COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF STATE

RESULTS OF ROBIS AskED® ELECTRONIC POLL BOOK (AskED® 3.4.128.7 AND Command Center 5.0.50) EVALUATION

Issued By:

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RESULTS OF THE ROBIS ASKED® ELECTRONIC POLL BOOK EVALUATION

I.   INTRODUCTION

Pennsylvania's voter registration law, Act 3 of 2002 (Act 3), 25 Pa.C.S. §§ 1101 et seq., requires that the poll book or district register "shall be in a form prescribed and approved by the Secretary" for both paper and electronic poll books, (25 Pa. C.S. §1402(b)(2)). Pursuant to the request by Robis Elections Inc. (Robis), the Department of State (Department) evaluated the AskED® 3.4.128.7(AskED®) and Command Center 5.0.50, Electronic Poll Book (EPB) to ensure that the system complies with all the applicable requirements of Act 3, including the regulations implementing Act 3, 4 Pa. Code §§ 183.1 et seq., and the Pennsylvania Election Code, 25 P.S. §§ 2601 et seq., and therefore can be used in Pennsylvania elections. The evaluation consisted of in person system demonstration, email communication and conference calls with Robis personnel, and documentation review. The in-person system demonstration happened on April 12, 2018 in the Ocean Room of Keystone Building located at 400 North Street, Harrisburg, Pennsylvania. David Davoust, President and Jon Krier, Special Projects Manager, represented Robis. Jonathan Marks, Commissioner; Mike Moser, Deputy Commissioner; Sindhu Ramachandran, Voting Systems Analyst of the Department's Bureau of Commissions, Elections and Legislation; and Jessica Myers, Deputy Director of Policy represented the Secretary of the Commonwealth during the demonstration. Staff members of Bureau of Commissions Elections and Legislation (BCEL) and the Department's Office of Chief Counsel also attended the demonstration. The system demonstrated on April 12th required reconfiguration to comply with the poll book statutory requirements. Robis team worked with the Department to reconfigure the system and demonstrate compliance to all the statutory requirements via a WebEx held on June7,2018. The Department videotaped the in-person demonstration and WebEx.

II.   AskED® ELECTRONIC POLL BOOK

The AskED® EPB demonstrated for use in Pennsylvania included the following components:

1. AskED® Poll Book (ePollbook) – ePollbooks are Windows operating system based laptops or tablets configured for use at the polling place to perform voter check in activities. The AskED® Poll Book 3.4.128.7 software application and SQL database installed on the laptop, allows poll workers to perform the polling place activities, typically performed using a printed paper poll book. The ePollbooks work in kiosk mode allowing the poll workers to access only ePollbook application.

2. AskED® Command Center 5.0.50 (Command Center) - Command Center is a web based platform that supports the management functions of the EPB system. AskED Command Center is a Windows/IIS application with a SQL backend. It can be accessed from county computers using standard web browsers such as Chrome, Internet Explorer and Safari. The system uses two factor authentication using private certificates. Command Center allows the election officials to prepare the voter and precinct data for use on ePollbooks. It also provides an Election Day monitoring platform, that connects election officials to polling places. The system facilitates managing election day operations by providing functionalities like monitoring polling place status, hardware health, and operational status, etc. Monitoring functionalities allow election officials to address potential issues and have better control on Election Day. The system also allows election officials to prepare customizable reports for analysis.

   (Note the demonstrated application software versions AskED® Poll Book 3.4.128.7 and AskED® Command Center 5.0.50

3. Poll Book case and accessories

4. Barcode Scanner

5. Topaz Signature Pad – Allows capturing the voter signature, if the configuration has signature capture enabled via signature pad. The AskED ePollbook supports two signature capture methods—on-screen signing, and attached signature pad.

6. Label Printer DYMO LabelWriter 400 – The label printer if enabled supports printing activities at the polling place.

(See attachment D for System Hardware Requirements of the ePollbook device used at the polling place that lists all the supported peripherals.)

7. Ballot on Demand Printing – The AskED ePollbook can be configured to print ballots on demand. Ballots are saved as PDFs and the ePollbook uses Adobe Acrobat Reader for printing. For ballot on demand printing, the ePollbook can use any printer that supports Windows and Acrobat Reader.

8. ExpressVote Activation card printing using ExpressPass software - ExpressPass software application installed on ePollbook allows ES&S voting system customers to print voter activation cards for ExpressVote device.

III.   EVALUATION APPROACH, PROCEDURES AND RESULTS

A.   Evaluation Approach

To evaluate whether AskED® EPB can be successfully used for elections in the Commonwealth of Pennsylvania and meets all the requirements mandated by Act 3 and the Pennsylvania Election Code the following approach was used: (1) System Demonstration; and (2) Documentation Review.

The Department requires a System Demonstration to examine and confirm on a field-ready system that the EPB satisfies all statutory requirements, and it allows the Department

to understand the capabilities and limitations of the system. The documentation review consists of analyzing the system specifications, user manuals, state certification and third-party test reports pertaining to Robis AskED® EPB system. Electronic Poll Books are heavily configurable distributed systems, typically consisting of networked tablets or laptops used at the polling place to check in voters. They work in conjunction with a central server performing the management functions, which include: preparing the election data, performing voter history updates and monitoring deployed devices at polling places. The documentation review is conducted to confirm that the system can be safely and efficiently used for elections in the Commonwealth of Pennsylvania, and to aid in deciding the EPB connectivity/networking configuration to be approved for use in Pennsylvania.

B. Procedures

1. System Demonstration

Robis representatives demonstrated the AskED® EPB system on April 12, 2018. The demonstration included an end to end set up and functional walkthrough of both the ePollbook used at the polling place, and the AskED® Command Center used to perform the data preparation and management functions. Robis used the test data supplied by the Department for the demonstration. The purposes of the demonstration were to (a) validate that the system complies with Pennsylvania's statutory requirements for poll books; (b) discuss the overall capabilities of the system; and (c) to evaluate level of compliance with the Commonwealth Information Technology Policies(ITPs) outlined in Attachment C of this report. The Department was unable to validate all the statutory requirements on the system configured for the in-person demonstration. Robis reconfigured the system to comply with all the statutory requirements, and Department validated the statutory requirements via Webex on June 7, 2018.

2. Documentation Review

The Department requested the following documentation from Robis for review.

1. System Specifications;

2. Hardware/Software/Peripherals/Additional Equipment Requirements;

3. Technical Data Sheet;

4. User Manual;

5. Usability Reports;

6. Security and Penetration Testing Reports and;

7. Test Reports from other states using the system.

Department staff reviewed the supplied documentation and analyzed the documentation of the system in detail.

3. Results

1. System Demonstration Results

a) Conformance to statutory requirements - The vendor successfully demonstrated that the AskED® EPB system conforms to the statutory requirements outlined in Pennsylvania law. The demonstration proved that the system can be configured to meet the statutory requirements. *See* Attachment A for the list of statutory requirements discussed and validated during the demonstration and WebEx.

b) Review of system capabilities - The Department reviewed the overall system capabilities during the demonstration and documentation review. *See* Attachment B for a summary of the demonstration discussion points.

c) Level of Compliance with Commonwealth IT policies – The Department provided Robis with a copy of the Commonwealth of Pennsylvania IT policies relating to the security of distributed systems and network connectivity. The Department also provided Robis with a questionnaire to evaluate the system security posture, which was completed and submitted as part of the evaluation request. Time was set aside during the demonstration to discuss the security of the system. The written response to the questionnaire and the security discussion with Robis team during the demonstration allowed Department staff to evaluate the system's level of compliance to Commonwealth IT policies and to understand the security features of the system.

See Attachment C for the specific policies and discussion summary that occurred during the demonstration and the questionnaire.

2. Documentation Review Results

Department staff analyzed the documentation provided by Robis to understand the system capabilities in detail. The submitted documentation included test reports for AskEd EPB system by Pro V&V, a federally recognized Voting System Test Laboratory (VSTL), to attest conformance to Indiana state statutory requirements. The VSTL report indicates successful validation of all the requirements for the State of Indiana. The Department also evaluated the Virginia State Board of Elections' security test report, with findings from a security analysis done on the EPB system, to identify the system vulnerabilities exposed to an external attacker. The review of the test reports allowed the Department to understand in depth the functionalities of the system and further assess the security properties of the EPB system. The findings indicated the need for strong passwords, proper chain of custody and restricting access to the poll worker account to the operating system files. The conclusion section of the security analysis report suggested that the system did not demonstrate any observable technical security vulnerabilities that allowed compromise of the data, and the need for election administrators to ensure the devices and network connectivity devices are secured appropriately.

The demonstration and documentation review determined that AskED® EPB consists of Windows OS based tablets or laptops hardened and configured as ePollbooks to perform voter check-in activity at the polling place, and Command Center system hosted on a server to perform administrative functions. The Command Center server can be hosted at a location of jurisdiction's choice, either at the county facilities or at the AskEd data center. The system allows the following modes of configuration:

- A live (fully connected) mode where data flows continuously between Command Center servers and all ePollbooks in use at a polling place. In this mode, the ePollbooks at polling place maintains a live connection with the Command Center Server. The

implementation can be via an existing public Internet Connection or can utilize a cellular network, with two factor authentication.

- A peer-to-peer communication mode where the ePollbooks at a polling place communicate to each other without any connection to the Command Center server. This configuration allows voter check-in data to sync up in a polling place, thus allowing the use of multiple ePollbooks at a polling place. The Local Area Network (LAN) connection can be hardline Ethernet connection or Wi-Fi.

- Disconnected State, where each of the ePollbooks are standalone devices. In this mode check-in activity is not synchronized to other ePollbooks in operation at the polling place, restricting the check-in activities to follow the alphabetic lines for check-in.

The networked environment makes the EPB system vulnerable to hacking attempts that can compromise the integrity of check-in data and/or result in unauthorized access to voter data. The Department staff analyzed the connectivity configurations during the demonstration in conjunction with the documentation provided and existing Department test protocols for Electronic ePollbook to come up with the connectivity approved for use in Commonwealth of Pennsylvania, which minimizes the security risks and maximizes the benefits in moving to an EPB solution.

3. Observations

Department staff noted the following as part of the demonstration and documentation review.

1) AskED® EPB uses software configuration features to determine the final functional behavior of the system. Even though the demonstration and subsequent evaluation showed that the system can be configured to satisfy all the statutory requirements, the Department will need assurance that the system setup complies with the approved configuration after purchase.

2) The deployed system security posture will depend on the parameters selected and configuration during set up. This will necessitate validating the configuration during and after setup to ensure that the system is configured in a secure manner.

3) AskED® EPB deployed in live (fully connected) mode communicates with the Command Center server located outside of the polling place and transmits transactional and operational data throughout Election Day to the Command Center. The demonstration included a discussion of the complete capabilities of the system. The live (fully connected) mode maintains a communication channel between the polling place and cloud server for the entire time the polls are open on Election Day.

4) The data from the SURE system is prepared for loading on ePollbooks using the Command Center system. The data preparation process runs scripts on the extracted data from SURE system. The process is reconciled via a high-level onscreen summary of the records processed and errors on the Command Center, but the prepared data must be validated for accuracy and completeness after loading to the ePollbooks to avoid any data inconsistencies on Election Day.

5) Robis provided system manuals and a Technical Data Package (TDP) to describe the functionality of the system. However, the supplied documentation contained manuals prepared for use in the State of Indiana and lacked user manuals for the Command Center.

6) System allows ballot printing and voting machine activation card encoding using software from the voting machine vendor.

IV. CONDITIONS FOR APPROVAL

Based on the evaluation, the Secretary of the Commonwealth of Pennsylvania approves AskED® EPB subject to the following conditions:

A. The ePollbooks in operation at a polling place **must not** be configured to communicate to the Command Center server during the polling hours on Election Day. The tablets or laptops in operation at a polling place can communicate to synchronize voter check-in data between each other at the polling place during the

polling hours. Any data transfer required between the Command Center system and ePollbook must happen outside of polling hours.

B. The ePollbooks at an individual polling place communicating with each other must be configured and managed in a secure manner and may never connect to a publicly accessible network. The network at the polling place must be a "closed network" allowing only components of the EPB system to connect and encryption must be enabled. The security settings must prevent other devices from detecting and connecting to the network at the polling place.

C. Any components which are/were part of the EPB system, including removable media, must not be connected to the Electronic Voting system. This includes, but is not limited to: PEB encoders and Voter Access Cards encoded on the EPB systems; USBs; SD cards; printers; CDs; etc.

D. Jurisdictions implementing AskED® EPB system **must not** use the driver's license or ID card bar code scanning capability to check in voters. This is to avoid voters being asked for an ID when not required by law. Counties must implement the system with the bar code scanning option disabled. The system must not present poll workers the option of checking in voters by scanning an identification card with bar code.

E. Portable media used to transfer files between any components of the EPB system must be new, unmodified and not refurbished. Alternatively, removable media that is being reused must be fully reformatted before each election. All removable media used for elections must be managed with proper chain of custody and administrative safeguards to protect against disclosure, theft, or damage.

F. Any unused ports in the Poll Book used at the polling place must be sealed with tamper-evident seals. The Poll Book case also must be locked and sealed.

G. Counties purchasing the AskED® EPB system must work with Robis and BCEL (Bureau of Commissions, Elections and Legislation) to do the following:

  1. Implement AskED® EPB system in a manner that satisfies all statutory requirements outlined in Act 3 and the Pennsylvania Election Code. The parameter configuration and the text of informational messages must be approved by BCEL.

  2. Implement AskED® EPB system in secure manner that complies with applicable county and Commonwealth IT policies and any directives or guidance by Department of State BCEL. The system configuration, connectivity set up, password configuration and password management policies must be approved by BCEL; and

  3. Implement AskED® EPB system with sound administrative practices and proper chain of custody in the same manner as counties deploy Electronic Voting Systems.

H. Counties implementing AskED® EPB must change all default passwords during implementation. County election officials must implement processes to confirm and maintain records that default passwords were changed before fielding the system. The proof must be documented using export of the system log files whenever possible. In situations where the log entries are not detailed enough a screenshot of the password change action performed at the election office or checklist will suffice. County election officials with administrative access on Command Center server must take proper precautions for password management and protection.

I. Counties must work with Robis to ensure that the ePollbooks are configured in such a way that poll worker access to the system is restricted to performing activities required at the polling place only. The system must preclude the poll workers from accessing any other utilities and operating system files. Software applications or

utilities not part of the approved AskED® EPB system must not be installed on the ePollbooks used at the polling place.

J. Counties implementing Robis AskED® EPB system must either use a USB drive, or implement at least two (2) ePollbooks per polling location with peer-to-peer communication enabled, to ensure data storage redundancy. Jurisdictions may implement with both forms of redundancy, but have at least one. If USB devices are used, poll workers must be trained to maintain strict chain of custody of the removable ePollbook and USB drive at all times.

K. Jurisdictions implementing the AskED® EPB system must keep an inventory of all the devices deployed in the county. The systems must be audited at the beginning of the Election cycle for any required maintenance. Any devices sunset, returned or otherwise disposed of at the end of a lease or end of useful life must be free of any software and voter data. Counties must implement processes to ensure that the "clean wipe" is validated, documented, and maintained for audit purposes.

L. Counties must have a contingency plan to ensure that an election will not be affected should any component (including connectivity and power supply) of the EPB system fail due to malfunction or cyber incident on Election Day. The contingency plan must ensure that no "check in" information is lost. The contingency plan must be reviewed and approved by BCEL. At a minimum, the contingency plan must ensure the availability of a full voter list and a process for maintaining and reproducing a list of voters who have already checked in if the EPB fails during voting hours.

M. Counties purchasing the Poll BookAskED® must work with BCEL to decide what portion of the data from the Statewide Uniform Registry of Electors (SURE) system can be shared with the vendor. The counties shall not allow the vendor to run any data extraction utilities against the SURE database/system. Any data transfer must happen via a file extract and secure file transfer process and must be encrypted. The voter

data extract must not contain any additional data elements than what was shared during the evaluation. The data elements and sharing mechanism must be approved by BCEL. Counties must ensure the accuracy of data loaded to the EPB system and maintain appropriate reports as necessary for auditability.

N. Counties purchasing the AskED® EPB must work with BCEL to finalize the process of voter history updates. Robis must be able to adhere to the extract format and timing of the update suggested by SURE system administrators.

O. Robis must notify the Department of State of any changes made to AskED® EPB system. This includes any changes to the software or the environment of the EPB system, including but not limited to Robis's development locations, cloud service vendors, data center locations, for example.

P. Robis must escrow a copy of the code, trusted build, any verification/identification software used, and installation instructions for safe- keeping and add the Commonwealth of PA as a beneficiary to the Escrow account.

Q. Robis must provide fully prepared and version-controlled user and system manuals for counties purchasing the EPB. The manuals must clearly identify each user configurable parameter. Copies of the final user manuals and any subsequent updated user manuals must be submitted to the Department before sale of the product or any subsequently approved product upgrades in Pennsylvania.

R. Counties must perform a thorough evaluation and User Acceptance Test of the EPB system before purchase. This test should include all expected activities occurring as part of the election including data import and export with the SURE system. This approval is based on a demonstration by vendor and documentation review. Demonstration by the vendor cannot be considered equivalent to testing.

S. Counties must work with Robis to define and implement policies on data retention and archiving of the EPB system including external servers and any removable media. Any election data stored on devices outside of the county network must be deleted and/or archived to physical media with access control as soon as it is no longer required or no later than ninety (90) days after Election Day. Voter data shared with the vendor must be tracked and deleted to avoid data breaches. Counties must retain, as required by law, archived copies of data sent and received from the vendor for audit purposes. Robis must keep audit logs of every data access event and make those audit logs available for inspection to the counties or BCEL upon request.

T. All jurisdictions implementing the AskED® EPB must carry out full Logic and Accuracy testing prior to every election on each device and maintain records of this testing. The Department recommends creating a county specific plan for Logic and Accuracy testing that includes all peripherals and anticipated check-in scenarios on Election Day. The vendor supplied Logic and Accuracy checklist should be used as a reference but must not be accepted in lieu of a county specific plan.

U. Robis must provide audit log specification documentation to BCEL and counties purchasing AskED® EPB system. The county election officials and IT personnel must work with Robis to understand the system logging capabilities. The county must be able to identify and gather logs that provide audit trail of the election data preparation and transactions at the polling place, and logs that aid in identifying and managing security incidents, fraudulent activity and operational problems. Processes must be implemented to harvest and safekeep the logs after the election for future analysis and review. The log files must be extracted and saved in a manner that allows identifying the device from which the logs files were extracted. The EPB log files must be retained for five (5) years in accordance with the statutory retention period for poll books.

V. Robis must ensure that future releases of the software with enhanced security features are presented for approval to Department.

W. Jurisdictions implementing ballot on demand printing on the EPB system must use only the version of ballot on demand software, certified as part of the voting system by the Secretary of the Commonwealth. The software versions must be verifiable on the EPB system. Jurisdictions must work with BCEL, voting system vendor and Robis to have an attestation from the voting system vendor approving the use of the software to print on demand ballots. Jurisdictions must include ballot on demand printing test cases as part of the Logic and Accuracy testing and ensure that the ballots printed are correctly scanned and tabulated by the voting system.

X. Jurisdictions implementing ExpressVote activation card printing on the EPB system must only use the version of ExpressLink software, certified as part of the appropriate ES&S voting system model by the Secretary of the Commonwealth. The software versions must be verifiable on the EPB system. Jurisdictions must work with BCEL, voting system vendor and Robis to have an attestation from the voting system vendor approving the use of the software to print activation cards. Jurisdictions must include test cases to print activation card and use it on the appropriate ExpressVote device, as part of the Logic and Accuracy testing.

Y. Robis shall not assign, in whole or in part, its rights, duties, obligations, or responsibilities with respect to software development, manufacturing of any proprietary hardware, service and maintenance of a system approved by the Secretary, without written notification to Department and approval from the Secretary. For the purposes of this condition, the term "assign" shall include, but shall not be limited to, the sale, gift, assignment, pledge or other transfer of any ownership interest in the system approved by the Secretary. The vendor must submit to the Secretary a request notifying the change, including information regarding the ownership and business interests of the assignee, and evidence the submission by a

written assignment agreement executed by the vendor and its assignee in which the assignee agrees to be legally bound by all of the terms and conditions of the approval and to assume the duties, obligations, and responsibilities being assigned. If a transfer of ownership/assignment of rights occurs such as in the event that the vendor assigns its rights and/or duties to another entity and once the assignment of said rights and duties to the new entity has been approved by the Secretary, the new entity shall be required to execute all security, confidentiality and Non-Disclosure Agreements that were executed by the originating vendor.

Z. Robis must ensure that all the involved entities in the system supply chain will follow all the applicable conditions in this report.

V. RECOMMENDATIONS

The Secretary makes the following recommendations to the counties purchasing the AskED® EPB system:

a) The counties should consider using the EPB in pilot mode during the first use in an election. This allows the jurisdictions to ensure that all appropriate checks and balances are in place before using the EPB system in full production mode. For larger counties, the county should also consider implementing in a phased approach to mitigate any unforeseen issues that may arise during implementation.

b) The Secretary urges counties to ensure that all poll workers and election officials receive appropriate training and are comfortable using the EPB. The training activities should include, but are not limited to: hands-on training on devices to perform election set up and operations at a polling place, cyber hygiene practices and procedures for detecting cyber-attacks. The training should ensure that poll workers and elections officials can detect any warnings that signal cyber-attacks and

immediately respond to them. Involvement of poll workers during the implementation project from start to finish with onsite trainings at the polling place is also recommended.

c) The counties using EPBs should implement processes of reconciliation at the open and close of polls to avoid any data discrepancies. Checklists should be developed for poll workers to ensure compliance with all reconciliation requirements to reduce the chance of human error. Counties should also work with Robis to produce quick reference cards and/or help files for use at the polling place on election day.

d) The Secretary recommends that counties purchasing the AskED® EPB system to perform proof of concept test onsite at all polling places to ensure peer to peer connectivity and power supply availability. The Secretary further recommends that the test is conducted with a test system using components of the same make, model and configuration as that used on Election Day.

e) The counties using the AskED® EPB system should develop and implement a disaster recovery plan that considers the possibility of a data breach or cyber-attack on the EPB. The plan should detail processes and procedures to be followed by poll workers and election officials in the event of a malfunction or cyber-attack.

f) The Secretary recommends that jurisdictions evaluate the possibility of hosting the Command Center server at county data center, depending on the availability of secure location and county IT resources. In house hosting allows options for more secure configurations using IP restrictions, county VPN Tunnel, segregating database server and web server etc.

VI.   CONCLUSION

Based on the demonstration, documentation review, and consultation with the Department staff, the Secretary of Commonwealth concludes that the Robis AskED® EPB system meets all of the applicable requirements set forth in Act 3 and the Pennsylvania Election Code, and can be used for checking in voters during elections, provided that all of the conditions listed in Section IV of this report are met.

Attachment A - Statutory Requirements

Requirement	Demonstrated (Yes/No)
The computer list shall be in a form prescribed and approved by the Secretary. (25 Pa. C.S. §1402(b)(2)).	Yes
Form of the Electronic Poll Book	
Each screen of the EPB shall contain the name of the county. (25 Pa.C.S. § 1402(b)(2)	Yes
Each screen of the EPB shall contain the election district. (25 Pa.C.S. § 1402(b)(2)).	Yes
Each screen of the EPB shall contain the date of the election. (25 Pa.C.S. § 1402(b)(2)).	Yes
Each screen of the EPB shall contain the date and time the list was prepared. (25 Pa. C.S. § 1402(b)(2)).	Yes
Content of the List:	
For each election district, the EPB shall contain an accurate list of the names of the registered electors- alphabetically by last name. (25 Pa.C.S. §1402(b)(2) and 1402(c)).	Yes
Poll workers must have access to the list at all times so that voters can be checked in without interruption. The Electronic Poll Book should provide for the following relating to data recovery and adequate contingencies should one or more elements of the Electronic Poll Book fail: ▪ Memory Redundancy • Internal	Yes

- External - Data Preservation - If the contingency for Electronic Poll Book failure is the printing of paper poll books/precinct lists from the EPB, the EPB must provide for the printing of a paper poll book AND a copy of the list of registered voters within the precinct. **Demonstration Comments:** EPB system keeps the data during operation on the hard disk of the ePollbook. Data redundancy at a polling place can be maintained by having multiple ePollbooks in a polling place, and having the check in data synchronized between them. The system also allows using a USB drive that saves all check in activities happening at the polling place. Reports can be configured, exported, and saved to preserve data at any point in time. The EPB must prevent multiple "check-ins" by the same voter. **Demonstration Comments:** The system demonstration showed that the system identifies an attempt to check in an already checked in voter. The ePollbook displays an indication of the original check in. The system can be configured for the poll worker to take additional actions like cancelling the check in, allowing the voter to vote provisionally etc. In an environment where there are multiple ePollbook connected data syncing between the devices must be functioning to ensure multiple "check ins" are prevented on different devices.	
A legible digitized signature for each registered elector. (25 Pa.C.S. § 1402(b)(2)). The official digitized signature for each registered elector must be obtained from the Statewide Uniform Registry of Electors (SURE) and it must be displayed in such a manner as only the poll worker can see the official signature at the time a voter is signing the EPB.	**Yes**

Street address of each registered elector. (25 Pa.C.S. § 1402(b)(2)).	**Yes**
Political party designation of each registered elector. (25 Pa.C.S. § 1402(b)(2)).	**Yes**
Suitable space for insertion of the signature of the registered elector. (25 P.S. § 3050(a.3); 25 Pa.C.S. § 1402(b)(2)).	**Yes**
Suitable space for insertion by the proper election official of the number and letter of the stub of the ballot issued to the registered elector or the registered elector's number in the order of admission to the voting systems. (25 P.S. § 3050(a.3); 25 Pa.C.S. § 1402(b)(2)).	**Yes**
Suitable space for insertion of the initials of the election official who enters the record of voting in the district register. (25 P.S. § 3050(a.3); 25 Pa.C.S. § 1402(b)(2)). If the EPB is designed in such a manner as it provides for unique login credentials for each election official, this requirement can be satisfied by a system-generated audit report that identifies by unique election official ID which voters were checked in by that election official. Demonstration comments: The application captures the "Poll Worker Name" during login process and that can be used as a proof to identify the election official who checked in the voter.	**Yes**
Indication of whether the elector needs assistance to vote and, if so, the nature of the disability. (25 PaC.S. § 1402(b)(2)).	**Yes**
The date of birth of the registrant. (4 Pa. Code § 183.11(b)(4)).	**Yes**
The SURE registration number of the registrant. (4 Pa. Code § 183.11(b)(5)).	**Yes**

The following elector's affirmation must appear above the signature area: "I hereby certify that I am qualified to vote in this election." (25 P.S. § 3043).	**Yes**
An identification of whether the registrant's status is active or inactive. (25 Pa.C.S. § 1901(c); 4 Pa. Code § 183.11(b)(6)).	**Yes**
Voter Status Flags required by the SURE system:	
For voters who are "Inactive," affirmation is required. (25 Pa.C.S. § 1901(c) and (d)(3); 4 Pa. Code § 183.11).	**Yes**
"ID Required"-identification of whether the voter needs to present voter identification. An elector who appears to vote in an election district for the first time must present valid voter identification. (25 P.S. § 3050(a)).	**Yes**
"Absentee Ballot"-If an elector who voted an absentee ballot is in the municipality on Election Day, he or she must vote in the precinct, and the absentee ballot is voided. (25 P.S. § 3146.6(b)).	**Yes**
"Must vote in person"-Identification of whether the voter needs to present voter identification if the elector votes for the first time by mail. (Federal: 42 U.S.C. § 15483(b)).	**Yes**

Attachment B - EPB Functionalities

Specific "check in"/voter handling Scenarios demonstrated

a) Provisional Ballot -

The process of performing a provisional check in and issuing a provisional ballot was demonstrated. The system allows the poll worker to enter a reason for issuing the provisional ballot. The dropdown options for the reason can be configured by the county. The system can also be configured to print the statutorily required affirmations on demand using the receipt printer.

b) Absentee Ballot -

The system functionality that allows the poll worker to check in a voter who voted an absentee ballot was demonstrated. The county can configure the system to give appropriate instructions to the poll workers about any reconciliations that will need to be performed at the close of polls to ensure that the submitted absentee ballot is voided since the voter was allowed to vote at the polling place.

c) Cancel Check in -

The system allows voiding a check-in that was already performed. Counties can configure the system to add additional workflow steps to the process, like having the poll worker review and agree before committing the void check-in. The system can also be configured to not allow cancelling a check in at the polling place.

d) Reissue Ballot -

The procedure for issuing a new ballot in place of a spoiled ballot was demonstrated. The system allows tracking the number of ballots issued to a voter and allows capturing a reason for reissue.

e) Inactive Voter Check in -

The process of checking in an Inactive voter was demonstrated. The county can configure the system to give appropriate instructions to the poll workers about the affirmation process and any reconciliations that will need to be performed at the close of polls. The system allows the voter affirmation process to be configured for on-demand printing using the receipt printer or a full-page printer. The affirmation can also be printed in Spanish.

f) Redirecting a voter to the correct polling place -

If the voter is at the wrong polling location, the system can assist the poll worker in identifying the correct polling location. The poll worker can perform a voter

look up and the system by default is configured to look up the voter in the polling place, even though the entire county data is in the poll book database. If the voter cannot be located, the poll worker can click a button to find if the voter record is present in the database. This search will look up the entire database and display the voter record for the poll worker. Additional functionalities like driving directions, email, text message etc. can be configured depending on the connectivity at the polling place.

g) Search/Lookup voter Capabilities of the EPB -
The system allows a poll worker to look up the voter list to find a specific voter, by scanning an ID with a barcode or by manual entry of voter details. The manual entry search allows the poll worker to enter the last name and fist name of the voter. The poll worker can enter any number of characters in the fields and the search results will get filtered as additional characters are entered. The system also provides search options to search by address, Date of Birth, voter id etc. The search options are configurable based on the data elements in the poll book database.

h) Check-in a voter multiple times -
System behavior/messages when poll worker tries to check in an already checked in voter was demonstrated. The system indicated that the voter already and the details of the voter check-in transaction. Counties can configure further actions to either spoil the check-in or restricting the "cancel" to individuals with higher level access.

SURE System Interaction

a) Capability to import data files from SURE -
It was demonstrated that the system allows loading data extracted in an agreed upon format from SURE system. The process involves the following steps:
   1) The data from SURE system is extracted by the county and placed on a secure FTP site.
   2) The user connects to AskEd Command Center using web browser.
   3) The extracted SURE system .mdb file is pulled from the FTP server.
   4) The loader program is run on the data file to convert it to a format required by the poll book. The database created for use on the poll book is compressed and encrypted.
   5) The poll book database is then downloaded to a USB.

The data preparation process on AskEd Command Center displays the steps involved in the data conversion. The system also displays the number of records

converted and any errors encountered. AskEd command center also allows the county to run a data validation process before the conversion process.

For any required data corrections, the county creates a new extract and places it on the FTP site. The AskEd Command Center loader program tracks the data and only changed and/or added records are updated to the database used in the poll book. The system also allows loading incremental voter data extract files from SURE using the same process.

The converted data can be loaded to ePollbook used at each of the polling places using USB drives. When the USB is inserted to the Poll Book, the program will access the data from the USB drive. The system is hardened and doesn't auto run any other files.

b) Reconciliation of the data load to the ePollbook -
The demonstration and discussion showed that the voter list/data load to the ePollbook system is reconciled and there is a process to handle exceptions.

c) Voting History Updates -
The process of generating a voter history update file that can be loaded to SURE system was discussed.

   1) After the election, the data from poll book is processed thru the consolidator. Data can be loaded to the consolidator by using a USB or connecting the system directly to the AskEd Command Center.
   2) Once data from all the ePollbook are consolidated a voter history file can be generated and uploaded to SURE.

d) County self-sufficiency in managing the interactions with SURE -
The system allows the county personnel to use the AskEd Command Center system to prepare the data from SURE for use in elections. Robis personnel is available for any support required.

Usability/User Interface

a) Procedures for setting up the ePollbook -
The procedures for setting up the ePollbook at the polling place was demonstrated. The system comes in a bag called "all in one case". The poll worker will need to unzip the case and place it on the desk. The power chord can be pulled out from the appropriate spot and can be plugged into the outlet. Case is

custom built based on the county hardware. The system allows using tamper evident seals to ensure that any unauthorized access is detected.

b) Poll worker ability to access the system and login -
The process of poll worker accessing the application was demonstrated. The system used for demonstration was configured to boot in to the hardened desktop, and hence the user had to double click to enter the application. It was discussed that the system can be configured to boot directly in to the application. The passwords are managed and configured as part of the data preparation process and allows creating passwords for individual poll workers or by polling place. The system further prompts the user to enter their first name and last name.

c) Screen navigation capabilities -
The screen navigation capabilities of the poll book were demonstrated and further discussed. It was discussed that the system is designed in such a way that the poll worker can read the screen and perform the action. The system navigation was clear, and used colors to identify flags on the voter data, like absentee, needs assistance, wrong precinct etc. Robis representative pointed out that there is customization possible with messages and colors for better readability using configurable parameters without software changes. The system does not allow customization of the screens based on individual voter profiles. Any settings decided during the data conversion process will apply to the entire EPB system.

d) Languages Supported by the system -
Robis representatives suggested that the system can support multiple languages. The poll worker screens and voter facing screens can be translated if required. The discussion suggested that most counties in the United States use the approach of translating the voter facing screens. Spanish is one of the supported languages. The system is currently being modified to support all the 14 languages required to be supported by California state statutes. The system demonstrated was configured for English display only. The actions required by the poll worker to change the language was discussed.

e) Clarity of the messages displayed to the poll worker -
The system messages displayed to the poll worker during operation was demonstrated. Robis representatives suggested that the application has been built with "just in time" training approach. Each screen gives instructions to poll workers on their next course of action. The county can configure the workflows and messages/instructions to poll workers.

f) System power up and shutdown procedures -

The processes for powering up the ePollbook and launching the application was demonstrated. The power on process will take the poll worker to a hardened desktop image that has only applications required by the poll book. The system can also be configured to automatically launch the application. The poll worker is prompted with the appropriate reconciliation steps to be performed at the end of the day.

g) System help availability -
The system allows to configure and display customized messages for poll workers. The messages guide poll workers through the voter processing steps. The county has the capability to edit the wording of the messages.

h) Peripheral Connection Capabilities -
The poll book used at the polling place allows to connect to different printers and USB scanners. The system also allows connecting USB drives. The devices are whitelisted as part of the system hardening done by Robis.

i) Election setup -
The steps used by county officials to create an election and preparing the ePollbook for use at the polling place was demonstrated and discussed. The steps also include appropriate check points that officials can use to ensure the correctness of data.

j) Command Center Polling Place Monitoring Capabilities –
The election official dashboards on Command Center "at a glance" page was demonstrated and discussed. Additional monitoring and messaging functionalities available on Command Center was discussed.

Auditability - Transaction Logging and Reports

a) Transaction Logging capability for EPB -
The logging capabilities for the ePollbook and Command Center were discussed. The ePollbook logging capabilities were demonstrated and explained in detail. The system allows exporting the logs files as delimited files. The log files can be identified using the GUID of the device. Robis further provided a copy of the logs to the Department for analysis.

b) Reporting -

The capability to configure and create reports from the EPB system was discussed. It was suggested that county can work with Robis personnel to customize and configure reports if necessary.

Communication and Multiple Unit Synchronization

a) Modes of configuration –
It was discussed that the system allows, peer to peer and fully connected modes of connectivity. These modes are discussed in detail on Page 6 of this report. The system uses a design model where application communicates to the Command Center using different listeners. This model allows a capability to limit the installation to only the required features.

b) Frequency of check in activity sync up between tablets -
The ePollbook at a polling place if connected synchronizes near real time. If there is a connectivity issue, then the units in operation at a polling place will not communicate check in data. Once the connectivity is restored the transaction sync up will happen and will include all the transactions during the period of connectivity loss.

c) AsdEd Command Center Hosting -
It was discussed that the Command Center server can be hosted at a location of jurisdiction's choice, either at the county facilities or at the AskEd data center.

Capacity, Redundancy, Fault tolerance and Continuity of Operations

a) Data Preservation -
Robis representatives explained that there are multiple ways to ensure data preservation and redundancy. On each individual ePollbook, the data is stored in the database on the local hard drive. The system also has an encrypted file which has all the vote check in data. If the system is running in peer to peer mode voter check in data is synchronized between all ePollbooks in a polling place. If the jurisdiction is running EPB system connected to the Command Center server, all voter check in transactions are synchronized to the Command Center server in real time. The system also allows to have a USB on the ePollbook which holds all the voter check in activities that happen at that polling place.

b) Power Supply and Battery Life -
The power supply and battery life of the system was discussed to ensure that the system can work on battery as well as power.

c) Ability to remove/add new units without disturbing existing units -
A new poll book can be introduced to the polling place without disturbing the existing units in operation.

d) System capability to support the volume of voters in any county in Pennsylvania -
It was discussed that the system will be able to support the volume of voters in any of the counties in PA without any performance degradations.

System Monitoring and Notification of system Errors or Deviations

a) Capability to perform a self-test for peripheral connectivity -
The system performs a self-test at power on to ensure that all the anticipated peripherals are connected and is working as expected.

b) Visible display indicating system connectivity -
The demonstration showed that the system has a display of whether the unit is connected and communicating to other ePollbooks and/or the Command Center server.

c) Visible display indicating power supply/battery -
The demonstration showed that the system has an indication that alerts the poll worker when running on battery. The system alerts the poll worker when the battery charge is below threshold by changing the color of the battery indicator.

Security and Chain of Custody

a) Password configuration on ePollbook -
The system allows passwords to be set up for each device, polling place or poll worker. Multiple password requirement can be configured for accessing specific functions. The functions requiring enhanced security can be defined by the county during set up.

b) Information displayed to the voter on the signature pad -
The screen presented to the voter for signature doesn't display the signature on file. It contains the voter affirmation and has an assigned location for the voter to sign using the stylus. If the configuration uses a smaller signature pad the paper affirmation is glued to the signature pad.

c) Access controls for Command Center -
Command Center system allows administrators to create new users. The user can then setup their password with an expiring token sent via email. Command Center can also be configured to require MFA.

d) Data in Motion Security -
Please refer to Item H in Attachment C.

e) Data at Rest Security -
Please refer to Item D in Attachment C.

Maintenance, Support and Training

a) Hardware and software acquisition options and support -
Robis representatives suggested that they work with the county to configure an optimal system for use in the county. County can purchase the hardware from any of their existing contract options if available. The laptop or tablet will then be hardened by Robis based on the agreed upon configuration.

b) Service Agreement and Warranty Options -
Robis representatives explained that there are several Service Agreement and Warranty options available for the jurisdictions interested in the system.

c) Training Options -
Robis representatives suggested that the county will be offered training options at purchase. They offer training for the trainers or can help the county in training poll workers. Webinar options are also available. Robis also works with counties to prepare poll worker quick reference cards for use on Election Day.

Attachment C - Commonwealth IT Policies

A) ITP-SEC001 – Policy that governs Commonwealth's antivirus agent, host intrusion prevention agent (host-based intrusion prevention system), incident response servlet and patch management agent for all servers.

Discussion Summary: The discussions suggest that -

AskED ePollbook used at the polling place and Command center software runs on Windows operating system and use antivirus and intrusion detection software. Robis suggested that patches are deployed on Pollbooks prior to the election. Command center servers are patched monthly or sooner depending on the severity of the patch. It was explained that Robis does a test on all patches before deployment and has a patch management policy that considers the election schedule. The system design provides protection from attacks that happen via connected external devices.

B) ITP -SEC004 - Establishes policy and enterprise-wide standards for commonwealth agencies on Web Application Firewalls

Discussion Summary:

The application roles and permissions are designed to provide granular access control. SSL and Client certificates are used for encryption of application communication in transit. IP restriction is implemented whenever possible and all traffic to the Command Center is filtered using a firewall. Robis Office to Datacenter communication runs through IPSec VPN tunnel and the company can support a similar implementation if the Command Center is hosted by the county. In addition, Robis personnel will work with the jurisdiction using the solution to implement any additional security mechanisms required by the County IT department.

C) ITP-SEC019 and ITP -SEC016 – Establishes policy and procedures to protect commonwealth electronic data.

Discussion Summary:

The company has a formally appointed security incident coordinator. It was represented that Robis performs own security assessments. Monthly PCI compliance assessments are performed on a portion of Robis network. An SSAE16 Type 2, SOC1, SOC2 report is available on the data center. It was also discussed that the network is limited to only U.S traffic and all other traffic is blocked. The discussions suggest that the company has a plan in place to triage and investigate suspected incidents.

D) ITP-SEC020 - Establishes policy and standards for encryption of data at rest

Discussion Summary:

It was represented that; all confidential data is encrypted at rest in the EPB system at all times. In addition, whole-disk encryption can be used on individual ePollbooks if data beyond sensitive data must be encrypted.

ITP-SEC024 – Establishes policies, procedures and standards related to reporting and managing of cyber security incidents.

Discussion Summary: The discussions suggest that the company has a plan in place to triage and investigate suspected incidents.

ITP-SEC025 – Establishes guidelines for the proper electronic use and disclosure of Personally Identifiable Information.

Discussion Summary:

All PII data is encrypted both in transit and at rest within the AskED ePB system. All employees are subject to criminal background checks and must sign non-disclosure agreements related to all customer data. Data is only available to staff who need it for the purposes of fulfilling the customer contract and may only use such data for that purpose. Test environments typically use obfuscated data.

ITP-SEC029 - Establishes policy and procedures for commonwealth agencies for physical security of IT resources.

Discussion Summary:

The data is housed in a Third-Party Data Center which is access controlled. Production data access is controlled to only required employees. It was represented that Robis follows PCI standards for the storage and use of all data on physical and electronic media. No media with protected data is left in an unlocked or unmonitored area. Access to all areas is video monitored. When drives are no longer used, Robis suggests the DoD Standard DoD 5220.22-M (ECE) (7 passes) plus physical destruction.

Robis suggests having a strict chain of custody for all the ePollbooks and accessories used at polling places.

ITP-SEC031 - Establishes policy and standards for encryption of data in transit to improve the confidentiality and integrity of data.

Discussion Summary:

The EPB system involves encryptions and secure transmission protocols. All data is encrypted while in motion whether transmitted electronically or stored on removable media and the implementation can comply to the Commonwealth IT policy. The EPB system uses IPSec VPN for data center connection, SFTP for transfer of files, Private Cert and HTTPS with TLS 1.2 for Command Center connection from counties.

E) ITP-SEC032 Establishes compliance standards for enterprise Data Loss Prevention (DLP).

Discussion Summary:

The policy refers compliance to the below mentioned policies. Robis's answers are provided below

1) ITP-SEC019 - Policy and Procedures for Protecting Commonwealth Electronic Data

Refer to Item C above.

2) ITP-SEC020 - Encryption Standards for Data at Rest

Refer to Item D above.

3) ITP-SEC031 - Encryption Standards for Data in Transit

Refer Item H above

4) ITP-SEC017 - CoPA Policy on Credit Card Use for e-Government Applications (if applicable)

Not applicable.

F) ITP-SEC007 - This Information Technology Policy establishes establish minimum standards for the implementation and administration of user, system, network, device, application account IDs, passwords, and requirements around multi-factor authentication.

Discussion Summary:

The discussion suggested that the EPB system can be configured in compliance with the Commonwealth ITP-SEC007. The poll book passwords can be assigned to each individual or polling place. Usernames and passwords are set by the individual jurisdiction for both the field system (ePB) and the Management System (Command Center). The Command Center uses MFA using private certificates. In addition, IP

restriction can be implemented. Users are managed using the AskED Command Center. All functions are role-based. County admin can define roles and what abilities/access each role has and then assign roles to individual users. It would be up to each County to manage the authentication, authorization and accounting of their users.

Attachment D - ePollbook (Polling Place Device System Hardware Requirements.

- Touch-enabled laptop or tablet:
  - 2 GHz Intel or AMD dual-core CPU
  - 2GB RAM
  - 64GB primary storage
  - For attachment of peripherals and data-updates, you will also need at least 3 USB 2.0 ports and 1 SD slot, or a docking station that provides them.
- Optional signature pad: Topaz SigPlus T-L460-HSB-R, or Topaz SigPlus T-LBK750-BHSB (requires USB port)
- Optional label printer: DYMO LabelWriter 400, *or* DYMO LabelWriter 450, *or* DYMO LabelWriter 450 Turbo, Zonerich AB-320M, AZT-201M, *or* Zebra iMZ320 (requires USB port)
- Optional ballot printer
- Optional 2D barcode scanner: Symbol DS6707-SR20007ZZR (requires USB port)
- Optional 1D barcode scanner: Motorola LI2208 Linear Imager (requires USB port)
- Optional ExpressPass printer