Home

Dominion Voting Systems

Elections

Approved Electronic Voting Systems from Dominion Voting Systems:

- Democracy Suite 4.14-D and 4.14-DS - Approved for use in Wisconsin at the June 18, 2015 meeting of the Government Accountability Board.

Attachment	Size
Democracy Suite 4.14-D and 4.14-DS Board memo.pdf	1.18 MB
Approval and Certification Letter (Dominion Democracy Suite 4.14-D & 4.14-DS).pdf	146.43 KB

MEMORANDUM

DATE: For the June 18, 2015, Board Meeting

TO: Members, Wisconsin Government Accountability Board

FROM: Kevin J. Kennedy
                   Director and General Counsel
                   Government Accountability Board

                   <u>Prepared and Presented by</u>:
                   Matthew Kitzman
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                   Government Accountability Board

SUBJECT: Dominion Voting Systems
                   Petition for Approval of Electronic Voting Systems
                   Dominion Democracy Suite 4.14-D & 4.14-DS Voting Systems

I.   Introduction

Dominion Voting Systems (Dominion) is requesting the Government Accountability Board (Board) approve the Democracy Suite 4.14-D (4.14-D) Voting System and the modified Democracy Suite 4.14-DS (4.14-DS) Voting System, for use in the State of Wisconsin. No electronic voting system may be utilized in Wisconsin unless the Board first approves the system. Wis. State. § 5.91 (see attached). The Board has also adopted administrative rules detailing the approval process. Wis. Admin. Code Ch. GAB 7 (see attached).

The 4.14-D is a federally tested and certified paper based, optical scan voting system powered by Dominion's Democracy Suite Election Management System (EMS) platform. The 4.14-DS is a modification of the 4.14-D to allow for modeming of unofficial election night results. Both systems consist of five major components: the EMS; the ImageCast Precinct (ICP), an optical scan ballot counter; the ImageCast Central (ICC), an optical scan ballot counter for central count locations; the ImageCast Evolution (ICE), an optical scan ballot counter and Americans with Disabilities Act (ADA) compliant ballot marking device component; and the ICP Ballot Marking Device (ICP BMD-Audio), an accessibility option for the ICP optical scan ballot counter. The 4.14-DS also consists of the ImageCast Listener (ICL), a telecommunication system for uploading unofficial election night results.

II.   Recommendation

Board staff recommends approval of the 4.14-D voting system and the 4.14-DS voting system for use in Wisconsin. Board staff's recommendations are located on pages 23-25, following the analysis of functional testing and road testing performed by Board staff.

III.   Background

On March 16, 2015, Board staff received an application for approval of the 4.14-D & 4.14-DS voting systems. Dominion submitted complete specifications for hardware, firmware, and related components to the voting systems. In addition, Dominion submitted technical manuals, documentation, and instruction materials necessary for the operation of the voting systems. At the same time, Dominion requested the Board approve the federally certified Democracy Suite 4.14-D voting system and the modified 4.14-DS voting system. On June 5, 2015, Board staff received an updated application for approval of the 4.14-D & 4.14-DS voting systems, removing the Democracy Suite Adjudication software, AIMS, and AutoMARK from the application.

The Voting System Test Laboratory (VSTL) responsible for testing 4.14-D, National Technical Systems (NTS), recommended that the U.S. Election Assistance Commission (EAC) certify the 4.14-D voting system. Dominion provided the NTS report to Board staff along with the Application for Approval. Voting systems submitted to the EAC for testing after December 13, 2007, are tested using the 2005 Voluntary Voting System Guidelines (VVSG 1.0). The EAC certified the Dominion Democracy Suite 4.14-D voting system on November 25, 2014, and issued certification number: DVS-DemSuite4.14-D.

4.14-DS is a modification to the federally certified 4.14-D. The modification provides support for modeming of unofficial election results from an ICE or ICP to the ICL through analog or wireless telecommunications networks. Numerous modifications to the 4.14-DS voting system were tested to VVSG 1.0 by NTS. The telecommunication component of the 4.14-DS received functional testing only.

Board staff scheduled voting system testing and demonstrations for the 4.14-D and 4.14-DS voting systems April 21-23, 2015 for functional testing and April 28-29, 2015 for road testing. A four-person team conducted these testing campaigns.

IV.   System Overview
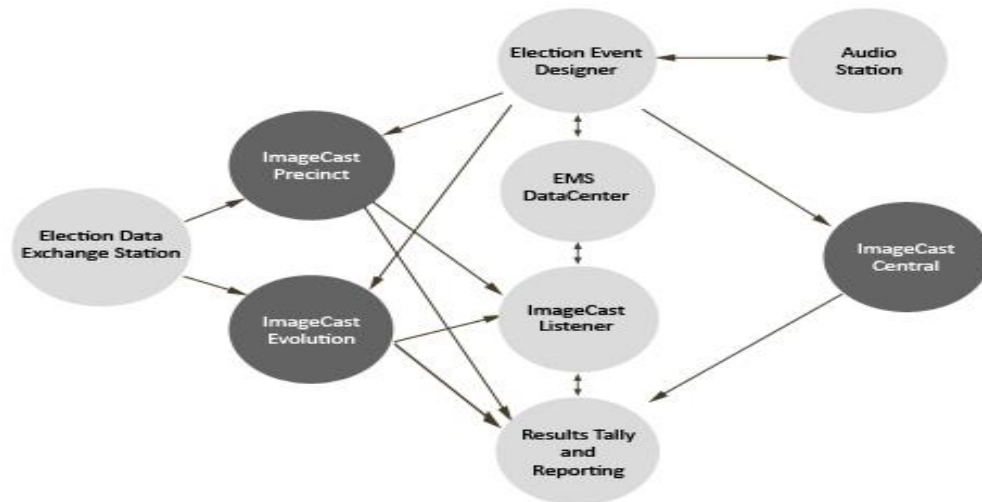
A.   Hardware

Dominion submitted the following equipment for testing:

Equipment	Hardware Version(s)/Make and Model	Firmware Version	Type
ImageCast Precinct (ICP) Ballot Marking Device (ICP-BMD Audio)	320A, 320C *HP Office Jet 7110	**4.14.17-US	Polling place scanner and tabulator Accessibility add-on
ImageCast Central (ICC)	*Canon Scanner DR-X10C/G1130 *OptiPlex 9020/9030 Desktop	**4.14.17	Central count scanner and tabulator
ImageCast Evolution (ICE)	410A *External Monitor AOC 156LM00003	**4.14.21	Polling place scanner and tabulator w/ accessibility functionality

*Compact Flash Cards	***SanDisk Ultra: SDCFHS-004G SDCFHS-008G RiData: CFC-14A RDF8G-233XMCB2-1 RDF16G-233XMCB2-1 RDF32G-233XMCB2-1 SanDisk Extreme: SDCFX-016G SDCFX-032G SanDisk: SDFAA-008G		Memory device for ICP and ICE tabulators.
*Modems	Verizon USB Modem Pantech UMW190NCD USB Modem MultiTech MT9234MU CellGo Cellular Modem E-Device 3GPUSUS AT&T USB Modem MultiTech GSM MTD-H5 Fax Modem US Robotics 56K V.92.		Analog and wireless modems for transmitting unofficial election night results.

* COTS devices used by the Democracy Suite Voting System.
** Board staff visually inspected firmware versions on each piece of voting equipment.
*** Dominion recommended flash cards.

The following paragraphs describe the design of the 4.14-D and 4.14-DS hardware taken in part from Dominion technical documentation.

1. ImageCast Precinct

The ImageCast Precinct is a precinct-based optical scan ballot tabulator that is used in conjunction with ImageCast-compatible ballot storage boxes. The system is designed to scan marked paper ballots, interpret voter marks on the paper ballot, and safely store and tabulate each vote from the paper ballot. The ImageCast Precinct supports enhanced accessibility voting by connecting the interchangeable Sip-and-Puff device, Foot Pedals, or Audio Tactile Interface (ATI). The accessibility option is available via the ICP-BMD Audio, which is an audio only option. It utilizes a commercial off the shelf (COTS) HP Office Jet 7110 printer to mark the ballot.
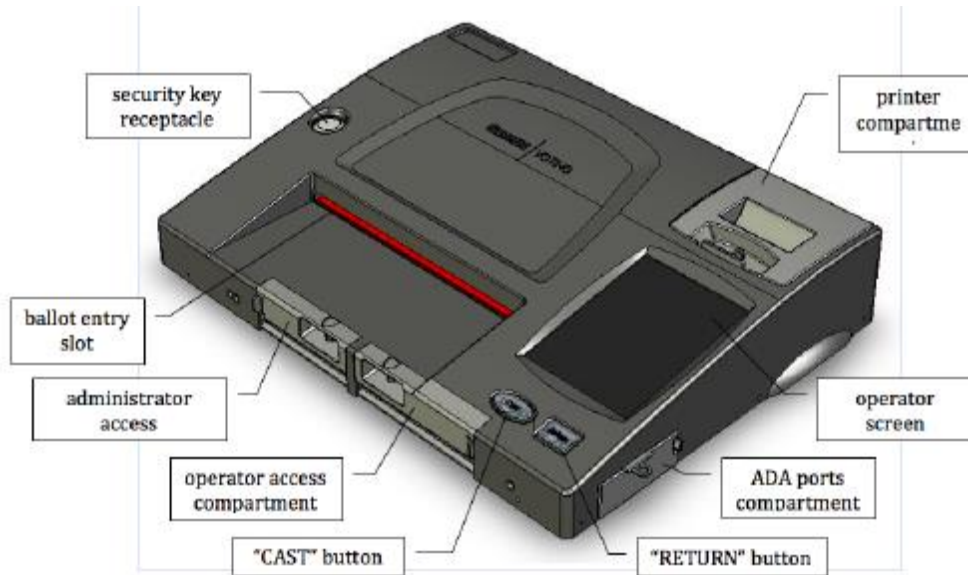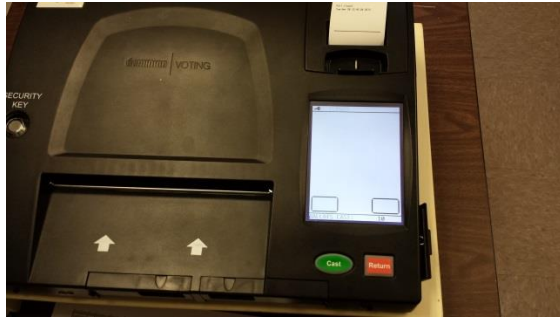
2. ImageCast Central

The ImageCast Central Count system is a high-speed, central ballot scan tabulator based on COTS hardware, coupled with a custom-made ballot processing software application. It is used for high-speed scanning and counting of paper ballots. The ICC system hardware consists of the following two COTS devices working together to provide accurate ballot processing functionality:

- Canon DR-X10C Scanner: Provides high-speed ballot scanning functionality, transferring the scanned images to the connected ImageCast Central Workstation.

- Canon DR-G1130 Scanner: Provides high-speed ballot scanning functionality, transferring the scanned images to the connected ImageCast Central Workstation.

- ImageCast Central Workstation: An all-in-one PC workstation used for ballot image and election rules processing. The workstation can be deployed in a stand-alone or networked configuration, allowing for automatic results transfers to the EMS Datacenter. The ImageCast Central workstation is COTS hardware which executes software for both image-processing and election rules application, such as "Vote for 2."

3. <u>ImageCast Evolution</u>

The ImageCast Evolution employs a precinct-level optical scan ballot counter (tabulator) in conjunction with an external ballot box. This tabulator is designed to mark and/or scan paper ballots, interpret voting marks, communicate these interpretations back to the voter (either visually through the integrated LCD display and/or audibly via integrated headphones), and upon the voter's acceptance, deposit the ballots into the secure ballot box. The tabulator also features binary input devices which permit voters who cannot negotiate a paper ballot to generate a synchronously human and machine-readable ballot from elector-input vote selections (ADA sessions). The supported binary input devices include a Sip and Puff device, Foot Pedals, and Audio Tactile Interface (ATI). The addition of the external monitor added in this modification allows for simultaneous ADA and ballot casting sessions. In this sense, the ImageCast Evolution acts as a ballot marking device. These devices are interchangeable and may be shared between the ICE and ICP units. Additionally, ballots marked by the ImageCast Evolution may be subsequently scanned on the ImageCast Precinct or the ImageCast Central if a recount is required.
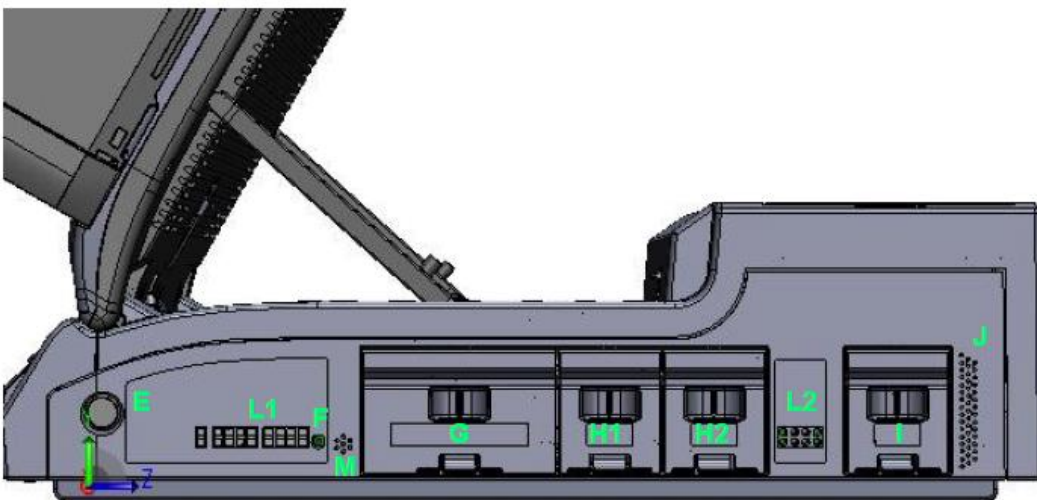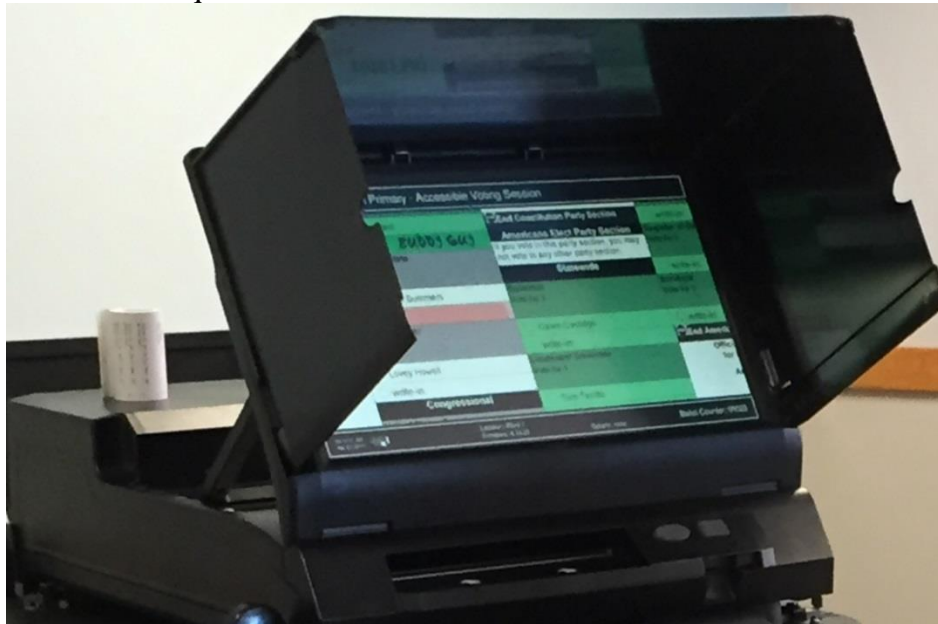
B.   Software

The Democracy Suite Voting System offers a new software suite powered by the EMS set of applications, which integrates election administration functions into a unified application. Its intended use is to define an election and to create the files used by the Precinct, Central, Evolution, and Listener. The complete EMS software platform consists of client (end-user) and server (back-end) applications, which are itemized below.

Software	*Version*
Democracy Suite Election Management System (EMS)	4.14.37

1. Election Event Designer
2. Results Tally and Reporting
3. Audio Studio
4. Data Center Manager
5. Election Data Translator
6. Application Server
7. Network Attached Storage Server
8. EMS File System Service
9. Database Server Application

ImageCast Listener	2.1.1.5301

*The EMS version brought for approval excluded any Adjudication or AIMS software components (which received approval by the EAC) due to scheduling of testing and limited practical uses of the Adjudication software in Wisconsin.
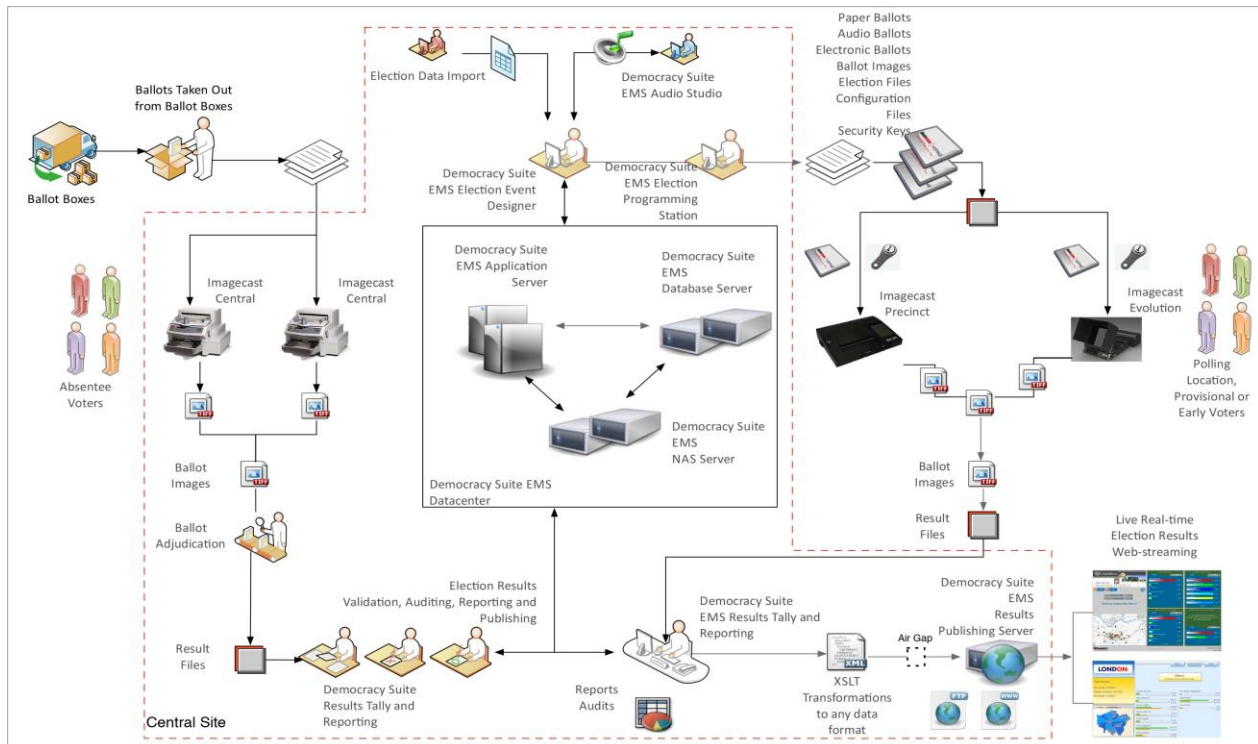
*System Map

* ImageCast Listener

The Democracy Suite EMS contains a new feature, which is called ambiguous mark technology. With past voting systems approved for use in Wisconsin, a mark was either read as a vote or not a vote. The Democracy Suite ambiguous mark technology allows for a third option in reading a mark, the ambiguous mark, which falls between the mark being read as a

vote or not a vote. A mark is considered ambiguous when it is filled in between a set of percentages (e.g., 15-30%) that are programmed during the election set-up. When a mark falls within this range the voting equipment returns the ballot to the voter with a prompt advising the voter of the ambiguous mark. The ballot cannot be overridden or otherwise cast on the voting equipment until the ambiguous mark is corrected (either by erasing or further filling in the target area).
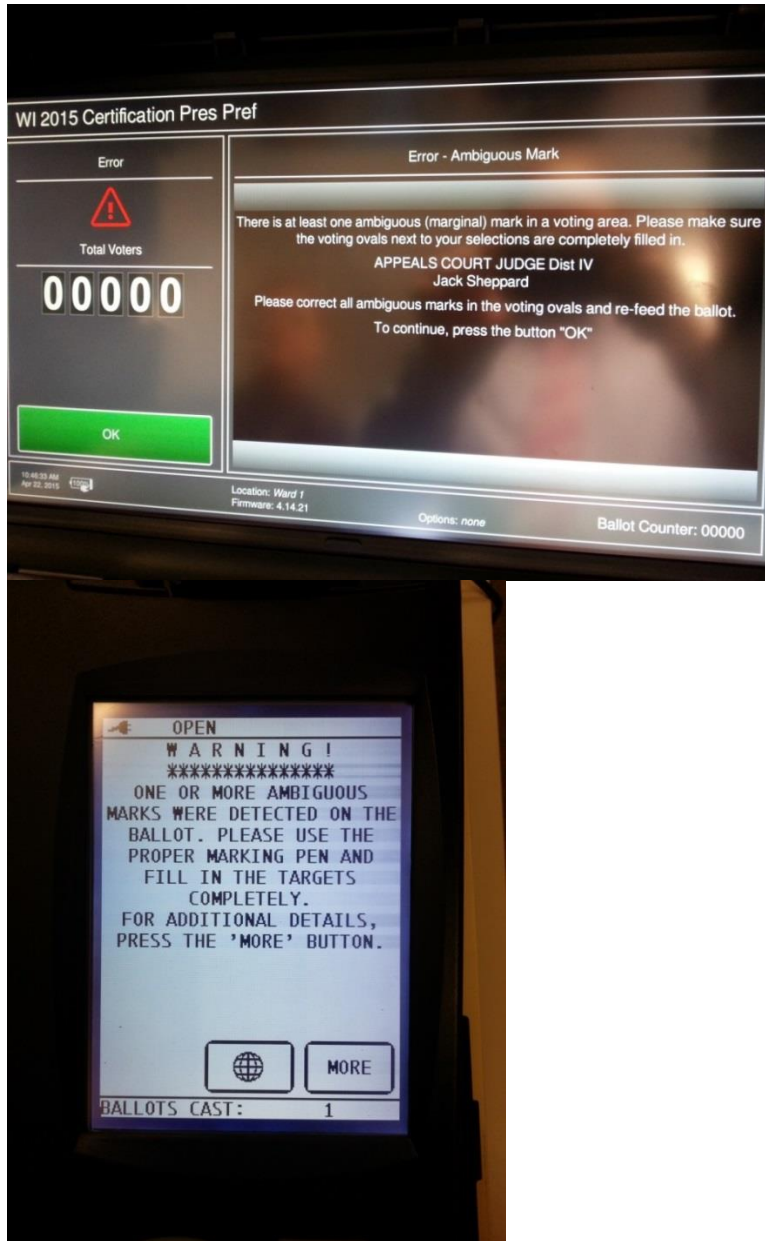
The percent of the target area that must be filled to trigger the ambiguous mark warning is set for each oval on the ballot and for the boxes where write-in names are placed on the ballot. The ovals and the write-in areas are programmed independently. During the testing campaign, staff tested the oval ambiguous mark threshold at 15-35% and the write-in ambiguous threshold at 12-35%, which represent the recommended settings established by Dominion. Furthermore, the ambiguous mark technology cannot be turned off; only minimized to a one

percentage point difference (i.e., the lower limit can be set at 12% and the upper limit set at 13%). The system can be set-up to effectively turn off the ambiguous mark technology for the write-in boxes by turning off the feature that detects marks in the write-in area. It is important to note that this is not turning off the ambiguous mark technology, but turning off the new Dominion write-in detection feature.

Dominion suggested and encouraged the G.A.B. to set a state standard for the ambiguous mark percentages, citing specifically the issues that may arise during a statewide recount if different standards are used by each county or municipality. Namely, if one county set their zone for 15-35% and another for 10-30%, voters, legislators, and the media may ask questions about why, all things being equal, a vote would count in one county and not in another.

Board staff conducted research on this ambiguous mark technology in order to determine whether a statewide standard was necessary and what that standard should be. The current VVSG 1.0 standard places the burden of determining at what point a piece of voting equipment should count a vote on the vendor. Board staff contacted Dominion and Election Systems and Software (ES&S) to inquire about the percentage thresholds on previously approved voting system. ES&S uses a complicated algorithm and pattern recognition system to determine mark recognition; therefore, Board staff is unable to determine a single percentage range through previously approved ES&S voting systems. Dominion's AccuVote voting system recognizes a valid mark as a vote when the reflectivity of the mark accounts for 32% of the target area, the oval. Board staff contacted each state listed on Dominion's fielded system report, which is a document accompanying the application and which provides a list of states that have approved or used the voting system. Florida uses the Democracy Suite voting system and set threshold range standards based on Dominion's recommended threshold ranges.[1] New Jersey uses the Democracy Suite voting system and set threshold range standards at Dominion's recommended threshold ranges. The recommended ranges Dominion provided to Board staff were different than the recommended ranges Florida indicates were provided to them.

V.   **Functional Testing**

As required by GAB 7.02(1), Wis. Adm. Code, Board staff conducted three mock elections with each component of Democracy Suite 4.14 systems to ensure the voting systems conform to all Wisconsin requirements. The test elections included a partisan primary, a general election with both a presidential and gubernatorial vote, and a nonpartisan election combined with a presidential preference vote.

Board staff designed a test deck of 1,001 ballots using various configurations of votes over the three mock elections to verify the accuracy and functional capabilities of the Democracy Suite 4.14 voting systems. Test ballots were provided by Dominion and marked by Board staff. Each mock election included three wards. Board staff fed these ballots through the ICE, ICC, and ICP. The ballot marking device on the ICE was tested by marking 29-40 ballots with the accessibility option and onboard printer. Two ballots were marked separately by the ICP COTS printer, which was conducted outside of the normal test deck campaigns. The votes captured by the onboard ICE printer and external COTS printer on the ICP were verified by

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[1] Florida's Standard: ICP & ICC- Oval and Write-in ranges are 5%-25%; ICE- Oval and Write-in ranges are 12%-35%.

Board staff before being scanned and counted by the ICE, ICC, and ICP. Board staff was able to reconcile each mock election on each piece of voting equipment submitted for testing.

VI.   **Telecommunication Testing**

At the May 21, 2013 Board meeting, pursuant to authority granted by Wis. Stat. § 5.91 and GAB Ch. 7, Wis. Adm. Code, and based upon the analysis and findings outlined in a staff memorandum, the Board adopted testing procedures and standards pertaining to modeming as detailed in the *Voting Systems Standards, Testing Protocols and Procedures Pertaining to the Use of Communication Devices in Wisconsin*, which are attached as Appendix 3. These rules apply to non- EAC certified voting systems, where the underlying voting system received EAC certification to either the VSS or VVSG 1.0, but any additional modeming component does not meet the VVSG 1.0.

At the same time, the Board directed staff to test non- EAC certified voting systems, where the underlying voting system received EAC certification to either the VSS or VVSG 1.0, but any additional modeming component does not meet the VVSG 1.0, to the criteria contained in the approved *Voting Systems Standards, Testing Protocols and Procedures Pertaining to the Use of Communication Devices in Wisconsin.* A properly submitted Wisconsin application for approval is required. Finally, at its May 21, 2013 meeting, the Board clarified that any modem approved in the future for use in Wisconsin must have been tested to the requirements contained in VVSG 1.0 or the most recent version of VSS currently accepted for testing and certification by the EAC. According to the NTS VSTL report, Dominion did not submit the 4.14-DS modem component for VVSG 1.0 testing, but instead requested that the modem receive functional testing only. Board staff proceeded with telecommunication testing despite the modeming component receiving functional testing only at the federal level.

In accordance with agency directives, Board staff conducted testing of the 4.14-DS voting system based on the *Voting Systems Standards, Testing Protocols and Procedures Pertaining to the Use of Communication Devices in Wisconsin* in three counties: Fond du Lac, Winnebago, and St. Croix, on April 28 and 29, 2015. All three counties were selected because of their interest in purchasing the new Dominion Democracy Suite Voting System, their location in the state, and the availability of clerks to participate during the testing dates. In consultation with each county clerk, Board staff selected three municipalities in each county to serve as locations for testing. The municipalities were selected in part because of the strength of the wireless networks in the community or lack thereof, the service providers used by each municipality, and the municipal clerk's willingness to host the testing team.

The wireless modem for the ICE and ICP is an external modem and communicates through the jurisdiction's wireless carrier.   The analog modem for the ICE is external. The analog modem for the ICP is internal and communicates through the jurisdiction's dial-up connection via a landline modem. Each method transmits results to the ICL, a secure server at a central office location, such as the county clerk's office. A firewall provides a buffer between the network, where the server is located, and other internal virtual networks or external networks. The data that is transmitted is encrypted and it is digitally signed. The modem function may only be used after an election inspector has closed the polls and used a security token on the equipment and entered a password to access the control panel. The network is configured to only allow

valid connections to connect to the Secure File Transfer Protocol (SFTP). The firewall further restricts the flow and connectivity of traffic.

The decision on whether the ICE or ICP includes an analog or wireless modem is made at the time of purchase, but can be easily changed at any time with the purchase of a new external modem, with exception of the internal analog modem for the ICP. The ICL and EMS supports modeming from a combination of methods in a jurisdiction. For example, a jurisdiction could have two sites with analog modems and three sites with wireless modems. Board staff successfully simulated such a setup as part of this test campaign. This voting system successfully handled simultaneous transmissions from both analog and wireless modems. Conversely, a jurisdiction could choose to purchase all analog modems or all wireless modems. Two factors that may impact a jurisdiction's purchasing decision include the strength of service in the jurisdiction and whether the jurisdiction has an existing contract with a service provider. A jurisdiction could choose to have two different pieces of voting equipment transmit results via different methods at a polling location, analog and wireless. This configuration was simulated at eight of the nine road test locations. The ICL and EMS supports modeming through various service providers, which can be reviewed in the table below. During testing, the strength of service ranged from one dot (lowest indicator level) to three dots (highest indicator level). Election results packets were sent successfully at all service levels.[2]

Service Provider*	Wireless/ Analog	County
AT&T	Analog	Fond du Lac
Wisnet	Wireless	Fond du Lac
Frontier	Analog	Fond du Lac
Bertram	Wireless	Fond du Lac
CenturyLink	Analog	Fond du Lac
US Cellular	Wireless	Fond du Lac
Charter	Wireless/Analog	Winnebago
TDS	Wireless/Analog	Winnebago
TWC	Wireless/Analog	Winnebago
AT&T	Analog	St. Croix
Baldwin Telecomm	Wireless	St. Croix
Verizon	Wireless/Analog	St. Croix
Century Tele	Analog	St. Croix

* This is not an exhaustive list of service providers that can transmit via the ICL. It is expected that every service provider in Wisconsin will be able to successfully transmit results.

Four Board staff members conducted the test, with four representatives from Dominion and two representatives from Command Central in each county to provide technical support. Dominion provided the necessary equipment for the testing, including three ICEs; three ICPs; modems for each unit; a portable EMS environment; and an ICL for modeming results, which included a SFTP client, servers, and firewall. Two ICEs were programmed to transmit results wirelessly and one by analog modem. Two ICPs were programmed to transmit results by analog modem and one wirelessly. In each location, Dominion set up the portable EMS

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[2] Neither the voting equipment modem function nor the ICL impacts the tabulation of official election results.

environment and ICL in a county office to receive test election results from each municipal testing location. In each municipal location, a Board staff member inserted a pre-marked package of 10-11 test ballots through the ICE and ICP to create an election results packet to transmit to the county office. A Board staff member was present at each county office to observe how the portable EMS environment and ICL handled the transmissions. Board staff was able to reconcile each road test packet with the printed results tape and the results which were transmitted by modem.

During road testing a functional test was conducted in the Town of Menasha and City of Fond du Lac to test the write-in recognition feature of the voting equipment. This feature allows for the voting equipment to recognize marks in the space where the voter indicates the name of their write-in candidate. Testing this feature caused a discrepancy in election total results due to some of the write-in test ballots not being read as anticipated. Results of the modem tests are provided in the tables below.

A. Fond du Lac County[3]

Municipality	Wireless/ Analog	Able to connect	Able to transmit	(Analog) Success rate *Connects/attempts*	(Wireless) Success rate *Connects/attempts*
City of Fond du Lac	Both	Yes	Yes	4/10[4]	8/10 [5]
Town of Oakfield	Both	Yes	Yes	13/15[6]	16/19[7]
Town of Rosendale	Both	Yes	Yes	15/17[8]	17/17

B. Winnebago County[9]

Municipality	Wireless/ Analog	Able to connect	Able to transmit	(Analog) Success rate *Connects/attempts*	(Wireless) Success rate *Connects/attempts*
Town of Black Wolf	Both	Yes	Yes	14/14	16/16 [10]
Town of Menasha	Both	Yes	Yes	2/6[11]	10/10
Town of Oshkosh	Both	Yes	Yes	8/10[12]	13/16[13]

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[3] County receives results via a wireless signal.

[4] City of Fond du Lac Analog: Card was programmed to dial area code, which wasn't required. In the ICP it is hardened and cannot be changed on-site. New card needed to be programmed.

[5] City of Fond du Lac Wireless: Received "port protector" errors. Error requires modem to be unplugged and re-plugged into the ICE.

[6] Town of Oakfield Analog: Port protector error.

[7] Town of Oakfield Wireless: Sim card was not positioned in the modem correctly.

[8] Town of Rosendale Analog: Tried to establish connection 3 times for each of the 2 failed attempts.

[9] County receives results via a wireless signal.

[10] Town of Black Wolf Wireless: One transmission took 4 minutes.

[11] Town of Menasha Analog: Card not programmed with the "1" at the beginning of the number. Since the ability to add a prefix creates a hard pause in the system when dialing it cannot be used to add a "1" to a number.

[12] Town of Oshkosh Analog: Two unsuccessful connection errors.

[13] Town of Oshkosh Wireless: Two port protector errors and one miscellaneous error, which resulted in the system returning to the administrative menu.

C. St. Croix County[14]

Municipality	Wireless/ Analog	Able to connect	Able to transmit	(Analog) Success rate *Connects/attempts*	(Wireless) Success rate *Connects/attempts*
City of Hudson	Both	Yes	Yes	8/13[15]	6/6
Town of Emerald	Both	Yes	Yes	1/8[16]	1/1[17]
Village of Hammond	Analog	Yes	Yes	6/10[18]	N/A

VII. Public Demonstration

A public demonstration of the voting systems was held April 22, 2015, from 4:30 p.m. to 6:00 p.m. in Madison at the G.A.B. office. Members of the public were invited to use the voting system and provide their feedback. Four people attended the public demonstration, including two from organizations that advocate for interests of individuals with disabilities, one from the League of Women Voters, and one member of the Marathon County IT Department. The 4.14-DS modem component was not demonstrated for the public. Feedback from the public demonstration is included in Appendix 2.

VIII. Wisconsin Election Administration Council Demonstration

Six of the 19 appointed members of the Wisconsin Election Administration Council (WI-EAC) attended a Dominion demonstration of the voting systems on April 23, 2015 from 12:30 p.m. to 3:00 p.m. in Madison at the G.A.B. office. The WI-EAC is composed of municipal and county clerks, representatives of the disability community, and advocates for the interests of the voting public. The 4.14-DS modem component was not demonstrated for the WI-EAC members. Feedback from the WI-EAC is included in Appendix 1.

IX. Board Staff's Feedback

Neither the 4.14-D or 4.14-DS voting systems are compatible with other Dominion voting systems currently approved for use in Wisconsin. Municipalities using other Dominion voting systems will have to purchase new equipment included within this test. The following is a list of staff concerns regarding each component tested.

1. ICP

   i. The accessible component for the ICP is audio only with a COTS printer that would be set up in a separate accessible voting booth. The audio only set-up of the ICP could lead voters to cast blank ballots by mistake or feeling discouraged

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[14] County receives results via a single analog phone line.
[15] City of Hudson Analog: Three errors due to phone line being plugged into the wrong port and two because of a busy signal because the County uses a single analog phone line to receive results with no rollover system.
[16] Town of Emerald Analog: Seven failed attempt were due to busy signal because the County uses a single analog phone line to receive results with no rollover system.
[17] Town of Emerald Wireless: Staff believed one successful submission was necessary.
[18] Village of Hammond Analog: Four failed attempts were due to busy signal because the County uses a single analog phone line to receive results with no rollover system.

from voting because the process is not as intuitive compared to current accessible voting systems in use in Wisconsin, such as touchscreens or other visual displays. Also, voters may be unaware of the accessible voting option if they do not see a separate accessible system in the polling place like they may have used in the past.

ii. The accessible component uses an ATI pad only, which will be difficult for individuals with dexterity issues. A "sip and puff" and pedals may be used, but those devices are not included and would have to be brought by the voter to the polls.

iii. The ICP warnings are the same as those on the ICE, but unlike the ICE, the ICP warnings are normally displayed over multiple screens. This could lead to voter confusion or lack of clarity because the entire warning message is not displayed. A voter or election inspector would have to hit "more" on the ICP screen to move to the remaining parts of the warning message. Furthermore, when a ballot is ejected by the equipment due to a ballot issue and then fully removed from the ICP, the machine clears the warning message.

iv. Photocopied ballots are accepted by the equipment. As long as the photocopy is of a high enough quality the photocopy will be accepted as long as it is of identical paper size (length, width, and ratio). The G.A.B. office copier, Kyocera TASKalfa 5500i, was used to make the copies with no additional altering of resolution or contrast from the current copier settings. During testing Board staff made four photocopies of the Nonpartisan Election ballot and one photocopy of the General Election ballot. For the Nonpartisan Election three photocopies were of lighter stock than the original ballot and one was heavier. One of the lighter stock copies was made on watermark paper. In each circumstance the equipment read the ballot and counted the votes. The one photocopy for the General Election was on lighter stock and read by the equipment.

v. The number that is dialed when modeming in unofficial election night results is hard-coded into the elections set up.

2. ICC

i. Photocopied ballots are accepted by the equipment. As long as the photocopy is of a high enough quality the photocopy will be accepted as long as it is of identical paper size (length, width, and ratio). The G.A.B. office copier, Kyocera TASKalfa 5500i, was used to make the copies with no additional altering of resolution or contrast from the current copier settings. During testing Board staff made four photocopies of the Nonpartisan Election and one photocopy of the General Election. For the Nonpartisan Election three photocopies were of lighter stock than the original ballot and one was heavier. One of the lighter stock copies was made on watermark paper. In each circumstance the equipment read the ballot and counted the votes. The one photocopy for the General Election was on lighter stock and read by the equipment.

3. ICE

  i.   The ICE took ballots filled out with red pen. In each of the three elections 2-4 ballots were marked with red ballpoint pen. In each election the ICE accurately tallied the votes for those candidates. No other piece of equipment tested in conjunction with the Democracy Suite Voting System was able to read red pen markings.

  ii. The accessible function requires election inspector intervention. In Wisconsin, election inspectors are trained not to inquire whether a voter requires or wants to utilize accessible voting equipment. Since the accessible component is part of the tabulating equipment an individual may receive a ballot, go over to the machine, insert the ballot, receive the prompt that the ballot is blank, and cast the blank ballot expecting an accessible component to appear on the screen. To use the accessible component on the ICE, the voter must communicate to an election inspector that they wish to use the accessible component. The election inspector must activate the accessible feature to permit the voter to make their selections using the ATI pad. When the voter has finished making their selections, the election inspector activates the accessible component for a second time to enable the ballot marking feature.

  iii. The accessible component uses an ATI pad only, which will be difficult for individuals with dexterity issues. A "sip and puff" and pedals may be used, but those items would traditionally have to be the property of the voter and brought by the voter to the polls.

  iv. If the municipality does not purchase the external monitor used during accessible voting sessions, other voters will not be able to place voted ballots into the equipment to be counted without risking the confidentiality and privacy of the voter using the primary screen accessibility component. This will require voted ballots to be placed in the auxiliary bin until the primary screen accessible voting session has ended and the voter has cast their ballot.

  v.   The access door with the modem port must remain open during voting to allow for access to the accessible controller USB connection. The modem connection port is only operable when the polls are closed and the option to modem in results only appears in the utility menu when the polls are closed.

  vi. Removing a ballot that was rejected due to a ballot issue (i.e. overvoted, crossover, etc.) will clear the message.

  vii. Photocopied ballots are accepted by the equipment. As long as the photocopy is of a high enough quality the photocopy will be accepted as long as it is of identical paper size (length, width, and ratio). The G.A.B. office copier, Kyocera TASKalfa 5500i, was used to make the copies with no additional altering of resolution or contrast from the current copier settings. During testing Board staff made four photocopies of the Nonpartisan Election and one photocopy of the General Election. For the Nonpartisan Election three photocopies were of lighter stock than the original ballot and one was heavier. One of the lighter stock copies was made on watermark paper. In each circumstance the equipment read the ballot and counted the votes. The one photocopy for the General Election was on lighter stock and read by the equipment.

4. <u>EMS</u>

   i. The EMS allows for elections to be set up to permit write-ins to take precedence over ballot candidates in all circumstances.
   ii. The EMS allows for elections to be set up to not require ballots marked using the ICE on-board accessibility printer to be returned for review prior to casting the ballot.
   iii. The EMS allows for elections to be set up not to make a notification sound when a warning displays on the voting equipment.
   iv. The EMS allows for elections to be set up with ambiguous zone thresholds set by the individual programming the election for the ovals and write in boxes.
   v. Individual results reports are not readable without the EMS software.
   vi. The Ambiguous Mark Technology threshold ranges are adjustable each election during election set-up. Each county could effectively program elections with different thresholds, which would mean a vote that counts in one jurisdiction may not necessarily count in another when cast on the same type of voting equipment. This capability may result in additional remade or spoiled ballots due to stray marks, hesitation marks, or paper imperfections if the threshold range is not set correctly. This capability may also require altering the pre-election testing of voting equipment to account for a need to test the programmable ambiguous mark thresholds.
   vii. Crossover Vote Warning: Board staff believes the warning message indicating a voter has made a crossover vote is sufficient to allow the voter to understand the implications of casting or returning the ballot.
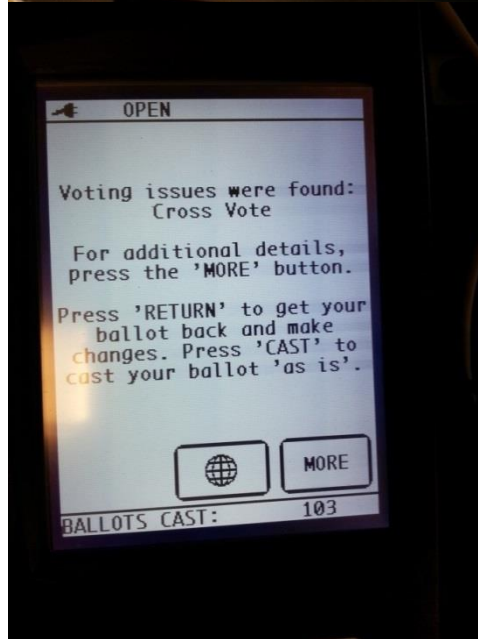
viii. Blank Ballot Warning: Board staff believes the warning message indicating a voter has made a blank ballot is sufficient to allow for the voter to understand the implications of casting or returning the ballot.
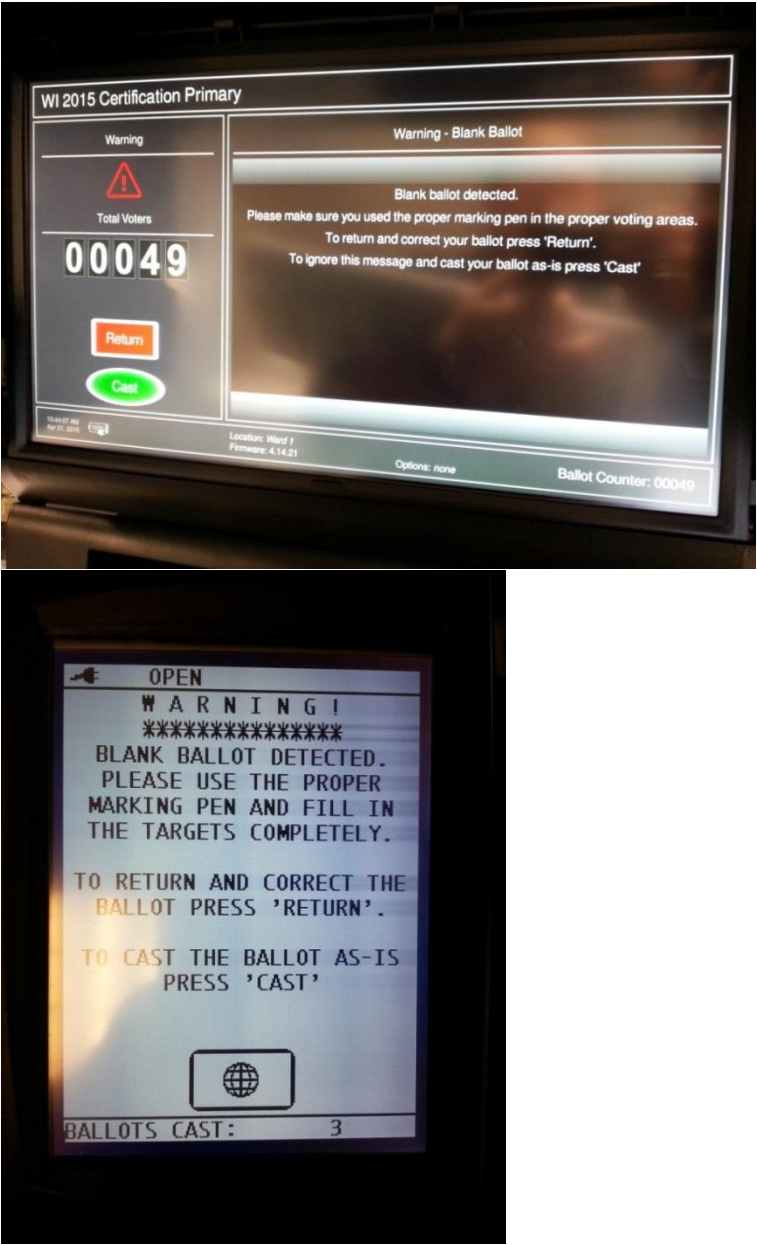
X.   Statutory Compliance

Wis. Stat. §5.91 establishes the following requirements which voting systems must meet to be approved for use in Wisconsin. Please see the below text of each requirement and staff's analysis of the 4.14-D and 4.14-DS's compliance with the standards.

§ 5.91 (1)
The voting system enables an elector to vote in secret.
Staff Analysis
The voting equipment has privacy screens or is designed to be placed in a voting booth.

§ 5.91 (3)
The voting system enables the elector, for all elections, except primary elections, to vote for a ticket selected in part from the nominees of one party, and in part from nominees from other parties and write-in candidates
Staff Analysis
The system meets this requirement.

§ 5.91 (4)
The voting system enables an elector to vote for a ticket of his or her own selection for any person for any office for whom he or she may desire to vote whenever write-in votes are permitted.
Staff Analysis
The system meets this requirement.

§ 5.91 (5)
The voting systems accommodate all referenda to be submitted to electors in the form provided by law.
Staff Analysis
The system meets this requirement.

§ 5.91 (6)
The voting system permits an elector in a primary election to vote for the candidates of the recognized political party of his or her choice, and the system rejects any ballot on which votes are cast in the primary of more than one recognized political party, except where a party designation is made or where an elector casts write-in votes for candidates of more than one party on a ballot that is distributed to the elector.
Staff Analysis
The system meets this requirement. The party preference is designed as a logic check instead of a contest in order to satisfy the requirement.

§ 5.91 (7)
The voting system enables the elector to vote at an election for all persons and offices for whom and for which the elector is lawfully entitled to vote; to vote for as many persons for an office as the elector is entitled to vote for; to vote for or against any question upon which the elector is entitled to vote; and it rejects all choices recorded on a ballot for an office or a measure if the number of choices exceeds the number which an elector is entitled to vote for on such office or on such measure, except where an elector casts excess write-in votes upon a ballot that is distributed to the elector.
Staff Analysis
The system meets this requirement.

§ 5.91 (8)
The voting system permits an elector at a General Election by one action to vote for the candidates of a party for President and Vice President or for Governor and Lieutenant Governor.
Staff Analysis
The system meets this requirement.

§ 5.91 (9)
The voting system prevents an elector from voting for the same person more than once, except for excess write-in votes upon a ballot that is distributed to the elector.
Staff Analysis
The system meets this requirement.

§ 5.91 (10)
The voting system is suitably designed for the purpose used, of durable construction, and is usable safely, securely, efficiently and accurately in the conduct of elections and counting of ballots.
Staff Analysis
The system meets this requirement.

§ 5.91 (11)
The voting system records and counts accurately every vote and maintains a cumulative tally of the total votes cast that is retrievable in the event of a power outage, evacuation or malfunction so that the records of votes cast prior to the time that the problem occurs is preserved.
Staff Analysis
The system meets this requirement. The voting equipment has an on-board battery, which lasts for 2 hours of continuous use in the event of a power outage. At 15% remaining power the system provides a low power warning and does not permit ballots to be fed into the equipment. The equipment can be overridden to allow for ballots to continue to be fed into the machine. From 15% to 10% remaining power the system beeps at each percentage point and election inspectors can print the election results tape and modem in unofficial election night results. Ballot images, election set-up, and tabulations results are stored on the compact memory cards.

§ 5.91 (12)
The voting system minimizes the possibility of disenfranchisement of electors as the result of failure to understand the method of operation or utilization or malfunction of the ballot, voting system, or other related equipment or materials.
Staff Analysis
The voting system meets this requirement. The system has the ability to provide ample warnings and notifications to electors. The warnings messages and notifications observed contain detailed information. (i.e. when an overvote is

detected the warning message informs the voter of an overvote and the contest it was cast in.)

§ 5.91 (13)
The automatic tabulating equipment authorized for use in connection with the system includes a mechanism which makes the operator aware of whether the equipment is malfunctioning in such a way that an inaccurate tabulation of the votes could be obtained.
Staff Analysis
The voting system meets this requirement.

§ 5.91 (14)
The voting system does not use any mechanism by which a ballot is punched or punctured to record the votes cast by an elector.
Staff Analysis
The voting system meets this requirement.

§ 5.91 (15)
The voting system permits an elector to privately verify the votes selected by the elector before casting his or her ballot.
Staff Analysis
All pieces of voting equipment in this system are digital tabulators. Electors can visually verify their votes prior to inserting the ballot into the equipment. The ICE and ICP may be configured to allow or require an on-screen or audio review of the machine's tabulation for one ballot or all ballots prior to being cast or counted. If the on-screen or audio review is not set-up the system will accept a ballot and count it without the opportunity for review.

§ 5.91 (16)
The voting system provides an elector the opportunity to change his or her votes and to correct any error or to obtain a replacement for a spoiled ballot prior to casting his or her ballot.
Staff Analysis
All pieces of voting equipment in this system are digital tabulators. Electors can visually verify their votes prior to inserting the ballot into the equipment. The ICE and ICP may be configured to allow or require an on-screen or audio review of the machine's tabulation for one ballot or all ballots prior to being cast or counted. If the on-screen or audio review is not set-up the system will accept a ballot and count it without the opportunity for review.

§ 5.91 (17)
Unless the ballot is counted at a central counting location, the voting system includes a mechanism for notifying an elector who attempts to cast an excess number of votes for a single office the ballot will not be counted, and provides the elector with an opportunity to correct his or her ballot or to receive a replacement ballot.

Staff Analysis
The system allows for the election configuration to reject all overvoted ballots, without the opportunity for the voter to override.

§ 5.91 (18)
If the voting system consists of an electronic voting machine, the voting system generates a complete, permanent paper record showing all votes cast by the elector, that is verifiable by the elector, by either visual or nonvisual means as appropriate, before the elector leaves the voting area, and that enables a manual count or recount of each vote cast by the elector.
Staff Analysis
This system is not a DRE; therefore, the requirement is not applicable. Voter filled out ballots are stored in the ballot box and each ballot image is saved to the compact flash cards with the election set-up and tabulation results.

The Help America Vote Act of 2002 (HAVA) also provides the following applicable requirements that voting systems must meet:

HAVA § 301(a)(1)(A)
The voting system shall:
(i) permit the voter to verify (in a private an independent manner) the votes selected by the voter on the ballot before the ballot is cast and counted;
(ii) provide the voter with the opportunity (in a private and independent manner) to change the ballot or correct any error before the ballot is cast and counted (including the opportunity to correct the error through the issuance of a replacement ballot if the voter was otherwise unable to change the ballot or correct any error); and
(iii) if the voter selects votes for more than one candidate for a single office –   (I) notify the voter than the voter has selected more than one candidate for a single office on the ballot;   (II) notify the voter before the ballot is cast and counted of the effect of casting multiple votes for the office; and,   (III) provide the voter with the opportunity to correct the ballot before the ballot is cast and counted

HAVA § 301(a)(1)(C)
The voting system shall ensure than any notification required under this paragraph preserves the privacy of the voter and the confidentiality of the ballot.

HAVA § 301(a)(3)(A)
The voting system shall—   (A) be accessible for individuals with disabilities, including nonvisual accessibility for the blind and visually impaired, in a manner that provides the same opportunity for access and participation (including privacy and independence) as other voters

Staff Analysis
The system meets these requirements. However, the system does not provide a suitable option for individuals with dexterity issues, without the voter bringing additional equipment to the polls. The accessible option requires the use of an ATI, without a touchscreen option, and requires significant time to complete. The accessible voting option requires involvement by the election inspector at multiple stages of the voting process. Mandatory election inspector involvement could lead to a real or perceived inability to vote or verify votes in a private and independent manner.

XI.   Conclusion

To determine whether a voting system should be approved for use in Wisconsin, the following recommendations are based upon three goals.

1.   Can the voting system successfully run a transparent, fair, and secure election in compliance with Wisconsin Statutes?

Staff's Response: Yes. The 4.14-D and 4.14-DS accurately completed the mock elections and were able to accommodate the voting requirements of the Wisconsin election process. As the 4.14-D is the base voting system for the 4.14-DS, the 4.14-DS also meets this goal.

2.   Does the system enhance access to the electoral process for individuals with disabilities?

Staff's Response: This system does not enhance access to the electoral process for individuals with disabilities over previously approved voting systems in Wisconsin. The scope and degree of accessibility from previously approved voting systems declines with the 4.14-D & 4.14-DS. The accessible options with the 4.14-D & 4.14-DS do not include a touchscreen option, and provide limited accessibility for individuals with dexterity issues. The system requires mandatory election inspector involvement during accessible voting. The all-in-one accessible and tabulating equipment may also confuse voters, and result in blank ballots being cast mistakenly. However, the system meets ADA requirements.

3.   Does the voting system meet Wisconsin's statutory requirements?

Staff's Response: Yes. The 4.14-D complies with all applicable state and federal requirements. As the 4.14-D is the base voting system for the 4.14-DS, the 4.14-DS also meets this goal.

XII. Recommendations

1. Board staff recommends approval of the Dominion Democracy Suite 4.14-D Voting System and components set forth above. This voting system accurately completed the three mock elections and was able to accommodate the voting requirements of the

Wisconsin election process. Additionally, Board staff recommends approval of the Dominion Democracy Suite 4.14-DS Voting System and components set forth above. These recommendation s are based on the VSTL report provided by NTS and on this voting system's successful completion of functional and telecommunication testing according to Wis. Stat. §5.91, G.A.B. 7.02, and the *Voting Systems Standards, Testing Protocols and Procedures Pertaining to the Use of Communication Devices in Wisconsin.*

2. Board staff recommends that as a continuing condition of the Board's approval, that Dominion may not impose customer deadlines contrary to requirements provided in Wisconsin Statutes, as determined by the Board. In order to enforce this provision, local jurisdictions purchasing Dominion equipment shall also include such a provision in their respective purchase contract or amend their contract if such a provision does not currently exist.

3. Board staff recommends that as a continuing condition of the Board's approval, that this system must always be configured to include the following options:

   a. Automatically reject all overvoted ballots, without the option to override.
   b. Store election set-up, results, and ballot images on both compact memory cards. Each memory card must be retained, with the data intact, for the required retention period. If a jurisdiction transfers the data from the memory cards to a digital storage device after the recount period they must transfer all files from both memory cards into two separate files.
   c. Prohibit the use of the Write-In Preference feature, which causes write-in votes to always count over a ballot candidate.
   d. Provide an audible warning tone and visual warning message when a crossover, overvote, blank, or ambiguous ballot is fed into the voting equipment.
   e. Return a marked ballot to the voter for review prior to casting the ballot when ballots are marked using the ICE on-board marking device system.
   f. The ambiguous mark threshold ranges must be set per Dominion's recommendation, which are 15%-35% for the oval and 12%-35% for the write-in box. The Board retains the discretion to alter these ranges.
   g. Capture digital ballot images of all ballots cast by the system.

4. Board staff recommends election inspectors shall continue to check the main bin and review all ballots for validly cast write-ins at the close of the polls at every election.

5. Board staff recommends election inspectors shall remake all absentee ballots automatically rejected by the voting equipment so that the ballot count is consistent with total voter numbers.

6. Board staff recommends clerks and election inspectors shall ensure that external modems are secured prior to, during, and after every election.

7. Board staff recommends election inspectors shall enable an on-screen review of the ballot on the ICE for every ballot marked using the on-board ballot marking device.

8. As part of US EAC certificate: DVS-DemSuite4.14-D, only equipment included in this certificate are allowed to be used together to conduct an election in Wisconsin. Previous systems that were approved for use by the former Elections Board and the G.A.B. are not compatible with the new Dominion voting system, and are not to be used together with the equipment seeking approval by the Board, as this would void the US EAC certificate. If a jurisdiction upgrades to 4.14-D, they need to upgrade each and every component of the voting system to the requirements of what is approved herein. Likewise, if a jurisdiction upgrades to 4.14-DS, they need to upgrade each and every component of the voting system to the requirements of what is approved herein. The EAC certification includes the AutoMARK in the certification, but option was not brought for approval in Wisconsin. Therefore, municipalities may not use an AutoMARK as a ballot marking device for ballots that will be fed into a 4.14-D or 4.14-DS piece of equipment.

9. Board staff recommends that as a condition of approval, Dominion shall abide by applicable Wisconsin public records laws. If, pursuant to a proper public records request, the customer receives a request for matters that might be proprietary or confidential, customer will notify Dominion, providing the same with the opportunity to either provide customer with the record that is requested for release to the requestor, or shall advise Customer that Dominion objects to the release of the information, and provide the legal and factual basis of the objection. If for any reason, the customer concludes that customer is obligated to provide such records, Dominion shall provide such records immediately upon customer's request. Dominion shall negotiate and specify retention and public records production costs in writing with customers prior to charging said fees. In absence of meeting such conditions of approval, Dominion shall not charge customer for work performed pursuant to a proper public records request, except for the "actual, necessary, and direct" charge of responding to the records request, as that is defined and interpreted in Wisconsin law, plus shipping, handling, and chain of custody.

XIII. Proposed Motion

MOTION: The Government Accountability Board adopts the staff's recommendations for approval of the Dominion Voting System's Application for Approval of Democracy Suite 4.14-D Voting System in compliance with US EAC certificate DVS-DemSuite4.14-D, including the conditions described above.

MOTION: The Government Accountability Board adopts the staff's recommendations for approval of the Dominion Voting System's Application for Approval of Democracy Suite 4.14-DS Voting System, which is a modification of the EAC approved 4.14-D voting system, US EAC certificate DVS-DemSuite4.14-D, including the conditions described above.

Attachments

✓   Appendix 1: Wisconsin Election Administration Council Feedback
✓   Appendix 2: Public Demonstration Feedback
✓   Appendix 3: *Voting Systems Standards, Testing Protocols and Procedures Pertaining to the Use of Communication Devices in Wisconsin*
✓   Wisconsin Statutes § 5.91

- ✓ Wisconsin Administrative Code GAB 7
- ✓ US_EAC Grant of Certification
- ✓ US_EAC Certificate of Conformance

APPENDIX 1: Wisconsin Election Administration Council's Feedback
These comments were provided via a structured feedback form.

1. **How would you rate the functionality of the equipment?**

Very Poor	Poor	Fair	Good	Excellent
			5	

- Write in's go into separate bin.
- Thought the ICE was very user friendly screen, easy to read being bigger, like the write in feature as described.
- Excellent write-in feature if voter does not complete oval or does not complete a name in write-in section.
- A negative is the non-ability to use colored ballots.
- I like larger display.

2. **How would you rate the accessible features?**

Very Poor	Poor	Fair	Good	Excellent
	1	4		

- Handicap—pushing buttons might be problem.
- Problem with handicapped voting—ATI.
- The controller would be more difficult for an individual to control. Touch screen would be much better. Cumbersome takes a long time to complete. Directions are not clear.
- No touchscreen ability.
- Against the ability to allow programming for ballot (from accessible device) to drop directly into ballot box without coming back to voter.
- Would like to see a touch screen option.
- Concerned about comments made about ATI.

3. **Rate your overall impression of the system.**

Very Poor	Poor	Fair	Good	Excellent
		1	4	

- Good overall, like paper ballots.
- Very excited to get another equipment option.
- Not sure if it's worth an additional $4,000 to have visual handicapped voting option if not used regularly.

APPENDIX 2: Public Demonstration Feedback

These comments were provided via a structured feedback form.

1. How would you rate the functionality of the equipment?

Very Poor	Poor	Fair	Good	Excellent
			1	1

- Would have to actually set it up and take it down to really be able to evaluate it.

2. How would you rate the accessible features?

Very Poor	Poor	Fair	Good	Excellent
			1	

- Instructions somewhat confusing.
- What if you choose not to vote in all categories?
- Prior instruction would be helpful.

3. Rate your overall impression of the system.

Very Poor	Poor	Fair	Good	Excellent
			1	1

- After use it became more clear and easier to use.
- Seems to offer many great features.

APPENDIX 3: Voting System Standards, Testing Protocols and Procedures Pertaining to the Use of Communication Devices

PART I: PROPOSED TESTING STANDARDS

Applicable VVSG Standard
The modem component of the voting system or equipment must be tested to the requirements contained in the most recent version or versions of the Voluntary Voting System Guidelines (VVSG) currently accepted for testing and certification by the U.S. Election Assistance Commission (EAC). Compliance with the applicable VVSG may be substantiated through federal certification by the EAC, through certification by another state that requires compliance with the applicable VVSG, or through testing conducted by a federally certified voting system test laboratory (VSTL) to the standards contained in the applicable VVSG. Meeting the requirements contained in the VVSG may substantiate compliance with the voting system requirements contained in Section 301 of the Help America Vote Act of 2002 (HAVA).

Access to Election Data
Provisions shall be made for authorized access to election results after closing of the polls and prior to the publication of the official canvass of the vote. Therefore, all systems must be capable of generating an export file to communicate results from the election jurisdiction to the Central processing location on election night after all results have been accumulated. The system may be designed so that results may be transferred to an alternate database or device. Access to the alternate file shall in no way affect the control, processing, and integrity of the primary file or allow the primary file to be affected in any way.

Security
All voting system functions shall prevent unauthorized access to them and preclude the execution of authorized functions in an improper sequence. System functions shall be executable only in the intended manner and order of events and under the intended conditions. Preconditions to a system function shall be logically related to the function so as to preclude its execution if the preconditions have not been met.

Accuracy
A voting system must be capable of accurately recording and reporting votes cast. Accuracy provisions shall be evidenced by the inclusion of control logic and data processing methods, which incorporate parity, and checksums, or other equivalent error detection and correction methods.

Data Integrity
A voting system shall contain provisions for maintaining the integrity of voting and audit data during an election and for a period of at least 22 months thereafter. These provisions shall include protection against:
- the interruption of electrical power, generated or induced electromagnetic radiation
- ambient temperature and humidity
- the failure of any data input or storage device
- any attempt at an improper data entry or retrieval procedure

Reliability

Successful Completion of the Logic and Accuracy test shall be determined by two criteria
- The number of failures in transmission
- and the accuracy of vote counting

The failure or connectivity rate will be determined by observing the number of relevant failures that occur during equipment operation. The accuracy is to be measured by verifying the completeness of the totals received.

PART II: TEST PROCEDURES AND PROTOCOLS

Overview of Telecommunication Test

The telecommunication test focuses on system hardware and software function and performance for the transmission of data that is used to operate the system and report election results. This test applies to the requirements for Volume I, Section 6 of the EAC 2005 VVSG. This testing is intended to complement the network security requirements found in Volume I, Section 7 of the EAC 2005 VVSG, which include requirements for voter and administrator access, availability of network service, data confidentiality, and data integrity. Most importantly, security services must restrict access to local election system components from public resources, and these services must also restrict access to voting system data while it is in transit through public networks. Compliance with Section 7, EAC 2005 VVSG shall be evidenced by a VSTL report submitted with the vendor's application for approval of a voting system.

In an effort to achieve these standards and to verify the proper functionality of the units under test, the following methods will be used to test each component of the voting system:

Wired Modem Capability Test Plan

Test Objective: To transfer the results from the tabulator to the Election Management System via a wired network correctly.

Test Plan:
1. Attempt to transmit results prior to the closing of the polls and printing of results tape
2. Set up a telephone line simulator that contains as many as eight phone lines
3. Perform communication suite for election night reporting using a bank with as many as seven analog modems:
   a. Connect the central site election management system to the telephone line simulator and connect the modems to the remaining telephone line ports
   b. Setup the phone line numbers in the telephone line simulator
   c. Use the simulated election to upload the election results
      i. Use at least eight tabulators in different reporting units
      ii. Use as many as two tabulators within the same reporting units
   d. Simulate the following transmission anomalies
      i. Attempt to upload results from a tabulating device to a computer which is not part of the voting system
      ii. Attempt to upload results from a non-tabulating device to the central site connected to the modem bank

      iii. Attempt to load stress by simulating a denial of service (DOS) attack or attempt to upload more than one polling location results (e.g., ten or more polling locations)

Wireless Capability Test Plan

Test Objective: To transfer the results from the tabulator to EMS via a wireless network correctly.

Test Plan:
1. Attempt to transmit results prior to the closing of the polls and printing of results tape.
2. Perform wireless communication suite for election night reporting:
    a. Use the simulated election to upload the election results using wireless transfer to the secure FTP server (SFTP)
    b. Use at least eight tabulators in different reporting units
    c. Use as many as two tabulators within the same reporting unit
3. Simulate the following transmission anomalies
    a. Attempt to upload results from a tabulating device to a computer which is not part of the voting system
    b. Attempt to upload results from a non-tabulating device to the SFTP server
    c. Attempt to load stress by simulating a denial of service (DOS) attack or attempt to upload more than one polling location results (e.g., ten or more polling locations)
    d. If possible, simulate a weak signal
    e. If possible, simulate an intrusion

Test Conclusions for Wired and Wireless Transmission

- System must be capable of transferring 100% of the contents of results test packs without error for each successful transmission.
- Furthermore, system must demonstrate secure rate of transmission consistent with security requirements.
- System must demonstrate the proper functionality to ensure ease of use for clerks on election night.
- System must be configured such that the modem component remains inoperable until after the official closing of the polls and printing of one (1) copy of the results tape**.**

PART III: PROPOSED SECURITY PROCEDURES

Staff recommends that as a condition of purchase, any municipality or county which purchases this equipment and uses modem functionality must also agree to the following conditions of approval.
1. Devices which may be incorporated in or attached to components of the system for the purpose of transmitting tabulation data to another data processing system, printing system, or display device shall not be used for the preparation or printing of an official canvass of the vote unless they conform to a data interchange and interface structure and protocol which incorporates some form of error checking.
2. Any jurisdiction using a modeming solution to transfer results from the polling place to the central count location may not activate the modem functionality until after the polling place closes.

3. Any municipality using modeming technology must have one set of results printed before it attempts to modem any data.
4. Any municipality purchasing and using modem technology to transfer results from the polling location to the central count location must conduct an audit of the voting equipment after the conclusion of the canvass process.
5. Default passwords provided by Dominion to county/municipality must be changed upon receipt of equipment.
6. Counties must change their passwords after every election.

PART IV: CONDITIONS FOR APPROVAL (VENDOR)

Additionally, staff recommends that, as a condition/continuing condition of approval, Dominion shall:

1. Reimburse actual costs incurred by the G.A.B. and local election officials, where applicable, in examining the system *(including travel and lodging)* pursuant to state processes.
2. Configure modem component to remain inoperative (incapable of either receiving or sending transmissions) prior to the closing of the polls and the printing of tabulated results.

5.91   Requisites for approval of ballots, devices and equipment. No ballot, voting device, automatic tabulating equipment or related equipment and materials to be used in an electronic voting system may be utilized in this state unless it is approved by the board. The board may revoke its approval of any ballot, device, equipment or materials at any time for cause. No such ballot, voting device, automatic tabulating equipment or related equipment or material may be approved unless it fulfills the following requirements:

(1)   It enables an elector to vote in secrecy and to select the party for which an elector will vote in secrecy at a partisan primary election.

(3)   Except in primary elections, it enables an elector to vote for a ticket selected in part from the nominees of one party, and in part from the nominees of other parties, and in part from independent candidates and in part of candidates whose names are written in by the elector.

(4)   It enables an elector to vote for a ticket of his or her own selection for any person for any office for whom he or she may desire to vote whenever write-in votes are permitted.

(5)   It accommodates all referenda to be submitted to the electors in the form provided by law.

(6)   The voting device or machine permits an elector in a primary election to vote for the candidates of the recognized political party of his or her choice, and the automatic tabulating equipment or machine rejects any ballot on which votes are cast in the primary of more than one recognized political party, except where a party designation is made or where an elector casts write-in votes for candidates of more than one party on a ballot that is distributed to the elector.

(7)   It permits an elector to vote at an election for all persons and offices for whom and for which the elector is lawfully entitled to vote; to vote for as many persons for an office as the elector is entitled to vote for; to vote for or against any question upon which the elector is entitled to vote; and it rejects all choices recorded on a ballot for an office or a measure if the number of choices exceeds the number which an elector is entitled to vote for on such office or on such measure, except where an elector casts excess write-in votes upon a ballot that is distributed to the elector.

(8)   It permits an elector, at a presidential or gubernatorial election, by one action to vote for the candidates of a party for president and vice president or for governor and lieutenant governor, respectively.

(9)   It prevents an elector from voting for the same person more than once for the same office, except where an elector casts excess write-in votes upon a ballot that is distributed to the elector.

(10)   It is suitably designed for the purpose used, of durable construction, and is usable safely, securely, efficiently and accurately in the conduct of elections and counting of ballots.

(11)   It records correctly and counts accurately every vote properly cast and maintains a cumulative tally of the total votes cast that is retrievable in the event of a power outage, evacuation or malfunction so that the records of votes cast prior to the time that the problem occurs is preserved.

(12)   It minimizes the possibility of disenfranchisement of electors as the result of failure to understand the method of operation or utilization or malfunction of the ballot, voting device, automatic tabulating equipment or related equipment or materials.

(13) The automatic tabulating equipment authorized for use in connection with the system includes a mechanism which makes the operator aware of whether the equipment is malfunctioning in such a way that an inaccurate tabulation of the votes could be obtained.

(14) It does not employ any mechanism by which a ballot is punched or punctured to record the votes cast by an elector.

(15) It permits an elector to privately verify the votes selected by the elector before casting his or her ballot.

(16) It provides an elector with the opportunity to change his or her votes and to correct any error or to obtain a replacement for a spoiled ballot prior to casting his or her ballot.

(17) Unless the ballot is counted at a central counting location, it includes a mechanism for notifying an elector who attempts to cast an excess number of votes for a single office that his or her votes for that office will not be counted, and provides the elector with an opportunity to correct his or her ballot or to receive and cast a replacement ballot.

(18) If the device consists of an electronic voting machine, it generates a complete, permanent paper record showing all votes cast by each elector, that is verifiable by the elector, by either visual or nonvisual means as appropriate, before the elector leaves the voting area, and that enables a manual count or recount of each vote cast by the elector.

Chapter GAB 7
APPROVAL OF ELECTRONIC VOTING EQUIPMENT

GAB 7.01   Application for approval of electronic voting system.

  (1)   An application for approval of an electronic voting system shall be accompanied by all of the following:

  (a) A signed agreement that the vendor shall pay all costs, related to approval of the system, incurred by the board, its designees and the vendor.

  (b) Complete specifications for all hardware, firmware and software.

  (c) All technical manuals and documentation related to the system.

  (d) Complete instruction materials necessary for the operation of the equipment and a description of training available to users and purchasers.

  (e) Reports from an independent testing authority accredited by the national association of state election directors (NASED) demonstrating that the voting system conforms to all the standards recommended by the federal elections commission.

  (f) A signed agreement requiring that the vendor shall immediately notify the board of any modification to the voting system and requiring that the vendor will not offer, for use, sale or lease, any modified voting system, if the board notifies the vendor that the modifications require that the system be approved again.

  (g) A list showing all the states and municipalities in which the system has been approved for use and the length of time that the equipment has been in use in those jurisdictions.

  (2)   The board shall determine if the application is complete and, if it is, shall so notify the vendor in writing. If it is not complete, the board shall so notify the vendor and shall detail any insufficiencies.

  (3)   If the application is complete, the vendor shall prepare the voting system for three mock elections, using offices, referenda questions and candidates provided by the board.

GAB 7.02   Agency testing of electronic voting system.

  (1)   The board shall conduct a test of a voting system, submitted for approval under s. GAB 7.01, to ensure that it meets the criteria set out in s. 5.91, Stats. The test shall be conducted using a mock election for the partisan primary, a mock general election with both a presidential and gubernatorial vote, and a mock nonpartisan election combined with a presidential preference vote.

  (2)   The board may use a panel of local election officials and electors to assist in its review of the voting system.

  (3)   The board may require that the voting system be used in an actual election as a condition of approval.

GAB 7.03   Continuing approval of electronic voting system.

  (1)   The board may revoke the approval of any existing electronic voting system if it does not comply with the provisions of this chapter. As a condition of maintaining the board's approval for the use of the voting system, the vendor shall inform the board of all changes in the hardware, firmware and software and all jurisdictions using the voting system.

  (2)   The vendor shall, at its own expense, furnish, to an agent approved by the board, for placement in escrow, a copy of the programs, documentation and source code used for any election in the state.

(3) The electronic voting system must be capable of transferring the data contained in the system to an electronic recording medium, pursuant to the provisions of s. 7.23, Stats.

(4) The vendor shall ensure that election results can be exported on election night into a statewide database developed by the board.

(5) For good cause shown, the board may exempt any electronic voting system from strict compliance with ch. GAB 7.

State of Wisconsin\Government Accountability Board

JUDGE GERALD C. NICHOL
Chair

KEVIN J. KENNEDY
Director and General Counsel

<u>Via Email</u>

June 29, 2015

Mr. Ian S. Piper
Director of Federal Certification
Dominion Voting Systems, Inc.
1201 18th Street, Suite 210
Denver, CO 80202

Mr. Piper:

On June 18, 2015, the Wisconsin Government Accountability Board (Board) granted approval of the Dominion Democracy Suite 4.14-D and 4.14-DS voting systems.

Board Staff tested and the Board approved the following hardware for the 4.14-D and 4.14-DS:

Equipment	Hardware Version(s)/Make and Model	Firmware Version	Type
ImageCast Precinct (ICP) Ballot Marking Device (ICP-BMD Audio)	320A, 320C HP Office Jet 7110*	4.14.17-US**	Polling place scanner and tabulator Accessibility add-on
ImageCast Central (ICC)	Canon Scanner DR-X10C/G1130* OptiPlex 9020/9030 Desktop*	4.14.17**	Central count scanner and tabulator
ImageCast Evolution (ICE)	410A External Monitor AOC 156LM00003*	4.14.21**	Polling place scanner and tabulator w/ accessibility functionality

Compact Flash Cards*	SanDisk Ultra***: SDCFHS-004G SDCFHS-008G RiData: CFC-14A RDF8G-233XMCB2-1 RDF16G-233XMCB2-1 RDF32G-233XMCB2-1 SanDisk Extreme: SDCFX-016G SDCFX-032G SanDisk: SDFAA-008G		Memory device for ICP and ICE tabulators.
Modems (4.14-DS only)*	Verizon USB Modem Pantech UML295 USB Modem MultiTech MT9234MU CellGo Cellular Modem E-Device 3GPUSUS AT&T USB Modem MultiTech GSM MTD-H5 Fax Modem US Robotics 56K V.92.		Analog and wireless modems for transmitting unofficial election night results.

* COTS devices used by the Democracy Suite Voting System.
** Board staff visually inspected firmware versions on each piece of voting equipment.
*** Dominion recommended flash cards.

Board staff tested and the Board approved the following software for the 4.14-D and 4.14-DS:

Software	*Version*
Democracy Suite Election Management System (EMS)*	4.14.37

1. Election Event Designer
2. Results Tally and Reporting
3. Audio Studio
4. Data Center Manager
5. Election Data Translator
6. Application Server
7. Network Attached Storage Server
8. EMS File System Service
9. Database Server Application

ImageCast Listener (4.14-DS only)	2.1.1.5301

*The EMS version presented for approval excluded any Adjudication or AIMS software components (which received approval by the EAC) due to scheduling of testing and limited practical uses of the Adjudication software in Wisconsin.

In order to maintain approval for use of the 4.14-D and 4.14-DS in Wisconsin, Dominion must comply with the requirements of Chapter 7 of the Government Accountability Board Administrative Code. A copy of this chapter has been enclosed for your review. Specifically, Dominion must:

1. Timely pay the Board's costs for testing and approving these voting systems. An invoice will arrive separately.

2. Immediately notify the Board of any changes to these voting systems. The Board will determine the procedures for approving any changes for use in Wisconsin on a case-by-case basis.

3. Furnish a copy of the programs, documentation, and source code for these systems to be placed in escrow with EscrowTech International, Inc within 90 days from the date of this letter, in accordance with Wis. Stat. § 5.905(2).

4. Ensure that the election results from these systems can be exported on election night into the Statewide Voter Registration System (SVRS) in a format specified by the Board.

5. Inform the Board regarding any municipalities in Wisconsin which agree to use these voting systems, as well as any states or other jurisdictions which approve this voting system for use.

6. In the instance of voluntary withdrawal, involuntary decertification by the US EAC (or other Federal agency responsible for voting systems certification), or revocation of approval by the Board of the Dominion Democracy Suite 4.14-D or 4.14-DS (including any component), Dominion shall provide affected customers with substitute tabulation equipment so that any impacted election may be properly tabulated pursuant to Wis. Stat. § 5.40.

7. Submit an Application for Modification for *de minimis* or non-*de minimis* changes; however, any non-*de minimis* changes may require a full or limited application and testing process.

8. Complete the attached Certificate of Performance Compliance: Delivery of Voting System for each municipality when the 4.14-D or 4.14-DS is purchased. One certified copy must be provided to the municipality upon delivery of the voting system and one certified copy must be provided to the Board.

Furthermore, the Board enacted additional requirements for the Dominion Democracy Suite 4.14-D and 4.14-DS voting systems. The Board determined that the following continuing conditions shall remain ongoing for Dominion and purchasing localities.

1. Dominion may not impose customer deadlines contrary to requirements provided in Wisconsin Statutes, as determined by the Board. In order to enforce this provision, local

jurisdictions purchasing Dominion equipment shall also include such a provision in their respective purchase contract or amend their contract if such a provision does not currently exist.

2. The 4.14-D or 4.14-DS must always be configured to include the following options:

   a. Automatically reject all overvoted ballots, without the option to override.
   b. Store election set-up, results, and ballot images on both compact memory cards. Each memory card must be retained, with the data intact, for the required retention period. If a jurisdiction transfers the data from the memory cards to a digital storage device after the recount period they must transfer all files from both memory cards into two separate files.
   c. Prohibit the use of the Write-In Preference feature, which causes write-in votes to always count over a ballot candidate.
   d. Provide an audible warning tone and visual warning message when a crossover, overvote, blank, or ambiguous ballot is fed into the voting equipment.
   e. Return a marked ballot to the voter for review prior to casting the ballot when ballots are marked using the ICE on-board marking device system.
   f. The ambiguous mark threshold ranges must be set per Dominion's recommendation, which are 15%-35% for the oval and 12%-35% for the write-in box. The Board retains the discretion to alter these ranges.
   g. Capture digital ballot images of all ballots cast by the system.

3. Election inspectors shall continue to check the main bin and review all ballots for validly cast write-ins at the close of the polls at every election.

4. Election inspectors shall remake all absentee ballots automatically rejected by the voting equipment so that the ballot count is consistent with total voter numbers.

5. Clerks and election inspectors shall ensure that external modems are secured prior to, during, and after every election.

6. Election inspectors shall enable an on-screen review of the ballot on the ICE for every ballot marked using the on-board ballot marking device.

7. As part of US EAC certificate: DVS-DemSuite4.14-D, only equipment included in this certificate are allowed to be used together to conduct an election in Wisconsin. Previous systems that were approved for use by the former Elections Board and the G.A.B. are not compatible with the new Dominion voting system, and are not to be used together with the equipment seeking approval by the Board, as this would void the US EAC certificate. If a jurisdiction upgrades to 4.14-D, they need to upgrade each and every component of the voting system to the requirements of what is approved herein. Likewise, if a jurisdiction upgrades to 4.14-DS, they need to upgrade each and every component of the voting system to the requirements of what is approved herein. The 4.14-D and 4.14-DS voting systems require a hardened computer terminal to program elections. Municipalities may not use an AutoMARK as a ballot marking device for ballots that will be fed into a 4.14-D or 4.14-DS piece of equipment.

8. Dominion shall abide by applicable Wisconsin public records laws. If, pursuant to a proper public records request, the customer receives a request for matters that might be proprietary

or confidential, customer will notify Dominion, providing the same with the opportunity to either provide customer with the record that is requested for release to the requestor, or shall advise Customer that Dominion objects to the release of the information, and provide the legal and factual basis of the objection. If for any reason, the customer concludes that customer is obligated to provide such records, Dominion shall provide such records immediately upon customer's request. Dominion shall negotiate and specify retention and public records production costs in writing with customers prior to charging said fees. In absence of meeting such conditions of approval, Dominion shall not charge customer for work performed pursuant to a proper public records request, except for the "actual, necessary, and direct" charge of responding to the records request, as that is defined and interpreted in Wisconsin law, plus shipping, handling, and chain of custody.

Please note that noncompliance with these, or any other requirements contained in Wisconsin Statutes or the Government Accountability Board Administrative Code, may result in the suspension or withdrawal of the Board's approval of these voting systems.

We require written acceptance of the terms specified in this letter within 20 business days from the date of this letter. If you have any questions, please do not hesitate to contact either myself or Matthew Kitzman of the Wisconsin Government Accountability Board.

Sincerely,

Wisconsin Government Accountability Board

Kevin J. Kennedy
Director and General Counsel

cc:

Dana LaTour
Regional Sales Manager
Dominion Voting Systems

Chad Trice
President
Command Central

Michael Haas
Elections Administrator
Wisconsin Government Accountability Board

Ross Hein
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