

The State of Texas



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Ruth R. Hughs
Secretary of State

MEMORANDUM

TO: Keith Ingram, Director of Elections, Texas Secretary of State

FROM: Chuck Pinney, Staff Attorney, Elections Division, Texas Secretary of State

DATE: February 18, 2020

RE: Election Systems & Software – EVS 6.1.0.0 Voting System Examination

In accordance with my appointment by the Texas Secretary of State as a voting system examiner under Tex. Elec. Code §122.067, I present my report on the voting system examination which took place on January 15-16, 2020, in the offices of the Texas Secretary of State at the James E. Rudder Building, 1019 Brazos, Austin, Texas 78701.

On January 15-16, 2020, the examiners appointed by the Texas Secretary of State and the Texas Attorney General examined EVS 6.1.0.0, a voting system that was presented by Election Systems & Software (“ES&S”) for certification in Texas. The following hardware and software components were examined at the Office of the Secretary of State:

Component	Version	Previous Texas Certification Date
ExpressTouch	1.0.3.0	9/16/2019
DS200 (HW 1.2)	2.30.0.0	9/16/2019
DS200 (HW 1.3)	2.30.0.0	9/16/2019
DS450	3.4.0.0	9/16/2019
DS850	3.4.0.0	9/16/2019
ExpressVote (HW 1.0)	4.0.0.0	9/16/2019
ExpressVote (HW 2.1)	4.0.0.0	9/16/2019
ExpressVote XL (HW 1.0)	1.0.3.0	9/16/2019
ElectionWare	6.0.0.0	9/16/2019
ExpressLink	2.0.0.0	9/16/2019
Event Log Service	2.0.0.0	9/16/2019

ExpressVote Activation Card Printer	N/A	9/16/2019
ExpressVote Previewer	4.0.0.0	9/16/2019
PaperBallot	6.0.0.0	9/16/2019
Removable Media Service	1.5.1.0	9/16/2019
Toolbox	3.5.0.0	9/16/2019

For the reasons outlined below, I recommend that this system be certified by the Texas Secretary of State under Tex. Elec. Code §§122.031 and 122.039.

Background

ES&S previously received certification in Texas for the Unity voting system and previous versions of EVS. The most recent version of their software, EVS 6.0.4.0, was presented by ES&S in June 2019, and was certified in September 2019.

The voting system that was the subject of this examination, EVS 6.1.0.0, was certified by the U.S. Election Assistance Commission (“EAC”) on September 24, 2019.

Summary of the Examination

The examination of EVS 6.1.0.0 took place on January 15-16, 2020.

The first day of the exam involved the installation of the software and firmware for EVS 6.1.0.0 off of the trusted build provided to our office by the testing lab.

At the end of the firmware and software installation on the first day of the exam, Lena Proft (an attorney for the Secretary of State) and I conducted the accessibility testing and tested the visually impaired functions, the sip-and-puff controller, and the paddle controller. The system generally performed well during the accessibility testing, though I noted that on the ExpressVote devices there were some issues displaying the selected race when using the different two-button switch controllers. That issue is described in more detail below.

At the beginning of the second day of the exam, the vendor provided a presentation of the software and the updates involved in the current version of EVS.

After the vendor presentation, the examiners tested the equipment by voting a series of test ballots and comparing the results of those test ballots. The examiners also conducted additional testing on various components of the system to determine if they could generate any issues or errors.

Analysis

The standards for a voting system in Texas are outlined in Texas Election Code Chapter 122. Specifically, the system may only be certified for use in Texas if it satisfies each of an

enumerated list of requirements contained in Texas Election Code §122.001. Because the system satisfies each of those requirements, I would recommend that this system be certified.

In general, EVS 6.1.0.0 is an excellent voting system that operates efficiently and effectively. The technical examiners have identified two issues (involving ballot layout and hash validation for the EMS system) which do not affect the reliability, accuracy, or security of the system if proper procedures are followed. I would recommend that the vendor make adjustments to those components of the system based on the feedback of the examiners.

I will address three issues in my report: (1) the indicators on the screen during the selection of candidates when using a two-button switch device in accessibility mode, (2) the ballot layout options, and (3) the hash validation process for the EMS system.

Indicators for Candidate Selection in Accessibility Mode

During the accessibility testing, I used two different two-button switch devices, the sip-and-puff device, and the paddles. When using a two-button switch device, one of the two buttons is coded to scroll through various selections, and the other button is coded to select (or deselect) the highlighted selection.

When using the two-button switch with the ExpressTouch and ExpressVote XL, the candidate that currently corresponds to the scrolling feature is highlighted in light blue with a dotted-line border surrounding the particular selection. When using the same device with the ExpressVote, the candidate that currently corresponds to the scrolling feature is only indicated by a dotted-line border surrounding that selection and does not provide any light-blue highlighting. The result is that it can be difficult (though not impossible) to determine which candidate has been scrolled to.

When using the device in high contrast mode, the candidate that currently corresponds to the scrolling feature is highlighted in white with a dotted-line border surrounding the particular selection. Therefore, this issue is not presented when using the device in high-contrast mode, and only occurs when using the device in color mode.

The system is very clear about which candidate has been actually selected as the voter's choice for that particular race, so this issue does not present any issues with the vote actually being recorded for the correct candidate choice for that voter. However, it may cause some confusion for voters when navigating this particular interface with these accessibility devices.

After speaking to the vendor, this appears to be an unintended bug. Since it does not affect the reliability or accuracy of the system and because the voter's actual choice of candidate is clear and readily discernable, I would not recommend denying certification on this basis. However, I would recommend that the vendor address this issue as soon as possible.

Ballot Layout Options

During the exam, the examiners asked the vendor about an issue that had previously occurred in a Pennsylvania election involving the ExpressVote XL. This issue caused errors in tabulation by

the ExpressVote XL's tabulation function, but did not affect the printing of the paper ballot by the XL system itself, which correctly tabulated when used with other tabulating devices. According to the vendor, this issue resulted from a ballot design issue where instructional text was placed on the touchscreen layout where a candidate's name would normally appear. As a result of this layout, votes that were cast for a particular candidate were instead assigned to the text field in the XL's tabulation logic, but were correctly assigned to the correct candidate on the printed ballot. In other words, the error in tabulation occurred when using the XL as a tabulator, but did not occur in any of the functions used by the XL in its ballot marking device configuration.

The vendor also indicated that these issues could be prevented or discovered before the election by properly testing the system before the election occurred. A jurisdiction that performs proper L&A testing and testing of tabulating equipment in accordance with Texas law and procedures prescribed by the Secretary of State's Office would be able to discover any similar issues in the tabulation logic and eliminate those issues before conducting the election.

ES&S has not sought certification of the ExpressVote XL as a tabulator, and has only requested certification of that device as a ballot marking device. Because the ballot layout issue only affected the tabulation logic of the XL, my concerns that it could be replicated in a Texas election are minimized because the XL will not be used as a tabulator in Texas. I would still recommend certification of the XL because the ballot marking functions of that device were not affected by the issue in that election, and there is nothing that indicates any issues with the reliability of the ballot marking function of that device.

However, I would still recommend that certification of this system include a condition that this type of ballot layout configuration is outside of the scope of this certification, and cannot be used in a Texas election. I would also recommend that the vendor eliminate this functionality from future versions, or at the very least that they provide more explicit warnings in the EMS system about the potential consequences of using this type of configuration.

Hash Validation Process for the EMS System

The technical examiners noted that there was an issue with the hash validation process for the EMS system. The system does appear to be capable of validating the hashes for the EMS system, but the technical examiners indicated that this was a fairly complicated process. I will defer to their expertise on this issue and echo their recommendations.

The hash validation process should be straightforward and simple for a local jurisdiction to perform when they receive their system, and it is not clear that the process provided by the vendor can be easily implemented by jurisdictions with lower levels of technical knowledge and expertise. I would recommend that the vendor improve its hash validation process in accordance with the recommendations of the technical examiners before its next release of the EVS system.

Conclusion and Recommendation

Because EVS 6.1.0.0 is an effective, highly usable voting system that complies with the necessary requirements for a voting system under Texas law, I would recommend certification of this system with the condition that the ballot formatting configuration described above be considered outside of the scope of the certification of this system.