Supplemental A: Electronic Poll Book Cost Analysis Report

MEMORANDUM

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TO: Members, Wisconsin Elections Commission

FROM: Michael Haas
Commission Interim Administrator

Prepared and Presented by:
Sarah Whitt   Sara Linski
WisVote Functional Lead   WisVote Elections Specialist

Richard Rydecki
Elections Specialist

SUBJECT: **Electronic Poll Book Cost Analysis Report**

This memorandum outlines options for the Wisconsin Elections Commission to implement electronic poll book technology in Wisconsin. It provides a comparison between the options of approving vendor systems, building a state system which is made available to municipalities, and a combination of those approaches. Staff has outlined cost categories, policy factors, potential timelines, neighboring state examples and the pros and cons of each option. E-poll books are used in at least 27 states, either as provided by a vendor or through an in-house system developed by a state or county.

I. Background

Electronic poll books (e-poll books) are an electronic version of traditional paper poll books which serve as a record of all registered voters for a particular reporting unit, in addition to a tracking tool for each participating elector's sequential voter number and signature. Poll books also store additional information such as a voter's proof of residence, whether the voter cast an absentee ballot or was assisted or challenged, etc. In addition to traditional poll book information, e-poll books can also assist in such activities as Election Day Registration, photo ID scanning and polling place redirection, often times through "wizard" functionality that will walk a poll worker step by step through Election Day processes. In short, e-poll books can make both the voter experience and election officials' work more efficient.

On March 19, 2014, staff prepared and presented a report on electronic poll book research to the Government Accountability Board ("Board"). The report evaluated e-poll books in use in other states, the interest of Wisconsin county and municipal clerks, current poll book statutory language, and minimum system requirements of an e-poll book solution. At this meeting, the Board determined that staff should not devote time and resources to further study electronic poll books and develop standards for their approval. Board members expressed concerns regarding competing agency priorities as well as uncertainty as to whether electronic poll books constituted a priority of the Legislature. At the time, Wis. Stat. § 6.79(1m) provided that any electronic poll books employed by municipalities were subject to the approval of the Board.

In October 2015, in response to continuing requests of local election officials, the Board reviewed and adopted draft standards for the testing and approval of e-poll books, and also directed staff to conduct a cost/benefit analysis to evaluate the options of permitting municipalities to purchase electronic poll books provided by vendors or developing a state-level electronic poll book system in-house directly incorporated into the statewide voter registration system.

In 2016 the Legislature passed and the Governor signed 2015 Wisconsin Act 261. That legislation created Wis. Stat. § 5.05(18) which states that the Wisconsin Elections Commission ("WEC" or "Commission") "may facilitate the creation and maintenance of electronic poll lists for purposes of § 6.79 including entering into contracts with vendors and establishing programs for development and testing." This additional legislative interest is consistent with continued requests from local election officials to have the option to employ electronic poll books.

At the request of the Commission, staff has gathered updated research on e-poll book solutions developed at the state or county level and e-poll books on the market today. Staff gathered information on the features of the products, implementation strategy, and costs of development and deployment for a "built" system versus a "bought" system to facilitate comparing costs.

II. Build Option

Commission staff investigated the resources and requirements that would be involved if Commission staff developed an e-poll book in-house and made it available for use to municipal clerks. The use of e-poll books would not be required but would be an option for each municipality.

If Commission staff developed an e-poll book, it would be developed and supported by Commission IT and program staff similar to the other WEC IT applications (WisVote, MyVote, Canvass, WEDCS, Access Elections!, Badger Voters). Commission staff would be responsible for developing the software, testing the functionality and usability of the product, providing training to local users and handling Help Desk calls related to the use and operation of the software. The software would be made available to clerks at no cost; however, clerks would be responsible for purchasing their own hardware (such as a laptop computer or tablet for use at the polls).

Supplemental A 2

A. Research – State Developed Solutions

Commission staff talked to officials in Iowa, Michigan and Colorado as model states which built e-poll book solutions in-house to gather information regarding the cost, timeline, lessons learned and general impressions. These states were able to provide very helpful information to Commission staff regarding the workload to develop the software, options for training and deployment, the on-going resources necessary to keep the software up to date, and how to best provide support to the local users of the system. As a result, staff was able to update its 2014 analysis and understanding of the alternatives.

1. Common Impressions

After looking at each of these states, several common impressions emerged regarding in-house e-poll book development:

- Each state reported its election workers had some initial apprehension about the new technology but now they would not want to revert back to the use of paper poll books.

- Beyond positive end-user feedback, each state reported that it pursued an in-house solution due to high vendor costs. Michigan and Iowa reported significant cost savings over vendor systems.

- All three states reported they were able to customize their systems to their unique statutory needs as a result of taking the project on themselves in a way that would not have been possible with a vendor system.

- Colorado and Iowa both emphasized the value of having an easy-to-use system for election workers. Taking additional time to develop a better application reduced ongoing costs for election worker training and Help Desk calls on Election Day.

- Consistent with the other states, Iowa stated that its impetus to develop the e-poll book was to help election workers navigate the complex rules and regulations involved in elections. The e-poll book fundamentally changed the way election workers are trained because step-by-step procedures are built into the functionality of the e-poll book. Iowa also reported lower election worker anxiety regarding their own ability to interpret election rules and regulations after the e-poll books were implemented.

- Colorado reported that their e-poll book was simple enough for election workers to use that in-person training was not necessary. Local users have reported that they prefer the e-poll book to the statewide voter registration database for transactions such as issuing ballots and registering voters because it is so easy to use.

- All three states developed their e-poll books using existing resources. Only Colorado added external resources to supplement their internal IT teams due to the highly

Supplemental A 3

compressed timeline required by their Legislature. None of the states had to expand their Help Desk or program staff to handle ongoing support of the poll books, and were all able to absorb the e-poll book work with their existing teams.

- All three states reported a high satisfaction level with developing their poll book in-house. None regretted their decision. All three states have continued to invest in improvements to their e-poll books and have continued to see added value with each improvement.

- All three states have a top-down statewide voter registration database that is maintained in-house by state IT staff, similar to Wisconsin. This structure greatly simplifies the process of building an e-poll book and integrating it with the statewide voter registration database.

2. Iowa

Iowa has several election features similar to Wisconsin, including Election Day Registration and the use of polling place lists of citizens ineligible due to a felony conviction, which made it a very helpful state to study. In Iowa, elections are managed at the county level. Iowa has 99 counties and two different e-poll books, both of which were developed in-house:

- Cerro Gordo County in Iowa developed the Precinct Atlas e-poll book in-house and made it available to other counties. The system is now managed by a consortium of Iowa counties and there is a small fee to support ongoing development of the system. Approximately 60 counties use the Precinct Atlas system.

- The Iowa Secretary of State's office also built an e-poll book in-house called Express Voter and made it available to Iowa counties. Approximately 14 counties use the Express Voter system.

The remaining 25 counties are not currently using an e-poll book. Recent law changes requiring an electronic comparison with the felon list will likely drive several of those counties to begin using e-poll books. Counties have a choice between the Precinct Atlas system and the Express Voter system.

Commission staff talked with both the Iowa Secretary of State's offices as well as Cerro Gordo County regarding the two e-poll books. Both offices gave similar reasons for why they chose to build an e-poll book in-house rather than purchasing vendor systems. They already maintain and support the statewide voter registration database in-house. When searching for a vendor, they were unable to find a suitable vendor who did both e-poll books and Election Day Registration (EDR) well and believed they could create a better solution in-house. After reviewing several vendors, Cerro Gordo County determined that no vendor was able to support the level of complexity required by Iowa's elections statutes.

Both Iowa solutions have the ability to interface with the statewide voter registration software, I-VOTERS, and both are able to easily facilitate the collection of Election Day Registration

Supplemental A 4

(EDR). Iowa requires a felon to petition to regain voting rights so they have incorporated an Ineligible Felon Voter List into their e-poll book solutions, which assists with that validation process. For instance, if a felon's twin appears to vote and meets the felon matching criteria, the poll worker is walked through how to accommodate and track this vote for further follow up.

The Iowa SOS and Cero Gordo County provided Commission staff with additional details regarding their systems:

a. Express Voter (Iowa Secretary of State)

- Usage: Previous research and demonstrations have shown the Express Voter system to be very user friendly. Because it is supported and modified in-house, Iowa is able to program multiple decision points a voter may encounter and walk an election worker through the appropriate next step in the process. Approximately 14 counties use the system. Most polling stations use at least two e-poll books, one for EDR's and one for voter check-in.

- Security: The Secretary of State's office maintains a security agreement with county users which includes password standards and requirements that virus protection is current, the hard drive is encrypted and the e-poll books are not connected to an outside network. A peer-to-peer network to connect laptops within the polling place is permitted.

- Training: Training was initially provided at no additional cost and is currently administered to Election Day workers by county election officials. Due to the e-poll book's step-by-step functionality, training is minimal.

- Help Desk: The Iowa Secretary of State's office is able to support 14 counties with two Help Desk staff in each election cycle.

b. Precinct Atlas (Cerro Gordo County)

- Usage: Most polling locations require two stations, while some EDR-heavy locations such as campuses require up to five e-poll book stations. Poll workers report that they feel less nervous in the lead up to Election Day as they feel the instructions provided through the system prevent them from committing errors they previously made. Precinct Atlas is used in 60 counties.

- Timeline: The original e-poll book was developed and rolled out on a quick, seven-week timeline in reaction to statutory changes in 2009 for Cerro Gordo County. After the initial roll out, Precinct Atlas brought in a consulting company to revamp the system. The second version was launched in advance of the 2012 election. Upon reflection and current staff capabilities, the County estimated that the current system could have been built in four months.

- Development Costs: The costs for the initial development and the revamp totaled approximately $190,000. Most of this cost resulted from bringing in outside developers to teach current development staff.

- Training: Training includes 15 potential scenarios of a voter presenting at the polls. The election staff members are immediately immersed in the system and learn that the system will guide them through various scenarios.

- Help Desk: Precinct Atlas supports 60 counties with limited HelpDesk support. County officials reported that most issues are worked out in the weeks leading up to the election and that strong training and user interface allows a more lean support model.

3. Michigan

Michigan administers elections at the municipality level rather than the county level, similar to Wisconsin. It has approximately 1,520 municipalities, 83 counties and 4,800 precincts. It does not have Election Day Registration.

Michigan chose to build its e-poll book in-house for several reasons. The Secretary of State's office already maintained and supported the statewide voter registration database so it was very simple to develop an e-poll book that integrated with that system. Also, the vendor products available in the market were expensive and were not tailored to the laws and business processes of Michigan. Vendors would have charged additional customization fees to meet Michigan's statutory requirements. The elections staff believed they could offer a better product at a lower cost.

Michigan also provided the following additional details regarding its system:

- Usage: The e-poll book is currently used in approximately 4,200 out of the state's 4,800 precincts (88 percent). The state provided municipalities with laptops at no cost when deploying the e-poll book. It also provided municipalities with additional funds to pay for maintenance of their voting equipment as an incentive to use the e-poll books. Both the laptops and the voting equipment maintenance were paid for out of federal HAVA funds.

- Security: All data loaded on the Michigan e-poll books is encrypted so that if a device is stolen or misplaced, an unauthorized user would not be able to read the data. Michigan also provides a post-election process that removes all data from the e-poll books once the data has been imported into the statewide voter registration system.

- Timeline: Michigan initially developed its in-house e-poll book and has been using it for approximately six years. It spent a total of three to four years designing and planning for e-poll books, but the actual development took only four to five months.

- Development Costs: Michigan's total costs for design and development were approximately $60,000 - $75,000.

- Pilot: Michigan completed several pilots in different municipalities for different elections before rolling out the e-poll book statewide. It chose a small set of precincts in each municipality for each pilot. The pilots allowed them to make several corrections before deploying the poll book on a large scale, which helped to accomplish a smooth roll out. Paper poll books were also available on-site during the pilot as a fail-safe but they were not used.

- Training: When rolling out the e-poll book, Michigan conducted in-person training in locations across the state. On-going training for new users is offered at the State offices. Training was handled in a "train the trainer" fashion where each municipality could send two people to training, and those people then trained any other users in their municipality.

- Help Desk: The Help Desk consists of three staff people who take all election-related calls, including questions related to the e-poll book. During the initial roll out the e-poll book volume was heavier but then levelled off as users became more familiar with the system. Michigan did not expand its Help Desk when it rolled out the e-poll book and managed the increased calls using the three existing staff.

4. Colorado

Colorado has Election Day Registration similar to Wisconsin. It administers elections at the county level and has 64 counties. Colorado's e-poll book is significantly different than those in Michigan or Iowa as it is completely web-based and updates the statewide voter registration database in real-time, making it an interesting alternative use case.

Colorado counties have used e-poll books at voting locations since 2003. When the statewide voter registration database was deployed in 2008, the system was customized by the vendor to provide an e-poll book module for those counties to use in their vote centers. In 2013 the Colorado Legislature eliminated the voter registration deadline, required that ballots be mailed to all voters, and replaced all precinct-based polling places in the state with county vote centers. These changes required Colorado to have e-poll books in every vote center that communicate with each other across the state and update voter records in real time. Colorado issued a Request for Information and was unable to identify a vendor that would support its statewide connectivity needs as well as same-day registration, so the State opted to build the new e-poll book in-house.

Colorado officials provided the following additional information regarding its e-poll book:

- Usage: The e-poll book is required to be used statewide at all vote centers.

- Security: Because the Colorado e-poll book is completely online, it uses a two-factor authentication system. Once the user enters their user ID and password, they are prompted to enter a randomly generated code. Users obtain the random codes through a small device like a key fob or a smart phone. The code changes each time a user logs in so even if a malicious user were able to obtain the user ID and password, they would not be able to provide the randomly generated code.

- • Timeline: State statutes required that the e-poll book be implemented within approximately three months so the State divided the project into phases. Phase I included the functionality to issue ballots and process voter address changes, and was completed within three months. It required the State to contract for additional development and project management resources. Phase II included processing new registrations and name changes and was completed over nine months, requiring fewer additional resources.

- • Development Costs: Due to the additional resources needed to meet the statutory timeline, total development costs for Phase I and Phase II were approximately $432,000.

- • Pilot: The system was piloted at the annual statewide mock election exercise that all Colorado election officials participate in.

- • Training: The State emphasized a user-centered design to make the e-poll book as easy to use as possible. Due to the ease of use of the system, the only training material needed for the program is a two-page document the State provides to the counties which in turn train their vote center workers.

- • Help Desk: The Elections Division in the Colorado Secretary of State's office handles most election-related Help Desk calls and can refer callers to the IT Help Desk if there are specific questions about the e-poll book software or the statewide voter registration system. Neither the Elections Division nor the IT Help Desk saw a significant increase in calls due to the e-poll book implementation and indicated they received very few Help Desk calls related to the system.

5. Lessons Learned From Other States

The primary lessons learned in the research of other states are that while development costs varied, states were pleased with their decisions to build their own e-poll book solutions and believed that they implemented a superior product over any vendor-based option. If the e-poll book is well designed, training costs can be reduced not only for the e-poll book technology, but also for election worker training. States were able to develop the e-poll books and provide on-going support using existing staff, with a number of development staff, program staff and Help Desk staff similar to what exists at the WEC.

B. Build Costs for Wisconsin

Commission staff worked with the IT Team to estimate the potential costs for Commission staff to develop an e-poll book solution for use in Wisconsin. The majority of the cost for building the e-poll book would be existing staff time and IT contractor time. Staff has determined that the e-poll book system can be developed using existing resources and that it would not be necessary to add personnel or contract with outside vendors to complete e-poll book development.

The following cost estimates are made based on existing staff that the Commission already employs. While the costs are quantified below, they represent an allocation of resources that are

already budgeted, and there would be very little additional non-staff costs to build an e-poll book.

1. Development

Staff anticipates needing one to two development resources and one project management resource dedicated throughout the project. Additional staff would be needed at the beginning of the project to develop the design and business requirements, as well as at the end for testing the system. Staff also plans to do prototyping and usability testing (similar to what was done during the highly successful redevelopment of the MyVote Wisconsin website) to ensure the system is easy for election workers to use.

The following chart represents the estimated costs for development of the e-poll book. Staff rates include fringe benefits, where applicable.

Role	Hours	Rate	Total	Notes
Developer	1040	$85.00	$88,400.00	two developers 50% time for 6 months
Project Manager	208	$29.71	$6,179.68	one election specialist at 20% time for 6 months
Functional Design	87	$41.85	$3,640.95	one business IT person for 50% time for first month
Testing Lead	87	$41.85	$3,640.95	one business IT person for 50% time for last month
Testers	120	$29.71	$3,565.20	three election specialists 50% time for 2 week
Usability/Prototyping	200	$29.71	$5,942.00	one election specialist as needed
Total			*$111,368.78*	

2. Deployment

Commission staff anticipates a small set of larger municipalities deploying the e-poll book as soon as it is available, while other municipalities may take a wait-and-see approach before moving forward.

To prepare the deployment estimates, staff anticipates three on-site training sessions across Wisconsin, with additional training available as needed. Staff also plans for a pilot in up to three municipalities with Commission staff observing. The pilot would be used not only to test the software but also to pilot the training approach and materials.

The following chart represents the estimated costs for deployment of the e-poll book. Staff rates include fringe benefits, where applicable.

Description	Hours	Rate	Total	Notes
Training: Materials Development	347	$29.71	$10,309.37	two trainers at 50% time for 2 months
Training: In Person Training	48	$29.71	$1,426.08	one trainer, one WisVote specialist per trip (3 trips)
Training: Travel costs	n/a	n/a	$1,000.00	vehicles, lodging and meals
Printed Materials	n/a	n/a	$50.00	training documents

Pilot: On Site Observation	24	$29.71	$713.04	two elections specialists, one business IT person for 1 election day
Total			**$13,498.49**	

3. Municipal Hardware Costs

Commission staff looked at a variety of hardware options and costs, reviewing state contract pricing, on-line pricing at reputable dealers and hardware purchased in other states.

Two pricing options for a 100-unit order are outlined below, depending on the type of hardware a municipality chooses to use.

Option 1: Laptop	Units/hours	Rate	Total	Notes
Laptop	100	$500.00	$50,000.00	one unit for EDR, one for voter check-in
Bar code scanner	100	$144.00	$14,400.00	one for each e-poll book
Printer	100	$150.00	$15,000.00	one for each e-poll book
Signature pad	100	$150.00	$15,000.00	only required if e-signatures are captured
Paper Back Up Poll Book	100	$25.00	$2,500.00	
Total		**$969.00**	**$96,900.00**	

Option 2: Tablet	Units/hours	Rate	Total	Notes
Tablet	100	$300.00	$30,000.00	one unit for EDR, one for voter check-in
Printer	100	$150.00	$15,000.00	one for each e-poll book
Paper Back Up Poll Book	100	$25.00	$2,500.00	
Total		**$475.00**	**$47,500.00**	

4. Combined Costs

Commission staff estimates that a statewide development and deployment project for an e-poll book would cost $124,867.27 using the projections above. Additionally, municipalities would take on the cost of hardware at a rate of $475 to $969 per check-in station at the polls.

III. Buy Option

Commission staff also evaluated several existing vendor options for e-poll books. There are a number of vendors in the current market who could provide a product that could meet Wisconsin's unique needs of Election Day Registration, photo ID checking and eligibility verification for voters convicted of a felony. Robis and ES&S are two vendors offering systems which are evaluated more fully below. The use of e-poll books would not be required but would be an option for each municipality.

If a "Buy option" was approved, Commission staff would refine the existing e-poll book standards proposed in the 2015 G.A.B. report as requirements to certify vendor solutions. Municipalities would be able to shop the market of available certified systems but would also take on the responsibility for purchasing software and hardware, as well as implementation of the system.

A. Research of Vendors

A. Common Impressions

- Robis and ES&S are e-poll book vendors who offer solutions with pre-programmed hardware, fully dedicated to e-poll book use. Each vendor provides laptop-based or tablet hardware options. This offers more variety of choice to municipalities with users who may have different preferences or needs.

- Training is an optional expenditure. Both vendors are willing and able to provide training materials and services, but also allow the state or local clerks to develop and administer training.

- Maintenance and ongoing costs are established at a fixed price. When new software or system updates need to be implemented, maintenance costs would cover these services. However, if there were no updates or issues within the year, those costs still need to be paid. Robis charges maintenance costs per unit and ES&S charges per election and per unit.

- Both vendors charge an additional cost for custom development above and beyond screen modification, initial set up and any standard features.

- Both interfaces are customizable and designed to be easy for an elections worker to use a couple times a year without extensive training.

- Any vendor would work with Commission staff to develop a data format that is compatible with WisVote.

B. Robis

Robis is a small elections technology vendor based in Wheaton, Illinois. Its product is called the AskED ePollbook and it is available in three different hardware configurations. Robis will translate decision points and rules to screens that will direct and prompt the election worker to take the appropriate action. Robis is a vendor that can accommodate Election Day Registration and is a solution with limited required peripheral devices such as barcode readers and e-signature pads.

- Features: Simple, direct and customizable user interface to guide elections workers to the correct actions in different scenarios. Additional information can be created and included in help topics to provide additional direction and tutorials for just-in-time training. The

AskED e-poll book can also benefit voters by providing directions to polling locations when a voter appears at the wrong location. The system could also be used to report potential wait times.

- Implementation: Robis would work with Commission staff to determine branching logic to program into the software to respond to different scenarios (e.g., provisional ballots, challenged ballots, same day registration). Robis would then configure the e-poll book screens to reflect the logic assembled by staff.

- Security: To prioritize security, Robis uses AES encryption, auditing of activities within the system, password authentication and variable access levels per user role. Additionally, the e-poll book can function offline or connect to the other e-poll books in a particular location to ensure each is up to date with the voter history entered within that location.

- Training: The vendor offers training at an additional cost to the purchasing jurisdiction.

- Ongoing Support: Support is included in the price per unit in the first year and is optional for an additional cost in subsequent years.

a. Cost of Development and Implementation

Staff collected pricing for acquiring 100 units and costs of implementation from Robis. Staff time required to assemble the requirements and collaborate with Robis development is not included in the estimates. Staff anticipates development and implementation costs to be one-time costs to cover all jurisdictions.

Description	Cost	Notes
Implementation	$5,000.00	Work with election staff to create initial eligibility logic and assist in the creation of initial help topics. Robis will also build any necessary dataloaders to load your registration data.
Election Data Setup	$1,995.00	Loading of addresses, voters, precinct data, etc.
Per Election Cost	TBD	Optional costs for training, ongoing support, and election data loading.
Total	*$6,995.00*	

b. Cost of Hardware

Robis provided several pricing options for hardware. The first option includes a laptop as the e-poll book device, peripherals and a case that is intended to make the e-poll book easier to use. The second option consists of the same hardware and software options but the pre-wired case is excluded. The third option listed below uses a tablet as the e-poll book device which uses internal software components that act as barcode scanner and signature pad.

Supplemental A 12

Option 1 - Laptop w/ Case	Unit	Rate	Total	Notes
Software License	100	$568.00	$56,800.00	Cost per unit will decrease in larger quantities.
Annual Support and Maintenance	100	$115.00	$11,500.00	Cost per unit will decrease in larger quantities.
Pre-wired case	100	$249.00	$24,900.00	
Laptop	100	$449.00	$44,900.00	
Barcode Scanning Gun	100	$149.00	$14,900.00	
Printer	100	$199.00	$19,900.00	
Signature pad	100	$205.00	$20,500.00	
Total		*$1,934.00*	*$193,400.00*	
Option 2 - Laptop	**Unit**	**Rate**	**Total**	**Notes**
Software License	100	$568.00	$56,800.00	Cost per unit will decrease in larger quantities.
Annual Support and Maintenance	100	$115.00	$11,500.00	Cost per unit will decrease in larger quantities.
Laptop	100	$449.00	$44,900.00	
Barcode Scanning Gun	100	$149.00	$14,900.00	
Printer	100	$199.00	$19,900.00	
Signature pad	100	$205.00	$20,500.00	
Total		*$1,685.00*	*$168,500.00*	
Option 3 - Tablet	**Unit**	**Rate**	**Total**	**Notes**
Software License	100	$568.00	$56,800.00	Cost per unit will decrease in larger quantities.
Annual Support and Maintenance	100	$115.00	$11,500.00	Cost per unit will decrease in larger quantities.
Tablet	100	$549.00	$54,900.00	
Printer	100	$199.00	$19,900.00	
Total		*$1,431.00*	*$143,100.00*	

c. Combined Costs

The combined costs for initial implementation and hardware for 100 e-poll book units procured through Robis vary depending upon the hardware option selected. The estimated costs range from a high of $200,395 for the laptop option with the pre-wired case, $175,495 for the laptop option without the prewired case, to $150,095.00 cost for the tablet-based version.

C. Elections Systems and Software (ES&S)

Elections Systems and Software (ES&S) is an elections technology vendor based in Omaha, Nebraska. It offers two e-poll book products, the ExpressPoll 5000 and the ExpressPoll Tablet.

These systems can be configured a variety of different ways in order to accommodate state laws and the needs of a purchasing jurisdiction.

- Features: The ExpressPoll Tablet uses a touchscreen to electronically capture voter signatures and an internal device to read state-issued driver license or ID card barcodes. The ExpressPoll 5000 has the same capabilities but requires external devices, such as signature pads and barcode scanners, to accommodate these procedures. Both of these systems can accommodate Election Day Registrations and provide standard e-poll book functions, such as flexible voter search options, voter signature capture and polling place location display for voters who may be at the wrong location.

- Implementation: The layout and content of screens for each of the two e-poll books can be customized to a limited degree in order to accommodate state-level requirements and the preferences of purchasing jurisdictions. ES&S would work with purchasing jurisdictions and WEC staff to ensure the e-poll book data format is compatible with WisVote.

- Security: A password is required to log into both of these systems. Neither system requires an active internet connection to function, but multiple e-poll book units at the same polling place would be networked to allow for the sharing of data between units.

- Training: The vendor offers training on the e-poll book software that supports the system at a cost.

- Ongoing Support: The vendor offers several ongoing support services, including annual software license and maintenance fees, pre-election programming and post-election data conversion services. All of these services are provided at a cost to the purchasing jurisdiction. A jurisdiction also has the option to license the programming software from the vendor and internally assume responsibility for some of these tasks.

a. Cost of Development and Implementation

Staff collected pricing for acquiring 100 units and the cost of implementation from ES&S. Staff time required to assemble the requirements and collaborate with ES&S development is not included. Staff anticipates development and implementation costs to be one-time costs to cover all jurisdictions, but this system requires additional annual costs and programming charges incurred on a per election basis. A purchasing jurisdiction would be responsible for a minimum of $10,300 to implement this system on a county-wide basis. There may also be optional additional charges for any customizations to e-poll book screens or system-generated reports.

Role	Quantity	Rate	Total	Notes
Acceptance Testing	100	$50.00	$5,000.00	
Project Management	1	$1,650.00	$1,650.00	
Shipping	100	$20.00	$2,000.00	
Software Training	1	$1,650.00	$1,650.00	
Optional Customization Options	TBD	$125.00 - $300.00	TBD	Vendor offers options such as e-poll book screen customization and custom report generation.
Total			$10,300.00	

b. Ongoing Costs

These costs represent ongoing costs that any acquiring jurisdiction would incur if it chose to implement an e-poll book from ES&S. In addition to the annual cost for maintenance and software licenses, there are per-election costs for the e-poll book set-up and data configuration and a post-election charge for processing the data generated on Election Day. ES&S also charges a processing fee of $0.025 per registered voter for converting the voter registration file from the WisVote system to a format compatible with one of their two e-poll books. The cost data provided below represents a sample data conversion cost using the number of registered voters in Kenosha County. E-poll books systems could be configured with only reporting unit-level data, which would lead to conversion costs savings, but the data provided represents a best practice favored by both the vendor and WEC staff.

ES&S also indicated that a purchasing jurisdiction could choose to have internal staff handle the pre-election programming and post-election data conversion. The cost to license the programming software would be between $2,000 and $2,500 per year, in addition to staff time spent on these activities.

Role	Quantity	Rate	Total	Notes
Annual Software License, Support and Maintenance	100	$99.00	$9,900.00	
Per Election Set-up/Configuration Cost	3	$750.00	$2,250.00	Data analysis, sample data review and final data delivery
Processing Fee Per Registered Voter (Sample Data from Kenosha County)	92,994	$0.03	$2,324.85	
Post-Election Data Conversion	3	$225.00	$675.00	
Total			$15,149.85	

c. Cost of Hardware

ES&S provided pricing options for two different hardware options. The first option is the ExpressPoll tablet that is the most recent e-poll book product the vendor has available for purchase. This version has many of the peripheral device options (signature pad, printer, barcode scanner) included in the device. The costs included below also include portable wireless routers that would be necessary if a municipality would like to network more than one e-poll

book at a polling place. The second option offered by ES&S is the ExpressPoll 5000, which is an older version of their e-poll book solution that requires the additional purchase of external printers and barcode scanners.

Option 1	Unit	Rate	Total
Express Poll with Integrated Stand	100	$1,200.00	$120,000.00
Integrated 4 port USB Hub	100	$28.00	$2,800.00
Thermal Printer Paper	100	$3.00	$300.00
Portable Wireless Routers (optional)	44	$45.00	$1,980.00
Included Features:			
Tablet, Barcode Scanning, Signature Capture Capabilities, Integrated Poll book stand, Integrated printer and power supply			
Total		*$ 1,276.00*	*$ 125,080.00*

Option 2	Unit	Rate	Total
ExpressPoll 5000 with Lazy Susan Stand	100	$865.00	$86,500.00
Printer	100	$412.00	$41,200.00
Printer Paper Roll	100	$3.45	$345.00
Included Features:			
Tablet, Barcode Scanning, Signature Capture Capabilities, tablet protective sleeve, back strap, and Lazy Susan stand			
Total		*$1,280.45*	*$128,045.00*

d. Combined Costs

A county-wide implementation of an e-poll book from this vendor would cost between $135,380 and $138,345 for 100 units. In addition, an average year consisting of three elections would cost an additional $15,149.85 for annual licensing and maintenance costs and programming fees.

B. WEC Testing and Certification Costs

Any vendor-based e-poll book would be subject to a testing and certification process administered by WEC staff. This process would involve staff review of the application materials and functional testing to ensure the system was compatible with Wisconsin election laws and WEC systems, such as WisVote. A successful Election Day pilot could also be required before certification. The data format for pre-election programming and post-election updates would have to be configured with the assistance of in-house IT developers. Using data from previous voting equipment testing campaigns, WEC staff would have to devote between 200 and 300 staff hours for each testing and certification campaign at an estimated cost of between $5,000 and $10,000 to the vendor. The variation in costs is dependent on the complexity of the system, time spent by IT developers creating the data format template and the possibility of staff planning and administering a system pilot on Election Day.

C. Vendor-Based System Cost Summary

The cost for a county-wide purchase and implementation of 100 e-poll book units from the vendors surveyed would range from $135,380 and $200,395.00 depending on the vendor and the system options purchased. The variation in these costs depend on consumer decisions regarding the type of hardware purchased and the addition of peripheral elements such as stands, printers, cases or other supporting devices.

In addition to the initial costs, there would be costs associated with ongoing support and elections-related programming and data conversion. These costs would vary based on the level of support desired by the purchasing jurisdiction, but each of these two vendors charges an annual support and maintenance fee that would range from $9,900 to $11,500. ES&S offers programming support on a per-election basis, but a jurisdiction could license the programming software from ES&S and program their e-poll books in-house. The annual programming costs provided by ES&S range from a low of $2,000 (programming software license and in-house programming) to $5,249.85 (ES&S handles programming for an average of three elections a year). Robis does offer programming support but did not provide that cost information with their pricing data. Any jurisdiction which decides to complete its own programming would need to budget for the staff time needed to complete those tasks.

IV. Summary and Cost Comparison

The unique structure of the election system in Wisconsin necessitates a flexible e-poll book system that can be customized to best serve Wisconsin election officials and voters. Features such as Election Day Registration, use of GIS tools instead of street ranges to assign voters to precincts, and administering elections at the municipal level instead of the county level make Wisconsin a unique implementation challenge for any vendor system. Staff resources would need to be invested in configuring or customizing any vendor system to accommodate Wisconsin's unique attributes. In addition, WisVote will also require customizations to allow for the import of voter participation and Election Day Registration information. Vendors may need to customize their EDR programming in order to meet Wisconsin's standard requirements and allow for a seamless integration between an e-poll book system and WisVote.

Vendor systems would also need to be configured to Wisconsin's specific election laws and business processes. One of the vendors who provided information for this report budgets for time to configure the e-poll book system based on state laws and processes, and includes that cost in implementation fees charged to a purchasing jurisdiction. Another vendor charges customers an hourly rate for customizing the poll book for state-specific processes. It is not known if these customization costs can be shared across municipalities or if each municipality would need to pay to have these customizations made. One vendor indicated that if all municipalities used the same configuration, it could be possible to develop a standard configuration that could be shared across purchasing jurisdictions. The cost structure for a shared development process has not been confirmed and it is unclear if other vendors would offer a similar cost-sharing model.

It is also critical that any e-poll book used in Wisconsin be very easy for election workers to understand and operate. The software itself must have a responsive design that is intuitive for non-computer users and that walks election workers through complex processes (such as provisional or challenged ballots, or matching with the ineligible voter list), encouraging them to follow the correct processes. Two of the states that built their own e-poll book indicated that investing time on system usability not only saved money on e-poll book training, but also on election worker training. If the poll book can walk the election worker through the different Election Day scenarios that occur, that election worker is more likely to handle those situations correctly and more confidently.

The vendors that Commission staff worked with in developing this report have deep experience in the e-poll book field and have had many years to perfect their software and services. Several e-poll book vendors also sell and program voting equipment and have relationships with local election officials. This expertise and knowledge is a valuable asset to the municipalities who purchase their systems, but it also comes at a cost. While Commission staff may not have the same experience and expertise regarding e-poll books, it has the most in-depth and reliable knowledge of Wisconsin election laws and procedures as well as the structure, functions and capabilities of the voter registration system which must interact with e-poll books. At its core, an e-poll book is simply a system to help execute Election Day activities, and Commission staff has the program and technical expertise to develop, implement and maintain an e-poll book solution.

This expertise is demonstrated by Commission staff's repeated success in developing in-house IT projects, most recently with WisVote, Online Voter Registration, and the updated MyVote Wisconsin website. A measure of this success is that municipal and county clerks have reached out to Commission staff and requested that the agency build an e-poll book in-house. While an in-house option would clearly save local jurisdictions money compared to vendor systems, that feedback also indicates that municipal and county clerks trust Commission staff's expertise and abilities regarding such projects. Commission staff has not received the same level of support from clerks for certifying vendor systems, although some municipalities certainly may like the option to purchase e-poll books from vendors.

As with other Commission IT projects, there are few additional costs to the State to build an e-poll book solution in-house. The Commission has the program and IT staff available to work on the project, and the project costs would be absorbed in the existing agency budget. Resources would be allocated to prioritize the e-poll book project. As part of its 2017 planning, the agency included e-poll book development in the IT Project Calendar to ensure time was available if approved, so there is no need to delay any existing IT projects to complete e-poll book development.

A vendor-based e-poll book solution would cost a purchasing jurisdiction $135,380 to $200, 295 for the initial purchase and implementation. Using Kenosha County as a reference, this deployment would involve 100 e-poll book units and include a minimum of $11,500 and potentially as much as $15,149.85 in annual costs. Over a four-year election cycle, this sample jurisdiction would incur between $46,000 and $60,599.40 in annual costs.

The cost for the WEC to develop the e-poll book software application is estimated at $111,368.78, with $13,498.49 in initial training expenditures. This application would be provided at no cost to interested jurisdictions that would then be responsible for the hardware costs and programming responsibilities. Hardware costs, based on state purchasing contract data, would range from $47,500 for 100 tablets and external printers to $96,900 for 100 laptops and external devices such as printers and signature pads. The WEC would incur any costs associated with updating and maintaining the application and would provide customer support with existing Help Desk and program staff.

The additional research obtained in preparing this report supports a conclusion that the WEC should develop an e-poll book system that would be made available for use by Wisconsin election officials. This approach would enable a cost-effective and flexible process that will ensure the system is compatible with Wisconsin election laws and administrative procedures while seamlessly integrating with WisVote. This development strategy will maximize both the cost-savings of local election officials and the efficiencies created through the use of an e-poll book system. Given the resources necessary to test and certify vendor-based e-poll book systems, staff does not recommend developing both a testing and certification process for vendor based systems as well as building an e-poll book system in-house. Rather, staff recommends that the focus of Commission efforts related to e-poll book systems should be directed to the creation of an e-poll book system developed by WEC staff that meets the expectations of local election officials and can be developed, implemented and maintained in a cost-efficient manner.

Recommended Motion: The Commission directs staff to proceed with efforts to build and implement an electronic poll book solution that is compatible with WisVote and made available to municipalities at no cost. In the event that municipalities request the ability to purchase vendor systems, staff shall request further guidance from the Commission.