncontrolled format strings	Yes
2.5.4-H	Recommended internal error checking	Yes
2.5.4-I	Pointers	Yes
2.5.4-J	Memory mismanagement	Yes
2.5.4-K	Nullify freed pointers	Yes
2.5.4-L	React to errors detected	Yes
2.5.4-M	Election integrity monitoring	Yes
2.5.4-N	SQL injection	Yes
2.5.4-O	Parameterized queries	Yes
2.6	The voting system handles errors robustly and gracefully recovers from failure.	
2.6-A	Surviving device failure	Yes
2.6-B	No compromising voting or audit data	Yes
2.6-C	Coherent checkpoints	Yes
2.7	The voting system performs reliably in anticipated physical environments. - Requirements in this section deal with voting system reliability with regard to environmental conditions and electrical surges and interference.	
2.7-A	Assessment of reliability	Yes
2.7-B	Continuous operation – typical environmental conditions	Yes
2.7-C	Continuous operation – varied environmental conditions	Yes
2.7-D	Ability to support maintenance and repair physical environment conditions – non- operating	Yes
2.7-E	Ability to support transport and storage physical environment conditions – non- operating	Yes
2.7-F	Ability to support storage temperatures in physical environment – non-operating	Yes
2.7-G	Electrical disturbances	Yes
2.7-H	Power outages, sags, and swells	Yes
2.7-I	Withstand conducted electrical disturbances	Yes
2.7-J	Emissions from other connected equipment	Yes
2.7-K	Electrostatic discharge immunity	Yes

3.1	The documentation describing the voting system design, operation, accessibility features, security measures, and other aspects of the voting system can be read and understood.	
3.1.1	System overview documentation	
3.1.1-A	System overview documentation	Yes
3.1.1-B	System overview, functional diagram	Yes
3.1.1-C	System description	Yes
3.1.1-D	Identify software and firmware by origin	Yes
3.1.1-E	Traceability of procured software	Yes
3.1.2	System performance documentation	
3.1.2-A	System performance documentation	Yes
3.1.2-B	Maximum tabulation rate	Yes
3.1.2-C	Reliably detectable marks	Yes
3.1.2-D	Processing capabilities	Yes
3.1.3	System security documentation	
3.1.3-A	System security documentation	Yes
3.1.3-B	Access control implementation	Yes
3.1.3-C	Physical security	Yes
3.1.3-D	Audit procedures	Yes
3.1.4	Software installation documentation	
3.1.4-A	Software installation documentation	Yes
3.1.4-B	Software information	Yes
3.1.4-C	Software location information	Yes
3.1.4-D	Election specific software identification	Yes
3.1.4-E	Installation software and hardware	Yes
3.1.4-F	Software installation procedures	Yes
3.1.4-G	Baseline image creation	Yes
3.1.4-H	Programmed device configuration replication	Yes
3.1.4-I	Software installation record creation	Yes
3.1.4-J	Procurement of voting system software	Yes
3.1.4-K	Open market procurement of COTS software	Yes
3.1.4-L	Erasable storage media preparation	Yes
3.1.4-M	Trusted storage media	Yes
3.1.5	System operations documentation	
3.1.5-A	System operations documentation	Yes
3.1.5-B	Support training	Yes
3.1.5-C	Functions and modes	Yes
3.1.5-D	Roles	Yes
3.1.5-E	Conditional actions	Yes

3.1.5-F	References	Yes
3.1.5-G	Operational environment	Yes
3.1.5-H	Readiness testing	Yes
3.1.5-I	Features	Yes
3.1.5-J	Support	Yes
3.1.5-K	Transportation and storage	Yes
3.1.6	System maintenance documentation	
3.1.6-A	System maintenance documentation	Yes
3.1.6-B	General contents	Yes
3.1.6-C	Maintenance viewpoint	Yes
3.1.6-D	Equipment overview details	Yes
3.1.6-E	Maintenance procedures	Yes
3.1.6-F	Preventive maintenance procedures	Yes
3.1.6-G	Troubleshooting procedure details	Yes
3.1.6-H	Special equipment	Yes
3.1.6-I	Parts and materials	Yes
3.1.6-J	Approved parts list	Yes
3.1.6-K	Marking devices	Yes
3.1.6-L	Approved manufacturers	Yes
3.1.6-M	Ballot stock specification	Yes
3.1.6-N	Ballot stock specification criteria	Yes
3.1.6-O	Printer paper specification	Yes
3.1.6-P	System maintenance, maintenance environment	Yes
3.1.6-Q	System maintenance, maintenance support and spares	Yes
3.1.7	Training documentation	
3.1.7-A	Training documentation	Yes
3.1.7-B	Personnel	Yes
3.1.7-C	User functions versus manufacturer functions	Yes
3.1.7-D	Training requirements	Yes
3.2	The processes and transactions, both physical and digital, associated with the voting system are readily available for inspection.	
3.2-A	Setup inspection process	Yes
3.2-B	Minimum properties included in the setup inspection process	Yes
3.2-C	Setup inspection record generation	Yes
3.2-D	Installed software identification procedure	Yes
3.2-E	Software integrity verification procedure	Yes
3.2-F	Election information value	Yes

3.2-G	Maximum and minimum values of election information storage locations	Yes
3.2-H	Variable value inspection procedure	Yes
3.2-I	Backup power operational range	Yes
3.2-J	Backup power inspection procedure	Yes
3.2-K	Cabling connectivity inspection procedure	Yes
3.2-L	Communications operational status inspection procedure	Yes
3.2-M	Communications on/off status inspection procedure	Yes
3.2-N	Quantity of voting equipment	Yes
3.2-O	Consumable inspection procedure	Yes
3.2-P	Calibration of voting device components	Yes
3.2-Q	Checklist of properties to be inspected	Yes
3.3	The public can understand and verify the operations of the voting system throughout the entirety of the election.	
3.3-A	System security, system event logging	Yes
3.3-B	Specification of common data format usage	Yes
3.3-C	Bar and other codes	Yes
3.3-D	Ballot selection codes	Yes
4.1	Voting system data that is imported, exported, or otherwise reported, is in an interoperable format.	
4.1-A	Election programming data input and output	Yes
4.1-B	Tabulator report data	Yes
4.1-C	Exchange of cast vote records (CVRs)	Yes
4.1-D	Exchange of voting device election event logs	Yes
4.1-E	Voting device event code documentation	Yes
4.1-F	Specification of common format usage	Yes
4.2	Standard, publicly available formats for other types of data not addressed by CDF specifications are used.	
4.2-A	Standard formats	Yes
4.2-B	Public documented manufacturer formats	Yes
4.3	Widely-used hardware interfaces and communications protocols are used.	
4.3	Interfaces and communication protocols	
4.3-A	Standard device interfaces	Yes
4.4	Commercial-off-the-shelf (COTS) devices can be used if they meet all applicable VVSG requirements.	
4.4-A	COTS devices meet applicable requirements	Yes

5.1	Voters have a consistent experience throughout the voting process within any method of voting.	
5.1-A	Voting methods and interaction modes	Yes
5.1-B	Languages	Yes
5.1-C	Vote records	Yes
5.1-D	Accessibility features	Yes
5.1-E	Reading paper ballots	Yes
5.1-F	Accessibility documentation	Yes
5.2	Voters receive equivalent information and options in all modes of voting.	
5.2-A	No bias	Yes
5.2-B	Presenting content in all languages	Yes
5.2-C	Information in all modes	Yes
5.2-D	Audio synchronized	Yes
5.2-E	Sound cues	Yes
5.2-F	Preserving votes	Yes
6.1	The voting process preserves the privacy of the voter's interaction with the ballot, modes of voting, and vote selections	
6.1-A	Preserving privacy for voters	Yes (6.2-A.1 – N/A -E2E)
6.1-B	Warnings	Yes
6.1-C	Enabling or disabling output	Yes
6.1-D	Audio privacy	Yes
6.2	Voters can mark, verify, and cast their ballot or other associated cast vote record without assistance from others.	
6.2-A	Voter independence	N/A - E2E
7.1	The default voting system settings present a ballot usable for the widest range of voters, and voters can adjust settings and preferences to meet their needs.	
7.1-A	Reset to default settings	Yes
7.1-B	Reset by voter	Yes
7.1-C	Default contrast	Yes
7.1-D	Contrast options	Yes
7.1-E	Color conventions	Yes
7.1-F	Using color	Yes
7.1-G	Text size (electronic display)	Yes
7.1-H	Scaling and zooming (electronic display)	Yes
7.1-I	Text size (paper)	Yes
7.1-J	Sans-serif font	Yes

7.1-K	Audio settings	Yes
7.1-L	Speech frequencies	Yes
7.1-M	Audio comprehension	Yes
7.1-N	Tactile keys	Yes
7.1-O	Toggle keys	Yes
7.1-P	Identifying controls	Yes
7.2	Voters and election workers can use all controls accurately, and voters have direct control of all ballot changes.	
7.2-A	Display and interaction options	Yes
7.2-B	Navigation between contests	Yes
7.2-C	Voter control	Yes (7.2-C.4-5 N/A -Voting Variation)
7.2-D	Scrolling	Yes
7.2-E	Touch screen gestures	Yes
7.2-F	Voter speech	N/A
7.2-G	Voter control of audio	Yes
7.2-H	Accidental activation	Yes
7.2-I	Touch area size	Yes
7.2-J	Paper ballot target areas	Yes
7.2-K	Key operability	Yes
7.2-L	Bodily contact	Yes
7.2-M	No repetitive activation	Yes
7.2-N	System response time	Yes
7.2-O	Inactivity alerts	Yes
7.2-P	Floor space	Yes
7.2-Q	Physical dimensions	Yes
7.2-R	Control labels visible	Yes
7.3	Voters can understand all information as it is presented, including instructions, messages from the system, and error messages.	
7.3-A	System-related errors	Yes
7.3-B	No split contests	Yes
7.3-C	Contest information	Yes
7.3-D	Consistent relationship	Yes
7.3-E	Feedback	Yes
7.3-F	Correcting the ballot	Yes
7.3-G	Full ballot selections review	Yes
7.3-H	Overvotes	Yes

7.3-I	Undervotes	Yes
7.3-J	Notification of casting	Yes
7.3-K	Warnings, alerts, and instructions	Yes
7.3-L	Icon labels	Yes
7.3-M	Identifying languages	Yes
7.3-N	Instructions for voters	Yes
7.3-O	Instructions for election workers	Yes
7.3-P	Plain language	Yes
8.1	The voting system's hardware, software, and accessories are robust and do not expose users to harmful conditions.	
8.1-A	Electronic display screens	Yes
8.1-B	Flashing	Yes
8.1-C	Personal Assistive Technology (PAT)	Yes
8.1-D	Secondary ID and biometrics	Yes
8.1-E	Standard audio connectors	Yes
8.1-F	Discernable audio jacks	Yes
8.1-G	Telephone style handset	Yes
8.1-H	Sanitized headphones	Yes
8.1-I	Standard PAT jacks	Yes
8.1-J	Hearing aids	Yes
8.1-K	Eliminating hazards	Yes
8.2	The voting system meets currently accepted federal standards for accessibility.	
8.2-A	Federal standards for accessibility	Yes
8.3	The voting system is evaluated with a wide range of representative voters, including those with and without disabilities.	
8.3-A	Usability tests with voters	Yes
8.4	The voting system is evaluated for usability with election workers.	
8.4-A	Usability tests with election workers	Yes
9.1	An error or fault in the voting system software or hardware cannot cause an undetectable change in election results.	
9.1.1	Software independence	
9.1.1-A	Software independent	Yes
9.1.2	Tamper evidence	
9.1.2-A	Tamper-evident records	Yes
9.1.2-B	Tamper-evident record creation	Yes

9.1.3	Voter verification	
9.1.3-A	Records for voter verification	Yes
9.1.3-B	Ballot error correction	Yes
9.1.3-C	Voter reported errors	Yes
9.1.4	Auditable	
9.1.4-A	Auditor verification	Yes
9.1.4-B	Documented procedure	Yes
9.1.5	Paper records	
9.1.5-A	Paper record production	Yes
9.1.5-B	Paper record retention	Yes
9.1.5-C	Paper record intelligibility	Yes
9.1.5-D	Matching selections	Yes
9.1.5-E	Paper record transparency and interoperability	Yes
9.1.5-F	Unique identifier	Yes
9.1.5-G	Preserving software independence	Yes
9.1.6	Cryptographic E2E verifiable	
9.1.6-A	Verified cryptographic protocol	N/A
9.1.6-B	Independent evaluation of E2E cryptographic protocol implementation	N/A
9.1.6-C	Cryptographic ballot selection verification by voter	N/A
9.1.6-D	Methods for cryptographic ballot selection verification	N/A
9.1.6-E	Ballot receipt	N/A
9.1.6-F	Disputes involving ballot receipts	N/A
9.1.6-G	Evidence export	N/A
9.1.6-H	Mandatory ballot availability	N/A
9.1.6-I	Verification of encoded votes documentation	N/A
9.1.6-J	Verifier reference implementation	N/A
9.1.6-K	Privacy preserving, universally verifiable ballot tabulation	N/A
9.2	The voting system produces readily available records that provide the ability to check whether the election outcome is correct and, to the extent possible, identify the root cause of any irregularities.	
9.2-A	Audit support documentation	Yes
9.3	Voting system records are resilient in the presence of intentional forms of tampering and accidental errors.	
9.3-A	Data protection requirements for audit records	Yes
9.4	The voting system supports efficient audits.	
9.4-A	Risk-limiting audit	Yes
9.4-B	Random numbers supporting audit processes	Yes

9.4-C	Unique ballot identifiers	Yes
9.4-D	Multipage ballots	Yes
10.1	Ballot secrecy is maintained throughout the voting process.	
10.1-A	System use of voter information	Yes
10.2	The voting system does not contain nor produce records, notifications, information about the voter, or other election artifacts that can be used to associate the voter's identity with the voter's intent, choices, or selections.	
10.2.1	Voter associations	
10.2.1-A	Direct voter associations	Yes
10.2.1-B	Indirect voter associations	N/A
10.2.1-C	Use of indirect voter associations	N/A
10.2.1-D	Isolated storage location	N/A
10.2.1-E	Removal of indirect voter associations	N/A
10.2.1-F	Confidentiality for ballots with indirect voter associations	N/A
10.2.2	Identification in vote records	
10.2.2-A	Identifiers used for audits	Yes
10.2.2-B	No voter record order information	Yes
10.2.2-C	Identifying information in voter record file names	Yes
10.2.2-D	Aggregating and ordering	Yes
10.2.2-E	Randomly generated identifiers	Yes
10.2.3	Access to cast vote records (CVR)	
10.2.3-A	Restrict access to records of voter intent	Yes
10.2.3-B	Digital voter record access log	Yes
10.2.4	Voter information in other devices and artifacts	
10.2.4-A	Voting information in receipts	N/A
10.2.4-B	Logging of ballot selections	Yes
10.2.4-C	Activation device records	Yes
11.1	The voting system enables logging, monitoring, reviewing, and modifying of access privileges, accounts, activities, and authorizations.	
11.1-A	Logging activities and resource access	Yes
11.1-B	Voter information in log files	Yes
11.1-C	Preserving log integrity	Yes
11.1-D	On-demand access to logs	Yes

11.2	The voting system limits the access of users, roles, and processes to the specific functions and data to which each entity holds authorized access.	
11.2.1	Authorized access	
11.2.1-A	Ensuring authorized access	Yes
11.2.1-B	Modifying authorized user lists	Yes
11.2.1-C	Access control by voting stage	Yes
11.2.1-D	Access control configuration	Yes
11.2.1-E	Administrator modified permissions	Yes
11.2.1-F	Authorized assigning groups or roles	Yes
11.2.2	Role-based access control	
11.2.2-A	Role-based access control standard	Yes
11.2.2-C	Minimum group or role permissions	Yes
11.2.2-D	Applying permissions	Yes
11.3	The voting system supports strong, configurable authentication mechanisms to verify the identities of authorized users and includes multi-factor authentication mechanisms for critical operations.	
11.3.1	Access control mechanisms	
11.3.1-A	Access control mechanism application	Yes
11.3.1-B	Multi-factor authentication for critical operations	Yes
11.3.1-C	Multi-factor authentication for administrators	Yes
11.3.2	User authentication credentials	
11.3.2-A	Username and password management	Yes
11.3.2-B	Password complexity	Yes
11.3.2-C	Secure storage of authentication data	Yes
11.3.2-D	Password disallow list	Yes
11.3.2-E	Usernames within passwords	Yes
11.4	The voting system's default access control policies enforce the principles of least privilege and separation of duties.	
11.4-A	Least privilege for access policies	Yes
11.4-B	Separation of duties	Yes
11.5	Logical access to voting system assets are revoked when no longer required.	
11.5-A	Session time limits	Yes
11.5-B	Reauthentication	Yes
11.5-C	Account lockout	Yes
11.5-D	Lockout time duration	Yes

12.1	The voting system supports mechanisms to detect unauthorized physical access.	
12.1-A	Unauthorized physical access	Yes
12.1-B	Unauthorized physical access alert	Yes
12.1-C	Disconnecting a physical device	Yes
12.1-D	Logging of physical connections and disconnections	Yes
12.1-E	Secure containers	Yes
12.1-F	Secure locking systems	Yes
12.1-G	Backup power for power-reliant countermeasures	Yes
12.2	The voting system only exposes physical ports and access points that are essential to voting operations.	
12.2-A	Physical port and access least functionality	Yes
12.2-B	Physical port auto-disable	Yes
12.2-C	Physical port restriction	Yes
12.2-D	Disabling ports	Yes
12.2-E	Logging enabled and disabled ports	Yes
13.1	The voting system prevents unauthorized access to or manipulation of configuration data, cast vote records, transmitted data, or audit records.	
13.1.1	Configuration file	
13.1.1-A	Authentication to access configuration file	Yes
13.1.1-B	Authentication to access configuration file on EMS	Yes
13.1.1-C	Authentication to access configuration file for network appliances	Yes
13.1.2	Election records	
13.1.2-A	Integrity protection for election records	Yes
13.2	The source and integrity of electronic tabulation reports are verifiable.	
13.2-A	Signing stored election records	Yes
13.2-B	Verification of election records	Yes
13.3	All cryptographic algorithms are public, well-vetted, and standardized.	
13.3-A	Cryptographic module validation	Yes
13.3-B	E2E cryptographic voting protocols	N/A
13.3-C	Cryptographic strength	Yes
13.3-D	MAC cryptographic strength	Yes
13.3-E	Cryptographic key management documentation	Yes

13.4	The voting system protects the integrity, authenticity, and confidentiality of sensitive data transmitted over all networks.	
13.4-A	Confidentiality and integrity protection of transmitted data	Yes
14.1	The voting system uses multiple layers of controls to provide resiliency against security failures or vulnerabilities.	
14.1-A	Risk assessment documentation	Yes
14.1-B	Addressing and accepting risk	Yes
14.1-C	System security architecture description	Yes
14.1-D	Procedural and operational security	Yes
14.2	The voting system limits its attack surface by avoiding unnecessary code, data paths, connectivity, and physical ports, and by using other technical controls.	
14.2-A	Non-essential networking interfaces	Yes
14.2-B	Network status indicator	Yes
14.2-C	Wireless communication restrictions	Yes
14.2-D	Wireless network status indicator	Yes
14.2-E	External network restrictions	Yes
14.2-F	Secure configuration and hardening documentation	Yes
14.2-G	Unused code	Yes
14.2-H	Use of exploit mitigation technologies	Yes
14.2-I	Importing software libraries	Yes
14.2-J	Vulnerability management plan	Yes
14.2-K	Known vulnerabilities	Yes
14.3	The voting system maintains and verifies the integrity of software, firmware, and other critical components.	
14.3-A	Supply chain risk management strategy	Yes
14.3-B	Criticality analysis	Yes
14.3-C	Bill of materials	Yes
14.3.1	Boot integrity	
14.3.1-A	Cryptographic boot verification	Yes
14.3.1-B	Preventing of boot on error	Yes
14.3.1-C	Notification of boot validation failure	Yes
14.3.2	Software integrity	
14.3.2-A	Installing software	Yes
14.3.2-B	Software verification for installation	Yes
14.3.2-C	Application allowlisting	Yes
14.3.2-D	Integrity protection for software allowlists	Yes

14.4	Voting system software updates are authorized by an administrator prior to installation.	
14.4-A	Authenticated operating system updates	Yes
14.4-B	Authenticated application updates	Yes
14.4-C	Authenticated firmware updates	Yes
15.1	Voting system equipment records important activities through event logging mechanisms, which are stored in a format suitable for automated processing.	
15.1-A	Event logging	Yes
15.1-B	Exporting logs	Yes
15.1-C	Logging voter information	Yes
15.1-D	Logging event types	Yes
15.1-D.1	General system functions	
15.1-D.1.a	Device generated error and exception messages	Yes
15.1-D.1.b	Critical system status messages	Yes
15.1-D.1.c	Non-critical status messages	Yes
15.1-D.1.d	Events that require election official intervention	Yes
15.1-D.1.e	Device shutdown and restarts	Yes
15.1-D.1.f	Changes to system configuration settings	Yes
15.1-D.1.g	Integrity checks for executables, configuration files, data, and logs.	Yes
15.1-D.1.h	The addition and deletion of files.	Yes
15.1-D.1.i	System readiness results	Yes
15.1-D.1.j	Removable media events	Yes
15.1-D.1.k	Backup and restore	Yes
15.1-D.2	Authentication and Access Control	
15.1-D.2.a	Authentication related events	Yes
15.1-D.2.b	Access control related events	Yes
15.1-D.2.c	User account and role (or groups) management activity	Yes
15.1-D.3	Networking	
15.1-D.3.a	Enabling or disabling networking functionality	Yes
15.1-D.4	Software	
15.1-D.4.a	Installing, upgrading, patching, or modifying software or firmware	Yes
15.1-D.4.b	Changes to configuration settings	Yes
15.1-D.4.c	Abnormal process exits	Yes
15.1-D.4.d	Successful and failed database connection attempts (if a database is used).	Yes
15.1-D.4.e	Changes to cryptographic keys	Yes

15.1-D.5	Voting Functions	
15.1-D.5.a	Ballot definition and modification	Yes
15.1-D.5.b	Voting events	Yes
15.1-E	Configuration file access log	Yes
15.2	The voting system generates, stores, and reports all error messages as they occur.	
15.2-A	Presentation of voting application errors	Yes
15.2-B	Voting application error handling documentation	Yes
15.2-C	Logging system errors	Yes
15.2-D	Creating error reports	Yes
15.3	The voting system is designed to protect against malware.	
15.3-A	Malware protection mechanisms	Yes
15.3-B	Updatable malware protection mechanisms	Yes
15.3-C	Documenting malware protection mechanisms	Yes
15.3-D	Notification of malware detection	Yes
15.3-E	Logging malware detection	Yes
15.3-F	Notification of malware remediation	Yes
15.3-G	Logging malware remediation	Yes
15.4	A voting system with networking capabilities employs appropriate, well-vetted modern defenses against network-based attacks, commensurate with current best practices.	
15.4-A	Internal network architecture documentation	Yes
15.4-B	Secure network configuration documentation	Yes
15.4-C	Documentation for disabled wireless	Yes
15.4-D	Rule and policy updates	Yes