

## **Appendix E**

### **Design, Fabrication and Performance Requirements**

#### **1. Scope**

This Appendix contains the performance, design, and fabrication requirements for the New System. The New System shall be capable of serving at least 500,000 registered voters in approximately 600 precincts, and shall be capable of additional growth to meet any increase in voter rolls and re-precincting during the term of the Final Agreement. Such growth shall be possible through the acquisition of additional polling place equipment only; all election administration and voting data reporting software and hardware shall be capable of supporting this growth without modification.

#### **2. Reference Documents and Definitions**

The following documents form a part of this *Appendix E* to the extent specified herein:

- The Help America Vote Act of 2005 (Public Law 107-252);
- The California Elections Code, 2003 (the “Elections Code”);
- The San Francisco Charter (the “Charter”);
- The San Francisco Municipal Elections Code; and
- *The Voting Systems Performance and Test Standards* - Federal Election Commission, April 2002 (the “Voting System Standards”).

In the event of any conflict among the requirements of the documents listed above and this RFP, the order of precedence shall be as follows: (1) The Help America Vote Act of 2002; (2) The California Elections Code; (3) the Charter; (4) the San Francisco Municipal Elections Code; (5) this RFP; and (6) the Voting System Standards.

For purposes of this Appendix B, the following definitions shall apply.

“Ballot” means the one or more ballot cards or images that together are used by a voter to cast votes for all candidate and measure contests at an election. A single ballot may consist of one or more ballot cards, or one or more electronic images.

“Ballot card” means an individual paper sheet (optical scan technology) that contains all or some of the candidate and measure contests at an election.

“Ballot image” means a true electronic representation of a voters choices on a ballot A ballot image may consist of one or more electronic images that together are used by a voter to cast votes for all candidate and measure contests at an election.

### **3. Requirements**

The New System shall satisfy all applicable requirements of the Help America Vote Act of 2002, Elections Code, Charter and Municipal Elections Code. These requirements and the following functions and capabilities shall be used as a basis for system evaluation and tests.

#### **3.1 Election Management**

The New System shall provide hardware and software to interface with DOE's existing elections data system (DIMSNet 7.2 on Microsoft 2000 system).

#### **3.2 Election Operations**

The New System shall be capable of performing all functions related to:

- design of all ballots and ballot images, and production of camera-ready materials necessary for the printing of ballot cards. Proposer to include production costs within estimate.
- preparation of system hardware and software to count and tabulate ballots (including ranked-choice ballots), preserve results and produce elections reports;
- early and absentee voting, including early voting at multiple sites specified by DOE;
- opening the polls;
- casting, counting and tabulating ballots, including ranked-choice ballots;
- provisional voting;
- identification of error conditions and generation of error messages and instructions for correction of errors as specified;
- closing the polls;
- producing voting data reports as requested by DOE;
- producing audit data reports as requested by DOE;
- providing for the secure transmission of voting data from the polls or transmission center to the election Central Processing Network;
- consolidation of voting data;
- application of the rank choice voting algorithm and preservation and reporting results at each stage of the instant runoff voting process

(each round in which a candidate is eliminated and votes cast for the eliminated candidate are redistributed); and

- preservation and maintenance of a centralized archival record of all elections as approved and agreed to by DOE

### 3.2.1 Preparation for Voting

#### 3.2.1.1 Ballot

The New System shall provide a ballot in the form of one or more cards (Optical Scan Technology) containing printed information identifying the contests, candidates, and measures.

When the Charter requires the use of rank choice voting, the ballot shall permit the voter to rank his or her choices among the candidates for an elective office. **The City would prefer that the ballot permit the voter to cast as many choices as there are candidates for that office.** For these purposes, the number of candidates for an office equals the number of candidates who qualified to have their names printed on the ballot, plus all qualified write-in candidates. If the New System software must be written, installed and tested before the deadline for qualification of write-in candidates, and therefore DOE cannot know with certainty the number of candidates who will qualify as write-in candidates before the date the election-specific software is written, then the number of choices a voter may rank would be no fewer than:

The number of candidates who qualified to have their names printed on the ballot, plus the number of qualified write-in candidates for the same office as of the date the election-specific software was created, OR the number of candidates who qualified to have their names printed on the ballot, plus one, whichever is greater.

If technological limitations make it *impossible* for the New System to permit the voter to cast as many choices as there are candidates for a contest, the ballot shall permit the voter to rank no fewer than three choices for each rank choice voting contest.

#### 3.2.1.2 Multi-lingual Capability

The New System shall be capable of generating one trilingual ballot format in English/Chinese/Spanish, or two bilingual ballot formats in English/Chinese and English/Spanish. The New System shall also be capable of generating bilingual

ballot formats in additional languages, including but not limited to Russian and Tagalog, if there is a change in the law during the term of the Final Agreement that requires San Francisco to provide ballots in additional languages.

### **3.2.1.3 Programming and Software Installation, Verifiability**

The New System shall provide a means of programming each piece of polling place or central count equipment in accordance with the ballot requirements of the election, and the jurisdiction in which the equipment will be used. The programming means shall include a method for validating the correctness of the program, and of its installation in the equipment or in a programmable memory device if one is used.

The New System shall provide a means to ensure that all (nonresident or resident) software has been properly selected and installed for the election, and that the software correctly matches the ballot formats that it is intended to process.

### **3.2.1.4 Equipment Readiness Tests**

Each precinct ballot counting or vote recording device, and all central counting equipment, shall contain provisions for verifying proper preparation for an election, and for verifying that both the hardware and the software are functioning correctly. These tests and diagnostic procedures may be executed manually or automatically, and may allow for operator intervention to validate the proper execution of individually-selected equipment functions.

### **3.2.1.5 System Readiness Tests**

The New System shall contain appropriate and necessary provisions for verifying the integration of all system equipment, obtaining status and data reports from each set of equipment, and generating consolidated data reports at the polling place and higher jurisdictional levels.

### **3.2.1.6 Verification at the Polling Place**

Upon verification of the authenticity of the commands, the New System shall provide a printed record for each data storage device of the following:

- the election's identification data;
- the equipment's unit identification;
- the ballot's format identification;
- the contents of each active candidate register by office and of each active measure register (showing that they contain all zeros);
- a list of all ballot fields that can be used to invoke special voting options;
- other information needed to ensure the readiness of the equipment, and to accommodate administrative reporting requirements.

Polling place equipment shall permit the use of test ballots or other test devices to verify the correct interpretation of the ballot format(s) it is programmed to process, and to verify that voting data processing is accurate and reliable. Test data shall be segregated from actual voting data, either procedurally or by hardware/software features.

### **3.2.1.7 Verification at the Central Counting Place**

If the New System includes equipment for the consolidation of polling place data at one or more central counting places, it shall have the means to verify the correct extraction of voting data from transportable memory devices, or for the acquisition of such data over secure communication links. Verification shall include the use of security procedures, and communications security devices to be employed during the consolidation of actual voting data, as well as such other tests needed to assure the readiness of the equipment, and to accommodate administrative reporting requirements.

Upon verification of the authenticity of the commands, any portion of the New System used to process ballots cast by a voter at the polling place or absentee ballots in a central count location shall provide a printed record of the following:

- the election's identification data;
- the initial contents of each active candidate register by office and of each active measure register (showing that they contain all zeros); and

- such other information needed to ensure the readiness of the equipment and to accommodate DOE administrative reporting requirements.

Central count equipment shall permit the use of test ballots or other test devices to verify the correct interpretation of the ballot format(s) it is programmed to process, and to verify that voting data processing is accurate and reliable. Test data shall be segregated from actual voting data, either procedurally or by hardware/software features.

### **3.2.2 Early Voting and Simultaneous Elections**

The New System shall be capable of supporting early voting at multiple locations specified by DOE, commencing 29 days before each election during the term of the Final Agreement. This capability shall include any ancillary devices needed to support early voting with an Optical Scan Technology ballot reader. All early voting equipment must be programmable for all ballot types.

The New System shall be capable of conducting multiple simultaneous elections.

### **3.2.3 Opening the Polling Place**

The New System shall provide a means of verifying that ballot marking devices are properly prepared and ready for use (Optical Scan Technology) or that the selection features are functional (DRE Technology). The system shall provide a voting booth or similar facility, in which the voter may vote the ballot in privacy, and a secure receptacle for holding voted ballots (Optical Scan Technology). The New System shall provide a means of activating the ballot counting device (Optical Scan Technology) or vote recording device (DRE Technology), verifying that the device has been correctly prepared, and will allow the counting or casting of ballots, including but not limited to ranked-choice ballots.

### **3.2.4 Casting Ballots**

The New System shall provide for ballots on which there are printed fields (Optical Scan Technology) indicating the name of every candidate, and the title of every measure on the ballot on which the voter is entitled to vote. The New System shall provide a means by which the voter may mark the ballot to register votes. The New System shall enable the voter to vote for any and all candidates and measures appearing on the ballot, in any legal number and combination to which the voter is entitled.

Ballots with a ranked-choice contest shall permit the voter to rank each candidate in the contest, as provided in this RFP.

Optical Scan Technology systems shall provide a means for the voter to place the voted ballot, or cause it to be placed, into the ballot counting device (precinct count systems), or into a secure receptacle (central count systems). If the voter must leave the voting booth for this purpose, the system shall provide for the privacy of the voted ballot while it is being handled either by the voter or by a polling place official.

DRE Technology systems shall provide, in the event of power interruption at the polling place, a means for voting operations to continue. This means shall consist of an uninterruptible power supply as defined in Section 3.3.3 of this Appendix.

#### **3.2.4.1 Write-in Voting**

The New System shall provide a means of recording the selection of candidates for any office whose names do not appear upon the ballot.

#### **3.2.4.2 Voting in a Recall Election**

The New System shall provide for the marking or casting of ballots in a recall election in the manner specified in Division 11 of the Elections Code.

#### **3.2.4.3 Special Voting Options**

Ballot formats shall allow the use of all special options as enabled by the Elections Code and the Charter and San Francisco Municipal Elections Code, including but not limited to cross-voting among parties in open, blanket and unitary primary elections, and ranked-choice voting for local officeholders.

#### **3.2.4.4 Printed Record of Ballot Cast**

The New System shall produce all printed records of ballots cast that are required by law during the term of the Final Agreement.

### **3.2.4.5 Counting Ballots**

#### **3.2.4.5.1 Ballot Counter (Optical Scan Technology)**

Precinct counting devices shall accept and count ballots in any of four orientations. The ballot counter shall have:

- a four-or-more digit public counter that displays the number of ballot cards processed;
- security locks and seals;
- a removable programmable memory device which contains an internal power source to preserve elections data and voting data in the event of a power interruption;
- a printed record to assist poll workers in identifying and assisting voter in correcting error or omission;
- provides a visible warning of exposed power sources, and;
- a means of preventing or detecting the feeding of more than one ballot at a time, and messaging capability to inform the poll worker which of the multiple-fed ballots has been processed and which has not been processed

The ballot counter shall have the capability to process multiple ballot formats within a precinct, and multiple precincts within a polling place, and to produce voting data output reports that correctly contain the vote totals within each precinct or polling place subdivision.

#### **3.2.4.5.2 Ballot Box (Optical Scan Technology)**

The New System shall provide a precinct ballot box having three compartments:

- a compartment for fully marked and counted ballots;
- a compartment for write-in ballots; and
- a compartment for emergency voting.

Each ballot box shall have a security lock and seal.



### **3.2.4.5.3 Vote recorder (DRE Technology)**

Vote recorders (DRE Technology) shall count each ballot as it is cast. The vote recorder shall have a four-or-more digit public counter that displays the number of ballots cast. The vote recorder shall have a security lock and seal.

## **3.2.5 Closing the Polls**

Precinct count devices shall provide a means for closing the polls and for preventing the further counting or casting of ballots once the polling place has closed. After the polls have been closed, the New System shall produce voting data summary and system status reports, in the quantity and format specified by DOE, for inspection and signature by the designated polling place official(s).

## **3.2.6 Obtaining Polling Place Reports**

### **3.2.6.1 Voting Data Reports**

The New System shall provide a means for producing a printed report of the votes counted at the polling place, and for extracting this information from a transportable programmable memory device or data storage medium if one is used. After the proper sequence of events associated with closing the polling place has been completed, the New System shall allow the printing of a report and/or the extraction of data.

If more than one unit of vote-counting equipment is used in a polling place, the system shall provide a means for consolidating the data contained in each unit into a single report for the polling place. The consolidation process shall comply with the security and procedural requirements for the system as a whole, and for individual counting devices.

At a minimum, voting data reports for each precinct shall include:

- The precinct number;
- The number of ballots (optical scan technology) or ballot images (DRE technology) processed;
- The number of ballot cards (optical scan technology) processed;
- Candidate vote totals for each contest, including the number of first-choice, second choice, third choice, etc. votes cast for each candidate in each RCV contest and write-in contests;
- Measure vote totals for each contest;
- The number of ballots or ballot images read within each precinct, by type, including totals for each party in primary elections; and
- Separate accumulation of overvotes and undervotes for each race or issue.

### **3.2.6.2 Data Communications**

The New System shall provide for the secure electronic transfer of voting data to the Central Processing Network, with at least one option to transfer this data electronically from remote sites.

### **3.2.6.3 Audit Data Reports**

The New System shall provide audit records for all phases of elections operations. These records rely upon automated audit data acquisition and machine-generated reports, with manual input of some information. Primary emphasis is placed upon audit records of the ballot preparation and election definition phase, of system readiness tests, and of voting and ballot-counting operations. The software shall activate the logging and reporting of audit data as described in the following sections.

The timing and sequence of audit record entries is as important as the data contained in the record. Except where noted, provisions shall be made for the creation and maintenance of a real-time record. The purpose of the real-time record is to provide the operator or precinct official with continuous updates on machine status. This information allows effective operator

intervention during an error condition, and contributes to the reconstruction of election-related events necessary for recounts or litigation.

The New System shall incorporate a real-time clock as part of system hardware. It should maintain an absolute record of the time and date or a record relative to some event whose time and data are known and recorded. All audit record entries shall include the time-and-date stamp.

The audit record shall be active whenever the system is in an operating mode; this record shall be available at all times, though it need not be continually visible. The generation of entries shall not be terminated or interfered with by program control, or by the intervention of any person. The physical security and integrity of the record shall be maintained at all times. Once the system has been activated for ballot processing, the contents of the audit record shall be preserved during any interruption of power to the system until processing and data reporting have been completed.

A separate printer is not required for the audit record, and the record may be produced on the standard system hard copy output device if the following conditions are met:

- the generation of audit trail records does not interfere with the production of output reports;
- the entries can be identified so as to facilitate their recognition, segregation, and retention; and
- the physical security of the audit record entries can be ensured.

#### **3.2.6.3.1 Pre-election Audit Records**

During election definition and ballot preparation phases, an audit log shall be maintained of completion of the baseline ballot formats and modifications to them, a description of these modifications, and corresponding dates. These data are required to verify the election-specific database has been correctly prepared and maintained throughout subsequent modifications to the baseline format.

The pre-election audit log shall include manual data maintained by election personnel, samples of all final ballot formats, and the ballot preparation edit listings associated with them.

### 3.2.6.3.2 System Readiness Audit Records

Prior to the initiation of ballot counting, software shall be able to verify hardware and software status through an audit record. This readiness audit record shall include the identification of the software release, the identification of the election to be processed, and the results of software and hardware diagnostic tests. In the case of systems used at the polling place, the record shall include the polling place's identification.

The ballot interpretation logic capability shall test ballot formats to be processed. Such tests shall verify the allowable number of votes for an office or measure, the combinations of voting patterns permitted or required by the City, the inclusion or exclusion of offices or measures as the result of multiple ballot formats within the polling place, and any other characteristics that may be peculiar to the election or the polling place's location.

The readiness audit capability shall allow the processing, or simulated processing, of sufficient **test ballots** to provide a statistical estimate of processing accuracy.

The New System software shall ensure non-contamination of voting data through checks of all data paths and memory locations to be used in actual vote recording; upon the conclusion of the tests, the software shall provide evidence in the audit record that the test data have been expunged.

### 3.2.6.3.3 In-Process Audit Records

The New System shall provide in-process audit records consisting of data documenting system operation during diagnostic routines and the casting and tallying of ballots. At a minimum, the in-process audit records shall contain machine generated error and exception messages to ensure that successful recovery has been accomplished. Examples include:

- the source and disposition of system interrupts resulting in entry into exception handling routines;
- all messages generated by exception handlers;
- the identification code and number of occurrences for each hardware and software errors or failures;
- notification of system log-in or access errors, file access errors, and physical violations of security as they occur, and a summary record of these events after processing
- other exception events such as power failures, failure of critical hardware components, data transmission errors, or other type of operating anomaly

Critical system status messages other than informational messages shall be displayed by the system during the course of normal operations. These items include:

- diagnostic and status messages upon startup;
- the “zero totals” check conducted before opening the polling place or counting a precinct centrally; and
- the initiation or termination of card reader and communications equipment.

Non-critical status messages that are generated by the machine's data quality monitor or by software and hardware condition monitors, are not required in real-time and may, instead, be reported in log form.

#### **3.2.6.3.4 Post-election Audit Records**

After all ballots have been counted either at the polling place or in a central count location, the New System shall provide an audit record of all operator actions and system events occurring during consolidation of voting data and the preparation of the official canvass.

#### **3.2.7 Notification of Voter Error or Omissions**

To the greatest extent possible, the New System shall notify voters of errors and omissions. If a voter casts a ballot with an error or omission, the New System shall to the greatest extent possible produce a message that informs the voter of the specific error or omission and how to correct the error or omission. The New System shall to the greatest extent possible generate messages for errors and omissions which include, but are not limited to, the following:

##### **3.2.7.1 Regular Contests**

For regular (non-RCV) contests, a vote is valid and shall be counted unless one of the following error conditions prevents the vote from being counted:

- (1) the ballot contains more than the permissible number of votes per contest (overvote) (DRE technology should prevent all overvotes); or
- (2) the ballot contains no valid marks (blank vote).

In these two instances, a message shall notify the voter that his/her vote on the contest with the overvote or blank vote will not be counted unless the voter makes the indicated corrections.

The voter shall have the option of re-marking or completing the ballot and the re-marked or completed ballot shall be processed as a valid ballot. However, the voter shall also have the option to cast the ballot "as is."

If the voter chooses to cast the ballot "as is," a second error message shall advise the voter that the overvote or blank vote will not be counted.

### **3.2.7.2 RCV Contests**

#### **3.2.7.2.1 Errors and Omissions That Invalidate the Vote on the RCV Contest**

For RCV contests, a vote is valid and shall be counted unless the vote is an overvote or blank vote, as described below.

##### **3.2.7.2.1.1 Duplicate First Choice Overvotes**

If the voter indicates more than one candidate as the voter's first choice for an RCV contest ("duplicate first choice overvote"), the message shall inform the voter that his/her vote on the contest will not be counted unless the voter corrects the overvote.

For example, the message might state:

“More than one candidate has been selected per column. Voter may obtain new ballot to select only one candidate per column or voter may cast ballot ‘as is.’ If voter casts ballot ‘as is,’ votes in this contest can not be counted.”

The voter shall have the option of marking a fresh ballot which shall be processed as a valid ballot. The voter shall also have the option to cast the ballot “as is.”

##### **3.2.7.2.1.2 Blank RCV Contest**

If the voter leaves an RCV contest entirely blank, a message shall notify the voter.

The voter shall have the option of completing the ballot correctly and the completed ballot shall be processed as a valid ballot. The voter shall also have the option to cast the ballot “as is.”

For example, the message might state:

”No candidate has been selected in this contest. Voter may complete the ballot by selecting one

candidate per column or voter may cast ballot ‘as is’.”

### **3.2.7.2.2 Errors and Omissions That Do Not Invalidate the Vote on the RCV Contest**

When one of the following errors or omissions occurs, a message shall inform the voter and provide instruction on how to correct the error or omission. The voter shall have the option of re-marking and/or completing the ballot and the re-marked or completed ballot shall be processed as a valid ballot. However, the voter shall also have the option to cast the ballot “as is.”

If the voter chooses to cast the ballot "as is," the vote *shall be counted* according to the rules and conventions in Section 3.2.7.3 of this Appendix.

#### **3.2.7.2.2.1 Duplicate Later Choice Overvote**

If the voter indicates more than one candidate as the voter's second or later choice for an RCV contest ("duplicate later choice overvote"), and the voter does not correct this error, the vote for that contest *shall be counted*, subject to the rules and conventions in Section 3.2.7.3 of this Appendix.

This message might state:

“More than one candidate has been selected per column. Voter may obtain new ballot to select only one candidate per column or voter may cast ballot ‘as is.’ If voter casts ballot ‘as is,’ the votes are valid only up to the overvotes.”

#### **3.2.7.2.2.2 Skipped Rank**

If a voter skips a rank (for example, the voter selects a first and third choice candidate, but does not select a second choice candidate, or the voter selects first and second choice candidates, but does not rank any of the remaining candidates for that contest) for a contest, the vote *shall be counted*



according to the rules and procedures set forth in Section 3.2.7.3 of this Appendix.

The message might state:

“No candidate has been selected in one or more columns. Voter may but is not required to select one candidate in each column. Voter may select one candidate per column or cast ballot ‘as is.’”

### 3.2.7.2.3.3 Multiple Rank

If a voter ranks one candidate multiple times (for example, the voter ranks candidate A as the voter's first and third choice) for a contest, the vote *shall be counted* according to the rules and conventions set forth in Section 3.2.7.3 of this Appendix. (DRE technology should prevent multiple rankings.)

The message might state:

“A single candidate has been selected in more than one column. Voter may select a different candidate in each column or cast the ballot ‘as is.’ If voter casts the ballot ‘as is,’ multiple votes for a single candidate count only once.”

### 3.2.7.3 RCV Ballot Interpretation

The following table illustrates the rules and conventions for interpretation of RCV ballots. These rules and conventions shall be uniformly applied before application of the RCV algorithm. The table provides examples, and is not intended to be exhaustive. As indicated above, DRE technology should prevent many of these error conditions.

First Choice	Second Choice	Third Choice	Conditions	Interpretation
Ann/ Cat	Bob	Don	duplicate first choice overvote	Vote on RCV contest invalid. No vote will be counted
None	None	None	blank	Vote on RCV contest invalid. No vote will be counted
Bob	Ann/ Don	Cat	duplicate second choice overvote	Count Bob, then contest vote exhausted
Don	Bob	Ann/ Cat	overvote	Count Don, then Bob, then contest vote exhausted
Ann	Ann	Don	multiple rank	Count Ann, then Don, then next

				choice candidate
Bob	Ann	Bob	multiple rank	Count Bob, then Ann, then next choice
Bob	Ann	Ann	multiple rank	Count Bob, then Ann, then next choice candidate
Ann	Ann	Ann	multiple rank	Count Ann, then next choice candidate
None	Don	Cat	skipped rank	Count Don, then Cat, then next choice candidate
Cat	None	Bob	skipped rank	Count Cat, then Bob as second choice, then next choice candidate
None	Ann	None	skipped rank	Count Ann, then next choice candidate
Bob	None	None	skipped rank	Count Bob, then next choice candidate
Ann	Bob	None	skipped rank	Count Ann, then Bob, then next choice candidate
None	None	Cat	skipped rank	Count Cat, then next choice candidate

### 3.2.8 Recovery from Errors and Omissions

#### 3.2.8.1 Messages Concerning Errors and Omissions

Messages concerning voter errors or omissions shall be made and reported as they occur. Except for errors which require resolution by a trained technician, all other errors or omissions requiring intervention by a voter or precinct official (for example, requiring the poll worker to press an override button to accept a ballot “as is”) shall be displayed or printed unambiguously in easily understood language text, or by means of other suitable visual indicators.

When numerical codes are used for trained technician maintenance or repair, the text corresponding to the code shall be self-contained, and/or an instructional sheet shall be affixed inside the unit device. This is intended to reduce inappropriate reactions to error and/or omission conditions, and to allow for ready and effective problem correction.

The message cue for all systems shall clearly state the action to be performed in the event that voter response is required. System design shall ensure that erroneous responses will not lead to irrecoverable error. Nested error conditions shall be corrected in

a controlled sequence such that system status shall be restored to that initial state existing before the first error occurred.

### **3.2.8.2 Voter Error**

In the event of a voter error:

- The New System shall provide a procedure enabling the segregation and later destruction of the ballot marked in error, and the issuing of a new ballot to the voter, or
- The New System shall provide a means for the voter to correct the error or omission prior to casting the ballot.

### **3.2.8.3 Poll Worker Error**

In the event of a poll worker error in operating the ballot counter or vote recorder the New System shall provide audible and/or visual indication of the error and a means for correcting the error which does not result in the corruption of any previously cast voting data or inhibit the continuance of voting after the error has been corrected.

## **3.2.9 Consolidation of Voting Data**

The New System shall provide for the release of unofficial voting data after closing of the polls. These reports may consist of reports of votes counted for one or more precincts, one or more offices, and one or more measures, in a format subject to approval by DOE.

### **3.2.9.1 Official Canvass**

Official voting data reports for the complete jurisdiction shall comply with the requirements of Division 15, Chapters 1 through 9 of the Elections Code.

## **3.2.10 Data Communications**

The New System shall provide a means to assure that all administrative and voting data transmitted from one device to another within a site, or transmitted between sites, shall be protected against unauthorized access and corruption of data.

## **3.2.11 Absentee and Early Voting**

The New System shall include the capability to generate and count absentee ballots in accordance with the requirements of the Elections Code.

### 3.3 Design Requirements

The New System design shall comply with the hardware design requirements of Section 3 and the software design requirements of Section 4 of the Voting System Standards and with the specific requirements listed below.

Components of the New System shall be classified by size and weight as follows:

- **Portable equipment** used at the polling place or in a central count location is defined as equipment that is regularly transported between its operating location and a place of storage. It is intended to be handled by one person, and is equipped with handles or lifting surfaces for this purpose. It shall be designed for installation on a table or in a voting booth. Its dimensions shall not exceed the space currently allocated by DOE for similar equipment, and its weight shall not exceed 40 lbs.
- **Movable equipment** used in a central count location is defined as equipment that is typically equipped with a rigid stand or base, with or without wheels or casters. It is intended to be handled by two or more persons, and handling may require the use of a dolly or lifting mechanism. There is no restriction on size or weight.

#### 3.3.1 Ease of Use

Components of the New System shall be designed and constructed so as to aid the user (whether voter, poll worker or DOE staff) in performing proper operations and to minimize the probability of error caused by the user. In particular, components shall be designed so that operations performed by the voter such as marking a ballot (Optical Scan Technology) or making a vote selection (DRE Technology) are easily understood, so that errors are prevented to the maximum extent possible, and so that recovery from an erroneous operation is facilitated by the attributes of the system. In addition, components shall be designed so that installation, set-up, operation and disassembly by poll workers and DOE staff at the polling sites is as simple and error-free as possible.

#### 3.3.2 Access for Voters with Special Needs

The design and installation of New System equipment used in the polling place shall accommodate access by voters with visual and/or mobility impairments in a manner that provides the same opportunity for

access and participation, including privacy and independence, as for other voters. Accommodation of voters with visual or mobility impairments must comply with all applicable laws during the term of the final agreement.

### **3.3.3 Backup Power**

The New System shall provide for an extended life back-up power supply to permit the continuation of voting operations for a minimum period of six (6) hours.

### **3.3.4 Durability**

The New System shall be designed and constructed to permit operational use for a service life of fifteen (15) years, provided that normal maintenance and parts replacement are performed 60 days prior to an election

### **3.3.5 Reliability**

New System components shall be designed and constructed to assure that the reliability of each ballot counting device or vote recording device during a normal cycle of preparation and elections use shall meet or exceed the requirements specified in Section 7.3.3 of the Voting System Standards.

### **3.3.6 Maintainability**

New System components shall be designed and constructed to assure that the maintainability of each ballot counting device or vote recording device during a normal cycle of preparation and elections use shall meet or exceed the requirements specified in Section 3.4.4 of the Voting System Standards.

### **3.3.7 Availability**

New System components shall be designed and constructed to assure that the availability of each ballot counting device or vote recording device during a normal cycle of preparation and elections use shall meet or exceed the requirements specified in Section 3.4.5 of the Voting System Standards.

### **3.3.8 Safety**

The New System shall contain no identified hazards to personnel and/or equipment occurring during operation, maintenance, storage,

transportation or disposal. Any and all hazards or potential hazards shall be clearly marked. Residual potential hazards shall be mitigated by design redundancy, fail-safe features, safety devices, warning devices, operational constraints and/or precautionary procedures. The content of this section notwithstanding, the New System shall comply with all of the safety requirements of all applicable State and Federal occupational safety and health standards.

### **3.4 System Security Requirements**

DOE will implement security procedures to prevent unauthorized physical access to sensitive facilities and equipment. The New System shall include and support operational features to prevent both inadvertent and deliberate operations which could result in the disruption of the elections process and corruption of election administrative and voting data.

#### **3.4.1 Facility Access Control**

The installation and operation of the New System shall be consistent with the physical access control procedures of DOE.

#### **3.4.2 Operations Access Control**

The operation of the New System shall be consistent with the administrative access control system of DOE, enabling the access of designated personnel to system functions, which they are authorized to perform, and preventing their access to system functions that they are not authorized to perform.

## **4. Quality Requirements**

### **4.1 Materials and Parts**

Only new and previously unused materials and parts shall be used to fabricate, assemble, and repair the New System components.

### **4.2 Workmanship**

Workmanship standards for fabrication and assembly of the New System shall meet or exceed standard commercial and industrial practice, and shall assure that the New System components are free from damage or defect.

### **4.3 Classification of Inspections**

The inspection requirements specified herein are classified as follows:

- Engineering analysis
- Quality conformance inspection and test

#### **4.3.1 Engineering Analysis**

The purpose of engineering analysis is to provide objective evidence as to the system's ability to meet specific performance requirements where testing or inspection is not required due to performance demonstrated in other similar applications, or to prior testing such as an ITA-conducted qualification test. Engineering analysis may include evaluation of data accumulated from inspection, or calculations based on a valid model of the item being analyzed and upon valid generic performance data for components of the item.

#### **4.3.2 Quality Conformance Inspection and Test**

Quality conformance inspection and test shall consist of:

- Acceptance inspection and test; and
- Special inspection and test.

##### **4.3.2.1 Acceptance Inspection and Test**

The purpose of these inspections and tests is to assure that each component of the New System and the system as a whole meet the minimum established functional performance requirements. The New System shall be subjected to the acceptance tests listed in *Appendix F*. Acceptance inspection and test shall include quantifiable measurements when appropriate. Tests may also include demonstrations consisting of uninstrumented testing where success is determined by observation alone.

##### **4.3.2.2 Special Inspection and Test**

The purpose of these inspections and tests is to assure that certain critical requirements are satisfied by the performance of the voting system. Based upon the outcome of acceptance inspection and test, DOE may determine that additional tests are needed to assure that these performance requirements are satisfied.

## **4.4 Characteristics**

### **4.4.1 Election Operations**

#### **4.4.4.1 Preparation for Voting**

##### **4.4.1.1.1 Ballot**

To verify conformance to Section 3.2.1.1 of this Appendix, each ballot format generated for the sample primary election and each ballot format generated for the sample general election shall be tested using marked test ballots or other testing device in the pattern and quantity specified in the System Acceptance Test Plan.

##### **4.4.1.1.2 Multi-lingual Capability**

To verify conformance to Section 3.2.1.2 of this Appendix, one ballot format generated for the sample primary election and one ballot format generated for the sample general election shall be produced in each of the trilingual or bilingual language combinations that the voting system can accommodate.

##### **4.4.1.1.3 Programming and Software Installation**

To verify conformance to Section 3.2.1.3 of this Appendix, ballot counters or vote recorders in the quantities specified in the System Acceptance Test Plan shall be programmed for the sample election. Correct programming shall be verified by performing a Logic and Accuracy test.

##### **4.4.1.1.4 Equipment Readiness Tests**

To verify conformance to Section 3.2.1.4 of this Appendix, ballot counters or vote recorders in the quantities specified in the System Acceptance Test Plan shall be activated to demonstrate that all built-in diagnostic tests are functioning as designed.



#### **4.4.1.1.5 System Readiness Tests**

To verify conformance to Section 3.2.1.5 of this Appendix, all system hardware and software, inclusive of ballot counters and/or vote recorders in the quantities specified in the System Acceptance Test Plan, shall be integrated and operated in a manner simulating the conduct of the election. This integration and operation shall include the simulation of inclusion of absentee ballots, such other “clean up” procedures as are authorized by DOE, and the production of all system-level reports.

#### **4.4.1.2 Verification of Pre-election Operations**

To verify conformance to Sections 3.2.1.6 and 3.2.1.7 of this Appendix, all specified pre-election operations at the polling place and the central counting location shall be performed and validated.

#### **4.4.1.3 Verification of Election Operations**

To verify conformance to Sections 3.2.2 through 3.2.10 of this Appendix, a simulated election shall be performed, as specified in the System Acceptance Test Plan.

#### **4.4.1.4 Voter Acceptance**

To verify conformance to Sections 3.3.1 and 3.3.2 of this Appendix, DOE shall survey voters using the system in the Pilot Program to assess their ability to use the voting system without undue procedural or physical difficulty.

#### **4.4.1.5 System Design**

To verify conformance to Sections 3.3.3 through 3.3.8 of this Appendix, DOE will evaluate the Independent Testing Authority’s Qualification Test Report and its conclusions regarding compliance with the requirements of the FEC Voting System Standards. DOE may, at its sole discretion, determine that additional special tests and examinations are required to assure compliance with its requirements.

#### **4.4.1.6 System Security**

To verify conformance to Sections 3.4.1 and 3.4.2 of this Appendix, DOE shall operate the system in accordance with its existing security procedures.

### **5. Packaging and Shipment**

Processing for delivery shall be as specified herein or in the Final Agreement.

### **6. Notes**

#### **6.1 Waivers**

Some functional requirements for verification of some voting system attributes may be waived at the sole discretion of DOE. These waivers, if granted, will be based on analysis and data that provide assurance that the performance of the New System during elections use will not be adversely affected by waiver of the demonstration requirement.

#### **6.2 Application of Requirements**

Unless otherwise specified by the Final Agreement or by direction of DOE, all performance and design requirements of this product description shall apply without exception.

### **7. System Documentation**

Upon delivery of the first article (hardware and software), the Proposer shall provide system documentation as defined in the Voting System Standards.