August 28, 2015
Sandro Burgos
Attn: Response to RFI for New Voting System
Department of Elections, City and County of San Francisco
City Hall, Room 48
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102

Dear Sandro,

This letter is Clear Ballot Group's formal introduction to the City of San Francisco's request for information for a new election system. Clear Ballot is proud to provide this response, and we are confident that after a careful review you will agree that Clear Ballot is the only organization that can provide the City of San Francisco with the following:

- An end-to-end voting system that is built on a modern software architecture to be future proof
- A system that leverages off-the-shelf hardware components to maximize sustainability
- The most flexible, feature rich, and easy-to-use ballot design tool and tabulation system in the industry
- The most cost-effective and vetted accessible voting solution
- A support team of the most dedicated and skilled election and technology professionals in the industry

Clear Ballot Group was founded in Boston in 2009 with the goal of increasing the accuracy and transparency of elections, leading to greater confidence in the results, while lowering costs and simplifying workflows. The company's headquarters are in Boston, with operations offices in Florida, Oregon, Colorado, and Vancouver, BC.

Our innovative vote visualization technology allows administrators to access complete and verifiable ballot images in seconds. Paper ballots are handled once during the tabulation process and never have to be touched again. A complete catalog of all voted ballots can be viewed, analyzed, and adjudicated quickly, securely, and with more certainty than ever before. This system will significantly reduce the tabulation time that the City's current system requires and provide the support it seeks to make elections transparent.

Our vision is to present the evidence of voters' intent, to make it efficient for canvassing boards to adjudicate ambiguous intent, record all decisions (human and software), and deliver the final results in a visually intuitive way that can easily be

distributed to the stakeholders of an election as broadly as election law allows. We do this because it eliminates the risk associated with the manual handling of ballots and cuts ballot processing at central count locations exponentially.

Clear Ballot has built, from the ground up, the first new voting system in a generation. We have delivered what no voting system has ever had: visual verification of voter intent. Our revolutionary system incorporates the insight from officials across the country to manage the complexity inherent in elections. In solving today's problems, Clear Ballot prepares jurisdictions for tomorrow's challenges.

This voting system--ClearVote--is receiving wide acclaim. Because it offers unparalleled increases in speed, accuracy, and transparency, and through competitive procurement, the ClearVote system has been purchased by large and small counties in Oregon. In 2016, almost half of all Oregon voters will have their ballots designed and tabulated by the ClearVote system.

Our technology is likely quite different from want other respondents may offer. It also ensures the greatest functional improvement in speed, ease of use, and long-term viability. We are confident you will recognize the value of this approach and select Clear Ballot to be your voting system partner.

If you have any questions, or if you need any additional information, please feel free to reach out to us at any time.

Sincerely,

Larry Moore
CEO, Clear Ballot Group

San Francisco RFI for Election Systems

Clear Ballot Group

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Clear Ballot overview

Mission

Clear Ballot Group (CBG) was founded in 2009 in Boston, Massachusetts to develop a new class of election administration tools. These tools, built on the principles of a modern software architecture and with commercially available hardware and software, are designed to improve the speed, accuracy, and transparency that election officials need to achieve three important objectives:

- Lower the cost of elections
- Improve the administration of elections
- Build trust in the stakeholders of an election

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Clear Ballot has offices in Boston, Massachusetts; Salem, Oregon; Denver, Colorado; Miami, Florida; and Vancouver, BC.

Leadership

Clear Ballot's leadership team comprises seasoned software entrepreneurs and elections technology innovators who approach product development from a perspective that is unique within the election industry. All Clear Ballot solutions are designed and built with the recognition that technology changes quickly, and our obligation to our customers is to prepare them for those changes. Our collective experience in building highly secure, broadly distributed, and expertly supported software, positions Clear Ballot as the leader in voting systems innovation.

Larry Moore has been CEO of four companies and was senior vice president of Lotus Development and the driving force behind the launch of Lotus Notes. He has founded two companies as well as managed an organization of over 300 professionals. Larry's vision for the visualization of voter intent is the foundation for Clear Ballot products and his strategic approach to realizing that vision has been instrumental in the development of Clear Ballot's technology and its team.

Tim Halvorsen's expertise in the design and development of secure, broadly distributed software applications is again evident in the innovation that distinguishes Clear Ballot tabulation and visualization software. Tim's leadership in bringing ground-breaking technology from concept to completion was established as a co-founder of Iris Associates, the company that developed the groupware application that became Lotus Notes. While at Lotus Development, Tim's team included more than 500 engineers.

Few people in the election industry have absorbed its complexities as deeply as Tab Iredale. Tab is an industry leader in state-of-the-art programming of electronic voting systems. As chief voting systems architect at Clear Ballot, Tab has applied his extensive knowledge of election processes and election security to a revolutionary election management system. Tab's contributions to the industry began at Global Election Systems, and he led product development teams at Diebold Election Systems, Premier Election Solutions, and Electronic Systems & Software.

Clear Ballot has built a talented team of election industry experts, product managers, senior software engineers, and election support professionals who understand the challenges that election jurisdictions face and are committed to bringing about positive change. This team is building the tools that allowing jurisdictions to run elections at a lower cost, with greater transparency, and much faster than ever before.

Election challenges

Clear Ballot built its technology with the guidance and insight of many respected and experienced election professionals. A consistent theme in early discussions was the lack of transparency and control election officials had over the process of vote tabulation. Additionally, the extraordinary cost to maintain, support, and upgrade electronic voting machines and the inability to budget accurately for those costs seemed to be a consistent point of frustration. In many cases, election officials would be required to make massive hardware investment for minor software upgrades or vice versa.

Another theme was the inability to control ballots effectively using their current workflow. Even the most meticulous election departments misplace ballots occasionally. Enormous manual effort is required to sort ballots, check totals, perform a recounts, or conduct an audits.

Election officials have expressed a strong desire for better tools to help them conduct elections with greater independence and the ability to find and remediate problems before they escalate. They also want tools to help them show their stakeholders the steps they take to ensure the integrity and transparency of their election. It is these things that have guided Clear Ballot's evolution.

Clear Ballot benefit

Reduce ballot handling

Clear Ballot innovation reduces the source of delay and error: paper handling. When a recount or an audit is required, Absentee and Early Voting ballots must be sorted and counted manually. With the Clear Ballot solution, ballots are handled once--when they are scanned. The high-resolution ballot images are tabulated, adjudicated, and stored in the election library. The paper can be sent to the warehouse.

Report accurate results quickly

The Clear Ballot solution ensures consistent and accurate results. Fujitsu scanners can process ballots much faster than legacy voting systems do. The high-resolution ballot images are stored securely and the vote ovals from each contest are linked to a variety of reports. Officials can examine preliminary results, visually verify and adjudicate unreadable ballots, and generate contest reports digitally—a much faster and more efficient process.

Resolve close elections

The power of visual verification is revealed when election results are close. Each voter-marked oval in the contest report is linked to its corresponding ballot. All overvotes, undervotes, and marginal marks can be reviewed by the election officials or canvassing board. Each voter marked oval becomes a digital link to its corresponding ballot, providing instant verification without additional ballot handling. The results can also be reviewed with all election stakeholders, giving candidates and their supporters convincing evidence of the likely outcome of a careful manual recount, and allowing jurisdictions to avoid incurring the unbudgeted costs of a lengthy recount.

Handle ballot inventory and tracking

Keeping track of the ballots themselves is crucial. The tracking information for each ballot allows any election official to identify the scanner used, the operator who scanned that ballot, the precinct the voter is registered in, the ballot style, and the ballot's physical storage location—the box itself and the position within the box.

Spend public funds wisely

The Clear Ballot solution integrates a browser-based user interface with commercial-off-the-shelf hardware and components deliver a scalable, cost-effective infrastructure for conducting and auditing elections. Election department staff do not need retraining on idiosyncratic features of legacy systems. The central scanners, which are available in different sizes, can be networked to process ballots for elections large and small.

Maintain trust in the election process

The volume of data available and the speed and ease of access to it supports prompt, constructive engagement with all election stakeholders, giving election officials the opportunity to build trust through transparency, particularly when elections are close.

Summary Statements of Proposed Voting System

1.1 Clear Ballot contact information

Clear Ballot Group, Inc.	Contact
Clear Ballot Group, Inc. 7 Water Street, Suite 700 Boston, Massachusetts 02109 (857) 250 4961	Jordan Esten, Director of Business Development jordan.esten@clearballot.com (920)915.0602

1.2 Product summary

ClearVote

*A modern,
browser-based voting system*

ClearDesign

*Ballot design, proofing,
layout, production &
programming*

ClearAccess

*Anywhere Ballot,
accessible, in-person
ballot marking system*

ClearCount

*Tabulation, reporting and
the visualization of voter
intent*

Clear Ballot would propose the use of its ClearVote voting system, the first U.S. voting system developed from the ground up in over a decade. ClearVote includes the ClearDesign ballot layout software, ClearAccess accessible voting system, ClearCount central count scanner, ClearCount P1000 precinct system, and ClearCount results and reporting software.

Fujitsu America, based in Sunnyvale, CA, is our ClearCount central count scanning partner, offering models to fit jurisdictions of all sizes. For San Francisco, we would suggest the Fujitsu fi-6800 scanners, the highest speed in their offering. Scanning speeds for different ballot lengths are provided later in this document, but each scanner can be networked into the system to scale to San Francisco's needs, and additional scanners can be leased for a large elections. The fi-6800 scanners are around $19,000/each and Clear Ballot suggests San Francisco have around eight, however will work with the city to find the optimal number. It's important to note that our scanning numbers are not burst speed, they occur on a per-hour basis taking into account real election conditions, prep, breaks, etc. The lack of physical oustacking allows significantly higher real scanning rates than competitors, and the ability to scale to the size of the election provides long term cost savings.

ClearAccess accessible voting system provides counties a modern system, heavily field testing with the accessible community before it was launched. ClearAccess outputs a marked paper ballot, similar to all other ballots in the election, which can be scanned on ClearCount central or the ClearCount precinct system. Each ClearAccess unit is currently priced at $5,000 per unit. The county could choose to put one ClearAccess unit in each polling place, and use a ballot box to tabulate the ballots centrally. Or each ballot can be tabulated on a ClearCount P1000 precinct machine, which would also be at each polling place. This decision is up to the county, and provides a window into the flexibility of ClearVote.

The ClearCount P1000 precinct system, provides modern commercial components, in rugged sheet-metal housing. This provides a much longer life than other systems, with the ability to upgrade components within the unit, without having to replace the entire piece of equipment. The P1000 scans and provides the voter feedback on overvotes in under three seconds, a dramatic reduction compared to competitors. The P1000 is also a much smaller footprint, saving the county on storage and delivery costs. The P1000 currently costs around $5,500 per unit. San Francisco could have one unit in each polling place, or use the ClearAccess units in its place.

Clear Ballot uses a perpetual license and does not charge for the number of seats or workstations a jurisdiction may purchase. There are annual support and maintenance fees to allow for upgrades and bug fixes. Additionally Clear Ballot has a strong partnership with Fujitsu, to provide annual maintenance and routine servicing ahead of the elections. This service is available in addition to the system support Clear Ballot provides.

1.3　Election-related services

Technical support

Clear Ballot technical support is available online and by telephone and email from our support staff. Our dedicated support page, Clear Ballot.desk.com, is available 24/7 and includes information from the product documentation and instructional videos. Our help desk provides telephone support during hours specified in its service level agreement, and by email.

Real-time support is available for ClearDesign. The identical user interface that runs on the jurisdictions private network also runs on the Internet on Clear Ballot's servers. To obtain real-time support, the Election Department staff simply makes a backup of its ClearDesign database and restores it to their private account on Clear Ballot's copy of ClearDesign on the Internet. Then a screen sharing session is initiated between Clear Ballots Election Services Group and a computer at the jurisdiction that is attached to the Internet. In that way, Clear Ballot's staff can diagnose an issue while seeing exactly what the staff sees on their private network. Recommended changes can be entered by Clear Ballot on the Internet version and also entered on the private version preserving security.

The help desk is staffed with three levels of support staff, ranging from basic support to the senior software engineers of the company. Throughout Election Day, the help desk is staffed 24/7 and response time is less than one hour. Problem reports are escalated depending on the needs of the customer. Our chief technology officer oversees all Level 3 reports. Response times depend on the needs of the customer.

Training

Clear Ballot also offers on-site training classes as part of its implementation program. Many of these courses include train-the-trainer modules. Training videos for the ballot tabulation process are also available through ClearBallot.Desk.com.

Clear Ballot has a strong on-site support and training team in place. List prices for Tier One on-site support are $2,400 for a two-day minimum, and $1,000 for each additional day. Tier Two support is available at $4,200 for a two-day minimum, and $1,600 for each additional day. Clear Ballot on-site training is $2,000 for a two-day minimum and $1,000 for each additional day. However, Clear Ballot has also built a system based on more intuitive software and commercial hardware, which requires less support and training than the current systems. In previous installations, counties expected to have to require the same amounts of training and support as their current systems, however found that they spent over 50% less time during both the installation and elections process on services. This saved the counties significant costs. Clear Ballot also has a strong web support and phone support infrastructure that can solve issues in a much more timely fashion, plus a huge library of training videos to help all employees using the system.

1.4   Approaches to implementation

The scalable configuration of the ClearVote system allows the City greater flexibility in designing and rolling out a system that suits its needs and objectives. It can be done in one big bang or rolled out in two or three phases. A big bang improves election operations immediately. A phased deployment introduces these improvements gradually and allows the county to spread the purchase of equipment and software over more than one budget cycle.

A two-phase roll-out could introduce ClearDesign and ClearCount Central Scan solution for all ballots cast outside a polling place (mailed in or voting centers) in Phase 1. In Phase 2, the ClearAccess ballot-marking system and ClearCount Precinct Scan could be deployed at the precinct level.

1.5   Product design and architecture

The design of the ClearVote voting system is based on a modular architecture that allows jurisdictions to add components to the system and replace equipment without disrupting operations.

Visual verification

The ClearVote system offers the unique ability to identify voter intent regardless of how it is expressed. This system captures ovals marked with red pens or highlighters or outside of the oval entirely. When ballots are scanned, the system creates high-resolution, grayscale PDF files, one for each side of the ballot. For each ballot image file, ClearVote includes information such as the scanner used, the time the ballot was scanned, the precinct the voter is registered in, the ballot style, the ballot's location in the storage box, and other information.

Voters' marks are identified and ranked according to the confidence level calculated by our innovative algorithm. When all marks are sorted for reporting, the marks that appear to be least likely to be a vote are grouped together and moved to the forefront, which allows officials to identify and review marginal votes quickly.

In all contest reports, each mark is linked to the ballot it came from. All election stakeholders can see how the vote totals for every candidate were computed. Election officials can override the software adjudication to accurately reflect the voter's intent digitally rather than by duplicating and scanning a physical ballot. The adjudication decision creates an audit log of all human resolutions.

COTS hardware

Commercial, off-the-shelf (COTS) scanning and computing hardware is developed for a much larger market than the election industry. Clear Ballot has partnered with Fujitsu to offer a range of robust, reliable optical scanners at different price points and access to a nationwide service network. Jurisdictions can select the hardware sized to their needs instead of being stuck with the one—and only—size that other election vendors offer.

Scalable configuration

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 needs. A county to 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.

Clear Ballot tests new models and takes those that meet performance requirements through state certification. This allows jurisdictions to upgrade scanners as their needs change and to budget accurately for that. The used equipment can be sold on the secondary market to recoup some of the cost or transitioned to other county departments.

1.5.1 ClearVote product family

Clear Ballot brings an innovative solution to every phase of the election. Built on a browser-based architecture to ensure the highest levels of usability and security, our Election Management System (ClearDesign) provides a more intuitive ballot layout process than anything on the market today.Our in-person ballot marking system (ClearAccess) is designed to ensure access for all voters by leveraging the best practices developed by the disability community. Our tabulation system (ClearCount) uses commercial of the shelf (COTS) hardware components, providing higher resolution images, faster scanning, and a scalable solution for every jurisdiction, large or small.

The core of the ClearVote solution is our vote visualization technology which allows election officials to have greater transparency and control over elections. Our election reporting tools are dynamic, allowing election officials more functionally in sorting and reviewing results and providing maximum transparency.

Clear Ballot develops all its products to be as flexible as possible while maintaining the highest levels of security and control. Our modern technology architecture provide an extendibility to work with other standards based systems. This provides significant security advantages and allows for complete auditability of all data coming in and out of our products. The illustration below details the traditional Election Management workflow and how Clear Ballot's products interface with other systems.

ClearVote

A modern,
browser-based voting system

ClearDesign

Ballot design, proofing,
layout, production &
programming

ClearAccess

Anywhere Ballot,
accessible, in-person
ballot marking system

ClearCount

Tabulation, reporting and
the visualization of voter
intent

ClearDesign election management system

ClearDesign is an election management system like no other in the industry. Its modern software architecture is built around role-based security and its browser-based interface is designed for ease of use. ClearDesign delivers the security and flexibility that election officials have long wanted in the ballot layout process.

Secure. ClearDesign gives officials greater control when they create elections. Election data is stored on a secure server, which prevents unauthorized access. By managing role-based permissions and access to election definition functionality, ClearDesign software prevents accidental overwrites and premature release of any part of a ballot set.

Intuitive. ClearDesign has a browser-based user interface that is easy to use. Election department staff can quickly generate, modify, and proof all their ballot styles instead of spending time re-learning stale EMS technology for each election.

Flexible. With ClearDesign software, election officials can create ballots for a wide range of card sizes. They can review and modify each ballot individually using drag & drop capabilities, lock in changes, and generate the revised version immediately.

ClearDesign Features	
Workflow	ClearDesign is designed for a smooth workflow
	Whether starting from scratch or importing data, ClearDesign makes the ballot creation process easy
Data Imports	Imported data links to ClearDesign fields making imports simple and easy
Proofing & Reporting	Numerous reporting options allow proofing before laying out ballots
	Reports are available in several formats providing many options for error prevention
Ballot Design & Layout	Design and layout options are in a hierarchy structure allowing changes to be made in several locations
	Drag and drop capabilities provide an interactive, visual display for ballot design
	• Card size adjustments can be made quickly and easily with the ability to save any changes

ClearAccess ballot-marking system

ClearAccess is an in-person ballot-marking system designed to ensure access for all voters. Operating on unmodified off-the-shelf touchscreen computers, ClearAccess software records voters' choices and prints machine-readable ballots that can be scanned and tabulated within the same processing stream as voter-marked ballots.

Accessible. ClearAccess has been developed with input from the disabled voting community to deliver a solution that supports both independence and privacy and ensures that all votes are counted fairly and accurately. ClearAccess software resides on a memory stick produced by ClearDesign and copied onto the ClearAccess ballot-marking device prior to the opening of polls.

Proven. ClearAccess is built on research and prototypes developed for the "Anywhere Ballot", a project funded by a United States, Election Assistance Commission grant to design accessible voting technology that can be integrated into any voting system. The design of this digital ballot integrates a well-tested voting method into the ClearVote election system.

Cost-Effective. ClearAccess responds directly to the budgetary constraints of election jurisdictions that, in turn, must accommodate an aging voting population. By avoiding proprietary systems that require a parallel process, ClearAccess provides a cost-effective solution for all jurisdictions.

ClearAccess features	
Easy & inexpensive	ClearAccess runs on a low-cost, accessible, touchscreen computer
Low-Cost Ballot Printing	Ballots are printed on standard ballot stock on a low-cost laser printer
Experience	Numerous reporting options allow proofing before laying out ballots
	Reports are available in several formats providing many options for error prevention
No Ballot Duplication or Handling	Verified ballots are ready to scan, no special handling or duplication
No sorting	Ballots of different length run therhough the same scanner without reprogramming.

ClearCount tabulation and reporting system

ClearCount is the nation's first browser-based tabulation system. Integrated with COTS scanners, ClearCount can tabulate ballots created by all major voting systems. Its high-speed scanning capabilities and easy-to-learn visual software, is an economical solution for all counties. It offers a central count and precinct count solution.

Scalable. One size does not fit all. High-speed, commercial scanners allow optimal throughput for every county, providing small, mid-sized, and large counties a solution customized to their needs and budgets. The ability to increase capacity by networking its scanners, means no jurisdiction has to buy more than it needs.

Visual. ClearCount tabulates and stores a high-resolution ballot image, then uses its ballot inventory system to digitally sort and catalog all scanned ballots. The visual reporting tools generate sortable contest, batch, and precinct reports, creating a visual connection to each ballot and how it was adjudicated. Overvotes, undervotes, write-ins and marginal voter marks are all immediately available for review and adjudication by the supervisor or canvassing board.

Innovative. The modular software architecture supports both old and new technology, preserving past investments while improving tabulation and reporting capabilities. Counties can transition from a legacy voting system without disrupting what is working.

ClearCount Reporting	
Election Data	Election data reports include information about the election, including the number of contests, candidates, parties, precincts, and ballot styles, along with details on the card size, scanners used, and boxes scanned.
Results	The Statement of Votes Cast (SOVC) report delivers a new standard of election transparency, allowing election officials to digitally review and sort all results in an election. Each number in this next generation SOVC is a link, providing the ability to drill down to the next level of visualization.
Vote Visualization	The Vote Visualization report displays all ovals in an election. Officials can quickly review digitally sorted overvotes, undervotes, write-ins, and marginal marks, decreasing canvassing time and avoiding the need for recounts. Each oval then instantly links to its corresponding high-resolution ballot image.
Ballot Images	Ballot images allow election officials to better determine voter intent, and also confirm the adjudication and provenance of each ballot. The provenance is everything that is known about a ballot including its box location, scan date and time, ballot style, and precinct.

ClearCount P1000 ballot scanner and tabulator

Clear Ballot is in the final development stages of its in-person, optical scan precinct voting unit, the ClearCount P1000. The P1000 meets the hardware standard of VVSG 1.1 and is built with commercially available hardware components in a rugged, sheet metal housing. The first-generation prototype scans and tabulates an 18-inch, two-sided ballot in 2.7 seconds.

This speed can make a difference at a precinct or voting center. When a ballot is blank, overvoted, or unreadable, the P1000 returns the ballot to the voter quickly, and indicates why it was returned. The P1000 can also tabulate voter-marked ballots printed by the ClearAccess system.

The quality of the ballot image is unique to this precinct system. White-light scanning detects and processes the marks that red-light scanning misses; all marks are preserved in an 8-bit grayscale, 200 dpi ballot image. Images are stored on removable devices that a jurisdiction can export to a central system for adjudication and certification.

The P1000 will be the first optical scan tabulator built using Intel's Next Unit of Computing (NUC®)—a high-performance computing platform in a tiny, 4-inch square package. The NUC will enable Clear Ballot to deliver performance (18-inch, 2-sided ballot tabulation in 2.7 seconds) and advanced, out-of-the box functionality with the ability to continue innovation over its 20+ year lifecycle.

The P1000 will be the most compact precinct system available. The scanning unit weighs 28 pounds, and the detachable ballot box is collapsible. Storage and transport costs for this system will be significantly lower than for its competitors.

Production of the second prototype is underway. The system will be ready for volume manufacturing in March 2016.

1.6 Recommended operating environment

The ClearVote system requires less physical space than competitor systems. The configuration below was developed for Multnomah County, Oregon. The design show below is a new layout for their central scan operation.
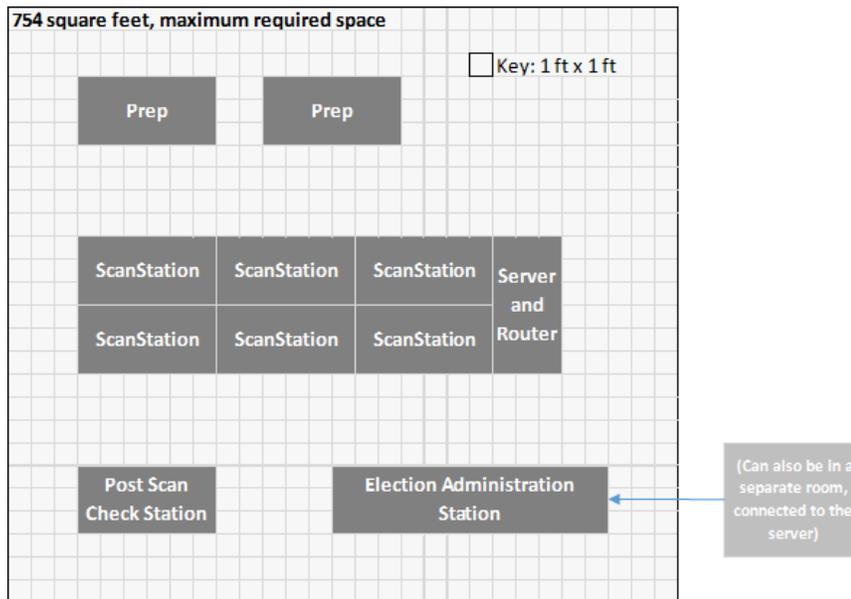
The configuration for Broward County, Florida offered enough to double the throughput with only one-third more space.
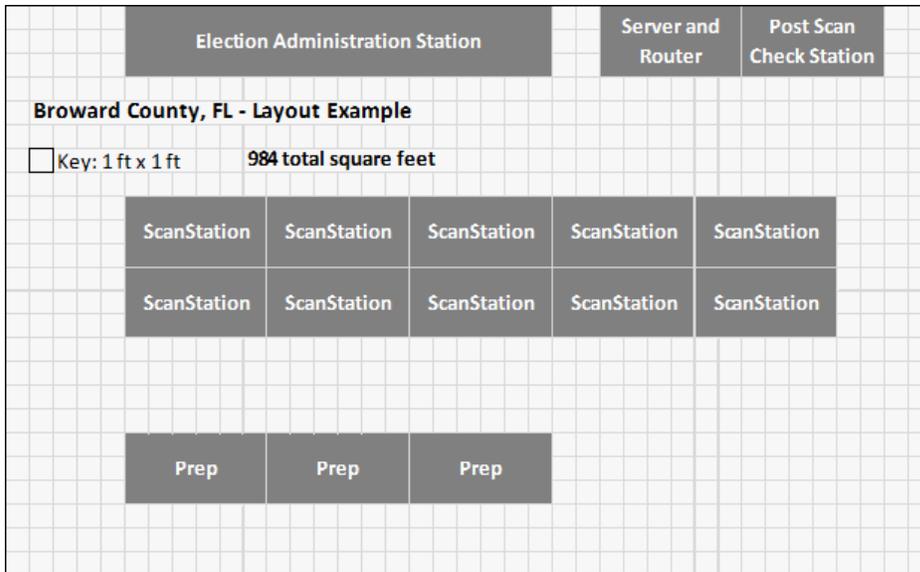
Each ScanStation requires 350 watts to power for the scanner and laptop. The Election Administration Station requires 580 watts to power the server, router, and laptops.

ClearVote has many options for disaster recovery. The election itself or any batch of ballots can be rescanned, also data can be saved to a backup drive as well as the server.

1.7   Product evolution

The management and engineers at Clear Ballot bring a depth and breadth of experience that enable the company to execute on a powerful vision for elections in America that is centered on two principles: transparency and efficiency.

The decisions we have made throughout the process of developing our election systems are centered on the assumption that technology is always changing. We have learned that election law changes more slowly.

We have designed our products to accommodate that change, we made a number of deliberate, strategic choices that allowed us to achieve our product vision rapidly and cost effectively.

- We adopted a browser-based software architecture, which enables us to use industry-standard computing tools such as web browsers, modern user interface tools, and modern programming languages. This decision eliminates the need to develop, test, and certify hundreds of thousands of lines of third-party code.

- We adopted COTS scanning and computing hardware, making a range of thoroughly tested and reliable central count scanners that address the budgetary and performance needs of every jurisdiction in America available for purchase immediately with an extensive service network in place.

- We developed an accessible ballot-marking system in less than 18 months, building on the excellent research and prototypes done for the Anywhere Ballot.

- We designed our precinct scan system with commercially available componets that can be replaced easily as necessary.

We will to continue our product development in this manner, staying current with VVSG standards, election law, and technology.

We are a new company. We are also the first company to bring technology innovation to the industry in a generation. We listened to what respected election officials told us about what they needed to serve the public with greater efficiency and transparency, and we built the tools to do it. The value we have provided in just 5 years is being recognized in jurisdictions across the country. We are excited about what we'll have for the City and the country 5 or 10 years from now.

1.8 Customer references

Tim Scott

Director of Elections
1040 SE Morrison
Portland, OR 97214
(503) 988-3720
elections@multco.us

Multnomah County is the largest county in Oregon and contains much of the City of Portland. it has 441,161 registered voters. In July 2015, the county replaced ES&S 650 systems with ClearCount and ClearDesign.

Edward R. Solomon

Director, Election Planning & Development Department
Broward County Supervisor of Elections Office

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esolomon@browardsoe.org

Broward County, Florida has 1,067,083 registered voters. For the 2014 general election, the county audited ES&S iVotronic, D200, and 650 systems with ClearAudit

Voting System Criteria

2.1   System functionality

A. Approval by Secretary of State

Clear Ballot plans to enter California certification in early 2016, and has the best product and team in place to work through the state's certification effort in a timely manner.

Clear Ballot's certification team is led by Ed Smith, formerly the director of certification at Dominion. ClearVote software is designed by an engineering team that understands elections and the demands of widely distributed applications.

Tim Halvorsen, the chief information officer for Clear Ballot, led the engineering team that developed and supported Lotus Notes.

Tab Iredale, our chief software architect, has developed election management systems for the major vendors and brings deep knowledge of the certification process to his design and development work.

The depth and the breadth of this team accounts for the innovation we have brought to the market in just 5 years and the speed with which we are moving through certification in many jurisdictions.

B. Use of paper ballots

The ClearVote voting system is designed to tabulate and adjudicate paper ballots. Our accessible ballot-marking system, ClearAccess, uses a touchscreen to produce a ballot that is printed and can be tabulated by either the ClearCount Central Scan and ClearCount Precinct Scan systems.

C. Use of open source software

Clear Ballot is built with modern software tools, allowing the integration of many open source pieces of software in its voting system. The main programming language is Python and many of the web utilities come from open source software.

D. Restrictions of software license

Clear Ballot has designed a very flexible system. Our ClearDesign ballot layout system allows a third party to create ballots for the City from the election and candidate data that is imported into its database. Our ClearCount tabulation system creates the files that would support an external audit and also assist the county in avoiding a recount.

We recognize that the public is not best served when voting systems can be put in use only with the services of a small group of technology experts.

E. Ranked choice voting and ballot design

Clear Ballot is familiar with the issues involved to implement preference voting. We feel strongly that to advance the benefits of preference voting and to earn the public's trust, it is critical that there be a simple, coherent design that spans ballot design, tabulation, reporting, and independent auditing. Such a system must provide the functions listed below.

Ballot design

- Usable: Ballots should be "voter friendly" regardless of their rendering.
  - Paper ballots with preference contests should not require a separate card
  - Accessible Anywhere Ballot (touchscreen) must support preference contest layout
  - To serve remote voters, Anywhere Ballot can be encapsulated in a single HTML file per ballot style
- Machine readable: All ballots must be immediately tabulated without duplication
- Transparent: Ballot definition files (BDFs) should be rendered in readable text

Tabulation

- Voting Methods: In-person, vote by mail, accessible, remote
- Performance
  - Non-preference contests results are instantaneous.
  - Preference contests in under 3 minutes,
- Transparency: Visualization of voter intent

Reporting

- Consistent: Reporting for "preference contests" consistent with plurality contests
- Transparent: Interactive display of vote transfer and intermediate results

Independent auditing

- Artifacts: Single ballot cast vote record, ballot inventory report, detailed results file in machine readable (CSV and XML) formats, detailed, non-editable, election audit logs
- Transparency: All election definition files are rendered in plain, well-documented text files

As experienced engineers and marketers of large-scale, widely deployed and highly secure systems, we believe that the best way to add the support for preference voting to ClearVote is to work closely with a large, forward-thinking jurisdiction to meet their needs as well as an organizations like Fair Vote (Fairvote.org) to ensure that there is sufficient generality to appeal to the broadest possible market.

F. Multiple language ballots

Clear Ballot systems can tabulate ballots in Spanish, Haitian Creole, Korean, and Chinese. Full support for these and other languages in the ClearDesign ballot layout system will be in place in 2016.

G. Equipment per precinct

The ClearVote system offers the City several options for equipment.

- ClearAccess in every precinct or polling place. The paper ballots it generates can be tabulated with the ClearCount Central Scan or Precinct Scan systems.

- ClearAccess and ClearCount Precinct Scan in every precinct and ClearCount Central Scan in the location that handles mail-in and early voting ballots.

H. Scanner speed

Clear Ballot has analyzed results from previous elections to establish the sustained speed of the Fujitsu fi-6800 scanner in an election environment. The data available from ClearCount reports also reveals the time spent feeding the scanner, taking breaks, and other stoppages.

The table below presents the average number of folded and flat ballots that the Fujitsu fi-6800 can scan per hour, by size of card. These numbers reflect the expected speed with experienced operators. The scanners may achieve greater speeds, but Clear Ballot advises jurisdictions not to assume scanning rates that are significantly higher than the numbers provided here.

8.5 x 5	7,872	7,085
8.5 x 11 (landscape)	5,508	4,957
8.5 x 11 (portrait)	4,716	4,244
8.5 x 14	4,144	3,730
8.5 x 17	3,352	3,016
8.5 x 21	2,640	2,376

I. Ballot images

Leon County, Florida uses ClearAudit for its election audits. Clear Ballot is currently supporting the county in posting digital images of all election ballots online, which voters can review with read-only security privileges to Clear Ballot Software.

http://www.clearballot.com/leon

The physical ballot is linked to the ballot image through the tracking information associated with each ballot. For example, a ballot labeled ED-04-10334 was cast on Election Day, stored in Box 4, and is Image 334.

J. Security standards

The security design for the ClearCount Precinct Scan system meets the VVSG 1.1 standard. The security for the ClearCount Central Scan system meets the VVSG 1.0 standard is projected to meet VVSG 1.1 in late 2016.

K. Importing candidate information from current system

The ClearDesign election management system accepts data and candidate information from most election management systems when it is imported in CSV or XML format.

When this data is in the ClearDesign environment, ballot design has never been easier. Ballot content can be proofed thoroughly and corrected quickly. Drag-and-drop adjustments can avoid possible confusion for voters. Vote targets can be adjusted to avoid the fold line for mail-in ballots.

Ballot styles can be generated from this content in the formats that election stakeholders--PDF files for the printer, HTML files for the ClearAccess ballot-marking system, and ballot definition files to program ClearCount tabulation.

L. Auxiliary battery power

The ClearCount Precinct Scan system and the ClearAccess ballot-marking system have auxiliary batteries that support 2 hours of continuous use.

M. Moving parts and maintenance costs

The moving parts in the ClearCount tabulation systems are limited. No mechanism for outstacking ballots is required because damaged ballots and ballots with overvotes and write-ins are scanned and adjudicated digitally from the ballot image.

Our ClearCount Central Scan system supports three models of Fujitsu scanners. Fujitsu is an international corporation with an extensive network to provide parts Fujitsu's U.S. headquarters are in Sunnyvale, California.

Our precinct scan system protects commercially available parts inside a custom sheet-metal housing.

N. Documentation

All ClearVote products have documentation written for the different audiences that will install, configure, administer, design, test, and use those products. The ClearAccess documentation includes information for poll workers and voters.

ClearDesign	ClearCount	ClearAccess	ClearAudit
Installation	Preparation and Installation guide	Installation Guide	Preparation and Installation Guide

ClearDesign	ClearCount	ClearAccess	ClearAudit
Ballot Design Guide	Election Administrator's Guide	Administrator's Guide	Election Administrator's Guide
Administrator's Guide	Reporting Guide	User's Guide	User's Guide
		Poll Worker's Guide	
		Voter's Guide	

This documentation is also updated regularly on our online support portal at clearballot.desk.com.

O. Auditing during tabulation

At any point during tabulation, an official can examine how the ClearCount system tabulated a ballot. The Box Report gathers the links to the ballot images associated with each box and how each was mark on it was interpreted. Should a box of scanned ballots present a problem of some sort, the ballot images associated with the box can be removed from the election library and the ballots in the box can be rescanned.

P. Reports and data to support auditing

ClearCount can generate all the data required to support an independent election audit. These reports can be extracted from the ScanServer database in machine-readable formats (CSV or XML).

Report	Description
Ballot Inventory Report	A CSV report that Includes details about the ballot storage box and its contents—the physical location of every ballot scanned; the provenance of the box, including Box ID; number of ballots in the box; number of unreadable ballots; Scan Station ID; scanner model, scanner serial number, operator, start/stop time, scanning performance, and number of precincts in the box.
Detailed Results	An XML file that closely follows the IEEE 1602 draft specification for election results reporting. This file contains results reporting at the finest level of disaggregation.
Statement of Votes Cast	A CSV file that for every contest, shows the number of cards cast and for each candidate or choice the votes, over votes and under votes.
Statement of Ballots Cast with Precincts	A CSV file that shows the number of cards cast in each precinct (across all splits)
Precinct and Style Report	A CSV file that shows the number of cards cast in each split precinct.

Report	Description
Single Ballot Cast Vote Record	A zip file that contains the files necessary to perform an independent risk-limiting audit of ClearCount tabulation results.
	CVR.CSV—Comma-separated variable (CSV) file suitable for import into Excel. The report contains one row for every ballot cast; columns include the unique BallotID (which links back to the ballot image), PrecinctID, BallotStyleID, BallotStatus, RemadeStatus and a column for each candidate /choice. The cells for each candidate contain a 1 for a vote, 0 when not a vote, or a blank if the contest does not appear on this ballot.
	CONTESTS.CSV—Contains the ContestID, the ContestName, and VoteRule.
	CHOICES.CSV—ChoiceID, ContestID, ChoiceName
	PRECINCTS.CSV – PrecinctID, BallotStyleID and PrecinctName
	PARTIES.CSV—PartyID, PartyName
Election Activity Log	A CSV file for an election that shows, by user and timestamp, every action taken or report run.
Web Activity Log	A CSV file for the system that shows all non-election specific activity. This report is useful to detect failed log-in attempts.

Q. Event logging

All actions that create or modify election records are password protected and logged throughout the election cycle and in all ClearVote system components. Access control ensures that a variety of different roles can be assigned to restrict access to sensitive functions to authorized individuals easily. Clear Ballot directs jurisdictions to restrict access to the server itself; the ClearVote system logs every attempt to access the server so that unauthorized attempts at access can be easily identified.

All actions that access election data, create or modify election records are password protected and logged in unmodifiable audit logs. The role-based access control system ensures that a variety of different roles can be assigned to restrict access to sensitive functions to authorized individuals.

ClearVote produces two types of usage logs: the System Log records every non-election specific server event (e.g. attempts to log into the server) and the Election Log which records the username and timestamp of every modification of the election database and every report run. Audit artifacts are machine-readable reports that can be generated by ClearVote which can be used by an independent audit system or set of procedures to audit the performance of Clear-Vote.

Examples of audit artifacts include a single-ballot cast vote record that shows the adjudication of every vote on every ballot; an XML results file that contains election results at the finest level of disaggregation; a ballot inventory report that records the physical location of every ballot; a "human adjudication" report that shows every ballot that was adjudicated manually; and a visualization of software adjudication as an overlay to every voter-marked ballot.

R. Support for risk-limiting auditing

Clear Ballot has built risk-limiting audit functionality into the ClearVote system. Through our ClearCount reporting software, we generate a single cast vote record. We are then able to locate the exact ballot to review, through our ballot inventory system. Officials are able to see the digital image of the ballot in seconds, and then can use the batch and ballot naming convention to locate the physical location of the ballots. The election officials can either physically count to locate the ballot, or to speed up the process, they can put the ballots on the scanner and type in the associated ballot inventory number. The high speed commercial scanners will begin counting pages (no scanning, tabulating, or images are processed) until it stops on the desired ballot. This allows election officials to review the physical ballot.

S. Review of voted ballots

In just a short time, Clear Ballot has become the industry leader in election transparency. All ballots tabulated on the central count and precinct scanners, produce a high quality, two-sided digital image of the ballot, and then are cataloged through our ballot inventory system. Clear Ballot does not outstack damaged ballots (tears, coffee stains, etc.), which are common to absentee ballots. All ballots are scanned. Any ballots having overwhelming damage or cut off timing marks, are still scanned, and can be digitally adjudicated on-screen by credentialed election officials.

However, in live election testing Clear Ballot was able to tabulate 90% of the ballots that competitors required remaking. This entire process is logged, and it is very transparent which teams of officials digitally adjudicated which ballots. This process can occur whenever the election officials have time, it does not need to happen before starting to scan the next batch. Additionally, all ballots in the batch that successfully tabulated are included in the result totals immediately, they don't require the damaged ballots from their batch be adjudicated. Clear Ballot's focus on digital images, instead of outstacking, saves significant time for the scanning operators, increasing scanning speeds across the election. It also allows for better ballot processes, which can be managed in a central digital location.

Clear Ballot's oval visualization software, allows election officials to immediately see all overvotes, undervotes, write-ins, and marginal marks. They can review these marks by contest, candidate, precinct, etc. Any issues can be resolved on the election administration screen, immediately or at the election official's convenience. It again does not affect the work of the scanner operator, improving the speed of scanning. The P1000 precinct system, does return the ballot to the voter, if it is overvoted or undervoted, providing the voter the chance to review their ballot or simply vote it. This scan and review occurs in less than three seconds, shortening the time per voter dramatically over current systems.

Leon County, FL has posted their entire election in read only format on the Clear Ballot website. The public can see all results, images, and track the adjudications made by election officials. In Leon's case, the public is provided a password by contacting the elections office, however that need not be the case for all counties. To see the Leon site below, please contact Clear Ballot and we can provide a password.

ClearBallot.com/Leon

(Also see the Usability and Transparency section for more detailed pictures and explanations of Clear Ballot's digital adjudication and oval visualization software).

T. Real-time results reporting

Clear Ballot results are available the moment each ballot is scanned (if before the polls close, only ballot totals are available). Given Clear Ballot's use of modern software, we have been able to reduce the ballot processing time dramatically. All central count scanners are networked together, but operate independently allowing the county to dramatically scale the number of central count scanners to best fit its needs. Results in the ClearCount software are available with each scanned ballot, even before the batch is complete the results can be updated. Reports in the Clear Ballot system are available in seconds, using dramatically improved processing capabilities over the current market standards. Clear Ballot is adamantly again manual processes, and has built a software architecture to provide election officials with more efficient methods of getting accurate results to voters.

U. Transport of equipment

The storage footprint for the ClearCount Central Scan system hardware is much smaller than that of other voting systems. Each scanner and its accompanying laptop can be safely stored in a 2'x3' box, and two boxes can be stacked.

Our precinct system, the ClearCount P1000, was designed with ease of use, storage, and transportation in mind.

The P1000 unit is compact and light, weighing in at a mere 28 pounds. Two poll workers can lift the machine into or out of a vehicle, giving the City more options for delivery and collection of equipment from polling places. The ballot box is a secure, collapsible unit that provides for ease of delivery to the polling place. Even more important, it stores flat in your election warehouse, taking up significantly less storage space than other voting systems.

The components of the ClearAccess system are also packed in wheeled boxes, which contain a monitor, a laptop, a printer, and one of each input device--headphones, sip-and-puff, paddle switch, and EZ Access keypad.

This compact size also gives the City more options in how its Election Day support rovers operate, how much emergency equipment they can keep on a vehicle, and how many polling places one rover can support.

V. Logic and accuracy testing

During L&A prep, Clear Ballot provides the opportunity for election officials to create pre-marked test decks. Multiple unique voting patterns can be set and marginal marks can be used if desired. In the L&A test, officials can scan ballots and see the vote totals and ovals on the screen instantly. For central count scanning this occurs through the election administration computer, and on the precinct machines, an election administration log-in allows the results and ovals to be viewed directly from each precinct machine. This process provides faster and more transparent L&A tests for the election officials and the public.

W. Compatibility with current system

Clear Ballot scanners and software are able to tabulate ballots from the election management systems of all major voting system companies (Hart, ES&S, Dominion). However, our ClearDesign ballot design and layout software sets a new standard in the industry, and is the suggested software to for creating ballots. ClearDesign is a secure, intuitive, and flexible ballot layout system, built with modern software architecture, with role-based security and its browser-based interface. ClearDesign delivers a software product that election officials have long wanted in the ballot layout process.

X. Automated reporting of pre-election testing

Clear Ballot is very much against manual processes, so it is designed to allow the ease of use of the entire reporting system at all times. ClearDesign includes a significant reporting section during the ballot layout process, ClearCount reports are vital during the L&A test and to review ballot style and precinct information before the election. All of this information can be reviewed in real-time by the election officials and exported as needed.

2.2   Usability and transparency

A. Accessibility to all voters

The ClearAccess ballot-marking system is designed to ensure that voters with a variety of disabilities can participate in elections at a public polling place little or no assistance. The software runs on unmodified COTS laptop computers that run the Windows 8.1 Pro operating system and supports specific models of accessible input devices.

The ClearAccess system produces a marked paper ballot that can be tabulated in the same stream as other ballots. The creation and tabulation of these ballots is integrated into the processes used to create the election. The marked ballots are not stored in the device or tabulated in a separate process.

The ClearDesign system can produce card sets formatted so that a ballot that would normally be printed on a single page 8.5" x 18" ballot can be printed on two (or more) pages of 8.5" x 11" ballot stock. This feature enables the use of low-cost printers in place of expensive ballot-on-demand printers that are capable of duplex printing of long ballots.

All files that make up the ClearAccess software reside on the memory stick that is produced by ClearDesign and copied onto the ClearAccess ballot-marking device before the polls open.

B. Support for assistive devices

The ClearAccess system consists of one or more ballot-marking stations that include the following physical components. All of these components are standalone, unconnected, and unmodified COTS hardware.

- Ballot-marking device station. A computer running the software as a browser application. On the ballot-marking station is a web server that serves up HTML pages for both voting and administration. The ballot-marking device runs the Windows 8.1 Pro operating system; the station can be enclosed in a protective bezel, which does not affect its operation.

- Privacy screen. A folding screen to ensure privacy for the voter during ballot marking.Personal assistive-technology devices. Each ballot-marking station provides the following assistive input devices:

  - EZ Access Series keypad

  - Headphones

  - Sip-and-puff (SNP)

  - Paddle switches

- Ballot-style transfer stick. A COTS USB 2.0/3.0 memory stick having at least 1 GB of memory that is used to transfer the ballot styles from the ClearDesign environment to the ballot-marking device. The ballot styles are HTML files that are encapsulated in a .zip file.

- Laser printer. A COTS laser printer attached to the ballot-marking device with a USB 2.0/3.0 cable that is capable of printing 8.5" x 11" 2-sided ballots (i.e., duplex printing) on 65# or 80# index paper.

C. Poll worker training requirements

Training for precinct equipment focuses primarily on the ClearAccess system. Poll workers will need to know where to plug in the assistive devices and how to prepare the system for the next voter. Because the system prints a paper ballot and does not store any record of that ballot, the most complex task will be what to do if the auxiliary power supply is exhausted.

D. Ballot tabulation record

The ClearVote system offers the unique ability to identify voter intent regardless of how it is expressed. This system captures ovals marked with red pens or highlighters or outside of the oval entirely. When ballots are scanned, the system creates high-resolution, grayscale PDF files, one for each side of the ballot. For each ballot image file, ClearVote includes information such as the scanner used, the time the ballot was scanned, the precinct the voter is registered in, the ballot style, the ballot's location in the storage box, and other information.

Voters' marks are identified and ranked according to the confidence level calculated by our innovative algorithm. When all marks are sorted for reporting, the marks that appear to be least likely to be a vote are grouped together and moved to the forefront, which allows officials to identify and review marginal votes quickly.

In all contest reports, each mark is linked to the ballot it came from. All election stakeholders can see how the vote totals for every candidate were computed. Election officials can override the software adjudication to accurately reflect the voter's intent digitally rather than by duplicating and scanning a physical ballot. The adjudication decision creates an audit log of all human resolutions.


E. Adjudication record

Ballots that are unreadable and need manual adjudication are identified digitally and presented to election officials for examination through a browser interface.

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.
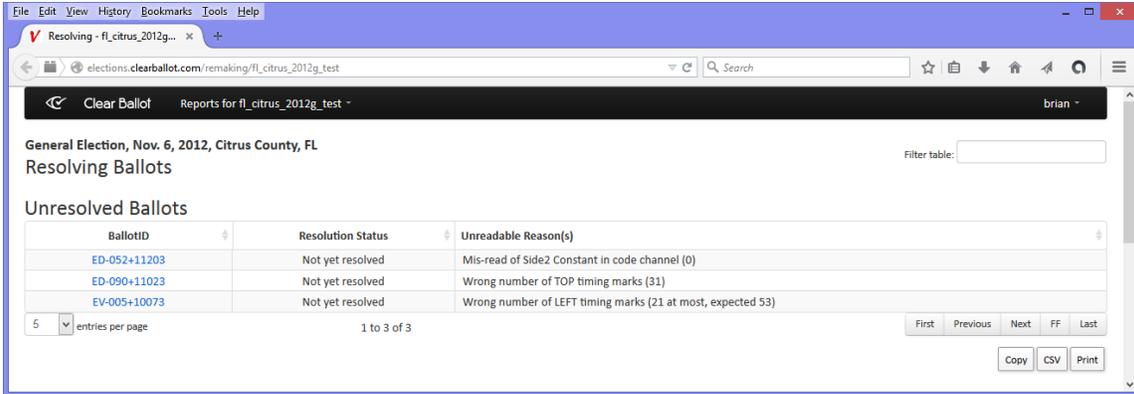
Users with credentialed access can then use the digital image of the ballot to identify and record the appropriate votes on the ballot.
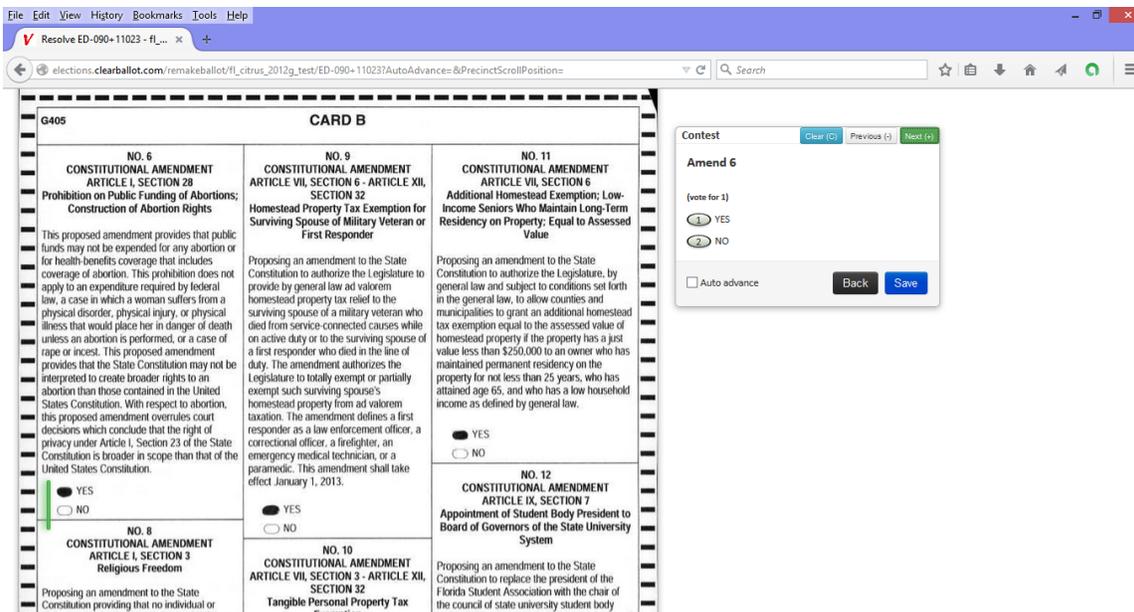
Because this process is entirely digital, unreadable ballots do not require that the entire batch be stopped and re-scanned. If officials need to access the physical ballot, its ballot image contains tracking information to locate the ballot in the box easily.

F. Transparency of election data

The ClearCount election data reports, contest reports, and audit reports are available in human-readable and machine-readable formats). The content of these reports can be filtered as appropriate to remove information that, although true, is not relevant to the scope of the report.

G. Support for posting ballot images

The resolution of the ballot files created during scanning creates a faithful representation of each ballot that is suitable for public posting. Clear Ballot would welcome the opportunity to make this practice standard procedure. We arecurrently hosting the ballots for the Leon County, Florida 2014 general election. These ballots are available at ClearBallot.com/Leon. A user name and password that provides read-only access to this archive is available on request.

H. Format options for election data

ClearVote election data is available in PDF, CSV, HTML, and XML formats.

2.3   Results reports

A. Real-time reports

ClearCount reports present election results with as much or as little detail that is needed. The Dashboard report provides access to the other reports, and the links in each present more details.

These reports are available throughout the canvass. The instant that a ballot is scanned, its image and tracking information are stored in the election library and available for reporting. Results from each scanned batch can show the number of ballots that are unreadable, overvoted, or include write-ins. All reportable results can be gathered and the adjudication can be performed at the City's convenience.

Insofar as it is possible, each number on a tabular report is a link that resolves into the set of images used to compute the number on the report. These images provide the evidence that the numbers on the report are an accurate interpretation of the voters' intent.

A selection of election data reports is included in the table below.

Report	Description
Dashboard	Overview of election data, ballot scanning operations, visual resolution of unreadable ballots, ballot reconciliation. Clicking any link provides more data.
Statement of Votes Cast	The number of ballots cast for each contest. For each candidate, the number of votes received; participating over votes, under votes, and votes for others; and a link to Precinct, Counter Group, and Party Affiliation subtotals. Data can be filtered by Precinct, Counter Group, Contest, Scan Station, BoxID (batch).
Vote Visualization Report (accessed from the Statement of Votes Cast)	Shows the oval images for a selected Candidate/Choice sorted by confidence in four sections: 1) Votes, 2) Over Votes with this Choice, 3) Under voted ballots without this choice and 4) Votes for Others. The Visualization report can be filtered by Precinct, Counter Group, Contest, Scan Station, BoxID (batch).
Statement of Cards Cast	For each whole precinct, the number of cards cast and the number of boxes that contain its cards. Data can be filtered by Precinct, Counter Group, Contest, Scan Station, BoxID (batch).
Statement of Votes Cast with Precincts	For each contest, the permutation of candidate/choice and precinct. For each choice/precinct pair, the number of votes, participating over votes, under votes, and votes for others; the number of boxes that contain cards marked for the candidate; also, a link to Counter Group subtotals. Data can be filtered by Precinct, Counter Group, Contest, Scan Station, BoxID (batch).
Contest Report	For each contest, the voting rule, number of choices, number of precincts where contest appears, number of boxes containing the contest, number of ballots cast, number of voted ballots, number of blank voted ballots, number of over-voted ballots, percentage of over votes, winning margin (number of votes), winning margin percentage, and winners. Data can be filtered by Precinct and Counter Group
Precinct Report	A report of all precincts and ballots\n\nCan be sorted by tabulation group, contest, or scanned box

Diagnostic reports allow election officials to monitor the status and integrity of the canvass and can be customized and generated as often as necessary.

Report	Description
Election Activity Log	Includes every log entry between a start and end date. Each log entry contains a timestamp (yyyy-mm-dd-hh-mm-ss), source of the log entry, election, user name, IP Address of requestor, explanatory message (e.g,

Report	Description
	logins/logouts, reports executed, software diagnostic errors). Data can be filtered by Start Date, End Date
Ballot resolutions	A two-part report that lists both resolved and unresolved ballots. For each unresolved ballot, the report displays its ballot ID, resolution status, and reasons it was unreadable. For each resolved ballot, the report displays the reason that human judgment was needed—the ballot was unreadable or there was an override to software adjudication.
Causes of Unreadable Ballots	A categorization of the causes of unreadable ballots. For each category: the unreadable reason, the number of ballots in the category, and the number of human-resolved ballots.
Ballot Locator	A report used to assist in high-speed retrieval of physical ballots. This report can be especially useful during a Risk Limiting Audit.

B. Customizable reports

The variety of data available and the options for filtering it provide a degree of customized reporting that is far above the industry standard. Should City officials require a report that is not available from the processes provided, Clear Ballot will work with the City to develop it.

C. Report data formats

The ClearCount reporting system can generate election reports in HTML, PDF, and XML formats for distribution to the state, the media, and to staff for detailed analysis.

2.4   Adaptability

A. Changes in how the City uses the system

The modular design of our product ensures that the City can go in any direction it cares to. It can scan ballots at voting centers or bring them to a central location. It can abandon polling places entirely and have voters mail in ballots. It can create a mobile polling place to serve voters who need assistive devices to mark a ballot. It could do some combination of all of those things.

Jurisdictions that are exploring new ways to remove barriers to participation are looking closely at what Clear Ballot can offer. In 2016, 40% of all ballots cast in Oregon, a mail-in state, will be designed and tabulated on ClearVote systems. Clear Ballot is a finalist in Colorado's program to select a uniform voting system for the state.

B. Purchase and leasing options

Our decision to use COTS hardware to run secure election software gives any jurisdiction more options than it currently has. The City can purchase base capacity for its central count operations and lease additional scanners for peak demand.

The City is not locked in to underperforming systems with Clear Ballot. Components can be upgraded and replaced. Equipment taken out of service can be sold on the secondary market or redeployed to other City departments.

C. Provisions for updating equipment

That Clear Ballot customers will expect to upgrade system components is a fundamental assumption of our product design. As new equipment comes to market, we will test it and take the components that support our software and improve system performance through certification.

D. Options for printing and translation of ballots

The City may choose its own printer, which must then be certified by Clear Ballot. To facilitate interactive ballot design, the system is fully capable of printing directly to ballot stock. The Clear Ballot printer certification provides a degree of protection for all parties involved by assessing the printer's management systems and shop-floor processes.