

STATE BOARD OF ELECTIONS



From the desk of... Kyle Thomas
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To: Steven S. Sandvoss; Executive Director

Re: Dominion Democracy Suite 5.6/WinEDS 4.0 Approval

Date: July 2, 2018

Dominion Voting Systems, Inc., an Illinois election equipment vendor, has requested a two-year interim approval for their new system, the WinEDS 4.0/Democracy Suite (WinDI) 5.6. This is an advancement of their previously approved Integrated Voting System WinDI 4.6 which received an interim approval from the Board in August of 2016. What makes this a new system approval instead of a system modification is the addition of a new ballot marking device (BMD) known as the ImageCast X (ICX) version 5.6.4.3 and the changes necessary to tabulate the ballots created by the ICX. The other main components of the WinDI 5.6 include the Election Management System (EMS) version 5.6.52.1, the ImageCast Central (ICC) central count tabulator, version 5.6.2.0301, the ImageCast Precinct (ICP2) in precinct tabulator, version 5.6.3.0107, the DVS Export, version 4.6.40.2, and the Cartridge Reader, version 5.6.40.3.

In March of this year, the Board voted to require any new system approval application received after March 31, 2018 must meet the 2015 Voluntary Voting System Guidelines (VVSG 1.1). Dominion's application was received prior to the deadline and therefore this system approval recommendation outlined below is based on the WinDI having met the VVSG 1.0 (2005) standards as indicated by the Voting System Testing Laboratory (VSTL) Pro V&V and the fact that the system tabulated all ballots accurately through our testing.

This test campaign was conducted through all four of our mock elections. Though the test was run against all components of the integrated system, the volume was focused towards the new ICX component as well as the equipment modified for its usage. The General Election portion consisted of 20 precincts with 291,420 ballot positions across the 14,600 ballots cast. The Consolidated Election was run in 15 precincts with 240,340 ballot positions across the 8,000 ballots cast. The Primary Election was ran across 10 precincts with 75,720 ballot positions on the 13,500 ballots cast. The Consolidated Primary was run in five precincts with 15,460 ballot positions on the 2,200 ballots cast. The tests were conducted on both 17" paper ballot stock as well as 22" paper ballot stock with all ICX ballots created on 11" stock. In total, over 1,600 ballots were created on the new ICX BMD.

From the onset of this campaign, many hurdles were encountered. The majority of these hurdles were the result of human error in programming and/or setup by the vendor and could have easily been avoided. On day one of the ICX ballot marking, it was discovered that the vendor had supplied the wrong paper stock. Upon review of the Technical Data Package (TDP), staff found no stock recommendation. The vendor updated the TDP to reflect the proper specifications and supplied the proper stock so that marking could resume. This first day, it was also discovered that the ICX instructions at the end of the marking session, asked the voter to “cast” their ballot instead of a more accurate reflection to print or mark their ballot. A change was recommended and the vendor provided proof that this change could be implemented in both the visual portion of the instructions as well as the audio instructions for visually impaired voters. This change is necessary to reduce confusion, as ballot casting does not occur until the voter inserts their marked ballot into a ballot tabulator and/or a ballot box.

Also encountered at the beginning of the ICX ballot creation, a portion of the machines had an issue reading the voter activation cards. When this occurs, the machine must be rebooted and a poll worker must enter new credentials to activate the machine. After this initial hiccup, only one machine encountered this situation again. However, staff did encounter a printer jam on a different device and touch screen issues with yet another machine. These latter issues don’t appear to be out of the ordinary as compared to other touch screen devices we have tested.

By the second day of the ICX ballot creation, staff found that due to a programming error, the ICX was displaying different office number information on the screen compared to what was printed on the paper ballot created by the same device. The candidate names were however correct. The vendor admitted that this was their error, as they had initially created the election information based off data received from our office several years ago and when updating the data, they had failed to update the office information in the “print view” portion of the database. This is something that should have been caught in their pre-test logic and accuracy (pre-lat). The error was corrected and testing was able to continue.

The next ICX issue that arose was related to the printer. The ICX utilizes a commercial off-the-shelf (COTS) printer, which has advantages as far as convenience/ease of replacement, however customization and settings can be more difficult to manage. Case in point, when the printer encounters a jam (regardless of how much of the ballot has been printed at that point) after the jam is cleared, the printer produces another ballot automatically. This is good in the sense that a voter will get a completely printed ballot, however due to the fact that the ICX is designed such that the election judge enters their initial when authorizing that machine for use, the voter may now have multiple ballots in their possession with judges’ initials. Staff has set recommendations listed below to protect against this multiple initialed ballot scenario.

Upon completion of the first election's ICX ballots, staff attempted the tabulation portion of the test. It was quickly apparent that an issue existed with the feeding of the ballots in a certain orientation. Namely the face up, head first orientation would not reliably be accepted by the tabulator. It was discovered that the position of the QR Code utilized for tabulation on ICX ballot was positioned too high to reliably be tabulated in this orientation. The vendor was able to adjust the positioning, however another one and a half weeks was required remaking these ballots.

There was also an issue with one of the components which would be utilized by a member of the ADA community. This interaction device, known as a sip-n-puff allows someone to operate the ICX without the use of their hands. The first two sip-n-puff devices delivered did not function correctly and actually operated backwards in some instances. It was determined that an issue with the cabling from the manufacturer was to blame. New devices were delivered and they functioned as designed.

Since this is a blended system which allows for results from the WinEDS tabulators to be merged with results from the Democracy Suite tabulators, staff ran ballots through both system's tabulators for the General Election to verify that the results can be merged accurately. The merger took place at Cook County's facility. The first attempt did not go as planned. The system identifies tabulators in the program by set numbers and unfortunately, the vendor had assigned the same numbers for the tabulators utilized in the Cook County portion as those used in our Springfield office. This security feature within the system properly recognized the repeated numbering and would not allow the results to be merged. Prior to the second attempt, the vendor assigned new machine ID's after which the results were able to be merged accurately. Once the issues encountered were resolved, results for the General as well as all other mock elections were tabulated and reported accurately.

In regards to the possibility that a voter may end up with multiple ballots containing judge's initials, staff recommends that instead of the election judge providing their initials on the screen of the ICX at setup, that the judge mark a horizontal line through the initials box on the ICX screen. Two possible administration options exist as they relate to initialing ICX paper ballots. A judge will have to either initial the ballot card in the top right hand corner when handing them out to the voter or a judge will need to be stationed at the ballot box where they will provide the initials just before the ballot is inserted into the tabulator/ballot box.

Now, for the distribution of the paper ballot stock utilized by the ICX machine, staff recommends two possible scenarios. The judge may hand out blank paper stock to a voter at check-in. In this case, the voter will need to put the ballot into "Tray 1" on the printer of the ICX and the "Tray 2" will need to be left empty and sealed with a tamper-proof seal. Due to the fact that the printer will indicate no paper exists, the voter will be instructed on the screen of the ICX to insert their paper ballot. Upon completion of their ballot creation, if a judge did

not initial the ballot, it will need to be initialed by a ballot-box judge before entering the tabulator/ ballot box. The second option would be to utilize the “Tray 2” portion of the printer, which can be pre-loaded with paper stock (Tray 2 would still need to be sealed with a tamper-proof seal- the seal would need broken when necessary for a judge to reload the tray). In this scenario, the voter would not be prompted to load their paper, however it would be absolutely necessary for a judge to be positioned at the ballot box and every ICX ballot would have to be initialed after having been voted upon but prior to insertion into the tabulator/ballot box.

Staff has additional recommendations outlined below;

Printer cords for power and connection to the ICX BMD should be secured to prevent tampering.

Paper ballot should only be marked using a black Sharpie Fine Point pen.

The vendor should set an established QR Code placement on the ICX ballot to avoid misplacement as described above.

The ballot box write-in ballot “diverter” should be removed until a quieter version can be implemented as the distinct sound made by this device degrades ballot privacy.

The vendor did make the ICX device available for testing by members of the ADA community. However, staff will also be making the device available for demonstration to the Mary Bryant Home. The results of said demonstration will be provided to the Board as part of the oral report.

As the Director of the Voting and Registration Systems Division, based on adherence to the recommendations enumerated above, I am requesting the Board grant Dominion Voting Systems, Inc. a two-year Interim Approval for their WinEDS 4.0/Democracy Suite 5.6 integrated voting system. Many issues were encountered along the way with the ICX setup, however each issue was resolved and/or a process was developed to handle the situation accordingly as well, all results were tabulated correctly.