From: Perez, Eddie <EPerez@hartic.com>
Sent: Sunday, July 14, 2013 1:09 PM
To: Public UVS Panel
Cc: Al Davidson (Temporary)
Subject: Hart InterCivic Responses - Invitation for Public Comment on Voting System Requirements for CO UVS
Attachments: Hart InterCivic Comments - Invitation for Public Comment on Voting System Requirements For CO UVS.Rev.1.071413.pdf

Mr. Al Davidson
Uniform Voting System Lead
Uniform Voting System Advisory Committee
State of Colorado
Department of State
1700 Broadway, Suite 200
Denver, CO 80290

RE: Invitation for Public Comment on Voting System Requirements
For a Uniform Voting System in Colorado

Dear Mr. Davidson:

Hart InterCivic respectfully submits the attached document containing our comments on draft voting system requirements for a Uniform Voting System in Colorado.

Thank you for providing Hart the opportunity to submit public comments on this important issue. If you have any additional questions about our responses, please do not hesitate to contact me.

Sincerely,
Edward Perez

_____

Edward Perez
Product Manager
Hart InterCivic
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Be sure to visit our new website at www.hartintercivic.com

This message (including any attachments) is intended only for the use of the individual or entity to which it is addressed and may contain information that is non-public, proprietary, privileged, confidential, and exempt

from disclosure under applicable law or may constitute as attorney work product. If you are not the intended recipient, you are hereby notified that any use, dissemination, distribution, or copying of this communication is strictly prohibited. If you have received this communication in error, notify us immediately by telephone and (i) destroy this message if a facsimile or (ii) delete this message immediately if this is an electronic communication. Thank you.

July 14, 2013

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Edward P. Perez
Product Manager
Hart InterCivic

Scott Gessler
Secretary of State

Hart InterCivic Comments - Invitation for Public Comment on Voting System Requirements For a Uniform Voting System in Colorado

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Colorado Secretary of State Scott Gessler intends to select a Uniform Voting System so all voters in all Colorado counties have the same voting experience on the same voting equipment and the processes for issuing, casting and counting votes will be uniform throughout the state.

Part of the selection process is asking vendors to propose voting equipment through a Request for Proposal (RFP) that will be issued August 1, 2013.

The RFP will contain "system requirements" that vendors will document whether or not they meet with any proposed system.

We have posted a working draft of these requirements on the Secretary of State website for public review and comment between now and July 14, 2013. The document is posted in a MS Word format so it may be edited.

- If there are requirements that you do not believe are necessary, please explain why.
- If there are new requirements that you propose, please add and explain why you believe they should be included.
- If you believe a requirement should be edited, please provide the suggested edits and any relevant comments.

To access the document and return it with your comments, follow the steps below:

1. **Download/Save** the document to your computer, (do NOT edit directly on the website)
2. Make the edits or comments
3. Save and email the completed document to publicparticipationpanel@sos.state.co.us by July 14.

From July 8th through July 14th the draft system requirements can be found and downloaded at:

http://www.sos.state.co.us/pubs/elections/VotingSystems/VSHomePage1.html
under the "**Uniform Voting System**" heading.

State of Colorado

Department of State

Uniform Voting System
DRAFT – July 3, 2013

RFP # CDOS-UVS-2013-01
Request for Proposal

Appendix B

System Requirements Table

INSTRUCTIONS FOR COMPLETING SYSTEM REQUIREMENTS TABLES

NOTE: For the public input process, we have removed the Response Code column to provide more room for public comments.

The Vendor must assign a Response Code to each listed requirement. 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 provided in the Cost Proposal Base Cost category.

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

Comment [EP1]: Hart InterCivic believes the differences between code "2" and code "3" are so nuanced that it would be helpful to simply consolidate the two classes into one description whose essential point is that customization at additional cost would be required to fully meet the requirement.

3 – The proposed solution does not provide the functionality required for the requirement. Customization and additional costs are required to meet full functionality. If customization is proposed, 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 meeting the requirement, including any potential workaround options.

5 – The Vendor is not proposing a solution for this requirement or others 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 Scanning and Tabulation requirements, but is not proposing a solution for Electronic Voting Equipment. In this example, the vendor would mark all Electronic Voting Equipment requirements with a Response Code of "5".

Comment [EP2]: Hart InterCivic believes that, in light of codes "1" and "4," code "5" is unnecessary and confusing. We believe that vendors can convey the same information by collectively reporting either "1" or "4," in appropriately selective portions of the table.

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.

System Requirements Tables for the following categories of requirements are contained in this Appendix B. Each category is further divided into sub-categories within the System Requirements tables.

- A – Election Management System (EMS)
- B – Polling Location Ballot Scanning and Tabulation Equipment
- C – Central Ballot Scanning and Tabulation Equipment
- D – Electronic Voting Equipment
- E – Ballot Envelope Scanning and Signature Verification
- F – Vendor Training and Support
- G – Certification, Auditing, Testing, Security and 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.

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM A – ELECTION MANAGEMENT SYSTEM (EMS)			
Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
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.	
Election Creation	A-3	Provide software capability for the creation of newly defined elections and the retention of previously defined election formats. The system shall be designed so as to facilitate error-free definition of elections.	
Election Creation	A-4	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.	
Election Creation	A-5	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.	

Comment [EP3]: Hart InterCivic recommends that this be split into two distinct requirements, i.e. 1) creation of new elections, and 2) the ability to retain previously defined elections. It would also be helpful to know whether the State has additional functional requirements associated with already-existing elections. (For example, the ability to copy an existing definition for a different use? The ability to delete election definitions? Etc.)

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM A – ELECTION MANAGEMENT SYSTEM (EMS)			
Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Election Creation	A-6	Provide for a unified, integrated centralized database that allows global edits. **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.	
Election Creation	A-7	Provide a mechanism for executing test procedures which 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.	
Election Creation	A-8	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: a. Full candidate name b. Candidate sequence, title and text of ballot questions, and voting language options c. Office name d. Contest name e. Number to vote for each office f. Party affiliation g. Number of eligible registered voters at the precinct h. Number of active registered voters at the precinct	

Comment [EP4]: Please elaborate on what is meant by "global edits." If the State can provide a use case scenario and/or examples, that would be helpful.

Comment [EP5]: Hart InterCivic does not entirely understand the objective of the stated requirement, and we recommend re-wording it. It sounds to us like there are at least three different objectives being aimed at, and they are difficult to disentangle. Is the requirement that the system be able to perform Logic and Accuracy testing (i.e. "verify the correctness of election programming")? Or is the requirement that the system allow operators to control the ballot style that is activated, so that only correct ballot styles can be used? Or, alternatively, is the requirement that the system support the production of something like a "configuration readiness report," which confirms that the ballot styles, polling place, and election ID all correspond with the installed election definition? These are all distinct issues, and we are unclear on the intent of this requirement. Finally, as a general convention, Hart recommends against the use of requirements to support "procedures," (as in, "a mechanism for executing test procedures") rather than describing more narrow technological functions, as procedures may be diverse in nature. In this example, we would prefer a statement such as, "The system shall support a test mode that supports the following functions…"

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM A – ELECTION MANAGEMENT SYSTEM (EMS)			
Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Election Creation	A-9	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: a. Full candidate name b. Office name c. Contest name d. Number of votes for candidates and ballot questions e. Number of votes against ballot questions f. Number of people voting summary and by party affiliation (if applicable) g. Number of registered voters at the precinct level (by party affiliation if applicable)	
Election Creation	A-10	Allow the EMS user the ability to create custom voter instructions that may include images.	
Election Creation	A-11	Provide the flexibility to have an election coded by a vendor, county, state or other third party and import or export as necessary.	
Election Creation	A-12	Accommodate multiple languages (English and Spanish required). **Note:** Please explain the capabilities of your system to handle multiple languages.	
Election Creation	A-13	Allow for a mock election setup and support for public use prior to the initiation of a live election.	
Ballot Creation	A-14	Provide for standard ballot layouts.	
Ballot Creation	A-15	Provide user ability to customize the standard ballot layouts.	
Ballot Creation	A-16	Provide user ability to create new ballot layouts.	

Comment [EP6]: In light of requirement A-14 (i.e. starting from baseline layouts) and A-15 (i.e. customizing those same layouts), we recommend that requirement A-16 be deleted, as virtually any election system is likely to require some pre-set parameters and variables that define the boundaries within which ballot layouts must take place; in other words, we feel the appropriate focus is on the ease and robustness with which standard layouts may be customized; in contrast, including a requirement for "creating new" layouts strikes us as being under-determined.

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM A – ELECTION MANAGEMENT SYSTEM (EMS)			
Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Ballot Creation	A-17	Allow for creation of a multi-page ballot. **Note:** Please explain how your system handles the creation of multi-page ballots.	
Ballot Creation	A-18	Have the capability to reprogram a ballot for an electronic voting device. **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.	
Ballot Creation	A-19	For each election, generate and maintain a contest and candidate database, data store (or similar) 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.	
Ballot Creation	A-20	Provide software capability for the creation of newly defined ballot layouts, for the retention of previously defined ballot formats, and for the modification of a previously defined ballot format. The system will be designed so as to facilitate error-free definition of ballot layouts for electronic voting equipment and optical scan equipment.	

Comment [EP7]: Can the state provide a more detailed use case scenario? The example provided, of a change in text, does not seem limited to electronic ballots only, and hence we are unclear on exactly what is meant by "reprogram" and why only "electronic voting devices" are mentioned. Is the requirement specifically referring to changes in the AUDIO associated with names and contests on the electronic ballot?

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Comment [EP8]: A-20 includes three distinct requirements: create; retain, and modify. We recommend that each of these be separated into distinct requirements, and furthermore, that they clarify the distinction between the use of the word "format" versus "layout."

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM A – ELECTION MANAGEMENT SYSTEM (EMS)			
Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Ballot Creation	A-21	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. **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.	
Ballot Creation	A-22	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). **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-23	Import/export ballot information and voter registration information to and from Colorado's centralized statewide database.	
Ballot Creation	A-24	Generate sample ballots for each ballot style.	
Ballot Creation	A-25	Generate a consolidated ~~sample ballot~~report containing all races, issues and questions.	

Comment [EP9]: Hart InterCivic recommends that this request for system limits be extracted and placed on its own line.

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Comment [EP10]: As CRS 1-7-1003 provides only high level statements concerning Ranked Choice or Instant Runoff voting, any additional details the State can provide regarding functional requirements in this area would be helpful.

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Comment [EP11]: Because a "bedsheet" type presentation is not a facsimile of the actual formatting with which finished ballots will be presented (by virtue of the fact that it is a "bedsheet," i.e. it does not include page breaks, column breaks, etc.), we believe that this requirement would be achieved more effectively with a readable, usable, consolidated report.

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM A – ELECTION MANAGEMENT SYSTEM (EMS)			
Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Ballot Creation	A-26	Produce ballot content output for paper ballot printing, with the following capabilities: a. Accommodate non-proprietary print-ready format (e.g. PDF). b. Accommodate multiple stub sizes within same election. c. Accommodate multiple stubs on a ballot. d. Accommodate variable paper ballot stub sizes up to three (3) inches. e. Customize paper ballots with sequential numbering and static fields. Note: Please provide your ballot size capabilities and layout options.	
Ballot Processing	A-27	Output ballot content to secure file electronic media.	
Ballot Processing	A-28	Output ballot content to accommodate accessible voting, including adjustable audio and visual output. **Note:** Please detail capacity limits of data fields for accessible voting (e.g. font sizes, display options).	
Ballot Processing	A-29	Allow users to electronically adjudicate ballots to reflect voter intent, while retaining the originally marked ballot image. **Note:** Please explain the process and time efficiency of ballot adjudication using your system.	
Vote Results Reporting	A-30	Report vote tally results by individual upload. **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.	
Vote Results Reporting	A-31	Report vote tally results by contest jurisdiction-wide.	

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Comment [EP12]: Additional details concerning the use cases and requirements for different stubs would be helpful.

Comment [EP13]: Hart InterCivic recommends extracting this to a separate line item.

Comment [EP14]: Please clarify what is meant by "individual upload".

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM A – ELECTION MANAGEMENT SYSTEM (EMS)			
Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Vote Results Reporting	A-32	Report vote tally results by contest by precinct.	
Vote Results Reporting	A-33	Report the total votes for each candidate for each contest, as well as by candidate by precinct.	
Vote Results Reporting	A-34	Report vote tally results by voting location.	
Vote Results Reporting	A-35	Report vote tally results by ballot source (e.g.. Early Vote, Election Day, Mail, and Provisional).	
Vote Results Reporting	A-36	Report votes by ballot style.	
Vote Results Reporting	A-37	Report undervotes and overvotes in each contest, with the option to exclude.	
Vote Results Reporting	A-38	Report a summary of results in addition to the detailed Statement of Votes Cast reports.	
Vote Results Reporting	A-39	Report certified write-in candidate results in each contest with the ability to exclude.	
Vote Results Reporting	A-40	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-41	Export each report in PDF, XLS, TXT and CSV formats.	
Vote Results Reporting	A-42	Provide for Zero reports to be printed prior to first upload.	
Vote Results Reporting	A-43	Allow reports to be run at any time before, during or after the upload process.	

Comment [EP15]: It would be helpful if the State can provide a use case scenario and clarify what is meant by "ballot style." (We have reviewed the definition that appears in Rule 45, and it still remains unclear whether "style" is intended to be read narrowly, in the sense of a unique identifier that appears on a ballot, or whether it is used in broader sense, i.e. as the unique combination of races and options that appears on a given ballot, regardless of how the ballot is identified (in terms of precinct, other identifier, etc.).

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SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM A – ELECTION MANAGEMENT SYSTEM (EMS)			
Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Vote Results Reporting	A-44	Provide customization of report headers (e.g. "Unofficial" or "Final Unofficial"), contest labels and print layout. **Note:** Please explain any character limitations imposed by your system on labeling, reporting or exporting.	
Vote Results Reporting	A-45	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 C.R.S. § 1-8-308(b). This is also applicable to property owner ballots. **Note:** Please explain how your system will accommodate this requirement.	
Vote Results Reporting	A-46	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-47	Be able to suppress or include property owner ballot results.	
Vote Results Reporting	A-48	Provide an option to suppress a race or candidate from all reports, when withdrawn from ballot.	
Vote Results Reporting	A-49	Highlight the candidate/measure with the most votes in each contest.	
Vote Results Reporting	A-50	Have the capability to report political party designation for each candidate for partisan elections.	

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Comment [EP16]: We recommend this be re-worded as, "Provide an easily-readable method to identify the candidate/measure with the most votes in each contest."

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM A – ELECTION MANAGEMENT SYSTEM (EMS)			
Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Import/Export	A-51	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 a 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-52	Prevent the upload of wrong or duplicate portable vote storage media units. **Note:** Please explain your system's safeguards against errant or multiple uploads from portable vote storage media units.	
Import/Export	A-53	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-54	Save a report to a local or portable drive for transfer to a networked computer.	
Import/Export	A-55	~~Display~~Where applicable, d~~D~~isplay error messages and instructions to recover during uploading, reporting, importing and exporting.	

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 …)**	**Comments**
In-Person Polling Location Scanning	B-1	Notify voter/user of errors before accepting ballot.	
In-Person Polling Location Scanning	B-2	Retain an electronic image of each voted paper ballot in a non-proprietary format.	
In-Person Polling Location Scanning	B-3	Capture votes from paper ballots.	
In-Person Polling Location Scanning	B-4	Accept overvoted ballots upon review.	
In-Person Polling Location Scanning	B-5	Accept undervoted ballots.	
In-Person Polling Location 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). **Note:** Please explain how your system accounts for multi-page ballots.	
~~Tabulation~~ ~~Tabulation~~In-Person Polling Location Vote Capture	B-7	Have the ability to write cast vote records to a media ~~that will not report the results until Election Day~~that the EMS can disallow from being tabulated prior to the close of polls on Election Day.	
~~Tabulation~~ ~~Tabulation~~In-Person Polling Location Vote Capture	B-8	Provide a means to upload or transmit vote count results to the EMS.	

Comment [EP17]: It might be helpful to also add the words, "Polling Place Scanning" in this column; initially, Hart InterCivic did not notice this important descriptor in the table heading.

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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 …)**	**Comments**
Central Scanning	C-1	Retain an electronic image of each voted paper ballot in a non-proprietary format.	
Central Scanning	C-2	Scan paper ballots into designated batches.	
Central Scanning	C-3	Verify ballot quantities by batch prior to commitment to the system.	
Central Scanning	C-4	Verify ballot quantities by batch after commitment to the system.	
Central Scanning	C-5	Rerun a batch of ballots, if necessary, without impacting results to date.	
Central Scanning	C-6	Have the ability to delete committed ballot batches from the system. **Note:** Please explain how your system manages batch accountability identification.	
Central Scanning	C-7	Identify and electronically segregate or "flag" ballots with overvotes for manual or electronic image review.	
Central Scanning	C-8	Identify and electronically segregate or "flag" ballots with write-ins for manual or electronic image review.	
Central Scanning	C-9	Identify and electronically ~~segregate~~"flag" ballots that cannot be read for manual or electronic ~~image~~ review.	
Central Scanning	C-10	Identify and electronically segregate or "flag" ballots that are read as blank for manual or electronic image review.	
Central Scanning	C-11	Provide information to the user as to why a ballot was electronically segregated~~.~~ or "flagged".	
Central 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 ballots processed at the close of the batch.	

Comment [EP18]: It might be helpful to also add the words, "Central Scanning" in this column; initially, Hart InterCivic did not notice this important descriptor in the table heading.

Comment [EP19]: It would be helpful if the State explains what is meant by "committed." If the meaning of the term is "saved," as in, the images have been accepted for retention in the database, that is relatively straightforward; on the other hand, if the State has a requirement that concerns the handling of Cast Vote Records after they have been stored to media (which, to us, is different than simply saving the batch), that should be clarified.

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Comment [EP20]: We recommend that the reference to "images" be removed, because if there is some reason that the system cannot read a ballot, it is also highly likely that there will be no image to review at all (if, for example, the system were unable to process the ballot information required to create an image in the first place…)

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 …)**	**Comments**
Central Scanning	C-13	Provide statistics of batches in committed batches. **Note:** Does your system have a batch size and/or number of batches limitation and, if so, what is it?	
Central Scanning	C-14	Have ~~database~~ election data backup capabilities. **Note:** Please explain your system database backup capabilities and protocols. Please address time constraints and general and real time redundancy.	
Central Scanning	C-15	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). **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.	
~~Tabulation~~ Central Vote Capture or Ballot Processing	C-16	Capture votes from paper ballots.	
~~Tabulation~~ Central Vote Capture or Ballot Processing	C-17	Accept overvoted ballots upon review.	
~~Tabulation~~ Central Vote Capture or Ballot Processing	C-18	Accept undervoted ballots with or without review.	
Central Vote Capture or Ballot Processing ~~Tabulation~~	C-19	Allow the option to disable or enable review of undervoted ballots.	
Central Vote Capture or Ballot Processing ~~Tabulation~~	C-20	Write cast vote records to a media that ~~will not report the results until Election Day.~~the EMS is capable of disallowing from being tabulated before the close of polls on Election Day.	

Comment [EP21]: Please clarify the intent of this requirement. What types of statistics are desired, and again, by the word "committed" does the State mean "saved to the database," or "Cast Vote Records saved to media," or something else?

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Comment [EP22]: It is unclear to Hart InterCivic whether the reference to "tabulation" and the title header "central ballot scanning and tabulation equipment" carries with it the *assumption* by the State that central scanning equipment actually counts (tabulates) votes. If the State is indeed making such an assumption, Hart recommends that any requirements associated with the central scanning solution that also assume that the system tabulates be ***removed*** from the table of requirements associated with central scanning. Not all central scanning solutions actually tabulate votes. In the Hart system, for example, the task of scanning/reading/adjudicating/saving votes that are centrally scanned is completely separate from the task of tabulation. Insofar as our central scanning solution functions as a "vote capture and vote adjudication" system, which goes only so far as understanding and storing the Cast Vote Record that gets stored on flash media for tabulation later, it is similar to in-person vote capture devices.

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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 …)**	**Comments**
Central Vote Capture or Ballot Processing ~~Tabulation~~	C-21	Provide a means to upload or transmit vote count results to the EMS.	
Error Handling	C-22	Identify and reject ballots that are from another election.	
Error Handling	C-23	Continue high-speed ballot processing while ~~outstacking~~ electronically or physically segregating and sorting ballots to user identified categories that need additional attention. **Note:** Please describe how your system handles these situations: a. Ballots are unreadable by the scanner. b. Notifying the user when a ballot has been scanned successfully or not. c. Notifying the user that a ballot has been previously scanned. 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.	

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT			
Requirement Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Electronic Ballot	D-1	Display choices for the contests, candidates and measures of the election for each ballot style.	
Electronic Ballot	D-2	When activated for the voter, ~~list the appropriate contests and measures on the first series of screens presented,~~ provide 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.	
Electronic Ballot	D-3	~~Tabulate~~ Record each voter's candidate and question selections as the ballot is cast.	
Electronic Ballot	D-4	Have a public counter that displays the number of ballots cast or marked, depending on the functionality of the accessible voting device.~~.~~	
Electronic 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. **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. **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.	

Comment [EP23]: Electronic voting equipment may include ballot marking devices that are distinct from digital paper ballot scanners. In such instances, strictly speaking, it would only be on the scanner that ballots are actually "cast," and, in contrast, the ballot marking device simply "captures the voter's selections," and the act of casting the ballot is a separate step. Accordingly, we recommend that the State pay close attention to its use of the word "cast," to ensure that the requirements apply to the proper type of in-person voting devices. If, in most instances, the State's requirements for accessible electronic voting are assumed to be performed on something other than a digital scanning device, then requirements should be narrowly phrases to say "cast" or "capture voter selections" (i.e. on a printed marked ballot, for example), as appropriate. Hart InterCivic believes that ballots can be "cast" on either a DRE device or on a digital paper ballot scanner; in contrast, strictly speaking, voters do not "cast" ballots on a "ballot marking device"; they mark selections only.

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SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT			
Requirement Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Accessibility	D-6	Provide electronic voting equipment designed to allow for installation in a voting location such as to accommodate 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. **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.	
Accessibility	D-7	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. **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.	
Accessibility	D-8	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. **Note:** Please explain how your voting device complies with all forward and side reach requirements of the ADAAG.	
Accessibility	D-9	Include a voting enclosure, used for an electronic voting device, that provides privacy for all voters while voting~~, is well lit, and is equipped with a fixed or adjustable writing surface of a height that is designed to accommodate voters with disabilities in accordance with ADAAG.~~	

Comment [EP23]: Electronic voting equipment may include ballot marking devices that are distinct from digital paper ballot scanners. In such instances, strictly speaking, it would only be on the scanner that ballots are actually "cast," and, in contrast, the ballot marking device simply "captures the voter's selections," and the act of casting the ballot is a separate step. Accordingly, we recommend that the State pay close attention to its use of the word "cast," to ensure that the requirements apply to the proper type of in-person voting devices. If, in most instances, the State's requirements for accessible electronic voting are assumed to be performed on something other than a digital scanning device, then requirements should be narrowly phrases to say "cast" or "capture voter selections" (i.e. on a printed marked ballot, for example), as appropriate. Hart InterCivic believes that ballots can be "cast" on either a DRE device or on a digital paper ballot scanner; in contrast, strictly speaking, voters do not "cast" ballots on a "ballot marking device"; they mark selections only.

Comment [EP24]: Hart recommends removing the indicated wording for several reasons: 1) "well lit" is vague and untestable; in contrast, there are well-defined requirements for visual display and accessibility in both the VSS and the VVSG, and collectively, those standards achieve the objective implied in the words "well lit"; 2) we believe it is unnecessary and unwise to mandate that accessible voting device enclosures include "a writing surface," as such a requirement potentially increases the size and weight of the voting device, while providing few benefits. By virtue of being an ELECTRONIC voting device that provides accessibility, one should not assume that voters would need to be writing (because they are not working with hand-marked paper ballots, for example), and furthermore, if the device is there to serve voters with special needs, then one should not assume that those voters are capable of writing (even if it were necessary to write…which it should not be). On the other hand, we believe that the design goal of creating a compact, lightweight accessible polling place device that includes an ATI and that can provide a variety of voting methods for persons with different abilities, and that accommodates forward and side wheelchair approaches, *while also providing privacy*, is the correct way to narrowly state the requirement.

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT			
Requirement Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Accessibility	D-10	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. **Note 1:** Please describe your accessible alternative input devices. List such devices and explain the operation of the device and how it accommodates voters with disabilities. **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. **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. **Note 4:** Is the voting screen glare-free regardless of positioning? **Note 5:** Please explain any magnifying capacity of the electronic voting device. **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. **Note 7:** Please explain how your electronic voting unit adequately provides secrecy for a voter who uses a wheelchair. **Note 8:** Please describe additional features of your system that are designed to accommodate voters with disabilities.	

Comment [EP23]: Electronic voting equipment may include ballot marking devices that are distinct from digital paper ballot scanners. In such instances, strictly speaking, it would only be on the scanner that ballots are actually "cast," and, in contrast, the ballot marking device simply "captures the voter's selections," and the act of casting the ballot is a separate step. Accordingly, we recommend that the State pay close attention to its use of the word "cast," to ensure that the requirements apply to the proper type of in-person voting devices. If, in most instances, the State's requirements for accessible electronic voting are assumed to be performed on something other than a digital scanning device, then requirements should be narrowly phrases to say "cast" or "capture voter selections" (i.e. on a printed marked ballot, for example), as appropriate. Hart InterCivic believes that ballots can be "cast" on either a DRE device or on a digital paper ballot scanner; in contrast, strictly speaking, voters do not "cast" ballots on a "ballot marking device"; they mark selections only.

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT			
Requirement Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Accessibility	D-11	Allow for importing of audio ballot content from an outside source (e.g. candidates or pre-recorded text). **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-12	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-13	Support an enlarged ballot for voters with visual impairments. Following the printing of a marked ballot or the casting of a vote the machine must reset to its initial state to accommodate the next voter.	
Accessibility	D-14	Accommodate voters regardless of their ability to read. **Note:** Please explain how such individuals would be instructed to utilize the audio interface.	
Accessibility	D-15	Allow for connection of personal auxiliary devices, such as sip/puff or jelly switch devices. **Note:** Please describe such capabilities provided by your system.	

Comment [EP23]: Electronic voting equipment may include ballot marking devices that are distinct from digital paper ballot scanners. In such instances, strictly speaking, it would only be on the scanner that ballots are actually "cast," and, in contrast, the ballot marking device simply "captures the voter's selections," and the act of casting the ballot is a separate step. Accordingly, we recommend that the State pay close attention to its use of the word "cast," to ensure that the requirements apply to the proper type of in-person voting devices. If, in most instances, the State's requirements for accessible electronic voting are assumed to be performed on something other than a digital scanning device, then requirements should be narrowly phrases to say "cast" or "capture voter selections" (i.e. on a printed marked ballot, for example), as appropriate. Hart InterCivic believes that ballots can be "cast" on either a DRE device or on a digital paper ballot scanner; in contrast, strictly speaking, voters do not "cast" ballots on a "ballot marking device"; they mark selections only.

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT			
Requirement Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Ease of Use	D-16	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. **Note:** Please explain how your proposed system facilitates voter actions prior to casting a ballot or printing a marked ballot.	
Ease of Use	D-17	Accommodate font sizes that are adjustable for ease of sight.	
Ease of Use	D-18	Show the voter a summary screen at the end of the ballot indicating the choices made and/or skipped.	
Ease of Use	D-19	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 the printing of the marked ballot. **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 votes or final printing of the marked ballot.	
Ease of Use	D-20	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 ~~vote is stored successfully~~voting session is completed.	
Ease of Use	D-21	Provide a means to demonstrate the operation of the electronic voting device to the voters.	

Comment [EP23]: Electronic voting equipment may include ballot marking devices that are distinct from digital paper ballot scanners. In such instances, strictly speaking, it would only be on the scanner that ballots are actually "cast," and, in contrast, the ballot marking device simply "captures the voter's selections," and the act of casting the ballot is a separate step. Accordingly, we recommend that the State pay close attention to its use of the word "cast," to ensure that the requirements apply to the proper type of in-person voting devices. If, in most instances, the State's requirements for accessible electronic voting are assumed to be performed on something other than a digital scanning device, then requirements should be narrowly phrases to say "cast" or "capture voter selections" (i.e. on a printed marked ballot, for example), as appropriate. Hart InterCivic believes that ballots can be "cast" on either a DRE device or on a digital paper ballot scanner; in contrast, strictly speaking, voters do not "cast" ballots on a "ballot marking device"; they mark selections only.

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT			
Requirement Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Ease of Use	D-22	Not permit a voter to over-vote a contest and will enable the voter to correct their selections. **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-23	Warn voters that they have under-voted a contest and permit them to correct or accept the under-vote. **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-24	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. **Note:** Please explain how your proposed system allows for write-in votes for any authorized contest.	
Ease of Use	D-25	Allow county personnel to modify the voter instructions ~~for the ballot and equipment.~~that are presented at the beginning of an electronic or audio ballot voting session.	
Ease of Use	D-26	Provide a screen response that would allow a voter to request the list of certified write-ins. ~~The list, specific to the voter's unique ballot style, should appear on the screen (pop-up) for the voter to view and select from.~~	
Uninterrupted Operation	D-27	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.	

Comment [EP23]: Electronic voting equipment may include ballot marking devices that are distinct from digital paper ballot scanners. In such instances, strictly speaking, it would only be on the scanner that ballots are actually "cast," and, in contrast, the ballot marking device simply "captures the voter's selections," and the act of casting the ballot is a separate step. Accordingly, we recommend that the State pay close attention to its use of the word "cast," to ensure that the requirements apply to the proper type of in-person voting devices. If, in most instances, the State's requirements for accessible electronic voting are assumed to be performed on something other than a digital scanning device, then requirements should be narrowly phrases to say "cast" or "capture voter selections" (i.e. on a printed marked ballot, for example), as appropriate. Hart InterCivic believes that ballots can be "cast" on either a DRE device or on a digital paper ballot scanner; in contrast, strictly speaking, voters do not "cast" ballots on a "ballot marking device"; they mark selections only.

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Comment [EP25]: As a general convention, Hart InterCivic recommends that requirements specify only the objective to be achieved, without prescribing a specific implementation method. Furthermore, a question: is it always true that, by the time that an election is defined and by the time that in-person voting equipment is deployed for the very earliest Early Voting period, the overall list of certified write-in names is always complete? In other words, does Colorado election law make it impossible that the final certification of names would ever happen only AFTER equipment has been deployed? If not, then we would recommend removing this requirement, as there would be no easy way to update the election definition with certified write-in names and still maintain the integrity and uniqueness of the overall election definition.

SYSTEM REQUIREMENTS TABLE for the COLORADO UNIFORM VOTING SYSTEM D – ELECTRONIC VOTING EQUIPMENT			
Requirement Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Uninterrupted Operation	D-28	Provide for continuous uninterrupted operation for a minimum of two hours in case of power failure. **Note:** 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?	
Uninterrupted Operation	D-29	In the event of the failure of an electronic voting unit, retain a record of all votes cast prior to the failure. **Note:** Please explain how your system retains and reports votes cast in the event of a loss of power.	
Voter Verifiable Paper Trail	D-30	For DRE voting devices only, i~~I~~nclude, with each voting device, the functionality of a Voter-Verified Paper Audit Trail (VVPAT) that meets all Federal and State Certification requirements. ~~The receipt 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.~~ **Note 1:** Please explain how your proposed voting device complies with this requirement. **Note 2:** Explain if your proposed system has an alternate means of counting the VVPAT in the event of a hand count of such VVPAT. The alternative means can include but is not limited to the availability of bar codes and readers for each VVPAT.	
Voter Verifiable Paper Trail	D-31	For DRE voting devices, h~~H~~ave the capability 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. **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.	

Comment [EP23]: Electronic voting equipment may include ballot marking devices that are distinct from digital paper ballot scanners. In such instances, strictly speaking, it would only be on the scanner that ballots are actually "cast," and, in contrast, the ballot marking device simply "captures the voter's selections," and the act of casting the ballot is a separate step. Accordingly, we recommend that the State pay close attention to its use of the word "cast," to ensure that the requirements apply to the proper type of in-person voting devices. If, in most instances, the State's requirements for accessible electronic voting are assumed to be performed on something other than a digital scanning device, then requirements should be narrowly phrases to say "cast" or "capture voter selections" (i.e. on a printed marked ballot, for example), as appropriate. Hart InterCivic believes that ballots can be "cast" on either a DRE device or on a digital paper ballot scanner; in contrast, strictly speaking, voters do not "cast" ballots on a "ballot marking device"; they mark selections only.

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 …)**	**Comments**
Mail Ballot Envelope Processing	E-1	Provide hardware with the capability to scan mail ballot envelopes and perform the following functions: a. Scan and capture voter ID barcode b. Scan and capture envelope and signature images c. Log envelope as received d. Endorse (customizable) & date/time stamp envelope e. Separate envelopes that may need manual intervention **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 configurable for ballot envelope size and design.	
Mail Ballot Envelope Processing	E-4	Automatically separate envelopes with non-matching signature, missing signature, unreadable signature, voter affidavit required, or voter ID required into a separate stack or identify them electronically for easy separation.	
Mail Ballot Envelope Processing	E-5	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).	

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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 …)**	**Comments**
Mail Ballot Envelope Processing	E-6	Provide a high-volume solution for counties with a large voter population. Note: Please specify the throughput capacity on your high-volume envelope processor.	
Mail Ballot Envelope Processing	E-7	Provide a low-volume solution for counties with a small or medium voter population. Note: Please specify the throughput capacity on your low-volume envelope processor.	
Mail Ballot Envelope Processing	E-8	Provide configurable reports for tray id, tray count and pieces status.	
Automated Signature Verification	E-9	Contain certified or 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.	
Automated Signature Verification	E-10	Be configurable to meet or exceed a state required acceptance threshold for signature acceptance.	
Automated Signature Verification	E-11	Provide user activity logs.	
Automated Signature Verification	E-12	Provide an audit function to verify the accuracy of machine accepted signatures.	
Automated Signature Verification	E-13	Extract returned ballot envelopes for manual review when the signature does not meet the acceptance threshold level.	

Comment [EP26]: What does the State consider to be a "large" voter population? Can you provide a quantitative range?

Comment [EP27]: What does the State consider to be a "small or medium" voter population? Can you provide a quantitative range?

Comment [EP28]: Can you provide more information about this "acceptance threshold," and how it is expressed or measured?

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 …)**	**Comments**
Automated Signature Verification	E-14	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. **Note:** 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 …)**	**Comments**
Voting Period Support	F-1	Provide technical support for all system components beginning 60 days prior to an election and continuing until 30 days after an election for each County.	
Hardware Supply Chain	F-2	Include hardware solutions for the UVS that are supported by a supply chain contingency plan. **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).	

Comment [EP29]: Please specify the number of election cycles for which the State would expect to have such services provided, by default. For example, in many typical implementation contracts, such services might be specified for the first one or two election cycles, and after that time, any additional services are contracted on an optional, as-needed, fee-based model.

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 …)**	**Comments**
Certification	G-1	Be certified by the EAC or another state. **Note:** If not certified, please explain.	
Auditing	G-2	Create and log audit records for all phases of election operations.	
Auditing	G-3	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: a. An identification of the program and version being run. b. An identification of the election file being used. c. A record of all options entered by the operator, including operator ID. d. A record of all actions performed by a subsystem of the system. e. A record of all tabulation and consolidation input. f. Audit log records that are created and maintained in the sequence in which operations were performed, with date/time stamps. **Note:** Please explain what audit trail techniques and standard audit reports are incorporated in your proposed system.	
Auditing	G-4	Accommodate random audits on electronic voting and tabulation devices.	
Auditing	G-5	Accommodate random audits on paper vote capture and tabulation devices.	
Auditing	G-6	Log all activity on voting equipment including: when turned on/off, by whom, any errors, when an error occurred and when an error is resolved.	

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 …)**	**Comments**
Auditing	G-7	Run real-time reports, when needed.	
Auditing	G-8	Run post-election diagnostics.	
Auditing	G-9	Provide audits for recounts.	
Auditing	G-10	Have a permanent paper record of each vote for audit purposes.	
Auditing	G-11	Support a variety of audit methods, including fixed percentage audits or risk limiting audits, ~~a Risk Limiting Audit~~ on both electronic tabulation and paper ballot tabulation devices. **Note:** Please describe how your proposed system supports the execution of ~~a Risk Limiting~~different types of a ~~A~~udits.	
Auditing	G-12	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-13	Use a real-time clock that will continue to run during a power loss.	
Auditing	G-14	Print audit reports on the standard system hardcopy output device if the following conditions are met: a. The generation of an audit trail report does not interfere with the production of other output reports. b. The entries can be identified so as to facilitate their recognition, segregation and retention. c. The physical security of the audit record entries can be ensured.	
Auditing	G-15	Create audit records during the election definition and ballot preparation phases showing completion of the baseline ballot formats and any modifications to them, a description of the modifications and a date/time stamp.	

Comment [EP30]: Please explain what is meant by "diagnostics," as well as the scope of the desired diagnostics. Is the requirement referring to voting devices, EMS workstations, both, or something else?

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Comment [EP31]: It would be helpful if the State could specify the minimum required information that each paper record might include, as well as any specific requirements concerning privacy as audits are performed.

Comment [EP32]: The phrase "Risk Limiting Audit" means different things to different people. Some academics take a very narrow approach to the term, in the sense that it is very "loaded" with the assumption of very specific types of procedures, to the exclusion of others. In contrast, other election officials take a much broader, and less deterministic approach to the use of the term "risk limiting audits." Hart InterCivic believes that the best way to address different needs is to acknowledge that various approaches to reducing risk through audits exist, and so-called "risk limiting" audits are only one of many, along with fixed percentage audits and other methods. These diverse methods can be specified through different sets of procedural – rather than technological – rules that determine the scope and nature of the audit.

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 …)**	**Comments**
Auditing	G-16	Create audit records during the pre-election phase that include manual data maintained by election personnel, samples of all final ballot formats and the ballot preparation edit listings associated with them.	
Auditing	G-17	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.	
Auditing	G-18	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: a. System startup diagnostic and status messages. b. Zero totals check event. c. The source and disposition of system interrupts resulting in entry into exception handling routines. d. All messages generated by exception handlers. e. The identification code and number of occurrences for each hardware and software error or failure. f. All operator actions. g. Notification of system login or access errors, file access errors and physical violations of security. h. Other exception events such as power failures, failure of critical hardware components, data transmission errors, and other types of operating anomalies.	

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Comment [EP33]: What is meant by the term "manual data"? Can the State provide examples?

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 …)**	**Comments**
Auditing	G-19	Provide for an in-process audit report of votes cast by each voter on each vote capture device. This report must be generated in a random order from the order of voters casting ballots, for privacy reasons.	
Auditing	G-20	Print reports necessary to perform a manual count as required by Colorado election law and rules. **Note 1:** Please explain how your proposed system can create the reports necessary to perform a manual count. **Note 2:** Please explain how, in the case of a recount, the election can be reconstructed ballot by ballot, while still maintaining voter anonymity.	
Testing and Auditing	G-21	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	
Testing	G-22	Allow 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…). **Note:** Please explain how your system allows for scripted simulation for creating test ballots and electronic voting equipment test input.	
Testing	G-23	Have the capability to test ballot formats 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-24	Provide capability to permit diagnostic testing of all the major components within each electronic vote capture device.	

Comment [EP34]: We do not understand what is meant by an "in-process audit report of votes cast by each voter." Is the State referring to a randomized collection of human-readable cast vote records that can be produced for review and audit? Please explain, especially what is meant by "in-process."

Comment [EP35]: Please explain what is meant by the term "scripted"? What type of automation, if any, is intended by the requirement?

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 …)**	**Comments**
Testing	G-25	Ensure non-contamination of voting data through tests of all data paths and memory locations to be used in actual vote recording.	
Testing	G-26	Provide evidence in an audit record that test data has been expunged.	
Testing	G-27	Allow the ability to load and test audio ballots in electronic vote capture equipment.	
Testing	G-28	Provide the ability to print all necessary reports for proofing the results of logic and accuracy testing.	
Security	G-29	Provide an environment whereby all databases and data are maintained with provisions for operational security, access control and auditability. **Note:** Please describe the authentication protocols for access to the EMS database and your system's processes for providing operational security and auditability.	
Security	G-30	Require dual authentication for access to specified critical functions in the EMS and all tabulation equipment.	
Security	G-31	Allow tamper resistant seals to be placed on all equipment openings and data access points. **Note:** Please describe the security offered by your proposed system.	
Documentation	G-32	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-33	Include documented instructions for troubleshooting voting equipment issues that may arise.	
Documentation	G-34	Include a complete set of User and Technical documentation.	

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Requirement Sub-Category	**Req. ID**	**UVS Requirement (The System will …)**	**Comments**
Documentation	G-35	Include current certification documentation and VSTL and/or state test reports.	