

# State of Colorado

## Department of State



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## **Uniform Voting System**

### **Request for Proposal**

### **RFP # CDOS-UVS-2013-01**

### **DRAFT for Public Comment**

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## **Appendix B**

### **System Requirements Table**

### **October 1, 2013**

## 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	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.	This requirement seems unnecessarily vague. Alternate language: Provide 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.
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.	Elections shall not be editable once the tabulation process has begun. Elections shall not be subject to deletion until after final results have been produced and the election has been backed up to independent storage.
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.	All such 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”.
Election Creation	A-7	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.	

Sub-Category	Req. ID	UVS Requirement (The System will ...)	Comment
Election Creation	A-8	<p>Provide for a unified, integrated centralized database that allows global edits.</p> <p><b>Note:</b> 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.</p>	
Election Creation	A-9	<p>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.</p>	<p>This requirement should be deleted. Test mode is harmful to the accuracy and relevance of the test. If the equipment has a test mode there must be procedures explained whereby the equipment can be tested without use of a test mode.</p>
Election Creation	A-10	<p>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:</p> <ol style="list-style-type: none"> <li>a. Full candidate name</li> <li>b. Candidate sequence, title and text of ballot questions, and voting language options</li> <li>c. Office name</li> <li>d. Contest name</li> <li>e. Number to vote for each office</li> <li>f. Party affiliation</li> <li>g. Number of eligible registered voters at the precinct</li> <li>h. Number of active registered voters at the precinct</li> </ol>	<p>List restated:</p> <ol style="list-style-type: none"> <li>1. Full candidate name</li> <li>2. Candidate sequence, title and text of ballot questions, and voting language options</li> <li>3. Office name</li> <li>4. <b><i>Contest name including candidate name in case of retention contest</i></b></li> <li>5. <b><i>Maximum number to vote for in each candidate contest</i></b></li> <li>6. Party affiliation</li> <li>7. Number of eligible registered voters at the precinct</li> <li>8. Number of active registered voters at the precinct</li> </ol>

Sub-Category	Req. ID	UVS Requirement (The System will ...)	Comment
Election Creation	A-11	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: <ul style="list-style-type: none"> <li>a. Full candidate name</li> <li>b. Office name</li> <li>c. Contest name</li> <li>d. Number of votes for candidates and ballot questions</li> <li>e. Number of votes against ballot questions</li> <li>f. Number of people voting summary and by party affiliation (if applicable)</li> <li>g. Number of registered voters at the precinct level (by party affiliation if applicable)</li> </ul>	<i>capable of returning for each contest, by precinct, style and party:</i> <ul style="list-style-type: none"> <li>a) Full candidate name</li> <li>b) Office name</li> <li>c) Contest name <i>if different</i></li> <li>d) <i>Number of votes for each contest choice</i></li> <li>e) <i>Number of instances where no vote is detected for each contest</i></li> <li>f) <i>Number of instances where more than the allowed maximum number of contest choices is voted for</i></li> <li>g) <i>Number of candidates voted for in a contest (up to the allowed maximum) [this is needed to balance the vote counts to the number of ballots received.]</i></li> <li>h) <i>Number of people voting by party affiliation (if applicable)</i></li> <li>i) Number of <i>active</i> registered voters at 7PM on election day at the precinct level (by party affiliation if applicable)</li> </ul>
Election Creation	A-12	Allow the EMS authorized user the ability to create custom voter instructions that may include images.	
Election Creation	A-13	Provide the flexibility to have an election created by a vendor, county, state or other third party and import or export as necessary.	“Except no such export or import shall be allowed after the election definition is finalized.”
Election Creation	A-14	Accommodate multiple languages (English and Spanish required). <b>Note:</b> Please explain the capabilities of your system to handle multiple languages.	“In text that appears on the ballot and on voter instructions. All log text and operator interfaces not intended to be seen by a voter while voting shall be in English.”
Election Creation	A-15	Allow for a mock election setup and support for public use prior to the initiation of a live election.	[This requirement should be deleted. Any mock election and any other test should use equipment just as it will be used in a regular election. No special provision should be made for a mock election.]
Election Creation	A-16	Allow for precinct numbers containing at least 10 digits/characters.	
Ballot Creation	A-17	Provide for standard ballot layouts.	[This requirement is too vague. Alternate text:] “Provide for standard ballot layout prototypes to be edited for ease of election specification.”
Ballot Creation	A-18	Provide an authorized user ability to customize the standard ballot layouts.	“During the election planning period only, and not to be allowed after the election definition is finalized.”

Sub-Category	Req. ID	UVS Requirement (The System will ...)	Comment
Ballot Creation	A-19	Provide an authorized user ability to create new ballot layouts.	“During the election preparation phase only. This function shall be disabled once the election definition is finalized.”
Ballot Creation	A-20	Allow for creation of a multi-page ballot. <b>Note:</b> Please explain how your system handles the creation of multi-page ballots.	[This requirement must be echoed in the tabulation portion in some detail.]
Ballot Creation	A-21	Have the capability to reprogram a ballot for an electronic voting device or optical paper ballot scanner. <b>Note:</b> 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.	[This is too vague.] “ Provide for a ballot layout that has been created or edited from a layout prototype to be used to speed up the process of designing a ballot layout for an electronic voting device. Likewise a ballot layout shall be capable of being used as a prototype layout for other ballots of different ballot style.”
Ballot Creation	A-22	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.	[The use of “electronic images” and “format” as a verb here is confusing. Alternate language follows:] “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-23	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.	“Facilitate the creation of new ballot layouts. The system will be designed to facilitate definition of ballot layouts for electronic voting equipment and for corresponding optical paper ballot scanning equipment in a manner that minimizes error and reports any discrepancies in ballot design between the two system targets.”
Ballot Creation	A-24	Provide for the retention of previously defined ballot layouts.	
Ballot Creation	A-25	Provide for the modification of previously defined ballot layouts.	“Except not after the election definition has been finalized or tabulation begun.”

Sub-Category	Req. ID	UVS Requirement (The System will ...)	Comment
Ballot Creation	A-26	<p>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.</p> <p><b>Note:</b> 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.</p>	[Optionally allow for a “not voting” choice to minimize the occurrence of undervotes.]
Ballot Creation	A-27	<p>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).</p> <p><b>Note:</b> 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.</p>	[CRS requires export of cast vote records for RCV elections.]
Ballot Creation	A-28	Generate sample ballots for each ballot style.	
Ballot Creation	A-29	Generate a consolidated sample ballot containing all races, issues and questions.	

Sub-Category	Req. ID	UVS Requirement (The System will ...)	Comment
Ballot Creation	A-30	<p>Produce ballot content output for paper ballot printing, with the following capabilities:</p> <ul style="list-style-type: none"> <li>a. Accommodate non-proprietary print-ready format (e.g. PDF).</li> <li>b. Accommodate multiple stub sizes within same election.</li> <li>c. Accommodate multiple stubs on a ballot.</li> <li>d. Accommodate variable paper ballot stub sizes up to three (3) inches.</li> <li>e. Customize paper ballots with sequential numbering and static fields on ballot stubs.</li> <li>f. Handle multiple font features.</li> <li>g. Handle special character sets associated only with non-English languages.</li> </ul> <p><b>Note 1:</b> Please provide your ballot size capabilities and layout options.</p> <p><b>Note 2:</b> Please provide information about your system’s font capabilities (e.g. typefaces, sizes, kerning and leading, bolding, underscoring, and italics).</p>	<p>“Allow for optional post printing of precinct so that print runs can be simplified into true ballot style and not require at least one print run per precinct.” [Ballot storage can be simplified and ballot printing made cheaper if only the number of true styles has to be printed and stored and ballot on demand is not required to solve that problem. The precinct code can be voted onto the ballot either by hand or by stamp or by the separate print run that prints the stubs.]</p>
Ballot Processing	A-31	<p>Output ballot content to secure electronic media for use in voting equipment.</p>	<p>[Blank ballot content is relatively harmless but needs to be secure enough to prevent any unauthorized modifications.]</p>
Ballot Processing	A-32	<p>Output ballot content to accommodate accessible voting, including adjustable audio and visual output.</p> <p><b>Note:</b> Please detail capacity limits of data fields for accessible voting (e.g. font sizes, display options).</p>	

Sub-Category	Req. ID	UVS Requirement (The System will ...)	Comment
Ballot Processing	A-33	<p>Allow authorized users to electronically adjudicate ballots to reflect voter intent, while retaining the originally marked ballot image.</p> <p><b>Note:</b> Please explain the process and time efficiency of ballot adjudication using your system.</p>	<p>[Does this belong in this section? Regardless, this is very important. “Electronically adjudicate” does not express the essence of important requirements.]</p> <p>“Facilitate the function of human users (usually election judges) who are authorized to adjudicate voter intent in the cases where the voter intent might not or could not have been correctly interpreted by machine. This requires both selection and separation of the exceptional ballots and a convenient method for reviewing both the real paper ballots and the electronic interpretation of the vote side by side- including the availability of and optional use of scanned photographic images of each ballot to assist in recognizing voter intent and recording it to include in the election results. Some means for reliably connecting physical ballots to digital expressions of the vote (cast vote records) must be provided.”</p>
Vote Results Reporting	A-34	<p>Report vote tally results by individual upload.</p> <p><b>Note:</b> 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.</p>	<p>“Report vote tally results in a variety of aggregations as follows in A34- A-45. In each case these tally results should include under and over votes with an option to exclude, and each report should simply be available upon request.”</p> <p>[many of these reports will introduce privacy problems with Colorado’s many special districts and now fully optional voting methods. Under and over votes are required to be able to balance vote counts to ballots in each aggregation for best integrity and auditing practices.]</p>
Vote Results Reporting	A-35	Report vote tally results by contest jurisdiction-wide.	
Vote Results Reporting	A-36	Report vote tally results by contest by precinct.	
Vote Results Reporting	A-37	Report the total votes for each candidate for each contest, as well as by candidate by precinct.	
Vote Results Reporting	A-38	Report vote tally results by voting location.	
Vote Results Reporting	A-39	Report vote tally results by ballot source (e.g. Early Vote, Election Day, Mail, and Provisional).	
Vote Results Reporting	A-40	Report votes by ballot style.	
Vote Results Reporting	A-41	Report votes by ballot batch.	

Sub-Category	Req. ID	UVS Requirement (The System will ...)	Comment
Vote Results Reporting	A-42	Report votes by ballot style within precinct.	
Vote Results Reporting	A-43	Report undervotes and overvotes in each contest, with the option to exclude.	[I would replace this requirement with a requirement to report the number of ballots read by the system in each contest. The under and overvote requirement must apply to each aggregation and not only to the contest as a whole. The cast vote record report is required by CRS for RCV voting method, but future Risk Limiting Audit will also require this report] Replace A-43 with: “For each contest, report the number of ballots scanned by the system that contain the contest and report the contents of the cast vote record corresponding to each ballot”
Vote Results Reporting	A-44	Provide capability to report ranked voting results.	“Provide the capability to report RCV – rank choice voting- results. [or this means to rank the candidate by vote count- an entirely different but rational meaning]
Vote Results Reporting	A-45	Report a summary of results in addition to the detailed Statement of Votes Cast reports.	[ this requirement is vague- what is contained on such a report? Probably it is the one that covers only the full district and does not contain the under and over votes? Can this be specified?]
Vote Results Reporting	A-46	Report certified write-in candidate results in each contest with the ability to exclude.	
Vote Results Reporting	A-47	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.	.”...and report for each contest the percent turnout as a ratio of the total of votes, under votes and overvotes to the number of active and total registrations, respectively.”
Vote Results Reporting	A-48	Export each report in PDF, XLS, TXT, EML and CSV formats.	“and provide for the ability for easy export of each report to commonly available external media e.g. USB attached flash memory or disk but with provisions to log any activity that takes place in conjunction with the attachment of any external storage”
Vote Results Reporting	A-49	Provide for Zero reports to be printed prior to first upload.	“Provide for any selected vote tally reports to be printed at any time after the election definition is finalized.” [Zero report is not a separate report- it is a print of a standard report that may or may not contain zero votes. Note that reports printed before election deadline that do contain vote counts are also potential leaks of the election data- and this is also a risk obtained by having a procedure to print report to ascertain if they are zero.]
Vote Results Reporting	A-50	Allow reports to be run at any time before, during or after the upload process.	Ditto above comments.

Sub-Category	Req. ID	UVS Requirement (The System will ...)	Comment
Vote Results Reporting	A-51	Provide customization of report headers (e.g. “Unofficial” or “Final Unofficial”), contest labels and print layout. <b>Note:</b> Please explain any character limitations imposed by your system on labeling, reporting or exporting.	
Vote Results Reporting	A-52	Include creation date and time on all reports.	
Vote Results Reporting	A-53	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, per §1-8-308(b), C.R.S. This is also applicable to property owner ballots. <b>Note:</b> Please explain how your system will accommodate this requirement for all reports to maintain voter privacy.	[ Under 1303, no votes will be counted by precinct.] “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.”  [note that leaving this up to the voting system vendor seems troublesome and extensive testing will be needed to be sure that this re-aggregation is being done correctly. Oversight for this function is especially required.]
Vote Results Reporting	A-54	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-55	Be able to include or exclude property owner ballot results.	
Vote Results Reporting	A-56	Provide an option to suppress a race or candidate from all reports, when withdrawn from ballot.	
Vote Results Reporting	A-57	Provide an easily-readable method to identify the candidate/measure with the most votes in each contest. If more than one winner is possible, identify all winners. <b>Note:</b> System should have this feature as an option, so not used on partial results reports.	
Vote Results Reporting	A-58	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-59	Import/export ballot information and voter registration information from/to the Colorado's centralized statewide database (SCORE).	[Import of voter registration information brings up privacy issues because voter identity information must be firewalled away from voter intent interpretation or aggregation and very carefully dealt with when printing ballots. Export of information to SCORE bring up oversight issues.]
Import/Export	A-60	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-61	Prevent the upload of wrong or duplicate portable vote storage media units. <b>Note:</b> Please explain your system's safeguards against errant or multiple uploads from portable vote storage media units.	[Note that failure of portable vote storage media units generally requires duplicate or corrective uploading. The requirement should be very careful about how these restrictions are maintained and overridden.]  "Any function to override of these preventive measures should require supervision by multiple official and significant logging."
Import/Export	A-62	Produce and print a list, at any time in the process, showing which portable vote storage media units have and have not been uploaded.	"and how many ballots are represented on the storage media unit."
Import/Export	A-63	Save a report to a local or portable drive for transfer to a networked computer.	"Save any report..." "All such reports are to contain the date and time of creation of the report the context and source of the report as well as the date and time of the copy to external media. All such reports are to be considered non-proprietary"
Import/Export	A-64	Display error messages and instructions to recover during importing and exporting operations.	
Data Storage and Processing	A-65	Will maintain election data in a secure environment. <b>Note:</b> Please describe how EMS data is stored and secured from unauthorized access and/or manipulation.	

Sub-Category	Req. ID	UVS Requirement (The System will ...)	Comment
Data Storage and Processing	A-66	Will provide CDOS the capability to centrally create and distribute election setup data to counties.	
Data Storage and Processing	A-67	Provide a means to upload or transmit vote count results to the EMS from vote collection/tabulation equipment.	“Such means shall not include connecting vote collection/tabulation equipment to a network that has any public accessibility.
Data Storage and Processing	A-68	Provide statistics of batches (e.g. number of ballots in each batch, number of batches saved, number of batches deleted, number of batches saved). <b>Note:</b> Does your system have a batch size and/or number of batches limitation and, if so, what is it?	[number of batches saved is duplicated]
Data Storage and Processing	A-69	Have the ability to delete saved ballot batches from the system. <b>Note:</b> Please explain how your system manages batch accountability identification.	
Data Storage and Processing	A-70	Have data backup capabilities. <b>Note:</b> Please explain any system data backup capabilities and protocols within your system.	
Data Storage and Processing	A-71	Have redundancy capabilities. <b>Note:</b> Please explain any general and real time redundancy features.	[ this is exceedingly vague- so much so it isn't clear what it means.]

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM B – POLLING LOCATION BALLOT SCANNING AND TABULATION EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
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. <b>Note:</b> Please describe the format(s) you offer for ballot images.		Note that ballot image are cast vote records in Colorado law. The phrases “electronic image” and “ballot images” are not specific enough.
Scanning	B-3	Capture votes from paper ballots.		“capture votes marked by a voter or a ballot marking device on a paper ballot such that if there will be detectable uncertainty in the machine interpretation of the lawfully expressed voter intent, election judges will be put in a position to reconcile the uncertainty”
Scanning	B-4	Accept overvoted ballots upon review.		[Old Diebold precinct scanners actually did perform according to this requirement- once a single overvote or undervote was detected, the ballot would be rejected and then if subsequently “accepted” the entire ballot would be machine interpreted regardless of how many errors remained on the ballot, often unknown to the voter. We can do much better than this scenario.] “Display or signify to the voter or to the operators of the equipment the location and nature of each overvote on a ballot and facilitate an acknowledgement or rejection in every case.”

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM B – POLLING LOCATION BALLOT SCANNING AND TABULATION EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Scanning	B-5	Accept undervoted ballots.		“Accept undervoted contests on ballots with or optionally without review. If review is authorized, display or signify to the voter or to the operators of the equipment the location and nature of each undervote on a ballot and facilitate recording of an acknowledgement or rejection in every case.” [undervotes on ballots is an area where existing technology falls flat- and solutions exist- such as printing a “not voting” choice on each contest. We can do much better with a good requirement around this issue. Note this equipment will be used for processing mailed in ballots in small counties.]
Scanning	B-6	Handle 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). <b>Note:</b> Please explain how your system accounts for multi-page ballots.		“Accept flattened ballots in any of four orientations including those formerly folded for mailing and with edges left rough from stub removal. Also conveniently handle exception processing when ballots in a batch are folded, torn or otherwise damaged. Please describe how exception handling is done in the scanning process.”
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.		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM B – POLLING LOCATION BALLOT SCANNING AND TABULATION EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Tabulation	B-9	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. <b>Note:</b> Please describe the security your equipment provides for ensuring media is not removed until procedurally authorized.		[Note that tally printouts can be printed at any time, so not sure why we need physical lockout on tabulation of cast vote records although any security that prevents early release of results is desirable. Colorado has created a big risk of early release of results by counting mail-in up to 15 days before election deadline] “Also provide the ability to copy from the secured media device the cast vote records and other reports to a conveniently available external storage after the election deadline for voting at 7PM.”
Tabulation	B-10	Provide a secure means to upload or transmit vote count results to the EMS.		[transmit usually means radio and this is illegal I believe-probably best to exclude use of radio or publicly accessible network]
Transportability	B-11	Be easily transported by one person. <b>Note:</b> Describe the transportability characteristics of your equipment (e.g. weight, width, height, wheels).		[this requirement may not be necessary given that we are not using precinct polling places. One large device could possibly handle multiple voters in a Colorado VSPC]
Supplies	B-12	Provide dust-and-moisture-proof covers for transportation and storage purposes. <b>Note:</b> Please describe your equipment covers.		Add B-13: “Provide for effective locations for security seals to satisfy Colorado security requirements.”

Additional comment about voter accessible vs. central count equipment. The 1303 bill gives us the opportunity to rethink this typical separation of functionality. Under 1303 there will be probably four significant requirements- high speed handling of mail ballots, low speed handling of mail ballots and voter interactive equipment- both assistive and not. In small counties, voter interactive equipment will probably be used in place of “central count” for mail ballot handling. Also it may be the case that voters will bring folded mail-in ballots to VSPC for counting on voter interactive equipment.

<b>SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM C – CENTRAL BALLOT SCANNING AND TABULATION EQUIPMENT</b>				
<b>Requirement Sub-Category</b>	<b>Req. ID</b>	<b>UVS Requirement (The System will ...)</b>	<b>Response Code</b>	<b>Vendor Response</b>
Scanning	C-1	Scan paper ballots into identifiable and locatable batches.		<p>“Describe how exception handling for batches is best done when damaged or unreadable ballots are encountered”</p> <p>[Consider machine counting/separation of stubs- this is the data that can be safely matched up to SCORE data regarding place and time of voting and method of voting. Also consider machine sorting of mail-in envelopes so that batches could be single ballot style for scanning and storage- many states do this.]</p> <p>Possible additional optional requirement C-1B: “Sort ballots by ballot style prior to scanning.”[ See also related requirement suggestion in Section E]</p>

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM C – CENTRAL BALLOT SCANNING AND TABULATION EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Scanning	C-2	Retain an electronic image of each voted paper ballot in a non-proprietary format. <b>Note:</b> Please describe the format(s) you offer for ballot images.		[while this does not belong in a “report” it should be made exportable to commonly available external media such as usb connected flash memory or disk drive. Note again that “ballot image” is confusing.. better to say “retain copy of the original digital scan data of each scanned paper ballot in a non-proprietary format that can be easily exported to commonly available external storage devices such as usb connected.” Note that it is important that these “images” be kept at the original resolution used by the scanner and not in some lower resolution.. Note it is also important that these scans be directly relatable to the paper they represent as well as the cast vote records that correspond to them. For that reason it is important to maintain the order of the scanned ballots and to record a sequence number of the resulting scans – if a post voting printed number cannot be attached to the ballot before scanning. However, the topic of the method of relating paper ballot to scan to cast vote record must be addressed in the RFP requirements.]
Scanning	C-3	Verify ballot quantities by batch prior to saving to the system.		[unsure what this means- verify manually to a count of each batch?]
Scanning	C-4	Verify ballot quantities by batch after saving to the system.		[ditto]
Scanning	C-5	Rerun a batch of ballots, if necessary, without impacting results to date.		“explain how exception handling is performed – c.f. C-1 “

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM C – CENTRAL BALLOT SCANNING AND TABULATION EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Scanning	C-6	Have the ability to logically delete (not physically) saved ballot batches from the system. <b>Note:</b> Please explain how your system manages batch accountability identification.		[ improvement upon the Note:] “batch accountability <b>and</b> identification and how recommended procedures achieve anonymity and protect the privacy of the voter intent.”
Scanning	C-7	Identify and segregate ballots with overvotes for manual or electronic image review.		“For each ballot containing one or more machine-detected overvotes or undervotes: accept or resolve each overvoted contest on each ballot during a human (election judge) review of the scanned image and if requested, the corresponding paper ballot. And, if undervote exception handling is selected, as required for a Colorado recount, for each ballot containing one or more machine-detected undervotes, accept or resolve each undervoted contest on each ballot during a human (election judge) review of the scanned image and if requested the corresponding paper ballot. In both cases, display or signify to the operators of the equipment the location and nature of each overvote and or undervote on each ballot and facilitate, record, and log an acknowledgement or alternate resolution in every case by correcting the cast vote record. Note that the relationship between each of the ballot scans and each of the paper ballots and each of the cast vote records must be clear at all times. Please explain the method by which this relationship will be maintained.”

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM C – CENTRAL BALLOT SCANNING AND TABULATION EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Scanning	C-8	Identify and segregate ballots with write-ins for manual or electronic image review.		[each of these deserves to be written a bit more carefully as above. I'll provide one more example here:] "Locate and segregate for electronic or physical access the three representations of the votes- paper ballot, ballot scan and cast vote record- for ballots containing write-in votes both with or without the target area filled in." [Colorado case law says the write-ins without the target marked do count] "Facilitate an election judge determination if the write-in name appearing on the ballot is on the certified candidate list and if so, the transposition of the candidate name to a digital representation of it in the cast vote record and log all activities"
Scanning	C-9	Identify and segregate ballots that cannot be read for manual or electronic image review.		[this is too vague] "Locate and segregate for election judge access the three representations of the votes- paper ballot, ballot scan and cast vote record- for ballots that cannot be scanned and those that contain contests that cannot be correctly interpreted by machine and those for which no votes are detected." [C-10 is not really a separate case] "Facilitate examination of the paper ballot and after a determination by election judges about voter intent on the paper ballot, facilitate modification of the cast vote record to reflect the decision."
Scanning	C-10	Identify and segregate ballots that are read as blank for manual or electronic review.		[not necessary]

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM C – CENTRAL BALLOT SCANNING AND TABULATION EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Scanning	C-11	Provide information to an authorized user as to why a ballot was segregated.		“This information should be made accessible at any time one of the electronic representations of a vote (ballot scan or cast vote record) is accessed”
Scanning	C-12	Identify a batch of ballots with a unique number and indicate count is zero upon beginning a scan and giving a total number of ballot pages processed at the close of the batch scan.		[This requirement has the defect of expecting a zero count, rather than detecting a zero count.] “Create a means to identify each batch of ballots with a unique number. Explain how use of this number will not sacrifice the privacy of voter intent. Report the contents of the ballot counter prior to commencing a batch scan. Report the ballot counter at the end of a 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.		“Accept flattened ballots in any of four orientations including those formerly folded for mailing and with edges left rough from stub removal. Also conveniently handle exception processing when ballots in a batch are folded, torn or otherwise damaged such that they cannot be scanned. Please describe how exception handling is done in the scanning process. Scan both sides of a ballot page when both sides are used.”
Scanning	C-14	Handle 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). <b>Note:</b> Please explain how your system accounts for multi-page ballots when pages are out of order or when all ballot pages are not returned.		[extended Note] “or when missing second pages of ballots are encountered in separate scan batches”
Scanning	C-15	Display publicly the number of ballots processed.		“explain how this number accounts for multi-page ballots in view of exceptions noted above”.

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM C – CENTRAL BALLOT SCANNING AND TABULATION EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Scanning	C-16	Display a Use counter showing the count of all ballots processed on the equipment, which is not reset after an election.		[ballot pages? Or sides? Or ballots?]
Tabulation	C-17	Capture votes from paper ballots.		“Capture votes marked by a voter or a ballot marking device on a paper ballot such that if there will be detectable uncertainty in the machine interpretation of lawfully expressed voter intent, election judges will be put in a position to reconcile the uncertainty”
Tabulation	C-18	Accept overvoted ballots upon review.		[C-18 through 20 seem redundant- they are covered in the scanning section above. The way they are expressed here is far too vague and does not even reflect the fact that there may be multiple problems on one ballot. It is contests that are under or overvoted, not ballots.]
Tabulation	C-19	Accept undervoted ballots with or without review.		ditto
Tabulation	C-20	Allow the option to disable or enable review of undervoted ballots.		ditto
Tabulation	C-21	Have the ability to write cast vote records to a secured media device during operation. <b>Note:</b> Please describe the security your equipment provides for ensuring media is not removed until procedurally authorized.		“Also provide the ability for an authorized user to copy from the secured media device the cast vote records and other reports to a conveniently and publicly available external storage after the election deadline for voting at 7PM.”
Tabulation	C-22	Provide a secure means to upload or transmit vote count results to the EMS.		[as mentioned above, probably better to exclude radio and public networks as media for transmission]
Error Handling	C-23	Identify and reject ballots that are from another election.		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM C – CENTRAL BALLOT SCANNING AND TABULATION EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Error Handling	C-24	<p>Continue high-speed ballot processing while electronically or physically segregating and sorting ballots to user identified categories that need additional attention.</p> <p><b>Note 1:</b> Please describe how your system handles these situations:</p> <ol style="list-style-type: none"> <li>a. Ballots are unreadable by the scanner.</li> <li>b. Notifying an authorized user whether a ballot has been scanned successfully or not.</li> <li>c. Notifying an authorized user that a ballot has been previously scanned.</li> <li>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.</li> </ol> <p><b>Note 2:</b> Please describe the processing speed of you high-speed ballot scanner.</p>		<p>[Typo “your high speed scanner”]</p> <p>“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.</p> <p>[Note that in the four items to the left, it may be preferable to refer to ballot pages or sides rather than ballots.]</p>

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Ballot	D-1	Display choices for the contests, candidates and measures of the election for each ballot style.		[an option for including a choice on each contest for “not voting” solves a lot of problems here. Contests is a sufficient word to cover the three items mentioned.]
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.		[Also a benefit that could obtain for election officials who open mail ballots and ought to confirm that the ballot style voted on is correct.]
Ballot	D-3	Tabulate each voter’s candidate and measure selections as the ballot is cast. <b>Note:</b> This requirement is not applicable to certain ballot marking devices that depend on the produced paper ballot being processed and tabulated elsewhere.		[ I think this requirement is misguided. ] “Interpret and record each voter’s contest choices in a cast vote record as the ballot is “cast”” [and “cast” requires definition]
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. <b>Note 1:</b> 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. <b>Note 2:</b> 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	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.		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Ballot	D-7	Provide a method by which voters with disabilities can choose the language of the ballot visually and through audio devices.		
Accessibility	D-8	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.  <b>Note:</b> 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-9	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.  <b>Note:</b> 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.		
Accessibility	D-10	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.  <b>Note:</b> Please explain how your voting device complies with all forward and side reach requirements of the ADA and ADAAG.		
Accessibility	D-11	Include electronic voting units adaptable for voters with disabilities either through adjustability of the device or the voting		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
		<p>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.</p> <p><b>Note 1:</b> Please describe your accessible alternative input devices. List such devices and explain the operation of each device and how it accommodates voters with disabilities.</p> <p><b>Note 2:</b> 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.</p> <p><b>Note 3:</b> 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.</p> <p><b>Note 4:</b> Is the voting screen glare-free regardless of positioning?</p> <p><b>Note 5:</b> Please explain any magnifying capacity of the electronic voting device.</p> <p><b>Note 6:</b> 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.</p> <p><b>Note 7:</b> Please explain how your electronic voting unit adequately provides <b>secrecy</b> <b>privacy</b> for a voter who uses a wheelchair.</p> <p><b>Note 8:</b> Please explain how a voter that cannot read your VVPAT printout can verify the accuracy of their cast votes.</p> <p><b>Note 9:</b> Please describe additional features of your system that are designed to accommodate voters with disabilities.</p>		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Accessibility	D-12	<p>Allow for importing of audio ballot content from an outside source (e.g. candidates or <b>pre-recorded text</b>).</p> <p><b>Note:</b> 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.</p>		["pre-recorded audio" - if pre recorded text it implies text to speech conversion]
Accessibility	D-13	<p>Allow for voter to change volume and/or speed of audio playback.</p>		
Accessibility	D-14	<p>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.</p>		
Accessibility	D-15	<p>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.</p> <p><b>Note:</b> If you are proposing a ballot marking device, does it allow for larger print on the printed ballot?</p>		
Accessibility	D-16	<p>Accommodate voters regardless of their ability to read.</p> <p><b>Note:</b> Please explain how such individuals would be instructed to utilize the audio interface.</p>		
Accessibility	D-17	<p>Allow for connection of personal auxiliary devices, such as sip/puff or jelly switch devices.</p> <p><b>Note:</b> Please describe such capabilities provided by your system.</p>		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Ease of Use	D-18	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.  <b>Note:</b> Please explain how your proposed system facilitates voter actions prior to casting a ballot or printing a marked ballot.		
Ease of Use	D-19	Accommodate font sizes that are adjustable for ease of sight.		
Ease of Use	D-20	Show the voter a summary screen at the end of the ballot indicating the choices made and/or skipped.		
Ease of Use	D-21	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.  <b>Note:</b> 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..		
Ease of Use	D-22	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..		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Ease of Use	D-23	Provide a means to demonstrate the operation of the electronic voting device to the voters.		“Provide a means for people including disabled people to test the equipment in a manner that would expose a wide variety of potential failures such as calibration, misunderstanding of directions or faulty or misleading ballot design”
Ease of Use	D-24	Not permit a voter to over-vote a contest and will enable the voter to correct their selections. <b>Note:</b> 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-25	Warn voters that they have under-voted a contest and permit them to correct or accept the under-vote. <b>Note:</b> 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-26	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. <b>Note:</b> Please explain how your proposed system allows for write-in votes for any authorized contest.		“Provide a user option to check the write in against the list of certified write-ins”
Ease of Use	D-27	Allow county personnel to modify the voter instructions for an electronic or audio voting session.		
Ease of Use	D-28	Provide a screen response that would allow a voter to request the list of certified write-ins.		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Ease of Use	D-29	<p>Provide an ability to reset screen calibration.</p> <p><b>Note:</b> Please explain if your electronic voting equipment produces any warnings when calibration needs to be reset.</p>		“Provide an authorized user an ability to reset screen calibration including between uses in an election”
Uninterrupted Operation	D-30	<p>Provide, in case of power interruption, a means for voting operations to continue. This feature shall consist of either an uninterruptible power supply (UPS) or other means to keep electronic voting equipment active.</p>		
Uninterrupted Operation	D-31	<p>Provide for continuous uninterrupted operation for a minimum of two hours in case of power failure.</p> <p><b>Note 1:</b> 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?</p> <p><b>Note 2:</b> 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.</p>		
Uninterrupted Operation	D-32	<p>In the event of the failure of an electronic voting unit, retain a record of all votes cast prior to the failure.</p> <p><b>Note:</b> Please explain how your system retains and reports votes cast in the event of a loss of power.</p>		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Voter Verifiable Paper Trail	D-33	<p>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.</p> <p><b>Note 1:</b> Please explain how your proposed voting device complies with this requirement.</p> <p><b>Note 2:</b> 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.</p>		<p>[“electronically marked ballot” is unclear- sounds like an electronic ballot. Using barcodes to count VVPAT’s utterly invalidates the purpose of the VVPAT and should not be allowed. What is on the VVPAT must have been at least in principle verified by human eyes. A bar code could not have been verified. Thus note 2 is not appropriate. Here is a rewrite:]</p> <p>“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 verifiable printed record produced and stored within the voting device or a full sized paper ballot indistinguishable from other voter marked ballots that has been marked by machine in a manner that prevents association of the identity of the voter with the ballot. Note that in Colorado a ballot marking device printed ballot must be delivered to the ballot box in a manner that is the same for all voters.</p> <p><b>Note 1:</b> Please explain how your proposed voting device complies with this requirement and achieves the goal of anonymity of the VVPAT or machine printed paper ballot.”</p>
Voter Verifiable Paper Trail	D-34	<p>Provide a means for voters with disabilities (visually impaired or unable to read) to review the VVPAT.</p> <p><b>Note:</b> 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.</p>		<p>[note that because the blind cannot see either the vvpac or a bar code on it is no reason why we should expect all other voters to have verified a bar code on a VVPAT.]</p>

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Voter Verifiable Paper Trail	D-35	<p>Have the capability, if proposing a DRE type machine, 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.</p> <p><b>Note:</b> 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.</p>		
Transportability	D-36	<p>Be easily transported.</p> <p><b>Note:</b> Describe the transportability characteristics of your electronic voting equipment (e.g. weight, width, height, wheels).</p>		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM E – BALLOT ENVELOPE SCANNING AND SIGNATURE VERIFICATION				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Mail Ballot Envelope Processing	E-1	<p>Provide hardware with the capability to scan mail ballot envelopes and perform the following functions:</p> <ul style="list-style-type: none"> <li>a. Scan and capture voter ID barcode</li> <li>b. Scan and capture envelope and signature images</li> <li>c. Log envelope as received</li> <li>d. Endorse (customizable) &amp; date/time stamp envelope</li> <li>e. Separate envelopes that may need manual intervention</li> </ul> <p><b>Note:</b> 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.</p>		
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.		
Mail Ballot Envelope Processing	E-6	Be configurable for thickness detection.		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM E – BALLOT ENVELOPE SCANNING AND SIGNATURE VERIFICATION				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
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).		["to various methods" appears superfluous]
Mail Ballot Envelope Processing	E-9	Provide a high-volume solution of at least 300 envelopes per minute for counties with a large voter population. <b>Note 1:</b> Please specify the throughput capacity on your high-volume envelope processor. <b>Note 2:</b> County size by registered voter population is as follows: Large = GE 80,000 voters Medium = 10,000 – 79,999 voters Small = LT 10,000 voters		
Mail Ballot Envelope Processing	E-10	Provide a low-volume solution for counties with a small or medium voter population. <b>Note:</b> 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.		
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.		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM E – BALLOT ENVELOPE SCANNING AND SIGNATURE VERIFICATION				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Automated Signature Verification	E-13	Be configurable to meet or exceed a state established acceptance threshold for signature acceptance.  <b>Note:</b> 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.  <b>Note:</b> Please explain your process for creating and using these records.		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM F – VENDOR TRAINING & SUPPORT				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
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. <b>Note:</b> 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.		
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 G – CERTIFICATION, AUDITING, TESTING, SECURITY AND DOCUMENTATION				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Certification	G-1	<p>Be certified by the EAC or another state.</p> <p><b>Note:</b> If not certified, please explain.</p> <p><b>Note:</b> 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.</p>		
Auditing	G-2	<p>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:</p> <ol style="list-style-type: none"> <li>a. An identification of the program and version being run.</li> <li>b. An identification of the election file being used.</li> <li>c. A record of all options entered by the operator, including operator ID.</li> <li>d. A record of all actions performed by a subsystem of the system.</li> <li>e. A record of all tabulation and consolidation input.</li> <li>f. Audit log records that are created and maintained in the sequence in which operations were performed, with date/time stamps.</li> </ol> <p><b>Note 1:</b> Please explain what audit trail techniques and audit reports are incorporated in your proposed system.</p> <p><b>Note 2:</b> 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.</p> <p><b>Note 3:</b> Please describe steps needed to protect the audit logs from possible unintentional or intentional erasure or alteration.</p>		<p>“Please provide a sample set of audit reports (system logs, etc.) from an election in any large county (not necessarily Colorado).”</p>

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM G – CERTIFICATION, AUDITING, TESTING, SECURITY AND DOCUMENTATION				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
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.		
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. <b>Note:</b> Please explain your system’s post-election diagnostic capabilities.		“Post election diagnostics should not endanger the integrity of the election record.” [unclear what auditable equipment means]
Auditing	G-8	Provide audits for recounts.		“Provide for adequate information to facilitate a risk limiting audit for recounts. [all cast vote records, pointers from cast vote records to paper ballots and vice versa]
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.”
Auditing	G-10	Support a Risk Limiting Audit on both electronic tabulation and paper ballot tabulation devices. <b>Note 1:</b> Please describe how your proposed system supports the execution of a Risk Limiting Audit. <b>Note 2:</b> §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.		[It may be wise to point to a particular definition of the Risk Limiting Audit]
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.		

<b>SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM G – CERTIFICATION, AUDITING, TESTING, SECURITY AND DOCUMENTATION</b>				
<b>Requirement Sub-Category</b>	<b>Req. ID</b>	<b>UVS Requirement (The System will ...)</b>	<b>Response Code</b>	<b>Vendor Response</b>
Auditing	G-12	Use a real-time clock that will continue to run during a power loss.		
Auditing	G-13	Print audit reports on the standard system hardcopy output device if the following conditions are met: <ul style="list-style-type: none"> <li>a. The generation of an audit trail report does not interfere with the production of other output reports.</li> <li>b. The entries can be identified so as to facilitate their recognition, segregation and retention.</li> <li>c. The physical security of the audit record entries can be ensured.</li> </ul>		“Whether or not the conditions are met, audit reports are to be easily copied by authorized personnel to external storage that is easily obtained and used by the public”
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 G – CERTIFICATION, AUDITING, TESTING, SECURITY AND DOCUMENTATION				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Auditing	G-17	<p>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:</p> <ul style="list-style-type: none"> <li>a. System startup diagnostic and status messages.</li> <li>b. Checks that pre-count reports show zeroes.</li> <li>c. The source and disposition of system interrupts resulting in entry into exception handling routines.</li> <li>d. All messages generated by exception handlers.</li> <li>e. The identification code and number of occurrences for each hardware and software error or failure.</li> <li>f. All operator actions.</li> <li>g. Notification of system login or access errors, file access errors and physical violations of security.</li> <li>h. Other exception events such as power failures, failure of critical hardware components, data transmission errors, and other types of operating anomalies.</li> </ul>		
Auditing	G-18	<p>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.</p>		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM G – CERTIFICATION, AUDITING, TESTING, SECURITY AND DOCUMENTATION				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Auditing	G-19	Print reports necessary to perform a manual count as required by Colorado election law and rules. <b>Note 1:</b> Please explain how your proposed system can create the reports necessary to perform a manual count. <b>Note 2:</b> Please explain how, in the case of a recount, the election can be reconstructed ballot by ballot, while still maintaining voter anonymity.		[what reports are needed to perform a manual count in Colorado? I fear this may actually be a request to print barcodes on ballots so that the CO definition of manual count can be implemented- one that includes reading a bar code. I do not believe any reports are needed to perform a manual count of ballots. However, reports are needed to locate ballots if a contests that represents a subset of the election is to be manually counted- reports indicating the location of the ballots to be counted are necessary. Perhaps it is best to spell this out if this is what is meant.]
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, text, EML) on readily available external storage devices.”
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: a. Hardware test b. Logic and Accuracy Test c. Post-Election Audit d. Pre-Recount Logic and Accuracy Test		“and capable of performing the Colorado Risk Limiting Audit commencing no later than 2017”

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM G – CERTIFICATION, AUDITING, TESTING, SECURITY AND DOCUMENTATION				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
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...). <b>Note:</b> Please explain how your system allows for scripted simulation for creating test ballots and electronic voting equipment test input.		
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.		

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM G – CERTIFICATION, AUDITING, TESTING, SECURITY AND DOCUMENTATION				
Requirement Sub-Category	Req. ID	UVS Requirement (The System will ...)	Response Code	Vendor Response
Security	G-31	Provide an environment whereby all databases and data are maintained with provisions for operational security, access control and auditability. <b>Note 1:</b> Please describe the authentication protocols for access to the EMS database and your system’s processes for providing operational security and auditability. <b>Note 2:</b> System security must not obstruct access to event and audit logs.		[Extension of Note 2:] “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” [does it?]
Security	G-33	Allow tamper resistant seals to be placed on all equipment openings and data access points. <b>Note:</b> Please describe the security offered by your proposed system relating to tamper resistant seal placements.		“such that unauthorized access is either prevented or clearly indicated by the destruction of a seal.”
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. <b>Note:</b> 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.		

<b>SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM G – CERTIFICATION, AUDITING, TESTING, SECURITY AND DOCUMENTATION</b>				
<b>Requirement Sub-Category</b>	<b>Req. ID</b>	<b>UVS Requirement (The System will ...)</b>	<b>Response Code</b>	<b>Vendor Response</b>
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.		G-41 “Explain provisions for sharing information about errors, failures, beneficial and best practices among users including those out of state.”