

CLEAR BALLOT

Colorado Pilot Election Review Committee
Request for Additional Information
Uniform Voting System

Responses to questions from the public and from PERC members



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Hillary Hall, Boulder County Clerk

1 Do you know if any system can do a 11"x17" page ballot. We have had to use an 11"x 17" ballot in most even year elections.

Ballots can be any length from between 8.5"x5" and 8.5"x21" (with the exception of roughly square ballots) in one-inch increments.

2 How does the audio and print database fit together? Do you have to have the audio completed before you can finalize the database? Can you create a separate database for the accessible voting with audio and the paper database and easily combine the results. For long ballots, having to wait for audio in the already very tight timelines can cause significant delays in the process

When we implement the recorded audio it will be in the same database as the paper ballot. You will not have to complete the audio before finalizing the paper ballot and printing them.

3 Can any of the systems scramble ballot images upon export? If they can, scrambling the images would increase anonymity and reduce cost in exporting the images for the public.

Clear Ballot's redaction tool for images is coming out in 2016. The redaction tool will allow counties to provide ballot images without any image scrambling.

4 For all systems, how is the image tied to the ballot? Seems like most rely on keeping them in order.

The image is tied to the ballot and sorted by filename. You should keep the ballots in order but we do have tools to help find ballots if you do not.

For ballots that are coded by precinct, target cards and box labels are downloaded from the Clear Ballot website at <http://clearballot.com/Support/TargetsAndLabels> and printed locally by County staff. The prep team places one target card on top of a batch of ballots and affixes the corresponding box label to the physical storage box. Target cards are used to associate a batch of ballots to a physical ballot box so that, if needed, the ballot image ID can be used to retrieve the physical ballot. This is *image-to-ballot traceability*.

The Card Inventory report summarizes every batch scanned in the election and, through

“drill-down” can display the image of every ballot in every box in the order in which it was scanned. If that order has been preserved when the ballots are transferred to the storage box, the location of the ballots correspond to the sequence of the ballot IDs in the report. If the order was not preserved, ballots can be scanned again, and the Card Inventory report can be regenerated, providing the location within the reordered ballots.

5 What are the projected lifespans for each of the systems?

The potential length of service of the ClearVote system cannot be measured in the conventional sense of “life span.” On a continuous basis, Clear Ballot updates its software and the COTS manufacturers update the hardware, rendering the concept of life span obsolete. Hardware components can be updated as budget priorities permit; the software will always be current.

6 Can images be exported to use in any BOD system?

Yes. Our PDFs can be used in any BOD system.

7 Can ballot name be edited to include district style and precinct in all systems? We name the styles in a way to make it very easy for judges to tell what ballot they are giving a voter.

Yes. Ballots can include names or place-identifying text to aid the election judges and other polling place staff.



1 Experience with multiple county implementations and the ability to assure successful outcomes

Clear Ballot has deployed implementations across Florida and Oregon. In both states, we have needed to get multiple counties up and running for the same election. Our ability to get county staff productive quickly on all aspects of our systems and our timely, attentive support has encouraged election officials in both states to become our customers.

During the 2015 implementation of the ClearVote system in Multnomah County, Oregon (441,000 registered voters) the delivery of hardware and software took place in June 2015 and the implementation was completed by the end of September 2015. The system was used for the November 3, 2015 election. All timelines for delivery, implementation, and execution of training and the election met or surpassed the expectations of the County.

2 Proven record with customer service efficiencies and effectiveness

Clear Ballot is a responsive organization, which our customers appreciate. The success of our Multnomah County implementation is being repeated across Oregon. We continuously update the cutting-edge support technologies used by our team to diagnose and resolve issues. By using new tools, we make our services more cost effective and timely than some of the more traditional delivery methods in use today.

Our current options for technology-enabled support include product sandboxes for training, testing and experimentation, video-enabled and air-gapped hardware diagnostics tools, online help desk and knowledgebase, customer service and ticket tracking connectivity via smartphone app.

We also have developed a certification programs for the technicians who serve our customers in jurisdictions across the country.

3 Organizational strength, not only fiscal, but also human resource capital. Does the vendor have seasoned and tenured staff, is there assurance of reliability into the future, etc.

Clear Ballot has the highest capability in the industry to attract veteran elections staff as well as staff experienced in large scale computing deployments. You will find that we have top caliber talent in the development of all portions of the new voting system, from ballot layout and proofing through central count, accessible voting, and finally to reporting and auditing. This is backed up by top caliber talent in project management, quality assurance, documentation, and certification management.



The appeal that Clear Ballot has to industry veterans is the opportunity to properly address technical and administrative deficiencies that they have long recognized and could not be confident would be addressed by existing vendors.

4

Flexibility and capability to address Colorado's innovative spirit and continuous improvements in moving elections forward by promoting a collaborative culture and can-do attitude

Clear Ballot promotes a collaborative environment in the workplace, from its all-staff weekly meetings where all ideas are welcome, frequent cross-training opportunities, to its internal use of technology to enable communication across states and time zones. Staff are chosen based on their intellectual commitment to improving elections, creativity, breadth and depth of their skills, respect for public service, and their ability to learn about the complexities of election management. Our industry veterans contribute a solid understanding of the realities of U.S. elections management, and our staff that are new to elections come to Clear Ballot bringing very strong technology and operations backgrounds because they want to make a difference in elections.

Our company is Boston-based, and has the support of innovative and successful investors. Our management team is able to draw from a large and talented local pool of technical and operations experts, and to meld that with the election team who have joined Clear Ballot from around the industry.

5

Fair pricing strategies

Clear Ballot has proposed comprehensive pricing for each county tier, as requested by the Secretary of State's office for review by the Pilot Election Review Committee. Our pricing model, like our voting system is based on transparency. Our implementation and support is based on our experience implementing our systems and training large and small counties on the use of our products and are priced clearly. Our software license fees are based on what we have determined to be market value, based on our unique capabilities, ease of use, and superior transparency. This is a common software pricing practice, and we are confident the State will find our prices reasonable and our solutions significantly more valuable than their costs. Lastly, our hardware is COTS hardware and can be procured, or more importantly shopped to ensure our pricing is fair. Clear Ballot has proposed a turnkey configured and installed hardware system price, but any jurisdiction can elect to source their hardware platform independently if they so choose. This ensures fairness in the process and ensures Clear Ballot's value added services can be evaluated objectively.



Simplicity and ease in utilizing the system; i.e., programming, set-up and tear-down, the ability for judges to address point(s)-of-failure, report generation, etc. Especially, when taking into consideration small and medium-size counties that experience a minimal judge pool and staffing resources that may not provide strength in technical and software skill sets

All portions of the ClearVote system were designed to minimize the expertise needed by scanner operators and VSPC staff. There is no programming needed by either central count or VSPC staff. They perform only the tasks typical of these operations—selecting ballots for accessible voters, ballot accounting as directed by the County, and operating the central count scanners by initiating the scanning of ballot batches. Reports are generated by selecting the report from a list, filtering the report (if necessary) by using drop-down menus, and pushing a button.

Set-up and tear-down is easy. Most of the equipment is easily transported by one employee who can lift 40 pounds. The largest size of Fujitsu scanner is easily transported by two such employees.

Security, accuracy and transparency

Yes, the ClearVote system provides for system-wide security procedures from the point when the election is created through ballot tabulation and results reporting.

A common maxim of the voting systems industry defines system security as “a combination of people, process, and technology.”

This is true, as far as it goes. The designers of the ClearVote system have taken the approach that security should not depend on people following processes, but must instead be embedded in the materials used to construct the system. Wherever it is possible—from the initial configuration of the components of the system through preparation and use during the election cycle and finally to auditing and storage—security is automatic and mistake-proof.

Where security does depend on people and processes, the ClearVote system funnels users along paths that lead to proper security settings and subsequent secure use of the system.

For example, when creating an election, the screen and tab layout of ClearDesign election management system steps the user through the election cycle, from initial information import to machine programming through all of the ballot layout and proofing steps in between. With over 70 proofing reports to use, an election official can be certain that the printed ballots are 100% complete and accurate for every style and

split. To support secure distribution of that workload, election administrators can rely on the concept of least privilege that the role-based security scheme enforces. Each system user is assigned a role that grants the access permissions required to perform their job, but no more than that.

In the polling place, the voter terminals for the ClearAccess system are equipped with a custom bezel or seals that block access to the USB ports and other controls on the computer terminal. Likewise, the operating system and software are hardened to keep users away from any soft controls over the system. It is, in all respects, a dedicated accessible voting terminal. The ADF package on the USB stick that programs each ClearAccess terminal is digitally signed so that unauthorized changes are detected and blocked before they could affect the integrity of the election.

The P1000 precinct scanner is also a dedicated voting device, allowing no improper access to the operating system or to the tabulation software. Its all-metal construction, including keyed access doors, ensures that anyone who attempts to tamper with the unit will be thwarted. Keyed locks on the doors for maintenance, access to the scan engine, and access to the thermal printer and results cartridges further ensure that physical attacks will fail. The P1000 unit runs on Linux, rendering the malware and attack methods common to Windows systems useless if someone attempts to corrupt its software.

The ClearCount tabulation and reporting system is the core of the ClearVote system. Its security is of the highest importance, and indeed, is of the highest caliber. The closed, secure network on which ballots are tabulated and reports are generated is not connected to a jurisdiction's networks or to any equipment that is unrelated to election duties. The server on this network also runs on Linux, which provides an inherently higher level of security while also thwarting Windows-related malware and attacks. Again, the principle of least privilege is enforced. Central scan operators can access only what is needed to scan ballots, and persons performing more sensitive tasks such as ballot adjudication can access the functions that would affect election results.

The engineers at Clear Ballot recognize that persons who would want to attack the voting system are creative. The system was thus designed to prevent those attacks and to surface any attempts. Audit information is collected automatically. There is no need to configure it, to explicitly start the collection processes, or to ask in-house experts to interpret the information or otherwise intervene. The oval visualizations allow authorized individuals to verify that the scanners worked correctly and that the results of each contest were completely and accurately collected and tabulated.

The transparency built into the ClearVote system makes visible the logs, performance information, and resulting election tallies. Rather than having to trust that mechanisms in some black box have produced correct results, election officials can see for



themselves that those tallies are accurate.

8 Proven success record implementing training strategies regarding a conversion, in addition to effective training materials for staff and judges

Clear Ballot leads the voting systems industry in training delivery methods, making extensive use of the Internet to augment the on-site/in-person approach and allowing the Counties to get a head start on training for an election cycle. Clear Ballot has already started to enhance and update its training materials based on feedback from the November 2015 Pilot elections.

9 Flexibility and capability to address small, medium and large county VSPC set-up/ configuration; i.e., Pitkin County still has VSPC's that process between 400 – 600 voter on Election Day, and over 10% of voters still vote a flat ballot in person. Simplicity in operations is essential when working with limited human resource capital –both judges and county personnel, and limited space with VSPC's and storage

ClearVote's components have been designed to keep the storage and operational footprints to a minimum and provide rapid set-up at both Election Central and the VSPC to further maximize County resources. There is no one-size-fits-all election system. With Clear Ballot, the county can use as many or as few central scanners as it wants given the size of the election jurisdiction and projected turnout. The system is fully scalable with COTS hardware that allows a county to build a system sized for its election needs and warehousing or storage configuration. A county can expand or reduce the capacity it needed for its previous election by just adding or subtracting COTS scanners. This configuration gives jurisdictions flexibility to adjust to the needs of their current election and to increase base capacity at lower cost than competitor systems. If needed, Clear Ballot's P1000 precinct scanners can be added to accommodate a county that wishes to provide in-person voting.

10 Ease in handling SCORE data integration with the system, and working with excess information from SCORE. Is the ballot style naming flexible with SCORE, especially with Everyone Counts.

ClearDesign currently imports data from SCORE. Ballot styles can be renamed.

11 Programming precinct based elections versus style based

The ClearDesign version in lab testing for several weeks and due out in January has coding both by style and by precinct. This is the version that will be fielded for the 2016 Primary Election.



Ease in layout capability; i.e., editing, spacing between columns, no candidates for a listed race and does the race look similar on the ballot vs. ADA voting device, allow space/characters text for endorsements (candidates pledges to run only one term), are there character limits, can ballot footers be customized or removed, ability to edit again once generated, etc.

ClearDesign is easy to use and functional. The drag-and-drop capabilities common to modern text editors are available in ClearDesign for ballot layout. For example, for mail-in ballots a vote target can be moved easily to avoid a fold line; images can be resized to fit available space.

The ballot-design functions of the ClearDesign system allow you to change fonts and adjust the size of fonts and images as you lay out the ballot and inspect the ballot design without having to create a memory stick. Spacing between columns can be adjusted. Ballot headers and footers can be defined for ballots and can be edited, or removed, once ballots are generated. Ballots would have to be re-laid out to re-format the revised headers/footers, but again you can adjust as you lay out the ballot design without having to create a memory stick.

The designer can create a “No Candidate” oval for contests that do not have candidates. Text for endorsement can be added to any candidate and space is allocated for it on the ballot.

The system supports six font faces (SansPro, SansPro Black, Arial, Courier, Helvetica, Times Roman) and 11 font sizes (6, 7, 8, 9, 10, 12, 14, 16, 18, 24, 36 point). This range of fonts supports the Unicode font sets, which supports all required languages. ClearDesign allows you to provide shading, color, boxes, lines, and other graphics, which can be used to enhance the ballot appearance and readability. Map images can also be imported and printed on ballots.

A printed ballot from the ADA device looks the same as the paper ballot. Both PDF and accessible electronic ballots are created from the election definition and will be scanned in ClearCount. These ballot sets eliminate the need for multiple ballot-proofing steps. Once proofing is complete, election staff can create the PDF files that can be sent to your ballot printing company, the Accessible Definition Files (ADF) that program our accessible voting system, ClearAccess, and the Ballot Definition Files that program both the P1000 precinct scanner and the ScanStations of ClearCount, our central count scanners.

Can a nonpartisan primary ballot be programmed? (Home Rule Charter)

Yes, the ClearVote systems support nonpartisan primary elections.

14

Does the ADA compatible equipment offer flexibility in programming the template features of the audio ballot; including, the ability to speed up, slow down, and pause the audio as the voters needs necessitate.

Yes. Voters who use the ClearAccess ballot-marking system can control the speed and the volume of the audio with the controls.

In responding to a voter survey administered in Adams County, several voters reported difficulty finding the audio volume controls. Believing that these controls would be required only for blind voters, voters looked for them on the EZ Access input device, instead of the Settings screen on the monitor. Clear Ballot has since reprogrammed the volume control to the EZ Access keypad, and this change will be included in the January certification submission.

15

Provisional ballot programming and processes

Provisional balloting will be done following each county's current secure paper provisional process. The provisional voter marks a paper ballot, which is placed in an envelope with the required information for election officials to determine eligibility at a later time. Provisional ballots that are determined to be valid are removed from the envelopes and scanned through the central scanner.

In provisional balloting, voters who need an accessible device will mark the ballot on one of the ClearAccess devices. The marked ballot is then printed, and the process for regular provisional ballots is followed.

16

How does the system handle multi-page ballots in an election; i.e., scanning, images, audits, etc.; and, what is the largest ballot paper size that can be produced.

Ballots lengths can be any length from between 8.5x5 inches and 8.5x21 inches (with the exception of roughly square ballots) in one-inch increments. The maximum number of unique ballot styles that the system can accommodate is 8,192.

The ClearVote system is also capable of scanning one-sided ballots, two-sided ballots, and multiple-card ballots while recording the event as one ballot cast.

Clear Ballot treats the term "ballot" as a logical concept which is associated with a voter as distinct from "cards" which are associated with physical pieces of paper. All scanners used in ClearVote are duplexing scanners and both sides of every card scanned are preserved in the database even if the ballot is single-sided.

"Ballot accounting" is a technique to associate the count of multi-card ballots with the number of voters casting ballots generally for the purpose of computing voter turnout. While most of the reporting deals in "card count" for



the purposes of ballot control, there are standard turnout reports that record the event of casting a multi-card ballot as a single event.

One of the unique and cost-saving features of the ClearVote voting system is the ability to print multiple ballot lengths. Counties would pay only for the paper they need to fit all of the contests on the ballots, which can be a significant cost savings. ClearVote can tally multiple ballot lengths at the same time and in the same batch. The value in this is if a county has a few ballot styles that are always longer than the rest because of extra districts, those few ballot styles can be printed on the longer ballot without having to print all ballot styles on the longer ballot. For example, if 50 ballot styles will fit on a 14-inch ballot, but three styles require a 17-inch ballot, the county can print the 50 ballot styles on 14-inch ballots and the other three styles on 17-inch ballots instead of having to print all 53 styles on 17-inch ballots. This will be a significant reduction in paper and costs. It will also yield faster results as it is faster to scan a 14-inch ballot than to scan a 17-inch ballot on any voting system.

17 Suppressing outcomes during tabulation due to death or withdrawal.

Yes, in response to recent requests from counties, this feature has been added to the next ClearCount version, which will be available to Colorado for the 2016 primaries.

18 What stopgaps are in place to prevent reprogramming of the election database after media has been downloaded; and, stopgaps to separate the upload of media and tabulation of results.

The election database can be set to a number of states, each of which prevents changes to the election. When the Ballots Created, Cards Created, and Media Created states are set, no changes can be made to the ballots, cards, or media. When the database is set to the Set for Election state, no further changes are allowed. After the election has been created and the BDF is uploaded to the ScanServer, the election definition cannot be changed.

19 Does the system provide various levels of administrative restrictions for authorized user.

Yes, it does. For a full explanation, see the response to Question 7 above.

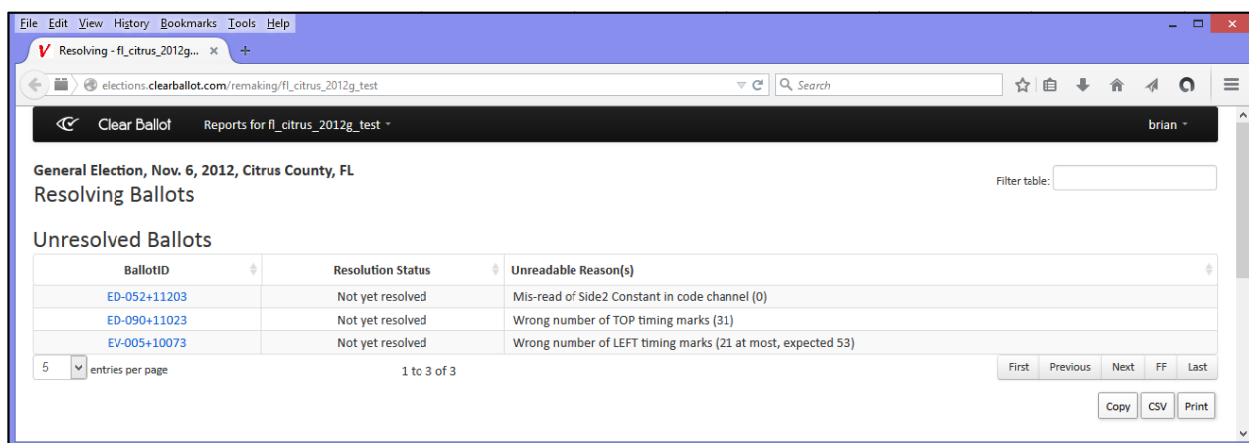
20 Capability in extracting various types of reports.

A summary of all election reports is included in this package as a separate document.

21 Scanning equipment - does the system assure issues are resolved before judges proceed, therefore assuring elections balance

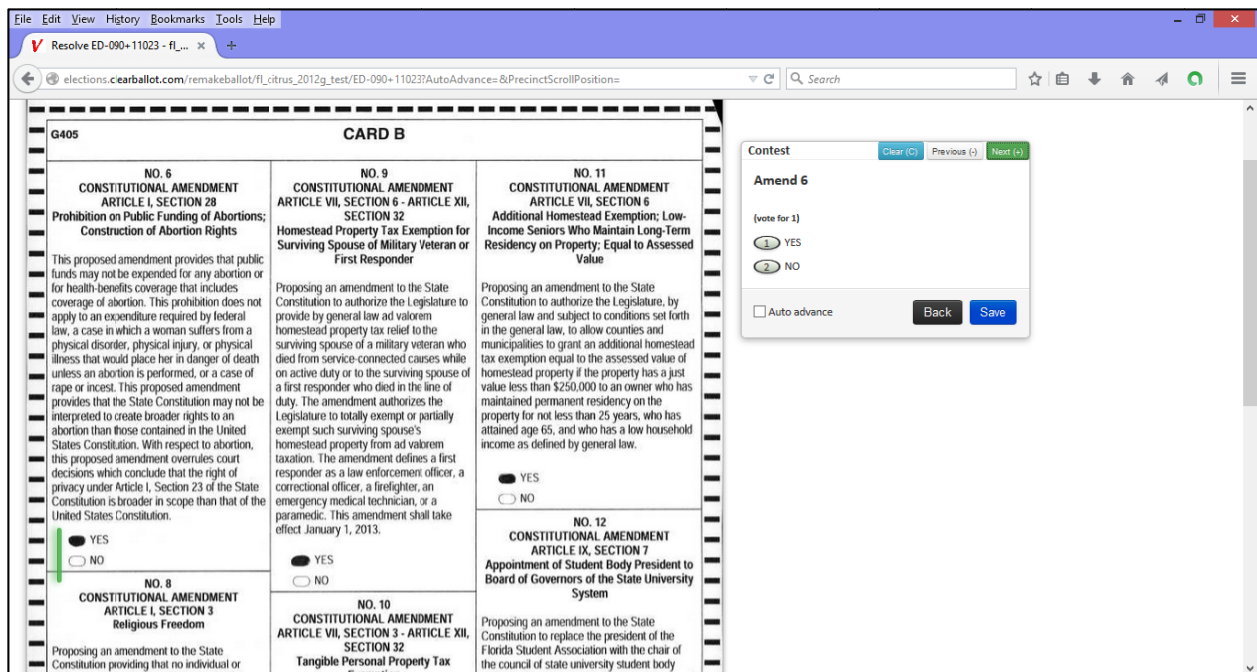
Ballots that are unreadable and need manual adjudication are identified digitally and presented to election officials for examination through a browser interface. The system displays the number of unreadable ballots in real-time, so that judges can identify scanning errors immediately.

The ClearVote system provides separate reports on all ballots that the system cannot adjudicate automatically. Each ballot is identified along with the reason that the system was not able to automatically adjudicate it.



Users with credentialed access can then use the digital image of the ballot to identify and record the appropriate votes on the ballot.





Because this process is entirely digital, unreadable ballots do not require that the entire batch be stopped and re-scanned. If officials need to access the physical ballot, its ballot image contains tracking information to locate the ballot in the box easily.

22 Safeguards to assure judges program the correct ballot style

Ballots can include names or place-identifying text to aid the election judges and other polling place staff.

In a survey administered in Adams County, voters and election judges reported that ballot style lookup was, by a wide margin, the No. 1 complaint about the ClearVote system. Clear Ballot has responded to this feedback promptly, as described below.

First, Clear Ballot has simplified the lookup process, and the change will be included in the system submitted for certification testing in January 2016, and thus available for the 2016 Primary Election.

Second, at the time of the pilots we had not yet implemented a feature that would allow the county to code their ballots by style instead of by precinct, resulting in a long lookup list. Implementing this feature is our highest priority and the solution will be available for certification testing in January 2016, which complies with the State's published certification and deployment schedules.

Third, we are looking into further simplification steps to connect a voter with the correct ballot style. Specifically, we will be looking into using the barcode printed out by SCORE



to automatically bring up the voter's ballot style. This feature would add a barcode reader to the ClearAccess device and eliminate the need for poll worker involvement.



Clarissa Thomas, Member and chairperson, UVS Public Participation Panel

In a disaster, can a county share equipment with another county or would it be necessary to rent?

In a disaster, Clear Ballot believes that the right approach is neighbors helping neighbors. Regardless of how many vendors the State chooses, Clear Ballot customers will be able to share equipment as agreed to by the disaster-affected counties.

Harvie Branscomb

The absence of an enforced air gap from scanning to tabulation. "All systems should use an air gap between scanning and EMS/tabulation. Users of Dominion and ES&S can do this via an option with the present system. Hart enforces the air gap. Clear Ballot systems can be rented but should not be purchased until the air gap is enforced"

ClearVote does in fact have an air gap between ballot layout and scanning/tabulation. Regardless, we find this comment to be without merit. No peculiar threat-vulnerability pair has been identified that is resolved by air gapping the system, nor is Clear Ballot aware of any threat that is mitigated by instituting an air gap into our system architecture.

On the contrary, having to manually move results from each scan batch, as would be required if an air gap were in place, carries the possibility of human error, and is slower than networked movement of images and tabulation results.