ES&S EVS 6.0.2.0

The Election Systems and Software (ES&S) release of the EVS 6.0.2.0 election system was examined in Austin on 1/22/19. The system was presented by Brooke Thernes, State Certification Manager for ES&S. This release was certified by the Federal Elections Assistance Commission (EAC) in October 2018.

This is a modification to the 6.0.0.0 release which was previously certified in Texas. Therefore, not all components of the system needed to be reviewed again. The main focus of this examination was to review the new ExpressVote XL DRE and the functional changes to Electionware. There were no changes to the other voting machines or software components.

The following table lists the modified 6.0.2.0 components used for the examination.

Table 1 - Releases for new Proprietary Hardware/Software Components

Hardware/Software	Version/Firmware #
Electionware (EMS)	5.0.1.0
ExpressVote - XL	1.0.0.0

For a detailed explanation of all the hardware components and applications of the 6.0.2.0 system please refer to the EAC's certification test report.

Findings

- The responses provided on Form-101 are acceptable.

- The Technical Data Package (TDP) documentation provided appears to be accurate and complete.

- The system software was successfully built and the hash values were verified to match the values of the executables that were used in the EAC testing.

- The pre-marked and the manually voted test ballots were recorded and tallied correctly.

- The ExpressVote XL is a DRE voting device and tabulator. It is a full-face voting device unlike the previously certified regular ExpressVotes which present the ballot on multiple pages. It has a separate layout process in the EMS than the regular ExpressVotes. The layout as designed in the EMS matches what is displayed on the voting device (i.e. wysiwyg).

  The full-face ballot layout used during the examination was less than ideal. Too much of the available screen real-estate was unused. Also, the candidates were not presented consistently for each race. Sometimes the candidates for a race were presented vertically and sometimes they were presented horizontally.

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Ballot layout requires consideration of how the candidates and parties are displayed. At the very least, a blank line or race separator (i.e. double line) should between each race. This should be enforced by the layout software so the ballot isn't presented like the test ballot which had races stacked on top of each other. With many candidates listed across the columns, and no gap before the next race, some of candidates were "lost" in the mix due to their unfavorable location.

The ES&S representative said that the poor layout was because she is not an expert in ballot design on the XL. Hopefully, the XL ballot layout and display will be improved in the next release.

- The UVC (universal voting console) provides the ADA compliant voting methods. It is the same as the one used for the previously certified ExpressTouch DRE.

- The audio ballot for both the ExpressVote XL and the regular ExpressVotes use the same audio file created in the EMS. The audio text to speech conversion is provided by the Nuance corporation's software.

  When voting on the ExpressVote XL using the audio ballot, the display will switch to a single race per page. This is so the audio ballot instructions are the same as for the regular ExpressVotes.

- There is no way to increase font without going into ADA mode (1 race per page layout).

- The ExpressVote XL uses thumb drives for the election ballot definition and results. A CFast card is used for the OS firmware. A separate CFast card is used for redundant storage of CVRs.

  The ExpressVote XL writes to the CFast card when a vote is cast. Redundancy is provided by the paper CVR. When the poll is closed, the CVRs are copied to the thumb drive. Audit log and images are also copied.

- According to the EAC's scope of certification, the ExpressVote XL storage and display capacities exceed all documented limitations.

- An EQC (election qualification code) is used between elections to wipe all the data from an ExpressVote XL. The CFast card with the OS firmware can then taken to a laptop to verify the hash value to verify that the executables are the same as the certified software.

- Ballot card stock must be purchased from ES&S. This could become expensive if ES&S raises the price.

- The ExpressVote XL has a UPS battery in its cabinet that will sustain the unit for 2 hours in the event of a power outage.

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- The ExpressVote XL date and time are set on an advanced settings menu. This should be done at the warehouse during the L&A test since the menu is not available to a poll worker. Once the poll is opened, the date and time cannot be changed.

- Ballot styles on the ExpressVote XL can be selected manually on the machine. The voter's ballot style can automatically selected by scanning a barcode on the CVR cardstock. The barcode can be printed via the Express Link application when using a paper poll book, or with the Express Poll application (electronic poll book), on the voter check-in laptop.

- Provisional voting should not be done on the ExpressVote XL. The ES&S representative said that the best practice is to have voter use a pre-printed paper ballot, or use a ExpressVote BMD (ballot marking device).

- Crossover voting will cancel the straight-party selections. This should be obvious to a voter on the full-face ballot.

- Protection/Security features tested on the ExpressVote XL included:

  - The touch screen did not respond to any touch where it should not have.

  - A ballot cannot be cast when the CFast results card was not inserted. This assures CVR redundancy (1 paper, 1 electronic) for each ballot cast.

  - The election results on the thumb drive could not be read on a Windows machine or a Linux Chromebook due to the encryption. The results file could be edited, but then it was not allowed to be imported into the EMS.

  - If the wrong size card stock is inserted, a pop-up will alert the user. Voting is not allowed (see photo attached below). However, the ExpressVote XL did except a ballot that was cut a half inch short. I do not believe this is a cause for concern.

  - The ExpressVote XL does have capability to have 2 locks on the ballot box (see photo below).

  - The ExpressVote XL has an ethernet port. The ES&S representative said it is for development only, and it is disabled for the certified release.

- The Electionware EMS changes relevant to voting in Texas were mainly performance improvements. The other improvements/enhancements were specific to other states.

- Device logs can be printed on the devices and are also uploaded into Electionware along with the results. The audit logs are in plain English and are easy to understand. Each entry is timestamped. The logs can be viewed by a specific date/time range, but there is no filter to list errors only.

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You can export the logs in a CSV (comma separated values) format and upload them to another PC to search. However, this introduces the possibility that media used to transfer could get infected with a virus or malware on that PC and then infect the Electionware machine if it is reused. ES&S recommends using the media one time only or reformatting it after each use.

Hopefully, search functionality will be added in the next release of Electionware so that this is not necessary.
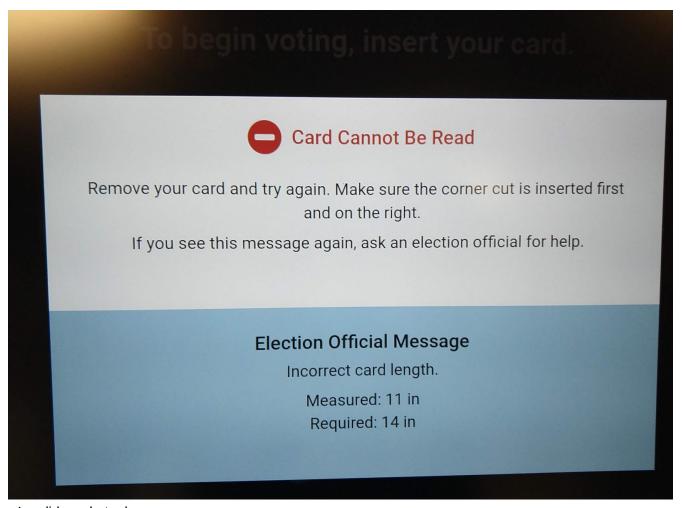
● The EMS has an option to save the DRE ballot images. I recommend that option be set to save images for all devices. Storage capacity of the media is adequate.

● Jurisdictions should review the system and component limitations sections of the EAC's *Scope of Certification* document before purchasing to verify that it can meet their needs.

Conclusion

I believe the system examined meets the requirements of the Texas Election Code. The modifications to the EMS were minor and presented no loss of functionality or security. The ExpressVote XL DRE worked well and was easy to use.

There is no issue that should prevent use of the EVS 6.0.2.0 system in Texas. I recommend certification.

Tom Watson
Examiner

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Invalid card stock message

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ExpressVote XL ballot box locks