# State of Colorado

## Department of State

# Uniform Voting System

# Request for Proposal

## RFP # CDOS-UVS-2013-01

## DRAFT for Public Comment

## Revised 8-26-13

*Includes comments submitted through 8-23*

*Note: All changes are indicated in yellow or red.*

*Some changes to numbering have occurred*

*(see next page for details)*

## Appendix B

## System Requirements Table

## October 1, 2013

## **Page changes from first round of comments**:

| | |
|---|---|
| Added new A-7 and renumbered. | A now goes to A-72 |
| Added new B-9 and renumbered. | B now goes to B-13 |
| Moved C-20 to C-15 | C now goes to C-25 |
| Added new D-6 and D-28 | D now goes to D-38 |

Final Round of edits will be done beginning September 4.

# INSTRUCTIONS FOR COMPLETING SYSTEM REQUIREMENTS TABLES

The Vendor must assign a Response Code to each listed requirement. Use only the values of 1, 2, 3, 4, or 5 as a Response Code. The Response Code values and meanings follow:

1 – The proposed solution **provides full functionality for the requirement**. Some configuration may be necessary. This functionality is considered part of the base solution cost.

2 – The proposed solution **provides partial functionality for the requirement**. Customization and additional costs are required to meet full functionality and **customization is being proposed**. In such cases, the Vendor shall provide a description, in the Vendor Response column, of the partial functionality provided. If customization would cause a certification issue, please explain in the Vendor Response column. Customization Costs to provide complete functionality shall be included in the Cost Proposal in the Customization Cost category.

3 – The proposed solution **does not provide any functionality required for the requirement**. Customization and additional costs are required to meet full functionality and are **customization is being proposed**. If customization would cause a certification issue, please explain in the Vendor Response column. Customization Costs to provide complete functionality shall be included in the Cost Proposal in the Customization Cost category.

4 – The specific requirement is **not met and the vendor does not propose a customization or service to meet it**. In such cases, the Vendor shall provide in the Vendor Response column an explanation of the reason(s) for not proposing customization to meet the requirement, including any potential workaround options.

5 – The Vendor is **not proposing a solution for requirements within the Requirement Category**, but is proposing solutions to requirements in other Appendix B table categories. For example, a vendor may be proposing a solution that addresses Electronic Voting Equipment only. In this example, the vendor would mark each Electronic Voting Equipment requirement with the appropriate Response Code and mark all the requirements in other categories with a Response Code of "5".

CDOS may include a **Note** at the end of a requirement statement requesting information from vendors. Vendors should address the Note by providing answers or information in the Vendor Response column. If the answer or information is lengthy and is provided in another area of the vendor's RFP response, a specific reference to that area may be provided in the Vendor Response column. If multiple notes are listed in a requirement, please identify the note number associated with each vendor response.

System Requirements Tables for the following categories of requirements are contained in this Appendix B. Each category is stored in its own MS Word table. Each category is further divided into sub-categories. The major categories and category definitions are:

- **A – Election Management System (EMS)** – this category addresses the software needed to programmatically create an election, design ballots, program voting system configurations, view stored cast votes and ballot images for adjudication, and provide for system reports.

- **B – Polling Location Ballot Scanner and Tabulation Equipment** – this category covers hardware and software used at a polling location to scan and tabulate ballots.

- **C – Central Ballot Scanner and Tabulation Equipment** – this category includes hardware and software used at a central location to scan and tabulate ballots. This equipment is typically used for processing mail/absentee ballots in volume.

- **D – Electronic Voting Equipment** – this category includes hardware and software that allows a voter to enter their vote by interfacing with an electronic device (e.g. touchscreen, touch controls, audible speech, sip and puff, paddles) rather than manually marking a ballot. By statute, the electronic voting equipment must generate a verifiable paper trail in the form of a printout or an actual machine marked ballot. The electronic voting equipment may or may not tabulate the votes. If the equipment is the type that marks a ballot, it is possible that the ballot will be scanned and tabulated by another piece of equipment.

- **E – Ballot Envelope Scanning and Signature Verification** – this category includes hardware and software to scan ballot envelopes, capture an image of the envelope (including voter signature), and affix certain information to the envelope (e.g. date, time, county identifier). The signature verification function is typically software driven on a designated computer, whereby an authorized user can view the signature captured by the envelope scanner or physically view the actual envelope and compare the signature with the signature maintained in the voter registration system.

- **F – Vendor Training and Support** – this category addresses training and support requirements of the voting system vendor.

- **G – Certification, Auditing, Testing, Security and Documentation** – this category identifies requirements related to voting system certification, auditing of election results, testing of hardware/software, and system documentation.

The Requirements tables are set up to not allow rows to break across pages. If a vendor response is long enough to cause a table row to be longer than one page can handle, please change the row property for that particular row to allow it to break across pages.

| Sub-Category | Req. ID | UVS Requirement (The System will …) | Comment |
|---|---|---|---|
| Election Creation | A-1 | Allow county and state election officials the ability to generate and maintain an administrative database containing the definitions and descriptions of political subdivisions and offices within their jurisdiction. | |
| Election Creation | A-2 | Replaced original with:<br><br>Provide definition for separate ballot styles that reflect different combinations of contests that are included depending on place of residence of the voter or similar administrative criteria.<br><br>~~Provide for the definition of political and administrative subdivisions where the list of candidates or contests may vary within the voting location and for the activation or exclusion of any portion of the ballot upon which the entitlement of a voter to vote may vary by reason of place of residence or other such administrative or geographical criteria.~~ | |
| Election Creation | A-3 | Provide software capability for the creation of newly defined elections. | |
| Election Creation | A-4 | Provide software capability for the retention of previously defined election setups. | |
| Election Creation | A-5 | Provide software capability to copy, edit and delete previously defined elections. | |
| Election Creation | A-6 | Generate all required master and distributed copies of the voting program in conformance with the definition of the ballot for each voting location and voting device, including devices required to facilitate mail-in voting and voters with disabilities. | |

| Sub-Category | Req. ID | UVS Requirement (The System will …) | Comment |
|---|---|---|---|
| Election Creation | A-7 | New Requirement: All master and generated copies shall be subject to Colorado rule concerning handling and testing of the "trusted build". Voting system shall conform to CDOS rules for "trusted build". | Such copies should bear unique, encrypted serial numbers. |
| Election Creation | A-8 | Provide for all distributed copies of the voting program, resident or installed, in each voting device to include all software modules required to monitor system status and generate machine-level audit reports, to accommodate device control functions performed by voting location officials and maintenance personnel, and to accept and accumulate votes. | |
| Election Creation | A-9 | Provide for a unified, integrated centralized database that allows global edits.<br>**Note:** Please describe how the system minimizes the need to update a particular data element in multiple locations for a change made to that data element anywhere within the database. For instance, removing a candidate that appears in multiple ballot styles or changing a voting location designation that appears in multiple places in the database. | To prevent illicit tampering, for example after an election definition has been fully tested and finalized, A-9 needs to require added security precautions for access to global editing. These should include password protected authorization by additional election officials and automatic, unalterable electronic records and reports (logs) of any and all such access by any means. Similar requirements should be included for less than global editing during the critical period after the election definition is finalized and until a definite time has elapsed after certification, recounts or audits, e.g. the federal 22 month requirement for preserving paper ballots and election records. |
| Election Creation | A-10 | Provide a test mode which supports testing to validate the correctness of election programming for each voting device and ballot style and ensure that the ballot display corresponds with the installed election program. | These systems should always be tested in live election mode (not "test mode") to see what they will do during a live election. Without very careful rephrasing, A-10 will create an extreme security risk, namely that tabulators will operate differently in "test" mode than in live election "mode." Please drop. If there is need for additional, add-on software modules that can be used to create or augment data on machine functions when testing in live election mode, then specify, e.g. what is needed to test adequately an assistive ballot marking device. Be sure to specify that these test modules may not alter the election mode behavior of the machines in any way, except to gather data on what the machine is doing in election mode! |

| Sub-Category | Req. ID | UVS Requirement (The System will …) | Comment |
|---|---|---|---|
| Election Creation | A-11 | Be able to receive data electronically from the Secretary of State and counties via electronic storage media or data transfer in an agreed upon format that contains, at a minimum, the following data:<br>a. Full candidate name<br>b. Candidate sequence, title and text of ballot questions, and voting language options<br>c. Office name<br>~~Contest name~~ d. Contest name including candidate name in case of retention contest.<br>~~d.~~<br>e. Maximum number to vote for each office<br>f. Party affiliation<br>g. Number of eligible registered voters at the precinct<br>h. Number of active registered voters at the precinct | There is a deep security problem implicit in A-11 and A-12. From election creation through auditing, etc. the system needs to function as an integrated whole, but without a strongly secured private network that includes every component, integration faces severe security challenges. Any data transfer through unsecured means (the internet, wireless, radio) can be hacked and the data altered. Accordingly it would be very unwise to allow the system components (e.g. EMS system and tabulators) to communicate with each other by any means that cannot be completely secured. Only encrypted physical storage media with strong chain of custody requirements can afford a reasonable chance of sufficient security. Either direction of data transfer, from central to distributed and vice versa, faces the same basic problem and should be managed in the same way. Prior to testing an election definition, the security requirements might be relaxed somewhat to use encrypted data transmission over the internet. But not after the definition is finalized. From that point forward heavy security and physical storage media are key to election integrity.<br>These necessary security requirements may not be fully compatible with the global editing requirement in A-9. If not, the global editing requirement must be altered. |
| Election Creation | A-12 | Be capable of returning data electronically to the Secretary of State and counties via electronic storage media or other data transfer in an agreed upon format that contains, at a minimum, the following information:<br>a. Full candidate name<br>b. Office name<br>c. Contest name<br>d. Number of votes for candidates and ballot questions<br>e. Number of votes against ballot questions<br>f. Number of people voting summary and by party affiliation (if applicable)<br>g. Number of registered voters at the precinct level (by party affiliation if applicable) | See A-11. |
| Election Creation | A-13 | Allow the EMS authorized user the ability to create custom voter instructions that may include images. | |

| Sub-Category | Req. ID | UVS Requirement (The System will …) | Comment |
|---|---|---|---|
| Election Creation | A-14 | Provide the flexibility to have an election created by a vendor, county, state or other third party and import or export as necessary. | Drop. As far as the system is concerned, elections are to be created by authorized users. There should be nothing in the system that changes depending on the type of authorized user. Who is an authorized user is a matter independent of the system. Importing and exporting are covered elsewhere. |
| Election Creation | A-15 | Accommodate multiple languages (English and Spanish required).<br>**Note:** Please explain the capabilities of your system to handle multiple languages. | |
| Election Creation | A-16 | Allow for a mock election setup and support for public use prior to the initiation of a live election. | |
| Election Creation | A-17 | Allow for precinct numbers containing at least 10 digits/characters. | |
| Ballot Creation | A-18 | ~~Provide for standard ballot layouts.~~<br>Provide for standard ballot layout prototypes to be edited for ease of election specification. | |
| Ballot Creation | A-19 | Provide an authorized user ability to customize the standard ballot layouts. | |
| Ballot Creation | A-20 | Provide an authorized user ability to create new ballot layouts. | |
| Ballot Creation | A-21 | Allow for creation of two sided and multi-page ballot.<br>**Note:** Please explain how your system handles the creation of multi-page ballots. | Typo: ballots<br>Two-sided ballots should have a built-in control to prevent coincident mark locations, where a bleed-through ink would result in marking votes on both sides. |
| Ballot Creation | A-22 | Have the capability to reprogram a ballot for an electronic voting device or optical paper ballot scanner.<br>**Note:** Please explain the process and procedure, with time frames, required to re-program a ballot on the electronic voting device in the event that there is a change to a name or contest on the ballot in the final few weeks before an election. | Unclear. Do you want ballot prototypes created by the EMS and flushed out for precinct level use to be useable by assist ballot marking devices? It is here assumed that any system's ballot prototypes are designed for use with paper ballot vote counting equipment (scanners, tabulators, or whatever the system is going to use). |

| Sub-Category | Req. ID | UVS Requirement (The System will …) | Comment |
|---|---|---|---|
| Ballot Creation | A-23 | ~~For each election, generate and maintain a contest and candidate database and provide for the production or definition of properly formatted ballots and electronic images. This database will be used by the system to format ballots or edit formatted ballots within the applicable jurisdiction.~~ Replace with: For each election, generate and maintain a contest title and candidate name database and provide for the production or definition of properly formatted ballot layouts for use on paper ballots and electronic voting devices. This database will assist the operator to design and or edit ballot layouts for paper ballots and electronic voting devices with a minimum amount of repetitive tasks | |
| Ballot Creation | A-24 | Provide software capability for the creation of newly defined ballot layouts. The system will be designed so as to facilitate error-free definition of ballot layouts for electronic voting equipment and optical paper ballot scanning equipment. | "… . For example, the system should have the capability to report discrepancies between ballot layouts for different targets." |
| Ballot Creation | A-25 | Provide for the retention of previously defined ballot layouts. | |
| Ballot Creation | A-26 | Provide for the modification of previously defined ballot layouts. | "… , subject to additional security requirements after an election has been defined." |
| Ballot Creation | A-27 | Provide a mechanism for the definition of the ballot, including the definition of the number of allowable choices for each office, contest, measure, and for special voting options such as write-in candidates.<br>**Note:** Please state your solution's maximum number of potentially active voting positions (arranged to identify party affiliations if a primary election), offices and their associated labels and instructions, candidate names and their associated labels and polling instructions, and issues or measures and their associated text and instructions. | Move up before A-24 |

| Sub-Category | Req. ID | UVS Requirement (The System will …) | Comment |
|---|---|---|---|
| Ballot Creation | A-28 | Provide for all voting options and specifications as provided for in the Colorado Revised Statutes, including the requirements for a recall election (C.R.S. § 1-12-18) and instant runoff voting (IRV) (C.R.S. § 1-7-1003).<br>**Note:** Ranked Voting Methods, including IRV, are currently features used in local jurisdiction elections and not at the State or County level. However; since counties often conduct elections for local jurisdictions, please explain the capabilities of your system to create and process a ballot that contains one or more contests requiring a ranked voting and tabulation process. | |
| Ballot Creation | A-29 | Generate sample ballots for each ballot style. | Vague. Printers generally create sample ballots by watermarking them to prevent use and by printing on colored paper stock. |
| Ballot Creation | A-30 | Generate a consolidated sample ballot containing all races, issues and questions. | |
| Ballot Creation | A-31 | Produce ballot content output for paper ballot printing, with the following capabilities:<br>a. Accommodate non-proprietary print-ready format (e.g. PDF).<br>b. Accommodate multiple stub sizes within same election.<br>c. Accommodate multiple stubs on a ballot.<br>d. Accommodate variable paper ballot stub sizes up to three (3) inches.<br>e. Customize paper ballots with sequential numbering and static fields on ballot stubs.<br>f. Handle multiple font features.<br>g. Handle special character sets associated only with non-English languages.<br>**Note 1:** Please provide your ballot size capabilities and layout options.<br>**Note 2:** Please provide information about your system's font capabilities (e.g. typefaces, sizes, kerning and leading, bolding, underscoring, and italics). | Output files must be password protected and identified with an encrypted serial number. |

| Sub-Category | Req. ID | UVS Requirement (The System will …) | Comment |
|---|---|---|---|
| Ballot Processing | A-32 | Output ballot content to secure electronic media for use in voting equipment. | Unclear. "…to secure *physical* media *(such as memory cards)* for use in *all distributed* voting equipment *(tabulators, scanners, assistive ballot marking devices, etc.)*" |
| Ballot Processing | A-33 | Output ballot content to accommodate accessible voting, including adjustable audio and visual output.<br>**Note:** Please detail capacity limits of data fields for accessible voting (e.g. font sizes, display options). | |
| Ballot Processing | A-34 | Allow authorized users to electronically adjudicate ballots to reflect voter intent, while retaining the originally marked ballot image.<br>**Note:** Please explain the process and time efficiency of ballot adjudication using your system. | Unclear. Somewhere the RFP needs to state your general plan that each paper ballot cast will be scanned and an electronic image saved, and also interpreted by the machine to create a cast vote record of exactly how the machine takes the votes to have been cast. The individual cast vote records provide the data for all tabulation and aggregation of election results. In light of this scheme, A-34 might better read: "Allow authorized users to adjudicate ballots to reflect voter intent by examining either the stored ballot image or the paper ballot itself. Such adjudication will result in authorized users either accepting the cast vote record or altering it manually. Encrypted and unalterable logs of such actions must be kept."<br>Prior to A-34, as a separate criterion:<br>"Provide for initial rejection of marked paper ballots when a contest is over or under-voted, or for any reason machine interpretation of the cast votes is ambiguous or unclear. Include an option to override and accept the ballot as cast at the voter's discretion. Unalterably log all such events should future adjudication be needed."<br>To facilitate adjudication after the fact, there must be a means of recovering the paper ballot source of the electronically stored data (image and cast vote record) and the means must not jeopardize the individual voter's privacy. This is best accomplished, we believe, as follows: When the initial scan of a paper ballot at the polls has been accepted and recorded by the machine and before it is deposited in temporary storage, the paper ballot is assigned an identification number by the machine which is printed on the ballot and recorded permanently as the ID of the scan image *and* cast vote record. ID numbers are to include identification of the jurisdiction and precinct or other location, and a batch number. Within batches of 10 to 100, ballots are *randomly* assigned unique ID numbers to protect voter privacy. Individual ballots can be retrieved by pulling the batch and then searching out the specific number. At the close of polls, paper ballots should be stored by batch. |

| Sub-Category | Req. ID | UVS Requirement (The System will …) | Comment |
|---|---|---|---|
| Vote Results Reporting | A-35 | Report vote tally results by individual upload.<br>**Note:** For the purposes of this RFP, the Vote Results Reporting requirements are shown as part of the EMS. Some vendors may have a reporting module that is considered separate from their EMS and, if so, can explain that in their response to this requirement. | Unclear what "individual upload" refers to. Each transmission? Each precinct batch? |
| Vote Results Reporting | A-36 | Report vote tally results by contest jurisdiction-wide. | |
| Vote Results Reporting | A-37 | Report vote tally results by contest by precinct. | |
| Vote Results Reporting | A-38 | Report the total votes for each candidate for each contest, as well as by candidate by precinct. | |
| Vote Results Reporting | A-39 | Report vote tally results by voting location. | |
| Vote Results Reporting | A-40 | Report vote tally results by ballot source (e.g. Early Vote, Election Day, Mail, and Provisional). | |
| Vote Results Reporting | A-41 | Report votes by ballot style. | |
| Vote Results Reporting | A-42 | Report votes by ballot batch. | |
| Vote Results Reporting | A-43 | Report votes by ballot style within precinct. | |
| Vote Results Reporting | A-44 | Report undervotes and overvotes in each contest, with the option to exclude. | Good. This is critical for audit purposes!<br>Add: "Report total ballots read for each contest."<br>This number should be constant for every upload and every subdivision thereof. |
| Vote Results Reporting | A-45 | Provide capability to report ranked choice voting results. | |
| Vote Results Reporting | A-46 | Report a summary of results in addition to the detailed Statement of Votes Cast reports. | "detailed Statement of Votes Cast reports" here seems to be an afterthought. See below. |

| Sub-Category | Req. ID | UVS Requirement (The System will …) | Comment |
|---|---|---|---|
| Vote Results Reporting | A-47 | Report certified write-in candidate results in each contest with the ability to exclude. | Add new item: Report complete cast vote records including the randomly assigned ballot ID numbers, for all jurisdictions and subdivisions.<br>Add new item: Save for export all recorded ballot images including their ID number, for all jurisdictions and subdivisions. |
| Vote Results Reporting | A-48 | Import election night voter registration counts for Active and Total voters and report percent turnout relevant to vote tally for both Active and Total registrations. | |
| Vote Results Reporting | A-49 | Export each report in PDF, XLS, TXT, EML and CSV formats. | "Have the capability to report in . . . ." |
| Vote Results Reporting | A-50 | Provide for Zero reports to be printed prior to first upload. | Better: "Provide capability to select any combination of reports available. Unalterably log all reporting" |
| Vote Results Reporting | A-51 | Allow reports to be run at any time before, during or after the upload process. | Drop "before, during . . . ."<br>"The upload process" = ? |
| Vote Results Reporting | A-52 | Provide customization of report headers (e.g. "Unofficial" or "Final Unofficial"), contest labels and print layout.<br>**Note:** Please explain any character limitations imposed by your system on labeling, reporting or exporting. | |
| Vote Results Reporting | A-53 | Include creation date and time on all reports. | |

| Sub-Category | Req. ID | UVS Requirement (The System will …) | Comment |
|---|---|---|---|
| Vote Results Reporting | A-54 | ~~When the total number of votes cast and counted in any precinct by early voters and mail-in ballot is less than the current threshold of ten, the returns for all such precincts in the political subdivision shall be reported together to maintain privacy,~~ When the total number of votes cast by voters on a specific ballot style/precinct or with a particular voting method or at a particular voting location is less than the currently allowed threshold of ten, the vote tallies for all such subgroups are to be reported in aggregations such that each category always contains at least 10. per §1-8-308(b), C.R.S. This is also applicable to property owner ballots.<br>**Note:** Please explain how your system will accommodate this requirement for all reports to maintain voter privacy. | Assignment of ballot, image and cast vote record ID numbers must be adjusted accordingly. Perhaps this can be accomplished by allowing the system to suppress the printing of (but not delete from the electronic record) precinct or location ID numbers in such cases. All paper ballots so involved must be stored in the same batches they were processed in to facilitate later recovery at need. Recommended: Do not allow the procedure in A-54 to cross jurisdictional lines. This would seriously hinder later auditing. Even so, it may be necessary to allow exceptions to the procedure to ensure that vote tally reconciliation can be accomplished. |
| Vote Results Reporting | A-55 | Allow the minimum threshold number of votes to be changed if the legal requirement changes. This requirement is referring to C.R.S. § 1-8-308(b). | |
| Vote Results Reporting | A-56 | Be able to include or exclude property owner ballot results. | |
| Vote Results Reporting | A-57 | Provide an option to suppress a race or candidate from all reports, when withdrawn from ballot. | |
| Vote Results Reporting | A-58 | Provide an easily-readable method to identify the candidate(s) /measure with the most votes in each contest. If more than one winner is possible, identify all winners.<br>**Note:** System should have this feature as an option, so not used on partial results reports. | |
| Vote Results Reporting | A-59 | Have the capability to report political party designation for each candidate for partisan elections. | |

| Sub-Category | Req. ID | UVS Requirement (The System will …) | Comment |
|---|---|---|---|
| Import/Export | A-60 | Import/export ballot information and voter registration information from/to the Colorado's centralized statewide database (SCORE). | |
| Import/Export | A-61 | Display detailed upload status for each portable vote storage media unit (e.g. memory card) by polling location and counting center. For example, we should be able to visually confirm an exact match between the physical portable vote storage media unit being uploaded and the unit identified by the EMS. (e.g. If an authorized user is uploading "Polling Location A, Memory Card 01", onscreen the user should be able to visually confirm that the system is uploading "Polling Location A, Memory Card 01." | |
| Import/Export | A-62 | Prevent the upload of wrong or duplicate portable vote storage media units.<br>**Note:** Please explain your system's safeguards against errant or multiple uploads from portable vote storage media units. | |
| Import/Export | A-63 | Produce and print a list, at any time in the process, showing which portable vote storage media units have and have not been uploaded. | |
| Import/Export | A-64 | Save a report to a local or portable drive for transfer to a networked computer in a non-proprietary format. | |
| Import/Export | A-65 | Display error messages and instructions to recover during importing and exporting operations. | |
| Data Storage and Processing | A-66 | Will maintain election data in a secure environment.<br>**Note:** Please describe how EMS data is stored and secured from unauthorized access and/or manipulation. | Needs clarification. A standard of "high security," which we recommend, would "prevent remote communication during an election via any media other that the single type of physical storage device used by distributed elements." Thus scanners and assistive ballot marking devices would have no physical capacity whatsoever to be connected to the internet or any wireless device. Any such capability would be ripe for abuse. (See A-67 below.) |

| Sub-Category | Req. ID | UVS Requirement (The System will …) | Comment |
|---|---|---|---|
| Data Storage and Processing | A-67 | Will provide CDOS the capability to centrally create and distribute election setup data to counties. | There is a tradeoff here between convenience in setting up an election, say by using internet connections and global alteration functions, and security against rigging during elections; the latter is best served by having no capacity for remote communication other than the designated physical storage media. We recommend that all remote communications during an election be carried out by physical transport with chain of custody of physical storage media and that no other means of remote communication be physically available in distributed equipment. Vendors that believe they can provide a fool proof way of physically disabling other means of remote communication during an election should specify exactly how this may be done.<br>The central computer running the primary EMS software should be fully secured behind a physical firewall with internet access physically disabled at all times during an election and until the election is certified and audited.<br>The "high security" requirements may cause a delay in reporting on election night from the most remote stations, but they are the only way to fully secure an election. |
| Data Storage and Processing | A-68 | Provide a means to upload or transmit vote count results to the EMS from vote collection/tabulation equipment. | In light of the above, please use: "Provide a single secure physical storage medium for the purpose of uploading vote count results to the central EMS station from distributed vote collection/tabulation equipment. No other means shall be present in any form in distributed equipment." |
| Data Storage and Processing | A-69 | Provide statistics of batches (e.g. number of ballots in each batch, number of batches ~~saved~~ pending, number of batches deleted, and number of batches saved).<br>**Note:** Does your system have a batch size and/or number of batches limitation and, if so, what is it? | |
| Data Storage and Processing | A-70 | Have the ability to delete saved ballot batches from the system.<br>**Note:** Please explain how your system manages batch accountability identification. | |
| Data Storage and Processing | A-71 | Have data backup capabilities.<br>**Note:** Please explain any system data backup capabilities and protocols within your system. | |

| Sub-Category | Req. ID | UVS Requirement (The System will …) | Comment |
|---|---|---|---|
| Data Storage and Processing | A-72 | Have redundancy capabilities.<br>**Note:** Please explain any general and real time redundancy features. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>B – POLLING LOCATION BALLOT SCANNING AND TABULATION EQUIPMENT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Scanning | B-1 | Notify voter and an authorized user of errors before accepting ballot. | |
| Scanning | B-2 | Retain an electronic image of each voted paper ballot in a non-proprietary format.<br>**Note:** Please describe the format(s) you offer for ballot images. | |
| Scanning | B-3 | Capture votes from paper ballots. | |
| Scanning | B-4 | Accept overvoted ballots upon review in a manner that allows the voter to review each case of an overvote, one case at a time and to provide clearly understandable options to further review the ballot, or cast the ballot without further review | . |
| Scanning | B-5 | Accept undervoted ballots. | Voter should have the same opportunity to review an undervoted ballot as an overvoted one, because in both cases a vote may be omitted (or discounted). |
| Scanning | B-6 | Handle, and reliably account for, multi-page ballots, including when the pages become separated from each other (votes will count regardless of the sequence pages are scanned or if some pages are not scanned).<br>**Note:** Please explain how your system accounts for multi-page ballots. | |
| Scanning | B-7 | Display publicly the number of ballots processed. | |
| Scanning | B-8 | Display a Use counter showing the count of all ballots processed on the equipment, which is not reset after an election. | |
| Scanning | B-9 | Accept ballots in any of four orientations | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>B – POLLING LOCATION BALLOT SCANNING AND TABULATION EQUIPMENT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Tabulation | B-10 | Have the ability to write cast vote records to a secured media device during operation that the EMS can disallow from being tabulated prior to the close of polls on Election Day.<br>**Note:** Please describe the security your equipment provides for ensuring media is not removed until procedurally authorized. | |
| Tabulation | B-11 | Provide a secure means to upload ~~or transmit~~ vote count results to the EMS. | "…means using physically resident storage media to upload . . ."<br>B-11.2: Provide for security on physically resident storage media that cannot be hacked, bypassed, faked, or undiscernibly replaced. |
| Transportability | B-12 | Be easily transported by one person.<br>**Note:** Describe the transportability characteristics of your equipment (e.g. weight, width, height, wheels). | |
| Supplies | B-13 | Provide dust-and-moisture-proof covers for transportation and storage purposes.<br>**Note:** Please describe your equipment covers. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>C – CENTRAL BALLOT SCANNING AND TABULATION EQUIPMENT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Scanning | C-1 | Scan paper ballots into identifiable and locatable batches. Ballot batches may be as small as a single ballot. | C-1.2: Within each batch, print a randomly assigned individual ballot ID number on each accepted ballot that is also assigned irrevocably to the corresponding retained electronic ballot image and cast vote record. |
| Scanning | C-2 | Retain an electronic image of each voted paper ballot in a non-proprietary format.<br>**Note:** Please describe the format(s) you offer for ballot images. Also describe how your system handles adequate resolution of saved images relative to the paper original | . |
| Scanning | C-3 | Verify ballot quantities counted to ballots provided by batch prior to saving to the system. | |
| Scanning | C-4 | Verify ballot quantities counted to ballots provided by batch after saving to the system. | |
| Scanning | C-5 | Rerun a batch of ballots, if necessary, without impacting results to date. | |
| Scanning | C-6 | Have the ability to logically delete (not physically) saved ballot batches from the system.<br>**Note:** Please explain how your system manages batch accountability identification. | |
| Scanning | C-7 | Identify and segregate ballots with overvotes for manual or electronic image review. | "Identify and segregate ballots with overvotes for later adjudication. Provide a mean of recovering both the cast vote record and the electronic image, as well as the physical ballot during adjudication. Provide a means of altering and accepting the cast vote record. Provide an unalterable log of all adjudications conducted during an election by precinct or location voted. |
| Scanning | C-8 | Identify and segregate ballots with write-ins for manual or electronic image review. | Amend as in C-7. Better: state all adjudication requirements together as a separate criterion and then specify in as much detail as possible what requires adjudication. |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>C – CENTRAL BALLOT SCANNING AND TABULATION EQUIPMENT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Scanning | C-9 | Identify and segregate ballots that cannot be read for manual or electronic image review. | Ditto. |
| Scanning | C-10 | Identify and segregate ballots that are read as blank for manual or electronic review. | |
| Scanning | C-11 | Provide information to an authorized user as to why a ballot was segregated. | |
| Scanning | C-12 | Identify a batch of ballots with a unique number and ~~indicate~~ verify that the count is zero upon beginning a scan and giving a total number of ballot pages processed at the close of the batch scan. | |
| Scanning | C-13 | Handle scanning of both front and back page of a ballot when data is contained on back of ballot page. | |
| Scanning | C-14 | Handle, and reliably account for, multi-page ballots, including when the pages become separated from each other (votes will count regardless of the sequence pages are scanned or if some pages are not scanned).<br>**Note:** Please explain how your system accounts for multi-page ballots when pages are out of order or when all ballot pages are not returned. | |
| Scanning | C-15 | Accept ballots in any of four orientations | |
| Scanning | C-16 | Display publicly the number of ~~ballots~~ ballot pages processed. | |
| Scanning | C-17 | Display a Use counter showing the count of all ballots processed on the equipment, which is not reset after an election. | |
| Scanning | C-18 | Allow the option to disable or enable review of undervoted ballots. | |
| Tabulation | C-19 | ~~Capture votes from paper ballots.~~ Capture votes marked by a voter or a ballot marking device on a paper ballot | : |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>C – CENTRAL BALLOT SCANNING AND TABULATION EQUIPMENT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Tabulation | C-20 | ~~Accept overvoted ballots upon review.~~<br>Account for overvotes in every contest where overvotes occur. | "Account for . . ."? Report? |
| Tabulation | C-21 | ~~Accept undervoted ballots with or without review~~.<br>Account for undervotes in every contest where undervotes occur. | Produce a report? |
| Tabulation | C-22 | Have the ability to write cast vote records to a secured media device during operation.<br>**Note:** Please describe the security your equipment provides for ensuring media is not removed until procedurally authorized. | From above: B-11.2: Provide for security on physically resident storage media that cannot be hacked, bypassed, faked, or undiscernibly replaced. |
| Tabulation | C-23 | Provide a secure means to upload ~~or transmit~~ vote count results to the EMS. | "secure physical storage media" |
| Error Handling | C-24 | Identify and reject ballots that are from another election. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>C – CENTRAL BALLOT SCANNING AND TABULATION EQUIPMENT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Error Handling | C-25 | Continue ~~high-speed~~ ballot ~~processing~~ scanning while electronically or physically segregating and sorting ballots to user identified categories that need additional attention.<br>**Note 1:** Please describe how your system handles these situations:<br>a. Ballots are unreadable by the scanner.<br>b. Notifying an authorized user whether a ballot has been scanned successfully or not.<br>c. Notifying an authorized user that a ballot has been previously scanned.<br>d. Identifies where a voter marked the box for a write-in and where the voter did not mark the box, but did enter a write-in candidate on the line.<br>**Note 2:** Please describe the processing speed options of your ~~high-speed~~ ballot scanner.<br>**Note** 3:Please describe how the relationship of paper ballot to ballot scan to cast vote record will be maintained when this physical or electronic sorting or segregation is taking place. | See suggestions for random ID – A-34 and A-54. |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>D – ELECTRONIC VOTING EQUIPMENT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Ballot | D-1 | Display choices for the contests, (candidates and measures) of the election for each ballot style. | This appears to refer to a touchscreen station or assistive ballot marking device. |
| Ballot | D-2 | When activated for the voter, display prominent ballot identifiers, including precinct, party, and similar identifiers, in order to give the voter the opportunity to verify that they will be voting on the correct ballot. | Ditto. |
| Ballot | D-3 | ~~Tabulate~~ Record each voter's candidate and measure selections as the ballot is cast.<br>**Note:** This requirement is not applicable to certain ballot marking devices that depend on the produced paper ballot being processed and tabulated elsewhere. | |
| Ballot | D-4 | Have a public counter that displays the number of ballots cast or marked, depending on the functionality of the electronic voting equipment. | |
| Ballot | D-5 | Make clear to the voter how to cast a ballot or print a marked ballot, such that the voter has minimal risk of doing so accidentally, but when the voter intends to cast the ballot or complete the ballot marking session, the action can be easily performed.<br><br>**Note 1:** Please describe how voters, including voters with disabilities, will be able to review their write-in input to the ballot interface, edit that input, and confirm that the edits meet their intent.<br>**Note 2:** Please describe how your electronic voting units provide a method by which voters with disabilities can choose the language of the ballot visually and through audio devices. | |
| Ballot | D-6 | Assure that the Ballot Marking Device automatically resets once the paper ballot is printed. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>D – ELECTRONIC VOTING EQUIPMENT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Ballot | D-7 | Allow voters, including voters with disabilities, to be able to review their write-in input to the ballot interface, edit that input, and confirm that the edits meet their intent. | |
| Ballot | D-8 | Provide a method by which voters with disabilities can choose the language of the ballot visually and through audio devices. | |
| Accessibility | D-9 | Provide electronic voting equipment designed to allow for installation in a voting location accommodating access by voters with disabilities in compliance with the Americans with Disabilities Act (ADA), HAVA and all applicable federal and state laws that address accessibility to voting for persons with disabilities.<br>**Note:** Please describe how your system's features comply with HAVA, ADA and other Federal and State laws that require accessibility for voters with a variety of disabilities, including visual or cognitive impairments. Identify the EAC standards your system meets. | |
| Accessibility | D-10 | Display, or accommodate, a ballot as defined in accordance with C.R.S. § 1-5-704. The size of a ballot position and the font size of candidate information must be in accordance with Colorado Election Rule 45.<br>**Note:** Please stipulate the maximum available positions on the voting device, based on such size of a ballot position and the font size of candidate information, to be used for an election. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>D – ELECTRONIC VOTING EQUIPMENT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Accessibility | D-11 | Include a privacy enclosure or voting booth that contains the electronic voting device(s) designated for voters with disabilities and comply with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) providing sufficient dimensions to allow access to voters who use wheelchairs.<br>**Note:** Please explain how your voting device complies with all forward and side reach requirements of the ADA and ADAAG. | |
| Accessibility | D-12 | Include electronic voting units adaptable for voters with disabilities either through adjustability of the device or the voting booth or inclusion of an auxiliary device. The auxiliary device should also be lightweight and removable making it portable for use on a voter's lap or provide an alternative solution.<br>**Note 1:** Please describe your accessible alternative input devices. List such devices and explain the operation of each device and how it accommodates voters with disabilities.<br>**Note 2:** Please explain how your proposed system accommodates voters with visual disabilities. Include with the description how portions of the displayed ballot may be intensified and/or enhanced, in contrast and font size and then restored to initial size.<br>**Note 3:** Please explain how your electronic voting device can be repositioned to accommodate a variety of voters with disabilities. Include any information about the ability of the voter to independently adjust the device.<br>**Note 4:** Is the voting screen glare-free regardless of positioning?<br>**Note 5:** Please explain any magnifying capacity of the electronic voting device.<br>**Note 6:** If your electronic voting unit uses an activation card, please explain how it may be used easily and independently by voters with disabilities including voters who use wheelchairs and people with visual disabilities. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>D – ELECTRONIC VOTING EQUIPMENT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| | | **Note 7:** Please explain how your electronic voting unit adequately provides secrecy for a voter who uses a wheelchair.<br>**Note 8:** Please explain how a voter that cannot read your VVPAT printout can verify the accuracy of their cast votes.<br>**Note 9:** Please describe additional features of your system that are designed to accommodate voters with disabilities. | |
| Accessibility | D-13 | Allow for importing of audio ballot content from an outside source (e.g. candidates or pre-recorded ~~text~~ audio.).<br>**Note:** Please explain the process and procedure, with time frames, required to re-program the audio read-back on the voting device in the event that there is a change to a name or contest on the ballot in the final few weeks before an election. | |
| Accessibility | D-14 | Allow for voter to change volume and/or speed of audio playback. | |
| Accessibility | D-15 | Provide for audio instructions for the ballot and a mechanism for voters with visual impairments to cast a ballot or print a marked ballot, either on the voting unit itself or on a separate device designed for this purpose. The process shall imitate the process used by sighted voters with the exception of the audio interface. | |
| Accessibility | D-16 | Support an enlarged ballot for voters with visual impairments. Following the casting of a vote or the printing of a marked ballot, the machine must reset to its initial state to accommodate the next voter.<br>**Note:** If you are proposing a ballot marking device, does it allow for larger print on the printed ballot? | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>D – ELECTRONIC VOTING EQUIPMENT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Accessibility | D-17 | Accommodate voters regardless of their ability to read.<br>**Note:** Please explain how such individuals would be instructed to utilize the audio interface. | |
| Accessibility | D-18 | Allow for connection of personal auxiliary devices, such as sip/puff or jelly switch devices.<br>**Note:** Please describe such capabilities provided by your system. | |
| Ease of Use | D-19 | Be designed so that actions performed by the voter, such as making a vote selection or changing a vote, are easily understood so that errors are prevented to the maximum extent possible, and so that recovery from an erroneous action is facilitated by the features of the system prior to casting the ballot or printing a marked ballot.<br>**Note:** Please explain how your proposed system facilitates voter actions prior to casting a ballot or printing a marked ballot. | |
| Ease of Use | D-20 | Accommodate font sizes that are adjustable for ease of sight. | |
| Ease of Use | D-21 | Show the voter a summary screen at the end of the ballot indicating the choices made and/or skipped. | |
| Ease of Use | D-22 | Allow the voter the ability to change a selection until the voter is satisfied with the choice at anytime prior to the final casting of a ballot or printing a marked ballot.<br>**Note:** Please explain here how your proposed voting system allows the voter to review and/or modify his/her selections before final casting of the vote or printing of the marked ballot.. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>D – ELECTRONIC VOTING EQUIPMENT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Ease of Use | D-23 | Provide a method for the voter to confirm their choices before casting the ballot or printing a marked ballot, signifying to the voter that casting or printing the ballot is irrevocable and directing the voter to confirm their intention to cast or print the ballot, and shall further signify to the voter that the ballot has been cast or printed after the voting session is complete.. | |
| Ease of Use | D-24 | Provide a means to demonstrate the operation of the electronic voting device to the voters. | |
| Ease of Use | D-25 | Not permit a voter to over-vote a contest and will enable the voter to correct their selections.<br>**Note:** Please explain how your proposed system shall not allow a voter to over-vote a contest and enable the voter to correct his or her selections. | |
| Ease of Use | D-26 | Warn voters that they have under-voted a contest and permit them to correct or accept the under-vote.<br>**Note:** Please explain here how your proposed system shall warn voters that they have under-voted a contest and permit them to correct or accept the under-vote. | |
| Ease of Use | D-27 | Provide a means of recording the votes cast for write-in candidates for any contest that allows write-in candidates. This capability shall allow the entry of as many names of candidates as the voter is entitled to select for each contest in compliance with Colorado's Election Law.<br>**Note:** Please explain how your proposed system allows for write-in votes for any authorized contest. | |
| Ease of Use | D-28 | Provide a user option to view on the screen the list of certified write-in candidates. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>D – ELECTRONIC VOTING EQUIPMENT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Ease of Use | D-29 | Allow county personnel to modify the voter instructions for an electronic or audio voting session. | |
| Ease of Use | D-30 | Provide a screen response that would allow a voter to request the list of certified write-ins. | |
| Ease of Use | D-31 | ~~Proved an ability to reset screen calibration.~~<br>Provide an authorized user an ability to reset screen calibration including between uses in an election<br>**Note:** Please explain if your electronic voting equipment produces any warnings when calibration needs to be reset. | . |
| Uninterrupted Operation | D-32 | Provide, in case of power interruption, a means for voting operations to continue. This feature shall consist of either an un-interruptible power supply (UPS) or other means to keep electronic voting equipment active. | |
| Uninterrupted Operation | D-33 | Provide for continuous uninterrupted operation for a minimum of two hours in case of power failure.<br>**Note 1:** Please specify how long your system will operate without an external power source and under what conditions. If the device does not have a battery backup, what size of UPS will be required to maintain operation for two hours?<br>**Note 2:** Please specify how your system will provide notice of power loss or low-battery state, so that poll workers or election officials can take appropriate steps. | |
| Uninterrupted Operation | D-34 | In the event of the failure of an electronic voting unit, retain a record of all votes cast prior to the failure.<br>**Note:** Please explain how your system retains and reports votes cast in the event of a loss of power. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>D – ELECTRONIC VOTING EQUIPMENT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Voter Verifiable Paper Trail | D-35 | Include, with each voting device, the functionality of a Voter-Verified Paper Audit Trail (VVPAT) that meets all Federal and State Certification requirements. The VVPAT can be in the form of a printed record produced by the voting device or an alternate solution if the voting device is not a Direct Recording Electronic voting system, such as ~~an electronically marked ballot~~. a Ballot Marking Device (BMD)<br>**Note 1:** Please explain how your proposed voting device complies with this requirement.<br>**Note 2:** Explain if your proposed system has an alternate means of counting a non-ballot type of VVPAT for audit purposes. The alternative means can include but is not limited to the availability of bar codes and readers for the VVPAT. | For security reasons, we recommend that DRE's or touch screen voting devices be used only as paper ballot marking devices. Hence this requirement should be dropped. |
| Voter Verifiable Paper Trail | D-36 | Provide a means for voters with disabilities (visually impaired or unable to read) to review the VVPAT.<br>**Note:** The review of the VVPAT by voters that cannot see or read the VVPAT requires a feature that enables read-back from the physical VVPAT. | Provide a means for voters with disabilities to review the machine marked paper ballot. |
| Voter Verifiable Paper Trail | D-37 | Have the capability, if proposing a ~~DRE type machine~~, touchscreen interface for the print on the VVPAT to be large enough and dark enough for voters to verify and for poll workers to read easily in recount.<br>**Note:** Please explain the type of paper used to record the VVPAT and the characteristics of the paper impression to ensure ease of reading and fade resistance. For instance; 18 point font, bold and double spaced would be preferred. | Drop |
| Transportability | D-38 | Be easily transported.<br>**Note:** Describe the transportability characteristics of your electronic voting equipment (e.g. weight, width, height, wheels). | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>E – BALLOT ENVELOPE SCANNING AND SIGNATURE VERIFICATION | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Mail Ballot Envelope Processing | E-1 | Provide hardware with the capability to scan mail ballot envelopes and perform the following functions:<br>a. Scan and capture voter ID barcode<br>b. Scan and capture envelope and signature images<br>c. Log envelope as received<br>d. Endorse (customizable) & date/time stamp envelope<br>e. Separate envelopes that may need manual intervention<br>**Note:** Please provide information about your ballot envelope sorting equipment, including what versions are available for counties with various volumes of envelopes. Can your equipment perform all these above functions in a single pass? If not, please explain the number of passes required and the actions taken on each pass. | |
| Mail Ballot Envelope Processing | E-2 | Be capable of generating an output file, with voter ID and voter's envelope signature, to be matched with SCORE voter registration data and used in the Automated Signature Verification process. | |
| Mail Ballot Envelope Processing | E-3 | Be capable of updating the mail ballot envelope output file with status values (e.g. received, accepted, rejected) so that the SCORE system can use the output file to update voter registration records. | |
| Mail Ballot Envelope Processing | E-4 | Allow disposition codes to be updated (e.g. from "challenged" to "good"). | |
| Mail Ballot Envelope Processing | E-5 | Be configurable for ballot envelope size and design. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>E – BALLOT ENVELOPE SCANNING AND SIGNATURE VERIFICATION | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Mail Ballot Envelope Processing | E-6 | Be configurable for thickness detection. | |
| Mail Ballot Envelope Processing | E-7 | Automatically separate envelopes with voter affidavit required, or voter ID required into a separate stack or identify them electronically for easy separation. | |
| Mail Ballot Envelope Processing | E-8 | Have an option for sort/pass ~~to various methods~~ with the ability to customize sorting definition (e.g. style, precinct, district, unaccepted ballots, signature discrepancy and no signature). | |
| Mail Ballot Envelope Processing | E-9 | Provide a high-volume solution of at least envelopes per minute for counties with a large voter population.<br>**Note 1:** Please specify the throughput capacity on your high-volume envelope processor.<br>**Note 2:** County size by registered voter population is as follows:<br>Large = ~~GE 80,000~~ over 25,000 voters<br>Medium = 10,000 – ~~79,999~~ 25,000 voters<br>Small = Fewer than 10,000 voters | |
| Mail Ballot Envelope Processing | E-10 | Provide a low-volume solution for counties with a small or medium voter population.<br>**Note:** Please specify the throughput capacity on your low-volume envelope processor. | |
| Mail Ballot Envelope Processing | E-11 | Provide configurable reports for tray id, tray count and pieces status. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>E – BALLOT ENVELOPE SCANNING AND SIGNATURE VERIFICATION | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Automated Signature Verification | E-12 | Provide tested/proven Automated Signature Verification (ASV) software, which can automatically compare a voter's ballot envelope signature with the SCORE voter registration signature based on a customer selected confidence determination.<br><br>Note: Provide any information about your system that might be an alternative to manual removal of the signature security tab on mail ballot envelopes | |
| Automated Signature Verification | E-13 | Be configurable to meet or exceed a state established acceptance threshold for signature acceptance.<br>**Note:** The State has not established a threshold requirement yet, but a CDOS Elections group is formed to determine threshold settings and will utilize the capabilities of the proposed ASV solutions to help determine an acceptable threshold. | |
| Automated Signature Verification | E-14 | Provide user activity log records that include full description of all human intervention during the ASV process. | |
| Automated Signature Verification | E-15 | Provide an audit function to verify the accuracy of machine accepted signatures. | |
| Automated Signature Verification | E-16 | Extract returned ballot envelopes for manual review when the signature does not meet the acceptance threshold level, is unreadable, or is missing. | |
| Automated Signature Verification | E-17 | Create a record when the signature does not meet the acceptance threshold level. This record will be used to generate a letter when the signature cannot be manually verified.<br>**Note:** Please explain your process for creating and using these records. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>F – VENDOR TRAINING & SUPPORT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Hardware & Software Support | F-1 | Include availability of vendor support personnel to assist in hardware and software installation and setup onsite. | |
| Hardware & Software Support | F-2 | Include availability of vendor support personnel to assist in hardware and software installation and setup from a remote help desk. | |
| Training | F-3 | Include availability of vendor supported onsite training personnel to train CDOS and County users. | |
| Training | F-4 | Include availability of self-study user training via the Internet or electronic media. | |
| Voting Period Support | F-5 | Provide technical support for all system components beginning 60 days prior to an election and continuing until 30 days after an election for each UVS county for a minimum of two (2) years after implementation. | |
| Hardware Parts and Supplies | F-6 | Include hardware solutions for the UVS that are supported by a supply chain contingency plan.<br>**Note:** Please provide an explanation of your supply chain contingency planning. The intent of this requirement is to assess the risk to Colorado of one or more of your suppliers not being able to provide needed components. Identify the depth of your supply chain (e.g. one, two or more suppliers deep). | |
| Hardware Parts and Supplies | F-7 | Make equipment parts and supplies available through December 31, 2020. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>F – VENDOR TRAINING & SUPPORT | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Hardware Parts and Supplies | F-8 | Not require royalty fees, user fees, or other charges or limitations on the printing of ballots designed or printed on vendor devices. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>G – CERTIFICATION, AUDITING, TESTING, SECURITY AND DOCUMENTATION | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Certification | G-1 | Be certified by the EAC or another state.<br>**Note:** If not certified, please explain.<br>**Note:** See §1-5-601.5 C.R.S. for Colorado voting system certification compliance with federal regulations. RFP §5.3.11 has a question on certification status of vendor offerings. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>G – CERTIFICATION, AUDITING, TESTING, SECURITY AND DOCUMENTATION | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Auditing | G-2 | Store sufficient data in a system audit log file to allow the auditing of all operations related to election setup, ballot creation, ballot tabulation, results consolidation and report generation. The audit log file shall contain:<br>a. An identification of the program and version being run.<br>b. An identification of the election file being used.<br>c. A record of all options entered by the operator, including operator ID.<br>d. A record of all actions performed by a subsystem of the system.<br>e. A record of all tabulation and consolidation input.<br>f. Audit log records that are created and maintained in the sequence in which operations were performed, with date/time stamps.<br>**Note 1:** Please explain what audit trail techniques and audit reports are incorporated in your proposed system.<br>**Note 2:** Please provide a list of all audit log files, the file location within the voting system, and the procedures to navigate to and retrieve them from the voting system.<br>**Note 3:** Please describe steps needed to protect the audit logs from possible unintentional or intentional erasure or alteration.<br>**Note 4**: Please provide a sample set of audit reports (system logs, etc.) from an election in any large county (not necessarily Colorado). | The audit file should be encrypted and unalterable. |
| Auditing | G-3 | Accommodate random audits on electronic voting and tabulation devices. | |
| Auditing | G-4 | Accommodate random audits on paper vote capture and tabulation devices. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>G – CERTIFICATION, AUDITING, TESTING, SECURITY AND DOCUMENTATION | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Auditing | G-5 | Log all activity on voting equipment including: when turned on/off, by whom, any errors, power fail, power restore, when an error occurred and when an error is resolved. | |
| Auditing | G-6 | Run real-time reports, when needed. | |
| Auditing | G-7 | Run post-election diagnostics on all auditable equipment in a manner that does not endanger the integrity of the election record.<br>**Note:** Please explain your system's post-election diagnostic capabilities. | |
| Auditing | G-8 | Provide audits for recounts. | |
| Auditing | G-9 | Have a permanent paper record of each vote for audit purposes. Preferably all paper records of all votes are in the same format and indistinguishable other than by ballot style | .<br>Drop. Disallow touch screen voting except as assistive ballot marking devices. |
| Auditing | G-10 | Support a Risk Limiting Audit, as defined in CRS 1-7-515(5)(b) on both electronic tabulation and paper ballot tabulation devices.<br>**Note 1:** Please describe how your proposed system supports the execution of a Risk Limiting Audit.<br>**Note 2:** §1-7-515 C.R.S. stated that Colorado must begin risk-limiting audits in 2014, but was revised in the 2013 session to extend the start of the requirement to 2017. | "on both assistive ballot marking devices and . . ." |
| Auditing | G-11 | Incorporate a real-time clock as part of the system hardware and all audit log record entries shall include a date/time stamp. | |
| Auditing | G-12 | Use a real-time clock that will continue to run during a power loss. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>G – CERTIFICATION, AUDITING, TESTING, SECURITY AND DOCUMENTATION | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Auditing | G-13 | Print audit reports on the standard system hardcopy output device if the following conditions are met:<br>a. The generation of an audit trail report does not interfere with the production of other output reports.<br>b. The entries can be identified so as to facilitate their recognition, segregation and retention.<br>c. The physical security of the audit record entries can be ensured. | |
| Auditing | G-14 | Create audit records during the election definition and ballot preparation phases showing completion of the baseline ballot layouts and any modifications to them, a description of the modifications and a date/time stamp. | |
| Auditing | G-15 | Create audit records during the pre-election phase that include electronic and manual data entered and maintained by election personnel, election definitions, instances of all final ballot layouts and the ballot preparation edit event log. | |
| Auditing | G-16 | Create audit records prior to the initiation of ballot counting to verify hardware and software status. These particular audit records shall include the identification of the software release, the identification of the election to be processed and the results of hardware and software diagnostic tests. | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>G – CERTIFICATION, AUDITING, TESTING, SECURITY AND DOCUMENTATION | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Auditing | G-17 | Create in-process audit records containing data documenting system operation during diagnostic routines and any machine generated error and exception messages. Examples of these audit records include:<br>a. System startup diagnostic and status messages.<br>b. Checks that pre-count reports show zeroes.<br>c. The source and disposition of system interrupts resulting in entry into exception handling routines.<br>d. All messages generated by exception handlers.<br>e. The identification code and number of occurrences for each hardware and software error or failure.<br>f. All operator actions.<br>g. Notification of system login or access errors, file access errors and physical violations of security.<br>h. Other exception events such as power failures, failure of critical hardware components, data transmission errors, and other types of operating anomalies. | |
| Auditing | G-18 | Provide an in-process audit report, for use post-election, consisting of data containing a record of votes cast by each voter as each initiates voting and casts a ballot. | |

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|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Auditing | G-19 | Print reports necessary to ~~perform~~ assist election officials in performing a manual count as required by Colorado election law and rules.<br>**Note 1:** Please explain how your proposed system can create the reports necessary to ~~perform~~ allow election officials to perform and validate a manual count.<br>**Note 2:** Please explain how, in the case of a recount, the election can be reconstructed ballot by ballot, while still maintaining voter anonymity. | |
| Auditing | G-20 | Contain unique, embedded, internal, and traceable serial numbers in system hardware. | |
| Auditing | G-21 | Record audit log entries onto durable non-volatile storage. | |
| Auditing | G-22 | Export audit logs in formats suitable for use by elections officials and the public including common electronic formats (PDF, Excel, CSV, TXT, EML) | |
| Testing | G-23 | Be configurable so as to be capable of performing the following tests on all system hardware/software, in compliance with current Colorado statutes and rules:<br>a. Hardware test<br>b. Logic and Accuracy Test<br>c. Post-Election Audit<br>d. Pre-Recount Logic and Accuracy Test<br>e. And capable of performing the Colorado Risk Limiting Audit commencing no later than 2017." | |
| Testing | G-24 | Allow authorized user creation of scripted simulation Logic and Accuracy tests with various patterns (e.g. 1,2,3 or 1,1,1 or 1,2,3,4,5…).<br>**Note:** Please explain how your system allows for scripted simulation for creating test ballots and electronic voting equipment test input. | |

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|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Testing | G-25 | Have the capability to test ballot layouts to verify the allowable number of votes for a contest or question and the combinations of voting patterns permitted or required by the using jurisdiction. | |
| Testing | G-26 | Provide capability to permit diagnostic testing of all the major components within each electronic vote capture device. | |
| Testing | G-27 | Ensure non-contamination of voting data through tests of all data paths and memory locations to be used in actual vote recording. | |
| Testing | G-28 | Provide evidence in an audit record that test data has been expunged. | |
| Testing | G-29 | Allow the ability to load and test audio ballots in electronic vote capture equipment. | |
| Testing | G-30 | Provide the ability to print all necessary reports for proofing the results of logic and accuracy testing. | |
| Security | G-31 | Provide an environment whereby all databases and data are maintained with provisions for operational security, access control and auditability.<br>**Note 1:** Please describe the authentication protocols for access to the EMS database and your system's processes for providing operational security and auditability.<br>**Note 2:** System security must not obstruct access to event and audit logs, and printing or exporting of reports | |
| Security | G-32 | Require dual authentication for access to the EMS and all tabulation equipment. This means two persons are required to agree to access the equipment | |

| SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM<br>G – CERTIFICATION, AUDITING, TESTING, SECURITY AND DOCUMENTATION | | | |
|---|---|---|---|
| **Requirement Sub-Category** | **Req. ID** | **UVS Requirement (The System will …)** | **Comment** |
| Security | G-33 | Allow tamper resistant seals to be placed on all equipment openings and data access points such that unauthorized access is either prevented or clearly indicated by the damage to or destruction of a seal.<br>**Note:** Please describe the security offered by your proposed system relating to tamper resistant seal placements. | Consult Argonne National Laboratories. Most "tamper-evident" and "tamper-resistant" seals have been found to be quite easy to defeat. |
| Security | G-34 | Allow all access points to equipment to be visible and subject to oversight of seals. | |
| Security | G-35 | Report unauthorized modifications to audit data or audit logs.<br>**Note:** Please explain your system's capabilities to restrict user authorizations and access rights for creating, reading, modifying, and deleting audit data or logs. | |
| Security | G-36 | Allow for installation and auditing of the "trusted build" per Colorado Election Rule 45. | |
| Documentation | G-37 | Include a clear set of documented instructions for election judges to set up voting equipment. These instructions should be modifiable by county personnel. | |
| Documentation | G-38 | Include documented instructions for troubleshooting voting equipment issues that may arise. | |
| Documentation | G-39 | Include a complete set of User and Technical documentation. | |
| Documentation | G-40 | Include current certification documentation and VSTL and/or state test reports. | |