

Minutes
State Election Commission Meeting
April 1, 2019

The State Election Commission meeting was called to order by Chairman Judy Blackburn at 12:12 p.m., Central Standard Time, April 1, 2019. The following members and staff were present: Commissioners Barrett, Duckett, McDonald, Wallace, Wheeler and Younce; Coordinator of Elections Mark Goins, Steve Griffy, AES System Administrator and Kathy Summers, Elections Specialist.

Tennessee Supreme Court Chief Justice Jeff Bivins swore State Election Commission members into their new term.

Commissioner Barrett made a motion to adopt the minutes from January 14, 2019, Commissioner McDonald seconded the motion and the minutes were unanimously approved. (Aye votes: Barrett, Blackburn, Duckett, McDonald, Wallace, Wheeler and Younce; No votes: None; Abstention: None.)

Commissioner McDonald made a motion to adopt the minutes from the February 13, 2019, telephonic meeting. Commissioner Younce seconded the motion and the minutes were unanimously approved. (Aye votes: Barrett, Blackburn, Duckett, McDonald, Wallace, Wheeler and Younce; No votes: None; Abstention: None.)

Commissioner Younce made a motion pursuant to T.C.A. § § 2-12-101 and 2-12-106, seconded by Commissioner McDonald and unanimously approved any nomination(s) for county election commission appointments as submitted, and to leave the nomination process open until 4:30 p.m. Central Standard Time Monday, April 1, 2019. (Aye votes: Barrett, Blackburn, Duckett, McDonald, Wallace, Wheeler and Younce; No votes: None; Abstention: None.) **(See attached county election commission appointments made.)**

Old Business

- **NONE**

Commissioner Duckett asked about the Code of Conduct not being on the agenda. Commissioner Duckett stated he has had considerable correspondence with County Election Commissioners and Administrators of Elections about the policy.

Chairman Blackburn asked Coordinator Goins if he would address Commissioner Duckett's concerns. Coordinator Goins discussed with Chairman Blackburn about placing the Code of Conduct on the April meeting agenda. Chairman Blackburn felt that with all of the county election appointments and vendor demonstrations it would be best to place the Code of Conduct on the July agenda.

Commissioner Duckett would like to bring closure to the Code of Conduct policy discussion, and he will not be able to attend the July 8, 2019, meeting.

After discussion, Commissioner Wheeler made a motion to move the July 8, 2019, meeting to July 22, 2019, and to place the Code of Conduct on the agenda; Commissioner Younce seconded the motion. The motion to move the July meeting to July 22, 2019, was unanimously approved. (Aye votes: Barrett, Blackburn, Duckett, McDonald, Wallace, Wheeler and Younce; No votes: None; Abstention: None.)

New Business

- **ES&S – EVS 6.0.2.0 – Demonstration and request for approval.**

Ben Swartz, State Certification Manager for ES&S, spoke on behalf of ES&S and introduced Stacy Jackson who works for ES&S out of Tennessee. Mr. Swartz gave a brief presentation of the modification and upgrades to EVS 6.0.2.0 voting system. Mr. Swartz stated any county having a current contract with ES&S is automatically eligible for upgrades once this system is certified by the State Election Commission. Mr. Swartz stated the counties have the choice of gold, silver or bronze maintenance plans and depending on the county choice, determines what the county will receive. Ms. Jackson confirmed the thirteen (13) counties, currently using ES&S's system, will receive the firmware upgrade free under their current contracts.

Coordinator Goins discussed the letters of recommendation from four (4) jurisdictions outside of Tennessee. Coordinator Goins stated three letters appear to be letters for the prior version 6.0.0.0. Mr. Swartz stated the 6.0.0.0 version had export printing issues and the 6.0.2.0 update addressed those issues. Mr. Swartz stated several jurisdictions have 6.0.2.0, and they will hold elections in May, updated letters could be provided after the May elections.

Coordinator Goins discussed recently filed legislation, which would allow Ranked Choice Voting, or IRV (Instant Runoff Voting) in Tennessee. Coordinator Goins asked if the EVS 6.0.2.0 has this capability, and if tabulation of IRV is certified, or if there a separate algorithm for IRV. Mr. Swartz stated the 6.0.2.0 tabulator is certified, and software used for Ranked Choice Voting is a utility called Express Runoff. Mr. Swartz explained the county would export, from the election ware, the cast vote record and run it against the Express Runoff utility. The Express Runoff utility would give the county the output for Ranked Choice Voting. Mr. Swartz stated ES&S's Ranked Choice Voting utility has not been certified by the EAC, as the EAC does not certify utilities. The Ranked Choice Voting utility for ES&S was tested by SLI Compliance out of Denver, Colorado.

Commissioner McDonald made a motion to certify the ES&S-EVS 6.0.2.0, pending review by Coordinator Goins of positive updated letters of recommendation, with final commission approval by telephonic meeting; seconded by Commissioner Wallace. The motion was unanimously approved. (Aye votes: Barrett, Blackburn, Duckett, McDonald, Wallace, Wheeler and Younce; No votes: None; Abstention: None.)

- **ES&S – PowerProfile Voter Registration System – Demonstration and request for Approval.**

Victor Williams, Vice President of Voter Registration for ES&S, spoke before the commission and introduced Perry Gaddis who demonstrated the PowerProfile Voter Registration System. Mr. Williams requested certification of the software system for use in Tennessee. (See attached Voter Registration Software Demonstration handout provided.)

Coordinator Goins advised commission members ES&S's PowerProfile system will communicate with the AES System and Steve Griffy, AES System Administrator was available for any questions.

Mr. Griffy stated his review of the PowerProfile Voter Registration System, showed the voter registration software was able to run the routine reports required of the counties and does interface with Tennessee's AES System.

Commissioner McDonald made a motion to certify ES&S - PowerProfile Voter Registration Software System, seconded by Commissioner Younce and was unanimously approved. (Aye votes: Barrett, Blackburn, Duckett, McDonald, Wallace, Wheeler and Younce; No votes: None; Abstention: None.)

- **Hart InterCivic – Verity 2.3 – Verity Touch Writer and Touch Writer Duo – Demonstration and request for approval.**

Allie Fick and Julian Montoya gave the presentation and demonstration of Verity 2.3 before the commission. Chad Colgan with Harp Enterprises also addressed the Verity 2.3 voting machine. (See attached handout provided by Hart InterCivic.)

Coordinator Goins asked about the daisy chain distance between machines and how votes are stored on this voting system. Ms. Fick stated the chain distance is 5 meters between each machine. Mr. Colgan stated this machine is a hybrid voting system with a ballot marking device. Once the voter receives their printed vote record, the voter then takes the vote record to the scanner and scans the ballot into the scanner. All votes are stored in the scanner.

Commissioner Younce asked Hart InterCivic if this machine is an upgrade to their current approved voting system. Ms. Fick stated this is an upgrade to Verity 2.0, the Touch Writer Duo has not been previously certified. Commissioner Younce stated Campbell County recently bought new voting equipment from Harp. The equipment bought by Campbell County is DRE, which does not provide for a ballot marking device. Commissioner Younce wants to know if the new machines will be provided to Campbell County without charge. Chad Colgan addressed the commission and stated Campbell County did purchase the Verity DRE product. Mr. Colgan stated Campbell County was made aware of the newer product, but the Campbell County Election Commission had a preference for a DRE product. Mr. Colgan stated if something is required federally or by Tennessee, to have voter

verified paper audit trail there will be options available to the county for upgrades. Mr. Colgan stated there would be costs involved to the county for those upgrades. Commissioner Younce asked Mr. Colgan what the cost would be to Campbell County if they have to upgrade. Mr. Colgan stated Campbell County purchased about one-hundred (100) units. Commissioner Younce believes Campbell County spent around \$534,000.00 for new voting equipment, which might be obsolete with the trend of voter verified paper audit trail voting machines. Commissioner Younce researched and found seventy percent (70%) of voting machines used in the United States have a verified paper audit trail. Commissioner Younce stated Tennessee law allows each county to determine which equipment they would like to purchase. Commissioner Younce has concerns when a county receives only one (1) bid for voting equipment, when there are five (5) certified vendors in Tennessee. Commissioner Younce believes the county will be required to buy new equipment when federal and or state law changes, and the taxpayers of his county will be required to pay for new equipment. Commissioner Younce wishes the state would require voter verified paper audit trail, and counties should be required to bid their voting machines competitively.

Commissioner Mike McDonald agrees with Commissioner Younce. Commissioner McDonald asked Coordinator Goins who has the authority to change the law for paper backup. Coordinator Goins advised the commission there was a piece of legislation which would have required counties to purchase voting machines with paper back up, but this legislation did not pass in the House. Coordinator Goins advised commission members, at least every eight (8) years, the commission is required to recertify voting equipment in Tennessee. Coordinator Goins advised commission members there are eighty one (81) counties who currently have DRE voting machines. The State Election Commission could put counties on notice and require new voting machines to be in place by a certain timeline. Coordinator Goins told commission members he has encouraged counties to purchase machines with a voter verified paper audit trail, and it appears Davidson, Knox and Shelby counties are looking to purchase voting machines with a voter verified paper audit trail. Commissioner Wheeler suggested the commission should require counties going forward to buy equipment with a paper audit trail.

Coordinator Goins asked Mr. Colgan what the options are, for counties using Hart InterCivic DRE machines, if a verified paper audit trail is required. Mr. Colgan state the counties would have to upgrade to a plug and play voter verified paper audit trail device, which gives the voter the opportunity to see how they voted on the side of the machine. Mr. Colgan stated there are conversion options, which would allow the county to go to a paper based system as all Hart InterCivic machines are built on the same platform.

Commissioner Younce explained to Mr. Colgan he sold DRE equipment to Campbell County, and Mr. Colgan knew the voting trend is going away from DRE

machines. Commissioner Younce is concerned Campbell County will now have to pay additional money to go to a voter verified paper audit trail if required. Commissioner Younce stated the Campbell County Election Commission advised their County Commission the voting equipment had a paper audit trail. Commissioner Younce asked the County Mayor why he voted against the election commissions request for new voting machines. Commissioner Younce stated the County Mayor told him the machine was not going to provide a paper audit trail and there was only one (1) bid for the voting machines.

Alli Frick of Hart InterCivic continued with her voting demonstration. The commission went out of session to view the voting machine. The Verity 2.3 Verity Touch Writer and Touch Writer Duo voting machine will need to be viewed in an election outside of Tennessee, since the Touch Writer Duo is a ballot marking device and this has not been previously certified by the State Election Commission.

- **Unisyn – Freedom Vote Tablet – OpenElect 2.0 and 2.0.A – De Minimis Keypad Change - Request for approval.**

Coordinator Goins advised commission members of the EAC's review and approval of the de Minimis change to the Freedom Vote Tablet, which is used with the OpenElect 2.0 and 2.0.A voting equipment. Commissioner Barrett asked if this change was going to be made available to counties using the machine at no cost. Election staff spoke with Chris Ortiz of Unisyn and confirmed the Freedom Vote Tablet would be made available free of charge, but there are no current users in Tennessee using the Freedom Vote Tablet.

Commissioner Wheeler made a motion to approve the de Minimis change to the Freedom Vote Tablet, seconded by Commissioner Younce and the de Minimis change was unanimously approved. (Aye votes: Barrett, Blackburn, Duckett, McDonald, Wallace, Wheeler and Younce; No votes: None; Abstention: None.)

- **Election of Chairman**

Commissioner Barrett made a motion to elect Commissioner Kent Younce as chairman, seconded by Commissioner Duckett. All members voted unanimously to elect Kent Younce as Chairman. (Aye votes: Barrett, Blackburn, Duckett, McDonald, Wallace, Wheeler and Younce; No votes: None; Abstention: None.)

- **Election of Secretary**

Commissioner Wheeler made a motion to elect Commissioner Greg Duckett as Secretary, seconded by Commissioner McDonald. All members voted unanimously to elect Greg Duckett as Secretary. (Aye votes: Barrett, Blackburn, Duckett, McDonald, Wallace, Wheeler and Younce; No votes: None; Abstention: None.)

Coordinator Update

- **TACEO - June Seminar**

Coordinator Goins advised commission members of the June 2-5, 2019, TACEO seminar. Coordinator Goins advised commission members, at their suggestion; he plans on having a break-out session for county election commissioners.

Commissioner Wheeler made a motion to move the April 8, 2019, meeting to a telephonic meeting to make county election commission appointments; Commissioner Barrett seconded the motion. The motion to change the April 8, 2019, regular meeting to a telephonic was unanimously approved. (Aye votes: Barrett, Blackburn, Duckett, McDonald, Wallace, Wheeler and Younce; No votes: None; Abstention: None.)

Commissioner Barrett discussed Commissioner Younce's concerns of sole source contracts when counties bid voting machines. Commissioner Barrett discussed how the General Assembly has a Fiscal Review Committee, which reviews and approves any sole source contract. Commissioner Barrett asked if it would be possible for the State Election Commission to have a process to review any sole source contracts. Commissioner Barrett suggested either the State Election Commission, or the Coordinator of Elections would have to approve the contract before the county could enter into a contract with a sole source.

After discussion, Commissioner Barrett made a motion in the event only one bid is received, for products or services for local county election commissions; the contract has to be reviewed by the Coordinator of Elections and or the State Election Commission before approval. The motion was seconded by Commissioner Younce and was unanimously approved. (Aye votes: Barrett, Blackburn, Duckett, McDonald, Wallace, Wheeler and Younce; No votes: None; Abstention: None.)

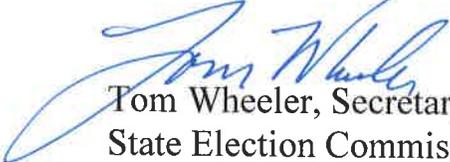
Commissioner Wheeler asked for clarification, on whether Commissioner Younce had a proper motion on the floor, regarding voting machines and the requirement of a paper audit trail for future voting machines purchased. Commissioner Younce stated that was his request. Commissioner Wheeler stated that the commission did not vote on that request. Coordinator Goins suggested the commission discuss this requirement at the next State Election Commission meeting, since proper notification of this item was not on the agenda for this meeting. Commissioner Younce requested this item to be placed on the July 22, 2019, meeting, and notification be provided to all Administrators of Elections. Commissioner Duckett stated he is happy for the county election commissions to attend the meetings and he encourages their participation. Commissioner Duckett stated the State Election Commission is the board tasked with establishing the rules for county election commissioners. Commissioner Duckett stated input from others is fine and appropriate. Commissioner Duckett does not want to create the image that the county election commissions should be making the rules they have to adhere to.

Commissioner Younce made a motion to add the discussion of voting machines, and the requirement of a paper audit trail for future voting machines purchased in Tennessee, be placed on the July 22, 2019, meeting agenda. The motion was seconded by Commissioner McDonald and was unanimously approved. (Aye votes: Barrett, Blackburn, Duckett, McDonald, Wallace, Wheeler and Younce; No votes: None; Abstention: None.)

The next regularly scheduled meeting is set for July 22, 2019, and will be held in the William R. Snodgrass – Tennessee Tower, Nashville Room - 3rd floor at 12:00 Noon, Central Standard Time.

The meeting was adjourned at 2:35 p.m. Central Standard Time.

Respectfully submitted,


Tom Wheeler, Secretary
State Election Commission

State of Tennessee



State Election Commission
312 Rosa L. Parks Avenue, 7th Floor
Nashville, Tennessee 37243-1102

New Appointment Status

April 1, 2019

		Appointment
Anderson	R Kent Younce / D Tom Wheeler	
	R William Thomas Gallaher	4/1/2019
	R Debra Jane Miller	4/1/2019
	R Joseph F. Rainey	4/1/2019
	D Mary Matheny	4/1/2019
D William E. (Bear) Stephenson	4/1/2019	
Bedford	R Donna Barrett / D Mike McDonald	
	R Daniel Joe Robbins	4/1/2019
	R Karen E. Thrasher	4/1/2019
	R Bob Wayne York	4/1/2019
	D Connie Crafton	4/1/2019
D Joe Wayne Tucker	4/1/2019	
Benton	R Jimmy Wallace / D Greg Duckett	
	D Cynthia (Cindy) Wheatley	4/1/2019
Bledsoe	R Kent Younce / D Tom Wheeler	
	R Wade Lee Kelly	4/1/2019
	R Robert Steven Standofer	4/1/2019
	R Judy O. Swafford	4/1/2019
	D Edward L. Boring	4/1/2019
D Charles T. (Tommy) Nipper	4/1/2019	
Blount	R Judy Blackburn / D Tom Wheeler	
	R H. Larry Garner	4/1/2019
	R William R. (Rick) Shepard	4/1/2019
	R Mary Beth West	4/1/2019

Bradley

R Judy Blackburn / D Tom Wheeler

- R Duane J. Gilbert 4/1/2019
- R Travis D. Henry 4/1/2019
- R Cristy Schuch 4/1/2019
- D Dana C. Burgner 4/1/2019
- D Oscar Stanley Kelley 4/1/2019

Campbell

R Kent Younce / D Tom Wheeler

- R Jamie Lynette Mundy Ball 4/1/2019
- R Brent Tyler McNeeley 4/1/2019
- R Charles Brian Younce 4/1/2019
- D Lucy Lobertini 4/1/2019
- D Marshall McKamey 4/1/2019

Cannon

R Kent Younce / D Mike McDonald

- R Dottie Jernigan Baskin 4/1/2019
- R Thomas W. Ganoe 4/1/2019
- R George Ronnie Orville Pittman 4/1/2019
- D Joan Banks-Shirley 4/1/2019
- D Sue H. Patrick 4/1/2019

Carroll

R Jimmy Wallace / D Greg Duckett

- R Julia A. Blanks 4/1/2019
- R Ronald R. Reiter 4/1/2019
- R Billy J. Smith 4/1/2019
- D Michael Corrado 4/1/2019
- D Nellie M. Hale 4/1/2019

Carter

R Judy Blackburn / D Tom Wheeler

- R Doug Buckles 4/1/2019
- R Dayton Paul Souder 4/1/2019
- R Junior E. Stanley 4/1/2019
- D Millard Garland 4/1/2019
- D Ramon Sanchez-Vinas 4/1/2019

Cheatham

R Donna Barrett / D Mike McDonald

- R Elke McLeroy 4/1/2019
- R Robert W. Melton , III 4/1/2019
- R Stephen C. Sexton 4/1/2019
- D Wilson B. Bell 4/1/2019
- D Bruce Gibbs 4/1/2019

Appointment**Chester**

R Jimmy Wallace / D Greg Duckett

R	Bill (Billy) J. Moore	4/1/2019
R	Stephen H. Morris	4/1/2019
R	Patsy Weatherington	4/1/2019
D	Kelley (KB) Doyle	4/1/2019
D	Sylvia Flowers	4/1/2019

Claiborne

R Kent Younce / D Tom Wheeler

R	Terry England	4/1/2019
R	Valerie Hill Moucha	4/1/2019
R	Robert Neil Walker	4/1/2019
D	Brad Davis	4/1/2019
D	Dot Lewis	4/1/2019

Clay

R Kent Younce / D Mike McDonald

R	Deborah (Debbie) Burnette	4/1/2019
R	Carrell Clements	4/1/2019
R	Vernon Groce	4/1/2019
D	Ronald D. Bailey	4/1/2019
D	Bart Cunningham	4/1/2019

Cocke

R Judy Blackburn / D Tom Wheeler

R	Charlotte T. Leibrock	4/1/2019
R	Vaughn Lewis Moore	4/1/2019
R	Betty H. Whitson	4/1/2019
D	Vickie J. Moore	4/1/2019
D	Stephen V. Stokely	4/1/2019

Coffee

R Donna Barrett / D Mike McDonald

R	Bill Bates	4/1/2019
R	Sandra M. Soesbe	4/1/2019
R	Emily Carson Thoma	4/1/2019
D	Barbara West Arp	4/1/2019
D	Carol Abel Berthay	4/1/2019

Crockett

R Jimmy Wallace / D Greg Duckett

R	Ralph Lee Carnell	4/1/2019
R	Andy Cole	4/1/2019
D	Randy Camp	4/1/2019
D	Kevin Ellison	4/1/2019

Cumberland

R Kent Younce / D Mike McDonald

R Mary (Linda) Baehr-Caldwell 4/1/2019
 R Shirley Carlyn Maynard 4/1/2019
 R James A. Petty 4/1/2019
 D Cynthia Annette Cooper 4/1/2019
 D Lisa H. Phillips 4/1/2019

Davidson

R Donna Barrett / D Mike McDonald

R James A. DeLanis 4/1/2019
 R Jesse C. Neil 4/1/2019
 R Emily J. Reynolds 4/1/2019
 D Tricia R. Herzfeld 4/1/2019
 D Ausbon J. Starling 4/1/2019

Decatur

R Jimmy Wallace / D Greg Duckett

R Grafton Dodd 4/1/2019
 R Melanie Holbert 4/1/2019
 R Chelsey Sparks 4/1/2019
 D Robert Lynn Brasher 4/1/2019
 D Lisa A. Brasher 4/1/2019

Dekalb

R Kent Younce / D Mike McDonald

R James F. Dean 4/1/2019
 R Walteen C. Parker 4/1/2019
 R Barbara J. Vanatta 4/1/2019
 D Lisa Georgette Peterson 4/1/2019
 D Jacqueline (Jackie) M. Smith 4/1/2019

Dickson

R Donna Barrett / D Greg Duckett

R Chad Murphy 4/1/2019
 R Amber Lynn Smotherman 4/1/2019
 R Timothy Bryan White 4/1/2019
 D Patricia Driver 4/1/2019
 D Nancy Johnson 4/1/2019

Dyer

R Jimmy Wallace / D Greg Duckett

R Joe M. Enoch 4/1/2019
 R Aleece Jackson 4/1/2019
 R Eric Maupin 4/1/2019
 D George L. Mitchell 4/1/2019
 D Larry G. Williams 4/1/2019

Fayette

R Jimmy Wallace / D Greg Duckett

- R Harris Alexander Armour , IV 4/1/2019
- R Gloria N. Jones 4/1/2019
- R Sylvan Meyer 4/1/2019
- D Ernestine P. Brown 4/1/2019
- D Maxine K. Middlecoff 4/1/2019

Fentress

R Kent Younce / D Tom Wheeler

- R Richard Alan Rader 4/1/2019
- R Jack L. Upchurch 4/1/2019

Franklin

R Donna Barrett / D Mike McDonald

- R Nancy Sue Brown 4/1/2019
- R Jennie Cowan 4/1/2019
- R Andrew Thomas Knapper 4/1/2019
- D Raymond Council 4/1/2019
- D Patty Priest 4/1/2019

Gibson

R Jimmy Wallace / D Greg Duckett

- R Sam Gregory 4/1/2019
- R Tim Luckey 4/1/2019
- R Dwight Reasons 4/1/2019
- D Joseph William Albright 4/1/2019
- D James Kaleb Dinwiddie 4/1/2019

Giles

R Donna Barrett / D Greg Duckett

- R Allen Barrett 4/1/2019
- R Annelle Guthrie 4/1/2019
- R Graham S. Stowe 4/1/2019
- D Henry A. Inman 4/1/2019
- D Judy C. Mitchell 4/1/2019

Grainger

R Judy Blackburn / D Tom Wheeler

- R Ronnie Cabbage 4/1/2019
- R Terry Johnson 4/1/2019
- R Tina Stratton Morrow 4/1/2019
- D Woody E. Nicely 4/1/2019
- D Kathy Winstead 4/1/2019

Greene

R Judy Blackburn / D Tom Wheeler

- R Charles L. Johnson 4/1/2019
- R Latasha W. Keller 4/1/2019
- R Peggy A. McCamey 4/1/2019
- D Charlena Jo Kendrick 4/1/2019
- D William (Willie) H. West 4/1/2019

Grundy

R Donna Barrett / D Mike McDonald

- R Daranda Kaye Hargis 4/1/2019
- R Wayne Harris 4/1/2019
- R Ashley Stoglin 4/1/2019
- D Michael D. Gipson 4/1/2019
- D Louie R. Ladd 4/1/2019

Hamblen

R Judy Blackburn / D Tom Wheeler

- R Ernest F. Horner 4/1/2019
- R David W. Purkey 4/1/2019
- R E. C. Reed , Jr. 4/1/2019
- D Gayle H. Bruce 4/1/2019
- D Kelley Hinsley 4/1/2019

Hamilton

R Judy Blackburn / D Tom Wheeler

- R Ruth H. Braly 4/1/2019
- R Joseph Christopher Clem 4/1/2019
- R Michael S. Walden 4/1/2019
- D Secondra Meadows 4/1/2019
- D Jerry H. Summers 4/1/2019

Hancock

R Judy Blackburn / D Tom Wheeler

- R Tommy Belcher , Sr. 4/1/2019
- R Eddie R. Buttry 4/1/2019
- R Harold Ramsey 4/1/2019
- D Geneva Anderson 4/1/2019
- D Robert W. Greer 4/1/2019

Hardeman

R Jimmy Wallace / D Greg Duckett

- R Carl Gibson 4/1/2019
- R Kreg Hamm 4/1/2019
- R Mildred (Joan) W. Henderson 4/1/2019
- D Melanie Renee' Bowers 4/1/2019
- D James Earl Hicks 4/1/2019

Hardin

R Jimmy Wallace / D Greg Duckett

- R Rhonda K. Cagle 4/1/2019
- R John H. White , III 4/1/2019
- R Bruce Wayne Williams 4/1/2019
- D Rosa Lynn Morris 4/1/2019
- D Starla Shaw 4/1/2019

Hawkins

R Judy Blackburn / D Tom Wheeler

R LeVern Nunley 4/1/2019
 R Nancy Point 4/1/2019
 R Joyce A. Simon 4/1/2019
 D Teresa Greer 4/1/2019
 D Judy Woods Trent 4/1/2019

Haywood

R Jimmy Wallace / D Greg Duckett

R Joan Cowling Banks 4/1/2019
 R Jan McAdams 4/1/2019
 R Macon Reagan Thornton 4/1/2019
 D John Ashworth 4/1/2019
 D Ida Ruth Bradford 4/1/2019

Henderson

R Jimmy Wallace / D Greg Duckett

R William "Bill" R. Martin 4/1/2019
 R Margaret D. Milam 4/1/2019
 R Robin Alan Powers 4/1/2019
 D Cornelia T. Morris 4/1/2019
 D Pope Thomas 4/1/2019

Henry

R Jimmy Wallace / D Greg Duckett

R Lorri Dalton 4/1/2019
 R Steve Goggans 4/1/2019
 R Tommy Townsend 4/1/2019
 D Bennie R. Akers 4/1/2019
 D Sylvia C. Humphreys 4/1/2019

Hickman

R Donna Barrett / D Greg Duckett

R Roy L. Cochran 4/1/2019
 R Roy M. A. Crews 4/1/2019
 R Ronald Steven Hethcote 4/1/2019
 D Brenda Burchard 4/1/2019
 D Lena Frazier 4/1/2019

Houston

R Donna Barrett / D Greg Duckett

R Patricia G. Mallory 4/1/2019
 R John Bennett Millard 4/1/2019
 R Tim Settles 4/1/2019
 D John Nichols 4/1/2019
 D Suzette Whitaker 4/1/2019

Humphreys

R Donna Barrett / D Greg Duckett

- R Dyan M. (Farmer) Hatcher 4/1/2019
- R James (Jimmy) E. Stevens , Jr. 4/1/2019
- R Chad Vaughn 4/1/2019
- D Jess S. Bowen , III 4/1/2019
- D Matthew Goins 4/1/2019

Jackson

R Kent Younce / D Mike McDonald

- R Betty Sue Goolsby 4/1/2019
- R Shirley Ann Henry 4/1/2019
- D Judy Neal Hardegree 4/1/2019
- D Barbara Hix 4/1/2019

Jefferson

R Judy Blackburn / D Tom Wheeler

- R Carolyn M. Etherton 4/1/2019
- R John F. (Jack) Kramer , Jr. 4/1/2019
- R Phyllis Mc Cracken 4/1/2019
- D Arlie C. Carr 4/1/2019
- D Betty Watkins 4/1/2019

Johnson

R Judy Blackburn / D Tom Wheeler

- R Mike J. Fritts 4/1/2019
- R Michael J. Pleasant 4/1/2019
- R Eric Taylor 4/1/2019
- D Charles M. McQueen 4/1/2019
- D Terry S. Thompson 4/1/2019

Knox

R Judy Blackburn / D Tom Wheeler

- R Robert (Bob) Bowman 4/1/2019
- R Christopher Dunn Heagerty 4/1/2019
- R Hannah Lee Parker 4/1/2019
- D Cameron J. Brooks 4/1/2019
- D Tammy Kaousias 4/1/2019

Lake

R Jimmy Wallace / D Greg Duckett

- R Ronnie Hays 4/1/2019
- R Pat Leake 4/1/2019
- R Stephen Parks 4/1/2019
- D Oma Gardner 4/1/2019
- D Robert Griffin 4/1/2019

Appointment**Lauderdale**

R Jimmy Wallace / D Greg Duckett

R William (Billy) Harmon	4/1/2019
R Alexis Hurt	4/1/2019
R Deborah S. Jenkins	4/1/2019
D Roy Lee Bonds , Sr.	4/1/2019
D Tracie Horner Canfield	4/1/2019

Lawrence

R Donna Barrett / D Greg Duckett

R Robert Gobble	4/1/2019
R Chris Stutts	4/1/2019
R Darryl Watson	4/1/2019
D Dan Hancock	4/1/2019
D Shirley Ann Perry	4/1/2019

Lewis

R Donna Barrett / D Greg Duckett

R Jimmie Earl Hatchett	4/1/2019
R Rebecca Lynne Rawdon	4/1/2019
R David Lee Thomas , Jr.	4/1/2019
D Robin Davis	4/1/2019
D Jerry Turner	4/1/2019

Lincoln

R Donna Barrett / D Mike McDonald

R Karen Jean Avilla	4/1/2019
R Dan Earl Long	4/1/2019
R Roger Dale Thomas	4/1/2019
D Joan B. Massey	4/1/2019
D Eddie Wilson	4/1/2019

Loudon

R Judy Blackburn / D Tom Wheeler

R Leo A. Bradshaw	4/1/2019
R James L. Davis	4/1/2019
R Darlene E. Schrubb	4/1/2019
D Betty E. Brown	4/1/2019
D Sue Jane Hartsook	4/1/2019

Macon

R Kent Younce / D Mike McDonald

R Brenda Gale Coley	4/1/2019
R Glen Harold Donoho	4/1/2019
R Harold M. Kemp	4/1/2019
D Georgia Ann Boles	4/1/2019
D Sherri Sircy	4/1/2019

Madison

R Jimmy Wallace / D Greg Duckett

- R William M. (Mike) Bledsoe 4/1/2019
- R Phyllis W. Means 4/1/2019
- D Murinell (Nell) Huntspon 4/1/2019
- D David K. Johnson 4/1/2019

Marion

R Donna Barrett / D Mike McDonald

- R Julia Cash Boggs 4/1/2019
- R David Lee Riley 4/1/2019
- R Yvonne Wilson 4/1/2019
- D Jerry D. Dempsey 4/1/2019
- D C. Shawn Henson 4/1/2019

Marshall

R Donna Barrett / D Mike McDonald

- R Richard Vincent Ackley 4/1/2019
- R Danny Bingham 4/1/2019
- R Marilu Clift 4/1/2019
- D Chundra (Cee Cee) Davis 4/1/2019
- D Barbara Woods 4/1/2019

Maury

R Donna Barrett / D Mike McDonald

- R Alpha B. (Tiny) Jones 4/1/2019
- R Linda LeeBron 4/1/2019
- R Samuel Jason Whatley 4/1/2019
- D James Larry Brewer 4/1/2019
- D Cara Elizabeth Lynn 4/1/2019

McNairy

R Jimmy Wallace / D Greg Duckett

- R Peggy Williams Daniel 4/1/2019
- R Wayne Henry 4/1/2019
- R Timothy W. Mast 4/1/2019
- D Wayne Elam 4/1/2019
- D Eddie Smith 4/1/2019

Meigs

R Judy Blackburn / D Tom Wheeler

- R Johnny R. Aikman 4/1/2019
- R Melvin Holmes , Jr. 4/1/2019
- R Vance William Hughes 4/1/2019
- D Thomas E. Creasman 4/1/2019
- D Patricia S. Harris 4/1/2019

Monroe

R Judy Blackburn / D Tom Wheeler

- R Alan Hawkins 4/1/2019
- R Dwayne Martin 4/1/2019
- R Charles E. Ridenour 4/1/2019

Montgomery	R Donna Barrett / D Mike McDonald	
	R Rick Longton	4/1/2019
	R Marie Tillman	4/1/2019
	R Rita S. Wilson	4/1/2019
	D Robert Darrell Lewis	4/1/2019
	D Laura Neese Weigandt	4/1/2019
Moore	R Donna Barrett / D Mike McDonald	
	R Daniel P. Boshers	4/1/2019
	R Lorraine Carter	4/1/2019
	R Gerald Hinkle	4/1/2019
	D Gary Michael Russell	4/1/2019
	D Raby Glen Thomas	4/1/2019
Morgan	R Kent Younce / D Tom Wheeler	
	D Mike Gunter	4/1/2019
	D Ronald W. Trout	4/1/2019
Overton	R Kent Younce / D Mike McDonald	
	R Bethel J. Cox	4/1/2019
	R Lawrence Alvin Duewer	4/1/2019
	R John Houser	4/1/2019
	D Jack R. Kirby	4/1/2019
	D Cassius Clay Parsons, III	4/1/2019
Perry	R Donna Barrett / D Greg Duckett	
	R Robert J. Erisman	4/1/2019
	R Brent Hinson	4/1/2019
	R Terry Richardson	4/1/2019
	D Margaret S. Rainey	4/1/2019
	D Wylie Wayne Swindle	4/1/2019
Pickett	R Kent Younce / D Mike McDonald	
	R Jeffery W. Massiongale	4/1/2019
	R Rex Melton	4/1/2019
	R Gary Thomas Winningham	4/1/2019
	D Frank C. Capps	4/1/2019
	D Fred Martin Elder	4/1/2019
Polk	R Judy Blackburn / D Tom Wheeler	
	R Carol Ann Kamm	4/1/2019
	R Earl Tipton	4/1/2019
	R James Robert Woody	4/1/2019
	D Jim Griffin	4/1/2019
	D J. M. York	4/1/2019

Appointment**Putnam**

R Kent Younce / D Mike McDonald

R Philip Duane Adams	4/1/2019
R David Alan Dukes	4/1/2019
R William (Bill) Fred Prall	4/1/2019
D Perry L. Bartlett	4/1/2019
D Linda Daniel	4/1/2019

Rhea

R Kent Younce / D Tom Wheeler

R Ray (Skip) W. Griffin	4/1/2019
R Linda Pendergrass	4/1/2019
R Frank Stephen Snyder	4/1/2019
D Kathleen Garrison	4/1/2019
D Hurley Marsh	4/1/2019

Roane

R Kent Younce / D Tom Wheeler

R Troy Beets	4/1/2019
R Lowell (Pete) Malmquist	4/1/2019
R James R. Ryans	4/1/2019
D Celia Simon	4/1/2019
D James L. Watts	4/1/2019

Robertson

R Donna Barrett / D Mike McDonald

R Sharon Hargraves	4/1/2019
R Raymond E. Knowles	4/1/2019
R Joe Terry Shows , Jr.	4/1/2019
D Andrew C. Heard	4/1/2019
D Patricia A. Morris	4/1/2019

Rutherford

R Donna Barrett / D Mike McDonald

R Felicia Hix	4/1/2019
R William Ransom Jones	4/1/2019
R W. Richard Reeves	4/1/2019
D Carolyn Demetria Cox	4/1/2019
D Judy Gail Whitehill	4/1/2019

Scott

R Kent Younce / D Tom Wheeler

R Charles Duvall	4/1/2019
R Fred Marcum	4/1/2019
R James R. Potter	4/1/2019
D Jack Randall Jeffers	4/1/2019
D Jerry W. Thompson	4/1/2019

Sequatchie

R Donna Barrett / D Mike McDonald

R Rickey L. Hickman 4/1/2019
 R Mary Frances Hixson 4/1/2019
 R Quay B. Tate 4/1/2019
 D Benny J. Barker 4/1/2019
 D Jan Baxter Johnson 4/1/2019

Sevier

R Judy Blackburn / D Tom Wheeler

R Carl (Ray) Mull 4/1/2019
 R Joe Fred Newman 4/1/2019
 R C. W. "Jack" Ogle 4/1/2019
 D James W. "Jim" Rugh 4/1/2019
 D Thomas L. Wagner 4/1/2019

Shelby

R Jimmy Wallace / D Greg Duckett

R Matthew Price 4/1/2019
 R Stavro (Steve) Stamson 4/1/2019
 R Brent Taylor 4/1/2019
 D Bennie Smith 4/1/2019
 D Anthony Tate 4/1/2019

Smith

R Kent Younce / D Mike McDonald

R Robert (Rob) Andre Goodrow 4/1/2019
 R James Neal Hall 4/1/2019
 R Janice Lynch 4/1/2019
 D Donnie Ray Dennis 4/1/2019
 D Andrea Denise Waggoner 4/1/2019

Stewart

R Jimmy Wallace / D Greg Duckett

R Timothy Borens 4/1/2019
 R Robert Girndt 4/1/2019
 R Carol Lovin 4/1/2019
 D Nellie F. Settle 4/1/2019

Sullivan

R Judy Blackburn / D Tom Wheeler

R Gerald H. Cassell 4/1/2019
 R James W. Holmes 4/1/2019
 R George T. Morton 4/1/2019

Sumner

R Donna Barrett / D Mike McDonald

R Miles Allen Ehmling 4/1/2019
 R John Michael "Mike" Fussell 4/1/2019
 R Jeffery B. Hulsey 4/1/2019
 D Patricia Dianne Collins 4/1/2019
 D John William Smith , Jr. 4/1/2019

Tipton

R Jimmy Wallace / D Greg Duckett

- R Mary Kay Bergen 4/1/2019
- R Theta K. Rone 4/1/2019
- R James A. Vandergrift ,Jr. 4/1/2019
- D Christopher Brent 4/1/2019
- D Letitia P. Wilson 4/1/2019

Trousdale

R Kent Younce / D Mike McDonald

- R David R. Baldwin 4/1/2019
- R Allison Barton 4/1/2019
- R Sherry Baxley 4/1/2019
- D Jeffrey Garrett Linville 4/1/2019
- D Ronald Kent Moreland , II 4/1/2019

Unicoi

R Judy Blackburn / D Tom Wheeler

- R Roland D. Bailey 4/1/2019
- R Paul Monk 4/1/2019
- R Thomas M. Reeves 4/1/2019
- D William (Bill) Beckman 4/1/2019
- D Marvin H. Rogers 4/1/2019

Union

R Kent Younce / D Tom Wheeler

- R Carl (Jack) Effler 4/1/2019
- R Kyle Richardson 4/1/2019
- R Ricky Lyn Walker 4/1/2019
- D Rodney Malone 4/1/2019
- D J. V. Waller 4/1/2019

Van Buren

R Kent Younce / D Mike McDonald

- R Jerry Dwayne Hodges 4/1/2019
- R Kurt Powers 4/1/2019
- R Kathleen Eldridge Rogers 4/1/2019
- D Shirley M. Hitchcock 4/1/2019
- D Jerry Randolph Johns 4/1/2019

Warren

R Kent Younce / D Mike McDonald

- R W. S. (Bill) Lee 4/1/2019
- R Bulon (Ben) E. Nixon , Jr. 4/1/2019
- R Bill Webb 4/1/2019
- D Patricia J. Davis 4/1/2019
- D Melvin Charles Yancy 4/1/2019

Washington

R Judy Blackburn / D Tom Wheeler

R Patti Gayle Jarrett 4/1/2019
 R Janet Willis McKee 4/1/2019
 R Jon Ruetz 4/1/2019
 D Margaret Davis 4/1/2019
 D Patsy Johnson 4/1/2019

Wayne

R Jimmy Wallace / D Greg Duckett

R Joe Paul Bryant 4/1/2019
 R Jerry D. Pigg 4/1/2019
 R Dean Lindsey Stegall 4/1/2019
 D Gene Davidson 4/1/2019
 D Bonnie E. Farris 4/1/2019

Weakley

R Jimmy Wallace / D Greg Duckett

R Britan Noel Coleman 4/1/2019
 R John Robert Freeman 4/1/2019
 R Wendell R. Verdell 4/1/2019
 D Amy Lewellen 4/1/2019
 D April Lieberman 4/1/2019

White

R Kent Younce / D Mike McDonald

R Charles Edward Greene 4/1/2019
 R Teresa Sergio 4/1/2019
 R John William Shaffield , Jr. 4/1/2019
 D Waymon T. Haston 4/1/2019
 D James C. Leftwich 4/1/2019

Williamson

R Donna Barrett / D Mike McDonald

R Robert D. Brown 4/1/2019
 R Jonathan Duda 4/1/2019
 R Phyllis Ann Streiff 4/1/2019
 D Susan Kimberly Henke 4/1/2019
 D Dana M. Smyth 4/1/2019

Wilson

R Kent Younce / D Mike McDonald

R Terry Ray Muncher 4/1/2019
 R Sherrie G. Orange 4/1/2019
 R John Charles Pope 4/1/2019
 D Ronnie D. Kelley 4/1/2019
 D Don Simpson 4/1/2019

Total New Commissioners: 445

State of Tennessee



State Election Commission
312 Rosa L. Parks Avenue, 7th Floor
Nashville, Tennessee 37243-1102

Holdover Status

April 1, 2019

		Appointment	Reappointment
Benton	R Jimmy Wallace / D Greg Duckett		
	R Jim Austin	3/10/2010	4/3/2017
	R Susan H. Roth	3/10/2010	4/3/2017
	R Ben Thompson	4/6/2015	4/3/2017
	D Russell King	4/3/2017	4/3/2017
Blount	R Judy Blackburn / D Tom Wheeler		
	D Robert L. Carroll	7/20/2004	4/3/2017
	D Ben R. Rauhuff	2/1/1994	4/3/2017
Crockett	R Jimmy Wallace / D Greg Duckett		
	R Ruste Via	4/6/2015	4/3/2017
Fentress	R Kent Younce / D Tom Wheeler		
	D Rodney W. Foy	9/17/2002	4/3/2017
	D Yvonne McDaniel Gernt	5/9/2011	4/3/2017
Jackson	R Kent Younce / D Mike McDonald		
	R Nell Anderson	4/18/1995	4/3/2017
Madison	R Jimmy Wallace / D Greg Duckett		
	R Phillip D. Bryant	4/2/2007	4/3/2017
McMinn	R Judy Blackburn / D Tom Wheeler		
	R Jordan Curtis	12/29/2016	4/3/2017
	R Amber Robinson	6/13/2011	4/3/2017
	R Matthew Todd Watson	4/1/2013	4/3/2017
	D Bobby J. Goodman	4/4/2011	4/3/2017
	D Brenda Ratledge	4/4/2011	4/3/2017
Monroe	R Judy Blackburn / D Tom Wheeler		
	D Jerry Ogle	4/3/2017	4/3/2017
	D Revonda Raper	4/11/2016	4/3/2017

Morgan

R Kent Younce / D Tom Wheeler

R Alan Scott Bradshaw

R Howard Human

R Billy R. Kries

Appointment

4/6/2009

4/3/1995

5/17/2005

Reappointment

4/3/2017

4/3/2017

4/3/2017

Obion

R Jimmy Wallace / D Greg Duckett

R Catherine Sue Jackson

R Robert C. Joyner

R David K. Parks

D John Algee

D Paige Burcham Dennis

4/4/2011

4/5/1999

4/6/2009

2/19/2003

4/14/2014

4/3/2017

4/3/2017

4/3/2017

4/3/2017

4/3/2017

Sullivan

R Judy Blackburn / D Tom Wheeler

D Leslie B. Carr

D Elizabeth M. Shine

4/3/1995

9/17/1996

4/3/2017

4/3/2017

Total Holdovers: 28

State of Tennessee



State Election Commission

312 Rosa L. Parks Avenue, 7th Floor
Nashville, Tennessee 37243-1102

Vacant Status

April 1, 2019

Fentress

R Kent Younce / D Tom Wheeler

R

Stewart

R Jimmy Wallace / D Greg Duckett

D

Total Vacancies: 2

ES&S

EVS 6.0.2.0 – Voting System
Demonstration and
Certification Request
April 1, 2019

Ben Swartz – ES&S, Sr. State Certification
Manager

Steve Pearson. Sr. Vice President of
Certification

Survey Responses:

- Ronnie Metsker, Election Commissioner – Johnson County, Kansas
- Brian McKenzie, Chief Deputy Clerk – Davis County, Utah
- Kent Jones, County Clerk – Summit County, Utah
- Ryan Cowley, Elections Director – Weber County, Utah

● EAC – Certification Number

ESSEVS6020

PROCEDURES FOR CERTIFYING VOTING MACHINES BY THE TENNESSEE STATE ELECTION COMMISSION

All voting machines/vendors must receive certification from the state election commission and the coordinator of elections before any voting machines or systems may be sold in the State of Tennessee.

First Step:

Any interested vendor should submit a written request to the coordinator of elections and the state election commission requesting certification of your company together with the EAC certification number, a financial report and a list of all states that have already bought your voting machines or systems. If you would like to demonstrate your product at a meeting of the state election commission, please make that request in your letter. You will be notified of the date, time, and place of the meeting where you may make your presentation.

Second Step:

A. Voting Machine Procedure

Following verification of EAC certification and an initial presentation of your product and/or services, you would need to arrange for at least two (2) State Election Commissioners (of opposite parties) and the coordinator of elections (or designee) to view your machines or system in use in an election of a substantial size in another state. An election of a substantial size involves at the minimum the following characteristics:

- The jurisdiction has a population of at least 10,000 persons;
- The jurisdiction has at least two (2) or more district races on the ballots; and
- There are at least two (2) contested races involving both at large and district races on the ballot.

B. Voting Machine Software or Hardware Upgrade

- EAC Certification;
- Presentation of upgrade before State Election Commission at a meeting; and
- Viewing of upgrade in another state (In lieu of viewing machine in another state, at the discretion of the State Election Commission, letters of recommendation from users in other jurisdiction may be used as support for approval.)

C. De Minimis Voting System Changes

- Any De Minimis change to an EAC certified voting system shall be submitted to the state election commission and coordinator of elections to be approved. For purposes of approval of the de minimis change to the voting system, all that will be required is a letter from the EAC stating the change is de minimis, unless further information is requested by the state election commission or coordinator of elections.

Third Step:

The State Election Commission must vote to certify the machine in order for the machines to be used in an election in Tennessee.

You may send any correspondence for both the state election commission and the coordinator of elections to the following address:

312 Rosa L.Parks Avenue, 7th Floor
William R. Snodgrass Tower
Nashville, Tennessee 37243
(615) 741-7956

If you have any further questions regarding certification of your company, please feel free to contact the office of the state election coordinator at the phone number listed above.



RECEIVED

February 27, 2019

2019 MAR -4 PM 12:43

Sent via UPS and Email

SECRETARY OF STATE
ELECTIONS

Mr. Mark Goins
Division of Elections
Tennessee Department of State
312 Rosa L. Parks Avenue
7th Floor, William R. Snodgrass Tower
Nashville, TN 37243

RE: Request for State Certification of Election Systems & Software's EVS 6.0.2.0 Voting System

Dear Mr. Goins:

Election Systems & Software (ES&S) is pleased to present this request to the Tennessee State Election Commission for state certification consideration of our most recent Election Assistance Commission (EAC) Certified *EVS 6.0.2.0 Voting System*. On October 4, 2018, the EAC granted certification of EVS 6.0.2.0 for conformance to the *Voluntary Voting System Guidelines (VVSG) v 1.0* standards and is an upgrade to the EVS 5.2.4.0 release certified by the Tennessee State Election Commission on January 14, 2019.

In addition to EAC Certification, 7 states have state certified the EVS 6.0.2.0 release. Those states are Delaware, Kansas, Missouri, Mississippi, New Jersey, Ohio, and Pennsylvania. In addition to those states, Arizona, South Carolina, and Texas certification examinations have been completed and ES&S should be obtaining state certification approval of EVS 6.0.2.0 in those states during the month of March 2019. Included with this cover letter is a completed survey from Johnson County, Kansas who utilized the EVS 6.0.2.0 release during the November 6, 2018 General election.

The table below represents the EVS 6.0.2.0 version numbers in comparison to the EVS 5.2.4.0 version numbers.

Tennessee			
State Certification of EVS 6.0.2.0			
EAC Certified: 10/04/2018			
VVSG v. 1.0 Compliant			
		EVS 5.2.4.0	EVS 6.0.2.0
Election Management System (EMS)	ElectionWare	4.7.1.4	5.0.1.0
	DS200 Precinct Tabulator (HW 1.2, 1.3)	2.12.2.0	2.17.0.0
ES&S Tabulators	DS850 Central Tabulator (HW 1.0)	2.10.2.0	3.1.0.0
	ExpressVote	1.4.1.7 (HW 1.0) 2.4.2.0 (HW 2.1)	1.5.0.0 (HW 1.0) 2.4.0.0 (HW 2.1)

Below is a brief summary of the enhancements since EVS 5.2.4.0 that are being submitted for State Certification consideration. Please refer to the System Overview for additional details pertaining to the products within the EVS 6.0.2.0 voting system.

➤ **Key Enhancement to the ExpressVote Universal Voting Device**

- Expanded support for a multiple card election, addition of a review box on the printed summary card, and wrapping to a second line for the contest on the printed summary card.

➤ **Key Enhancement to the DS200 Precinct Scanner**

- Added texture free areas to the outer plastic molding of the DS200 in order for improved adhesion of the sticker seals to the DS200 (ECO983).

➤ **Key Enhancement to the DS850 High Speed Central Scanner**

- The DS850 can now be configured to automatically send to the EMS server the results file of the scanned batch when the DS850 operator hits save. To use this feature, the DS850 is connected to the EMS via a closed network.
- Due to the certified report printers going end-of-life, an alternate report printer is now available, the Okidata 432DN (ECO 1005).

➤ **Key Enhancements to the Election Management System (EMS)**

- EVS 6.0.2.0 introduces the *Electionware-Reporting* module which integrates the old Election Reporting Manger (ERM) into Electionware. Key benefits of the Electionware-Reporting module includes:
 - Elimination of system limitations associated with the old ERM software
 - Ballot Review and adjudication
 - Write-in review and reporting
- The “commercial off the shelf” (COTS) components such as the Symantec anti-virus, Cerberus, and the Microsoft Operating System offline updates have been updated to the latest versions.



Included with this cover letter is an enclosed CD-ROM that contains the SLI Compliance EVS 6.0.2.0 VSTL Test Report, the EAC Scope of Certification for EVS 6.0.2.0, ES&S' Technical Data Package which includes the system overview, system operation manuals, security documents, maintenance manuals, etc., and the completed survey from Johnson County, Kansas.

In pursuant of item B under the Second Step of the Tennessee procedures for certifying voting systems, ES&S respectfully request the examination and approval of EVS 6.0.2.0 be scheduled at the April 1, 2019 Tennessee State Election Commission meeting.

If you require additional documentation or clarification, please do not hesitate to contact me via telephone at 402-970-1143 or email at brswartz@essvote.com.

Sincerely,



Benjamin Swartz
Sr. State Certification Manager
Election Systems & Software, LLC

Encl: Product Brochures, EAC Scope of Certification, CD Rom Containing Technical Data Package (TDP)



United States Election Assistance Commission



Certificate of Conformance

ES&S EVS 6.0.2.0

The voting system identified on this certificate has been evaluated at an accredited voting system testing laboratory for conformance to the *Voluntary Voting System Guidelines Version 1.0 (VVSG 1.0)*. Components evaluated for this certification are detailed in the attached Scope of Certification document. This certificate applies only to the specific version and release of the product in its evaluated configuration. The evaluation has been verified by the EAC in accordance with the provisions of the *EAC Voting System Testing and Certification Program Manual* and the conclusions of the testing laboratory in the test report are consistent with the evidence adduced. This certificate is not an endorsement of the product by any agency of the U.S. Government and no warranty of the product is either expressed or implied.

Product Name: EVS _____

Model or Version: 6.0.2.0 _____

Name of VSTL: SLI Compliance _____

EAC Certification Number: ESSEVS6020 _____

Date Issued: October 4, 2018 _____

Executive Director

Scope of Certification Attached

Manufacturer: *Election Systems & Software*
System Name: *EVS 6.0.2.0*
Certificate: *ESSEVS6020*

Laboratory: *SLI Compliance*
Standard: *VVSG 1.0 (2005)*
Date: *October 4, 2018*



Scope of Certification

This document describes the scope of the validation and certification of the system defined above. Any use, configuration changes, revision changes, additions or subtractions from the described system are not included in this evaluation.

Significance of EAC Certification

An EAC certification is an official recognition that a voting system (in a specific configuration or configurations) has been tested to and has met an identified set of Federal voting system standards. An EAC certification is **not**:

- An endorsement of a Manufacturer, voting system, or any of the system's components.
- A Federal warranty of the voting system or any of its components.
- A determination that a voting system, when fielded, will be operated in a manner that meets all HAVA requirements.
- A substitute for State or local certification and testing.
- A determination that the system is ready for use in an election.
- A determination that any particular component of a certified system is itself certified for use outside the certified configuration.

Representation of EAC Certification

Manufacturers may not represent or imply that a voting system is certified unless it has received a Certificate of Conformance for that system. Statements regarding EAC certification in brochures, on Web sites, on displays, and in advertising/sales literature must be made solely in reference to specific systems. Any action by a Manufacturer to suggest EAC endorsement of its product or organization is strictly prohibited and may result in a Manufacturer's suspension or other action pursuant to Federal civil and criminal law.

System Overview

The ES&S EVS 6.0.2.0 voting system is a modification of the ES&S EVS 6.0.0.0 voting system, certified on July 2, 2018, which contains limited changes to the Electionware application. The ES&S EVS 6.0.2.0 voting system is composed of software applications, central count location devices and polling place devices with accompanying firmware, and COTS hardware and software.

Electionware®

Electionware election management software is an end-to-end election management software application that provides election definition creation, ballot formation, equipment

configuration, result consolidation, adjudication and report creation. Electionware is composed of five software groups: Define, Design, Deliver, Results and Manage.

ExpressVote XL™

ExpressVote XL is a hybrid paper-based polling place voting device that provides a full-face touchscreen vote capture that incorporates the printing of the voter's selections as a cast vote record, and tabulation scanning into a single unit.

ExpressTouch®

ExpressTouch Electronic Universal Voting System (ExpressTouch) is a DRE voting system which supports electronic vote capture for all individuals at the polling place.

ExpressVote® Hardware 1.0

ExpressVote Universal Voting System Hardware 1.0 (ExpressVote HW1.0) is a hybrid paper-based polling place voting device that provides touch screen vote capture that incorporates the printing of the voter's selections as a cast vote record, to be scanned for tabulation in any one of the ES&S precinct or central scanners.

ExpressVote® Hardware 2.1

ExpressVote Universal Voting System Hardware 2.1 (ExpressVote HW2.1) is a hybrid paper-based polling place voting device that provides touch screen vote capture that incorporates the printing of the voter's selections as a cast vote record, and tabulation scanning into a single unit. ExpressVote HW2.1 is capable of operating in either marker or tabulator mode, depending on the configurable mode that is selected in Electionware.

There are two separate versions of the ExpressVote hardware version 2.1: 2.1.0.0 and version 2.1.2.0 (6.4 & 6.8). Please note that all future references to ExpressVote HW 2.1 as used throughout the document refers to both hardware versions.

DS200®

DS200 is a polling place paper-based voting system, specifically a digital scanner and tabulator that simultaneously scans the front and back of a paper ballot and/or vote summary card in any of four orientations for conversion of voter selection marks to electronic Cast Vote Records (CVR).

DS450®

DS450 is a central scanner and tabulator that simultaneously scans the front and back of a paper ballot and/or vote summary card in any of four orientations for conversion of voter selection marks to electronic Cast Vote Records (CVR).

DS850®

DS850 is a central scanner and tabulator that simultaneously scans the front and back of a paper ballot and/or vote summary card in any of four orientations for conversion of voter selection marks to electronic Cast Vote Records (CVR).

Event Log Service (ELS)

ELS monitors and logs users' interactions with the Election Management System. Events that happen when a connection to the database is not available are logged to the Windows Operating System log through the ELS.

Removable Media Service (RMS)

RMS is a utility that runs in the background of the Windows operating system. RMS reads specific information from any attached USB devices so that ES&S applications such as Electionware can use that information for media validation purposes.

Configurations

Within the scope of the ES&S EVS 6.0.2.0 voting system, three unique configurations are supported, in order to accommodate limitations of components with the ES&S EVS 6.0.2.0 voting system.

Configuration A

ES&S EVS 6.0.2.0: Test Configuration A is comprised of the entire suite of voting system products.

- Electionware
- ExpressVote Marker (HW 1.0)
- ExpressVote Marker/Tabulator (HW 2.1)
- ExpressVote XL
- ExpressTouch
- DS200
- DS450
- DS850

Configuration B

- Electionware
- ExpressVote Marker (HW 1.0)
- ExpressVote Marker/Tabulator (HW 2.1)
- DS200
- DS450
- DS850

Configuration C

- Electionware
- ExpressVote XL

Mark Definition

ES&S' declared level mark recognition for the DS200, DS450 and DS850 is a mark across the oval that is 0.02" long x 0.03" wide at any direction.

Tested Marking Devices

Bic Grip Roller Pen

Language Capability

EVS 6.0.2.0 supports English, Spanish, Chinese (Cantonese), Korean, Japanese, Hindi, Bengali, Vietnamese, Tagalog, Creole, Russian, and French. Configuration C also supports Punjabi and Gujarati.

Proprietary Components Included

This section provides information describing the components and revision level of the primary components included in this Certification.

System Component	Software or Firmware Version	Hardware Version	Model	Comments
Electionware	5.0.1.0			
ES&S Event Log Service	1.6.0.0			
Removable Media Service	1.5.0.0			
ExpressVote HW 1.0	1.5.0.0	1.0		Paper-based vote capture and selection device
ExpressVote Previewer (1.0)	1.5.0.0			
ExpressVote HW 2.1	2.4.0.0	2.1.0.0 2.1.2.0		Hybrid paper-based vote capture and selection device and precinct count tabulator
ExpressVote Previewer (2.1)	2.4.0.0			
DS200	2.17.0.0	1.2.1, 1.2.3, 1.3		Precinct Count Tabulator
DS450	3.1.0.0	1.0		Central Count Scanner and Tabulator
DS850	3.1.0.0	1.0		Central Count Scanner and Tabulator
ExpressVote XL	1.0.0.0	1.0		Hybrid full-faced paper-based vote capture and selection device and precinct count tabulator
ExpressTouch	1.0.0.0	1.0		DRE
ExpressVote Rolling Kiosk		1.0	98-00049	Portable Voting Booth
Voting Booth		N/A	98-00051	Stationary Voting Booth
ExpressVote Single Table		N/A	87033	Voting Table for One Unit
ExpressVote Double Table		N/A	87032	Voting Table for Two Units
ADA Table		N/A	87031	Voting Table for One Unit

System Component	Software or Firmware Version	Hardware Version	Model	Comments
DS200 Ballot Box		1.0	98-00009	Collapsible Ballot Box
DS200 Ballot Box		1.2, 1.3, 1.4, 1.5	57521	Plastic ballot box
DS200 Ballot Box		1.0, 1.1, 1.2	76245	Metal ballot box
DS200 Tote Bin		1.0	00074	Tote Bin Ballot Box
DS450 Cart		N/A	3002	
DS850 Cart		N/A	6823	
Universal Voting Console		1.0	98-00077	Detachable ADA support peripheral
Tabletop Easel		N/A	14040	
ExpressTouch Voting Booth		N/A	98-00081	Stationary Voting Booth
SecureSetup	2.0.0.1			Proprietary Hardening Script

COTS Software

Manufacturer	Application	Version
Microsoft Corporation	Server 2008	R2 w/ SP1 (64-bit)
Microsoft Corporation	Windows 7 Professional	SP1 (64-bit)
Microsoft Corporation	WSUS Microsoft Windows Offline Update Utility	11.1.1
Symantec	Endpoint Protection	14.0.1 (64-bit)
Symantec	Symantec Endpoint Protection Intelligent Updater (File-Based Protection)	20180116-002-core3sds5i64.exe
Symantec	Symantec Endpoint Protection Intelligent Updater (Network-Based Protection)	20180115-040-IPS_IU_SEP_14RU1.exe
Symantec	Symantec Endpoint Protection Intelligent Updater (Behavior-Based Protection)	20180108-003-SONAR_IU_SEP.exe
Cerberus	CerberusFTP Server – Enterprise	9.0.3.1 (64-bit)
Adobe	Acrobat	XI
Microsoft Corporation	Visual C++ Redistributable	vc_redist.x86.exe (32-bit)
RSA Security	RSA BSAFE Crypto-C ME for Windows 32-bit	4.1
OpenSSL	OpenSSL	2.0.12
OpenSSL	OpenSSL	2.0.16
OpenSSL	OpenSSL	1.02d
OpenSSL	OpenSSL	1.02h
OpenSSL	OpenSSL	1.02k

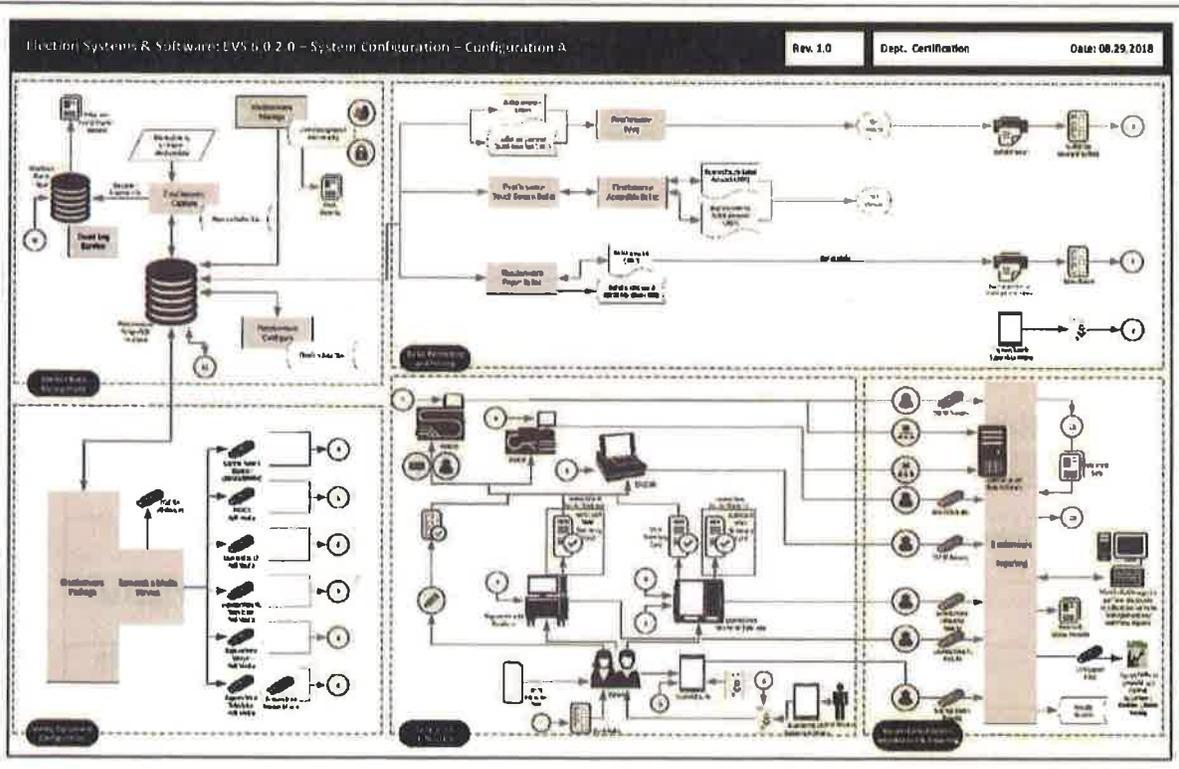
COTS Hardware

Manufacturer	Hardware	Model/Version
EMS Server		
EMS Client or Standalone Workstation		
Innodisk	USB EDC H2SE (1GB) for ExpressVote 1.0	DEEUH 1-01GI72AC1SB
Innodisk	USB EDC H2SE (16GB) for ExpressVote 2.1	DEEUH 1-16GI72AC1SB
Delkin	USB Flash Drive	512MB, 1 GB, 2 GB, 4 GB, 8 GB
Delkin	Validation USB Flash Drive	16 GB

Delkin	USB Embedded 2.0 Module Flash Drive	MY16MGFSY-RA000-D / 16 GB
Delkin	Compact Flash Memory Card	1 GB
Delkin	Compact Flash Memory Card Reader/Writer	6381
Delkin	CFAST Card	2GB, 4GB
Lexar	CFAST Card Reader/Writer	LRWCR1TBNA
CardLogix	Smart Card	CLXSU128kC7/ AED C7
SCM Microsystems	Smart Card Writer	SCR3310
Avid	Headphones	86002
Zebra Technologies	QR code scanner (Integrated)	DS457-SR20009
Symbol	QR Code scanner (External)	DS9208
Dell	DS450 Report Printer	S2810dn
OKI	DS450 and DS850 Report Printer	B431dn/B431d
OKI	DS450 and DS850 Audit Printer	Microline 420
APC	DS450 UPS	Back-UPS Pro 1500
APC	DS850 UPS	Back-UPS RS 1500 or Pro 1500
Tripp Lite	DS450 and DS850 Surge Protector	Spike Cube
Seiko Instruments	Thermal Printer	LTPD-347B
NCR/Nashua	Paper Roll	2320
Fujitsu	Thermal Printer	FTP-62GDSL001/ FTP-63GMCL153

Configuration Diagrams

Configuration A



System Limitations

This table depicts the limits the system has been tested and certified to meet.

System Characteristic	Boundary or Limitation	Limiting Component
Max. precincts allowed in an election	9,900	
Max. ballot styles in an election	15,000	
Max. candidates allowed per election	10,000	
Max. contests allowed in an election	10,000	
Max. number of parties allowed	General election: 75 Primary election: 30	
Max. District Types/Groups	25	
Max. districts of a given type	250	
Max. Contests allowed per ballot style	500	
Max. Reporting Groups in an election	14	
Max. candidates allowed per contest	230	
Max. "Vote For" per contest	230	
Max. ballots per batch	1,500	

Component Limitations:

Electionware

1. Electionware capacities exceed the boundaries and limitations documented for ES&S voting equipment and election reporting software. For this reason, ballot tabulator limitations define the boundaries and capabilities of Electionware system.
2. Electionware software field limits were calculated using default text sizes for ballot and report elements. Some uses and conditions, such as magnified ballot views or combining elements on printed media or ballot displays, may result in limits lower than those listed in the System Overview.
3. The Electionware Export Ballot Images function is limited to 250 districts per export.
4. Electionware is limited to the language special characters listed in the System Overview. Language special characters other than those on this list may not appear properly when viewed on equipment displays or reports.

5. The Straight Party feature must not be used in conjunction with the Single or Multiple Target Cross Endorsement features.
6. The 'MasterFile.txt' and the 'Votes File.txt' do not support results for elections that contain multiple sheets or multiple ExpressVote cards per voter. These files can be produced using the Electionware > Reporting > Tools > Export Results menu option. This menu option is available when the Rules Profile is set to "Illinois".

Paper Ballot Limitations

1. The paper ballot code channel, which is the series of black boxes that appear between the timing track and ballot contents, limits the number of available ballot variations depending on how a jurisdiction uses this code to differentiate ballots. The code can be used to differentiate ballots using three different fields defined as: Sequence (available codes 1-16,300), Type (available codes 1-30) or Split (available codes 1-18).
2. If Sequence is used as a ballot style ID, it must be unique election-wide and the Split code will always be 1. In this case the practical style limit would be 16,300.
3. The ExpressVote activation card has a limited ballot ID based on the three different fields defined as: Sequence (available codes 1-16,300), Type (available codes 1-30) or Split (available codes 1-18).

ExpressVote

1. ExpressVote capacities exceed all documented limitations for the ES&S election management, vote tabulation and reporting system. For this reason, Election Management System and ballot tabulator limitations define the boundaries and capabilities of the ExpressVote system as the maximum capacities of the ES&S ExpressVote are never approached during testing.

ExpressVote XL

1. ExpressVote XL capacities exceed all documented limitations for the ES&S election management, vote tabulation and reporting systems. For this reason, Election Management System and ballot tabulator limitations define the boundaries and capabilities of the ExpressVote XL system as the maximum capacities of the ES&S ExpressVote XL are never approached during testing.
2. ExpressVote XL does not offer open primary support based on the ES&S definition of Open Primary, which is the ability to select a party and vote based on that party.
3. ExpressVote XL does not support Massachusetts Group Vote.
4. ExpressVote XL does not support Universal Primary Contest.
5. ExpressVote XL does not support Multiple Target Cross Endorsement.
6. ExpressVote XL does not support Reviewer or Judges Initials boxes.
7. ExpressVote XL does not support multi-card ballots.
8. In a General election, one ExpressVote XL screen can hold 32 party columns if set up as columns or 16 party rows if set up as rows.
9. ExpressVote XL does not support Team Write-In.

ExpressTouch

1. ExpressTouch capacities exceed all documented limitations for the ES&S election management, vote tabulation and reporting systems. For this reason, Election Management System limitations define the boundaries and capabilities of the ExpressTouch system as the maximum capacities of the ES&S ExpressTouch are never approached during testing.

2. ExpressTouch does not offer open primary support, which is the ability to select a party and vote based on that party.
3. ExpressTouch does not support Massachusetts Group Vote.
4. ExpressTouch does not support Universal Primary Contest.
5. ExpressTouch does not support Multiple Target Cross Endorsement.
6. ExpressTouch does not support Team Write-In.

DS200

1. The ES&S DS200 configured for an early vote station does not support precinct level results reporting. An election summary report of tabulated vote totals is supported.
2. The DS200 storage limitation for write-in ballot images is 3,600 images. Each ballot image includes a single ballot face, or one side of one page.
3. Write-in image review requires a minimum 1GB of onboard RAM.
4. To successfully use the Write-In Report, ballots must span at least three vertical columns. If the column is greater than 1/3 of the ballot width (two columns or less), the write-in image will be too wide to print on the tabulator report tape.

Functionality

VVSG 1.0 Supported Functionality Declaration

Feature/Characteristic	Yes/No	Comment
Voter Verified Paper Audit Trails		
VVPAT	No	
Accessibility		
Forward Approach	Yes	
Parallel (Side) Approach	Yes	
Closed Primary		
Primary: Closed	Yes	
Open Primary		
Primary: Open Standard (provide definition of how supported)	Yes	Configuration B only
Primary: Open Blanket (provide definition of how supported)	No	
Partisan & Non-Partisan:		
Partisan & Non-Partisan: Vote for 1 of N race	Yes	
Partisan & Non-Partisan: Multi-member ("vote for N of M") board races	Yes	
Partisan & Non-Partisan: "vote for 1" race with a single candidate and write-in voting	Yes	
Partisan & Non-Partisan "vote for 1" race with no declared candidates and write-in voting	Yes	
Write-In Voting:		
Write-in Voting: System default is a voting position identified for write-ins.	Yes	
Write-in Voting: Without selecting a write in position.	Yes	
Write-in: With No Declared Candidates	Yes	
Write-in: Identification of write-ins for resolution at central count	Yes	
Primary Presidential Delegation Nominations & Slates:		
Primary Presidential Delegation Nominations: Displayed delegate slates for each presidential party	No	

Feature/Characteristic	Yes/No	Comment
Slate & Group Voting: one selection votes the slate.	No	
Ballot Rotation:		
Rotation of Names within an Office; define all supported rotation methods for location on the ballot and vote tabulation/reporting	Yes	
Straight Party Voting:		
Straight Party: A single selection for partisan races in a general election	Yes	
Straight Party: Vote for each candidate individually	Yes	
Straight Party: Modify straight party selections with crossover votes	Yes	
Straight Party: A race without a candidate for one party	Yes	
Straight Party: N of M race (where "N">1)	Yes	
Straight Party: Excludes a partisan contest from the straight party selection	Yes	
Cross-Party Endorsement:		
Cross party endorsements, multiple parties endorse one candidate.	Yes	
Split Precincts:		
Split Precincts: Multiple ballot styles	Yes	
Split Precincts: P & M system support splits with correct contests and ballot identification of each split	Yes	
Split Precincts: DRE matches voter to all applicable races.	Yes	
Split Precincts: Reporting of voter counts (# of voters) to the precinct split level; Reporting of vote totals is to the precinct level	Yes	It is possible to list the number of voters.
Vote N of M:		
Vote for N of M: Counts each selected candidate, if the maximum is not exceeded.	Yes	
Vote for N of M: Invalidates all candidates in an overvote (paper)	Yes	
Recall Issues, with options:		
Recall Issues with Options: Simple Yes/No with separate race/election. (Vote Yes or No Question)	No	
Recall Issues with Options: Retain is the first option, Replacement candidate for the second or more options (Vote 1 of M)	No	
Recall Issues with Options: Two contests with access to a second contest conditional upon a specific vote in contest one. (Must vote Yes to vote in 2 nd contest.)	No	
Recall Issues with Options: Two contests with access to a second contest conditional upon any vote in contest one. (Must vote Yes to vote in 2 nd contest.)	No	
Cumulative Voting		
Cumulative Voting: Voters are permitted to cast, as many votes as there are seats to be filled for one or more candidates. Voters are not limited to giving only one vote to a candidate. Instead, they can put multiple votes on one or more candidate.	No	
Ranked Order Voting		
Ranked Order Voting: Voters can write in a ranked vote.	No	

Feature/Characteristic	Yes/No	Comment
Ranked Order Voting: A ballot stops being counting when all ranked choices have been eliminated	No	
Ranked Order Voting: A ballot with a skipped rank counts the vote for the next rank.	No	
Ranked Order Voting: Voters rank candidates in a contest in order of choice. A candidate receiving a majority of the first choice votes wins. If no candidate receives a majority of first choice votes, the last place candidate is deleted, each ballot cast for the deleted candidate counts for the second choice candidate listed on the ballot. The process of eliminating the last place candidate and recounting the ballots continues until one candidate receives a majority of the vote	No	
Ranked Order Voting: A ballot with two choices ranked the same, stops being counted at the point of two similarly ranked choices.	No	
Ranked Order Voting: The total number of votes for two or more candidates with the least votes is less than the votes of the candidate with the next highest number of votes, the candidates with the least votes are eliminated simultaneously and their votes transferred to the next-ranked continuing candidate.	No	
Provisional or Challenged Ballots		
Provisional/Challenged Ballots: A voted provisional ballots is identified but not included in the tabulation, but can be added in the central count.	Yes	
Provisional/Challenged Ballots: A voted provisional ballots is included in the tabulation, but is identified and can be subtracted in the central count	Yes	
Provisional/Challenged Ballots: Provisional ballots maintain the secrecy of the ballot.	Yes	
Overvotes (must support for specific type of voting system)		
Overvotes: P & M: Overvote invalidates the vote. Define how overvotes are counted.	Yes	
Overvotes: DRE: Prevented from or requires correction of overvoting.	Yes	
Overvotes: If a system does not prevent overvotes, it must count them. Define how overvotes are counted.	Yes	
Overvotes: DRE systems that provide a method to data enter absentee votes must account for overvotes.	Yes	
Undervotes		
Undervotes: System counts undervotes cast for accounting purposes	Yes	
Blank Ballots		
Totally Blank Ballots: Any blank ballot alert is tested.	Yes	
Totally Blank Ballots: If blank ballots are not immediately processed, there must be a provision to recognize and accept them	Yes	
Totally Blank Ballots: If operators can access a blank ballot, there must be a provision for resolution.	Yes	
Networking		
Wide Area Network – Use of Modems	No	
Wide Area Network – Use of Wireless	No	

Feature/Characteristic	Yes/No	Comment
Local Area Network – Use of TCP/IP	No	
Local Area Network – Use of Infrared	No	
Local Area Network – Use of Wireless	No	
FIPS 140-2 validated cryptographic module	Yes	
Used as (if applicable):		
Precinct counting device	Yes	DS200, ExpressTouch, ExpressVote HW2.1, ExpressVote XL
Central counting device	Yes	DS450 and/or DS850

Baseline Certification Engineering Change Order's (ECO)

There are not any ECO's certified with the voting system.



ExpressVote[®]

Universal Voting System as a Marker



Multilingual

Touch Screen and Display

Allows voters to easily make vote selections and review their selection.

Instruction Panel

A visual guide that shows voters how to use the ExpressVote.

Card Slot

Where the voter inserts their card to activate selections.

Visual Aids

High contrast and zoom functionality.

Front Access Panel

Headphone jack, a port for a Sip-and-Puff device or two-position rocker switch, and Audio-Tactile Keypad make the unit ADA friendly.



Audio-Tactile Keypad

Enables ADA voters to control audio and navigate the ballot.



ACTIVATING THE VOTE SESSION:

Election officials can configure the ExpressVote to best fit their needs. The voter receives an activation card to begin the process.

- If only one ballot style is programmed for the election, a blank card activates the vote session.
- Multiple ballot styles with a blank card prompt poll workers to select the correct ballot style for the voter.
- A card with an activation barcode displays the correct options for the voter if the election has multiple ballot styles.



ExpressVote Key Features

As a marker, the ExpressVote handles the entire marking process, eliminating marginal marks and the need for voter mark interpretation. Voters utilize the touch screen to mark their vote selections, receiving a verifiable paper vote record upon completion. The ExpressVote is used during early voting or in precincts and vote centers on Election Day to serve every eligible voter, including those with special needs.

EASY TO SET UP AND USE



The one-step startup and poll-closing procedure make the ExpressVote an ideal device for poll workers. The intuitive design offers streamlined simplicity for poll workers and election staff. The ExpressVote is also small, lightweight and easy to move.

CONTROLLED AND REDUCED COSTS



Traditional ballot printing costs can be significantly reduced by eliminating the need for pre-printed paper ballots. Voters activate their vote session, make their selections and receive a paper record to cast. This process consumes 70 percent less paper than traditional ballots.

INNOVATIVE DESIGN



Voters review a summary page and can make changes before receiving their verifiable paper vote record. The ExpressVote prevents overvotes and undervoting with prompts and on-screen feedback. ExpressVote in marking mode neither stores nor tabulates vote counts. The system produces a verifiable paper record for each voter.

VERIFIABLE PAPER RECORD



After all selections are made, a human- and machine-readable paper record is produced that includes text and an optical scan barcode. Votes are digitally scanned for tabulation on an ES&S DS200®, DS450® or DS850® device.

SECURE



The ExpressVote Universal Voting System utilizes a variety of functions to ensure election data and cast vote records are secure. In its current certification as a marking device, no vote data is stored in the device. Its system functions are only executable during election events, in the manner and order intended by election officials performing their duties.

For more information visit www.esvote.com



DS200[®]

Precinct Scanner & Tabulator



Protective Cover

Cover has heavy-duty rubber seal to shelter DS200 from elements during transport.

Easy to Set Up

Lid-up, power-on approach allows poll workers to easily open polls.

Touch Screen and Display

Provides voters with instructions and immediate feedback. Tension bearings hold screen in place for custom positioning.

Ballot/Card Slot

Voters cast both ballots and vote summary cards here; accommodates up to 19-inch ballots.

Auxiliary Ballot Compartment

Main Ballot Compartment

Easy, hassle-free storage of up to 2,500 ballots.

11

The number of 14-inch flat ballots processed per minute

DS200 Key Features

The DS200 is a precinct-based scanner and vote tabulator equipped with the latest in ES&S' patented technology. Fully certified and compliant with EAC guidelines, the DS200 enhances the voting experience for voters and election officials alike. Our patented IMR™ and PTRAC® technology ensures even the most poorly marked ballots are read accurately and consistently — protecting voter intent. All of this is designed to make everyone's job easier.

ACCURATE



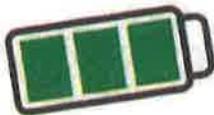
The DS200 combines the ES&S-patented Intelligent Mark Recognition (IMR™) and patented Positive Target Recognition & Alignment Compensation (PTRAC®) systems to accurately track and pinpoint target locations. This technology accommodates ballots inserted at angles or with erroneous marks to uphold voter intent. This precision improves the reliability of elections.

SECURE



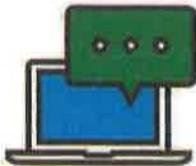
Like all ES&S tabulation equipment, the DS200 includes physical security features such as locking panels and security seals to secure sensitive components and election files, and a key-locked case for transport and shipping. The DS200 operating system controls, limits and detects unauthorized access to all critical data. The system also includes safeguards, such as data encryption and digital signatures, that help protect sensitive data and verify authenticity, including certification of all firmware.

RELIABLE



Having both battery backup and thermal paper means you never have to worry about power outages or printer ink.

COMPATIBLE



Works in conjunction with:

- ExpressVote® Universal Voting System
- Electionware® Election Management Software
- DS450® High-Throughput Scanner & Tabulator
- AutoMARK® Ballot Marking Device
- DS850® High-Speed Scanner & Tabulator
- Election Reporting Manager®

COMPREHENSIVE



- Optional wireless modem results transfer with encryption
- Backup data storage
- Primary data storage device
- Data sent via Secure File Transfer Protocol (SFTP) server



DS850[®]

High-Speed Scanner & Tabulator

Patented IMR™ and PTRAC®

IMR™ and PTRAC® technology provides unparalleled accuracy that reduces time-consuming manual ballot adjudication.

Touch Screen Display

Walks the operator through every step of the tabulation process.

TruGrip™ Rollers

Provides constant contact, ensuring each ballot - even those folded or damaged - are individually processed.

S-Curve

Patented design enables lightning-quick scanning and smooth ballot flow.

Output Bins

- Sorts ballots into:
- Counted
 - Requires Further Review
 - Write-Ins



300

The number of 14-inch flat ballots processed per minute

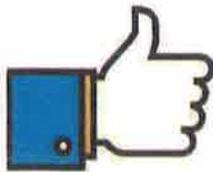
DS850 Key Features

Your elections require a centralized vote scanner and tabulator that is quick and accurate. With its high-speed digital image processing, the DS850 continuously scans ballots to save you valuable time when tabulating election results.



SECURE

System integrity and electronic audits make the DS850 part of the most dependable family of central vote scanners and tabulators on the market. Safeguards, such as data encryption and digital signatures, help protect sensitive data and verify authenticity, including certification of all firmware.



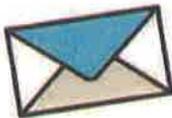
USER-FRIENDLY

Designed specifically for the election process, the DS850 features a user-friendly software interface on a 15-inch LCD color touch screen. The S-shaped transporter allows for a natural flow, creating separation between individual ballots.



ACCURATE

ES&S' patented IMR™ and PTRAC® technology ensures that ballots are read accurately and consistently, protecting voter intent and eliminating manual adjudication time.



FOLDED BALLOT PROCESSING

The DS850 is designed with a series of TruGrip™ rollers, which maintain constant contact with the ballot surface, ensuring quality control throughout the entire tabulation process.



HIGH-SPEED SORTING

The DS850 is the only high-speed scanner in the marketplace that can sort various ballot sizes at full speed. It scans and sorts 14-inch double-sided ballots at 300 per minute into three output bins, separating ballots into three categories: counted, requires further review, and write-ins.



Electionware®

Election Management System

User Friendly

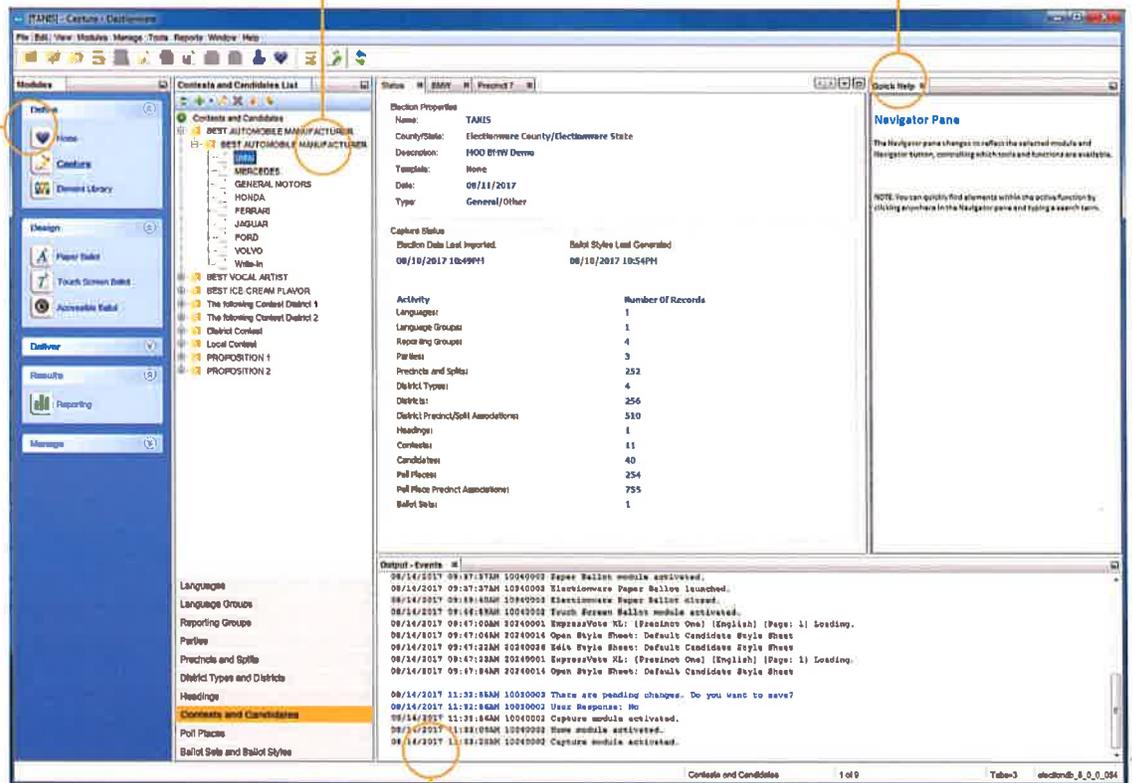
Navigator helps users access exactly what is needed in the current module.

Quick Help

Context-sensitive Quick Help is available in all areas of Electionware.

Easy End-to-End Workflow

Enables end-to-end election management, from data capture, ballot layout, and configuring equipment to loading and reporting results.



Feedback

Flexible, yet powerful election management software guides user through the creation of the election, ensuring that all election data, security codes, and machine settings are added correctly to the election definition.

ELECTION INTELLIGENCE

- Timely election data inquiries and reports
- Workflow management and error alerts
- Enforced data accuracy
- User customization
- Tracking of election media
- Live status indicators for incoming results

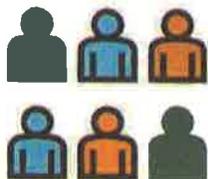
PRODUCTIVITY

- Fast data import
- Reusable election and ballot layout templates
- Simple translation and audio file management
- Multiple simultaneous users
- Ballot image filtering, viewing and printing

Electionware Key Features

Electionware is designed to accommodate the latest election trends, including early and overseas voting, ADA compliance, ballot adjudication, and Election Night reporting. Use Electionware to create an election information database, format ballots, program voting and ballot scanning equipment, count ballots, review ballot images, and report results. This agile election management system is the result of our nearly 40 years of election product research and development.

SIMULTANEOUS MULTIUSER ACCESS



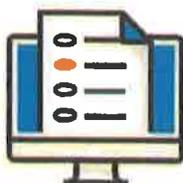
Multi-user Electionware functionality enables large jurisdictions to use authorized election personnel on a closed-network system simultaneously creating precinct media flash drives and entering information for the ES&S equipment and Electionware. Additionally, the multi-user functionality in Electionware allows multiple teams of election officials to work simultaneously on different elections.

DATA SECURITY



Electionware incorporates the latest in election security, including built-in audit controls, encrypted election data, and access level user credentials designed to keep election data safe and secure. Electionware is fully compliant with EAC guidelines for usability, accessibility and security requirements. The Equipment Security feature creates security codes that control access to voting equipment. All election media USB flash drives contain encryption specific to the current election and equipment type.

ROBUST



Electionware manages nearly 10,000 ballot styles and precincts; supports myriad languages; manages and deploys multiple levels of security. One database for multiple equipment types provides election-wide uniformity and compliance, as well as less room for human error.



Voting System Security

Election Systems & Software (ES&S) is a proud provider of voting system technology across the United States. We have been in the business of providing tabulation systems to local and state jurisdictions for nearly 40 years.

The voters of our nation cast their ballots using a number of different methods. The types and kinds of technology in use across the nation vary from state to state and county to county, depending on the election laws and preferred voting methods for a particular jurisdiction. Depending on the jurisdiction, voters can cast their ballots by mail in advance of Election Day or in a polling location on Election Day, and in some cases in a polling location during an Early Voting period. A number of voters cast their ballots on a voting device designed to ensure that those with disabilities can vote securely and independently. The most common way to vote, however, remains in-person at a polling location on the day of the election. Polling place ballots are then tabulated at the precinct, or in some cases; they are centrally counted at the Elections Office.

At ES&S we design, build and sell voting systems that support all the aforementioned voting methods. The overriding design philosophy with all of our products is to ensure accuracy, security and reliability — a philosophy that has prevailed throughout our company's history. As such, ES&S is committed to ensuring the long-term sustainability of our products. A large part of our company is devoted to sourcing and maintaining replacement parts for our fielded systems – regardless of age. All replacement parts are tested and certified for use prior to installation. Additionally, we field hundreds of trained support personnel who perform preventative maintenance on voting systems to ensure that each piece of technology is in good working order prior to Election Day.

ES&S submits our tabulation systems to rigorous and lengthy test campaigns as part of the Election Assistance Commission's (EAC) Voting System Certification Program. This important program sets forth security and performance standards that were developed by Scientists, Academicians and Election Officials. All of our systems are tested by independent laboratories that have received federal accreditation.

In addition to adhering to the security and performance requirements of the EAC Certification Program, our voting equipment adheres to secure practices that surround the creation, transfer, and storage of important election files and data. Our products employ encryption and digital signing for all data-in-transit using cryptographic modules that meet the Federal Information Processing Standard. Our systems allow Election Officials to easily adhere to the laws of their state which mandates strict physical security and tight chain of custody of the voting machines.

In the event that a voting machine has a mechanical issue, or a human makes an error in preparing or using a voting machine, every state in the nation has protocols for the use of back-up equipment, audits of voting results and publicly documented physical tests to ensure that issues can be corrected prior to Election Day or before the final certification of voting results.

Our vision at ES&S is simple and unwavering. We believe in "maintaining voter confidence and enhancing the voting experience". We deliver on this commitment through our dedication to the research, design and manufacture of secure, accurate and reliable voting systems. In addition, we remain committed to submitting all of our systems to the EAC federal testing process that is the gold standard for our industry. Finally, our promise of accuracy, security and reliability is supported and strengthened by the dedication and attention to excellence that is a hallmark of the thousands of Election Officials across the nation whom we serve. We support each of these officials in our mutual quest to perpetually uphold the integrity of this nation's elections process.



HARDENING

Election Management System Hardening

Hardening of the Election Management System (EMS) is the process of configuring servers, workstations, and network equipment in an effort to minimize security vulnerabilities and have a standard configuration of the EMS for each release. Configuration settings are based on security best practices and recommendations from Federal and Industry Standards that provide specific and actionable ways to prevent malicious activity and improve the collective security of EMS systems, and to achieve acceptable levels of integrity and reliability of voting systems. When an ES&S EMS system or network is hardened, the cybersecurity posture of the network is improved which lowers the risk to outside threats.

EMS hardening configures the EMS systems and network to include only the services, applications, utilities, and settings required to successfully operate the EMS. By utilizing certified scripts and updates, a standard configuration that has been developed, tested, and certified ensures a secure and reliable voting infrastructure. Moreover, hardening provides many benefits to an EMS system including Security, Reliability, and Standardization.

Federal Guidelines recommend that security standards of voting systems include the following objectives:

- Protect critical elements of the voting system
- Establish and maintain controls to minimize errors
- Protect the system from intentional manipulation, fraud, and malicious mischief
- Identify fraudulent or erroneous changes to the voting system
- Protect secrecy in the voting process

Hardening of the EMS helps conform to Federal and Industry Standards. This is accomplished by configuring and locking down multiple areas of the voting systems. Access and functionality is restricted to only that required to operate the voting systems. Examples of system hardening activities include:

- Modifying the Windows registry
- Configure Account and Local Policies
- Configure Software restriction policies
- Removes non-essential Windows components
- Sets permissions on application folders
- Configures group based security permissions
- Creates standard configuration of Windows network



ELECTIONWARE®

Security Features of the ES&S Election Management System (EMS)

Accuracy, security and reliability are the cornerstones of the ES&S development process for each voting system we manufacture and sell. From concept to construction, ES&S adheres to industry-leading standards and complies with rigorous testing schedules set forth by federal and state election agencies. Upholding and perpetuating the integrity of our nation's election process is our continuing mission as a company.

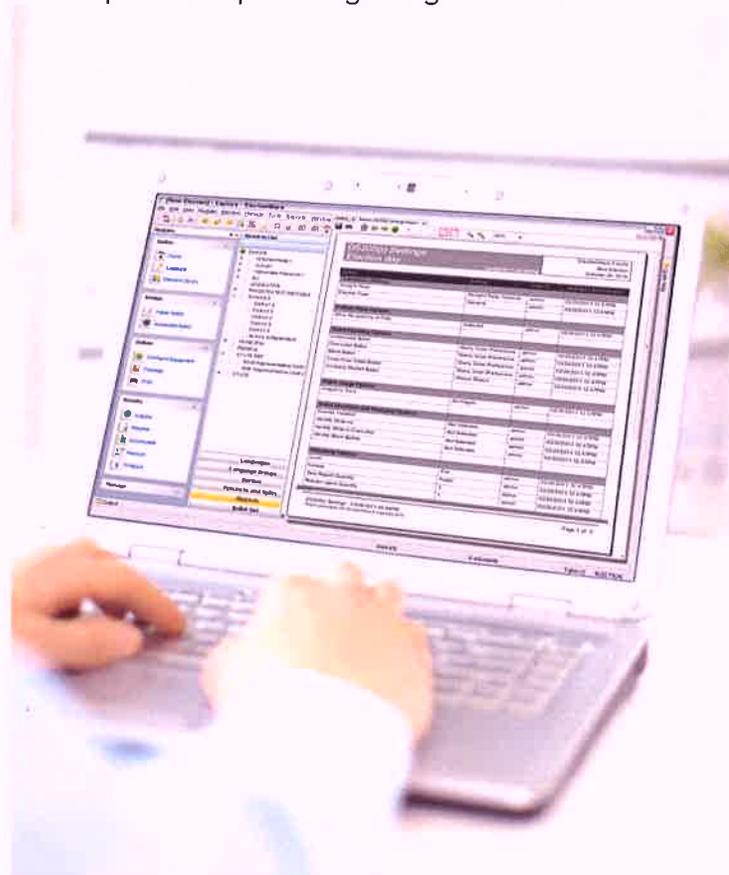
Electionware is an election management system (EMS) certified by the U.S. Election Assistance Commission (EAC), which allows jurisdictions to manage their elections through the software's easy-to-understand, user-friendly interface. Our EMS incorporates the very latest in election security, including heightened audit controls and change-management processes that are built in to make sure election data is safe and secure. Electionware requires users to enter a valid username and password prior to gaining access to the application. The username and passwords are stored in an encrypted form in the database.

Electionware saves a record of all user actions with username to the system audit log. Electionware maintains an audit log that shows all system processes. This audit log can be filtered by date and type of event. The log can be printed, or saved in a variety of file formats, including .pdf, .rtf, .html, .xls, and .csv. The log operates during all processes including results processing. Optionally, log events can be viewed in real-time in the output window, which displays errors in red text, warnings in blue text, and normal events in black text.

Audit records created during the election definition and ballot preparation include records for the finalization of ballot layout and modifications to that finalization. These records incorporate a date/time stamp, include a description of the action and the module the action occurred in. Audit reports can be filtered by date, event type, and sorted by ascending or descending timestamps.

System security for Electionware limits casual access to system files. Officials are required to implement a strong physical and procedural security plan that limits access to Electionware to authorized personnel only. Electionware does not offer any data entry feature that can be used to alter programming. The database server accesses data through a service account, protecting data files from direct access.

A complete security hardening process is provided for the computer platform of the EMS as a security measure. This process hardens the basic input/output system (BIOS), the operating system, and the User Access Controls so data cannot be modified outside the intended flow of the application or by a malicious hacker.





DS200[®]

Security Features of the Precinct Scanner & Tabulator

Accuracy, security and reliability are the cornerstones of the ES&S development process for each voting system we manufacture and sell. From concept to construction, ES&S adheres to industry-leading standards and complies with rigorous testing schedules set forth by election agencies. Upholding and perpetuating the integrity of our nation's election process is our continuing mission as a company.

Like all ES&S ballot tabulation equipment, the DS200 in precinct paper-based scanner and tabulator includes physical security features such as locking panels and security seals to secure sensitive components and election files, and a key locked case for transport and shipping. This paper-based system maintains paper vote records and takes digital images of each processed ballot.

The DS200 has received full certification and approval by the U.S. Election Assistance Commission (EAC). The unit allows election officials to easily validate that all resident firmware matches the firmware version certified for use in that jurisdiction. It also generates detailed audit and event logs to reveal all actions taking place on the unit while also digitally signing and encrypting all data to prevent malicious tampering. Each administrative function requires a password be entered for completion and units can be configured to require a passcode before the tabulator boots up.

Strong physical safety features including controlled keys with unique locks, security seals and security screws eliminate the possibility of undetected system tampering during storage, transport and use. The unit only accepts approved and certified USB drives to prevent unauthorized data transfers or uploads.

The DS200 tabulator is a single purpose voting device. As such, once an election official installs election programming, it is not possible for a separate device to interface with the DS200 in order to overwrite or change the election definition or system firmware. Additionally, when election results are transmitted, a double encryption procedure is employed that ensures results are secure from the time they are bundled by the DS200 tabulator until they are processed by the Election Reporting Manager (ERM).





DS850[®]

Security Features Of The High-Speed Scanner & Tabulator

Accuracy, security and reliability are the cornerstones of the ES&S development process for each voting system we manufacture and sell. From concept to construction, ES&S adheres to industry-leading standards and complies with rigorous testing schedules set forth by federal and state election agencies. Upholding and perpetuating the integrity of our nation's election process is our continuing mission as a company.

The DS850 uses key-locks and security seals to protect the unit against tampering or intervention in system operations. All data ports and the power switch are secured behind clear plastic lockable and sealable access doors to protect access and allow election officials to detect unauthorized access easily. All critical hardware components can be locked and sealed, as well. It also provides additional alerts and logs access to the back service door.

The DS850 has no capability to write or otherwise change the election program once installed. The contents of the DS850 election media are digitally signed and verifiable using the application. The design does not include any form of manual election data entry or manipulation, thus providing a general safeguard for critical election data. All administrative functions are limited to the controls allowed through the touch screen interface, for machine operation only.

The DS850 provides options for both real-time printed and electronic logging of all activity performed, with the ability to reprint logs on demand or export electronic logs for complete review. The DS850 logs all passcode attempts, whether successful or failed, to the digitally signed audit log. In addition, all user actions (such as administrative selections and open and close poll events), whether successful or failed, are written to the audit log. Only the DS850 system can create, read, modify, and delete the audit log/inventory as the user interface is locked out of this functionality.

The DS850 uses digital encryption and signing of key configuration and data files for complete integrity of the election and results. All DS850 data is signed with FIPS-compliant digital signature algorithms. All data generated is also signed so the program receiving the data can validate it.





Printing Services

Ballots Start with the Right Paper



COUNTRIGHT[®]
BALLOT STOCK BY ES&S

Ballot Printing Solution

Nearly 40 years of industry experience makes Election Systems & Software the leader in ballot production. Ballots are produced efficiently, precisely and specifically to a jurisdiction's needs. CountRight® ballot stock optimizes voting system performance, ensuring success on Election Day.

IT ALL STARTS WITH THE RIGHT PAPER



- Quality of a ballot determines whether it is scanned and tabulated properly
- Our ballots' distinct characteristics are certified with your specific system
- Only one facility in the U.S. produces CountRight paper, trademarked by ES&S
- Specific formulas designed around weight, opacity, smoothness, thickness, and brightness

FOLLOWED BY INDUSTRY'S MOST EXPERIENCED BALLOT PRODUCTION TEAM



- State-specific teams know your requirements, deadlines, and statutes
- Easy and convenient online ordering
- Dedicated teams provide continuous service throughout the process, helping package, ship and track your orders

BE ASSURED WITH BALLOT CHECK

ES&S understands that you want accurate ballots printed to your specifications and shipped on time. That's why we developed the Ballot Check™ Quality Assurance Program, the most comprehensive quality assurance program in the industry.

With Ballot Check, ES&S goes beyond normal proofing and ballot content verification. All ballot print jobs are inspected and monitored to match your specifications for ballot registration, sizing, ink density, and oval and line thickness. Results are recorded in a Quality Assurance Audit Log.

All ES&S print facilities, including our Preferred Partner Printers, use Ballot Check to provide the highest level of ballot printing accuracy, giving our customers the peace of mind and satisfaction of knowing that the ballots they receive have been thoroughly tested and inspected, and are ready for Election Day.





Field Services

Maintenance Service Protection Program

IS AN EQUIPMENT CHECKUP ON YOUR LIST OF TO-DO'S? IT DOESN'T HAVE TO BE!

Keep your voting systems working at peak performance with preventative maintenance — along with certified software and firmware upgrades and enhancements offered-through ES&S' Maintenance Service Protection Program.

Be confident this election knowing that your voting solutions are in the care of trained ES&S professionals who have intimate product knowledge and, on average, 10-12 years of election experience each.



**UPGRADES &
ENHANCEMENTS**



**REPAIR
SERVICES**



**TECHNICAL
SUPPORT**

Field Services

- ES&S performs sustainment engineering for end-of-life parts, ensuring continued product operation
- All ES&S technicians experience extensive training, and are certified by a Senior Field Services Technician
- All ES&S employees undergo a background check prior to hire
- To assist with record keeping, ES&S provides electronic documentation with a serial number after a work order has been completed
- ES&S ensures equipment adheres to federal and state certification requirements
- 24/7 access to customer-specific documentation
 - Product Advisories
 - Product documentation
 - Training materials
- Easy budgeting with one annual invoice ensures customers are not affected by price fluctuations and rising expenses

ES&S MAINTENANCE PROTECTION PACKAGES INCLUDE:

	Gold Package	Silver Package
Scheduled preventative maintenance services including inspection, cleaning, calibration, and testing of covered equipment	Every Year	Odd-Numbered Years*
Free certified replacement parts	✓	✓
Technical help desk support	✓	✓
Repair services	✓	✓
Certified software and firmware upgrades and enhancements	✓	✓
Service by trained and certified ES&S technicians	✓	✓
Exclusive ES&S-certified system parts	✓	✓
Service history tracking	✓	✓
Service satisfaction survey	✓	✓
One simple annual invoice	✓	✓

* During odd-numbered years, customers may ship equipment back to our Omaha headquarters for repairs at their shipping expense

For more information visit www.essvote.com



Voting System Reference Questions

Reference Name and Contact Information:

Ronnie Metsker, Election Commissioner
Johnson County Election Office
2101 East Kansas City Road
Olathe, Kansas 66061
ronnie.metsker@jocogov.org
Direct: 913-715-6850

Jurisdiction Name:

Johnson County, Kansas – Johnson County Election Office

Quantity, type and version of voting equipment and software installed:

We have 2,100 ExpressVote voting machine units; designed, manufactured, sold and serviced by Election Systems & Software (ES&S). Specifically, our fleet is made up of the ExpressVote (with tabulator) including kiosk; ElectionWare Version 6.0.2.0. (Version 6020). The accompanying networked hardware includes: two servers, 10 clients and two DS850 high speed scanners.

How many voters are in your jurisdiction?

419,403 (on Election Day, November, 2018)

When did your jurisdiction purchase the system?

Spring 2018

How many elections have you used the system?

2

Have any upgrades been made to the system since you purchased it?

One software upgrade has been made to the original ElectionWare Version 6000.

Why?

Software upgrade from version 6000 to Version 6020 (update was needed for corrections in codes – see below)

Are you still using the same system?

Yes, the hardware is the same; ES&S has provided an upgrade to the software. The update was tested and certified at the federal and state level.

Describe your overall impression of the system based on experiences in your jurisdiction.

Outstanding

Are you satisfied with the training provided to your staff?

Absolutely. ES&S training is very customer service oriented and technically exhaustive in scope.

Are you satisfied with the training provided for poll officials?

N/A; we do our own training of our election workers

Are you satisfied with the support the vendor has provided for early voting (if applicable), Election Day, and post-election activities?

Yes for all three

Are you satisfied with the cost of support?

Yes

Do you feel the cost of support is competitive or too expensive?

Yes, we are satisfied. The service and support is provided by ES&S at a very reasonable cost. A very good value.

Describe any issues the vendor has had meeting your jurisdiction's requirements, if any.

We experienced a disappointing performance in the original reporting software (Version 6000) on election night, August 2018. ES&S engineers and management corrected the disappointing performance with upgrades made in their new version, (Version 6020). All upgrades were completed in a timely fashion.

Describe any issues your jurisdiction has had regarding equipment availability, if any.

No issues.

Describe any issues your jurisdiction has had regarding the accuracy of election results, if any.

We are currently engaged in discussions with ES&S engineers regarding an operational anomaly in the software reporting module. We are confident the matter will be resolved soon.

Describe any other issues your jurisdiction has had with the system, if any.

Johnson County has requested a software modification in a future version to provide only one option to the voter: an auto-eject of the voter's ballot after it has been marked, forcing the ballot to be ejected for the voter's visual and physical review. Satisfying this request will fulfill the Kansas Secretary of State's requirements. The vendor has committed to provide the change by 2020 primary and general election cycle.

Has the vendor been responsive in addressing issues?

Yes, we have been very impressed with the extent, timeliness and the scope of responsive action that members of ES&S have taken to correct issues of concern. Other issues that have surfaced are in the process of being addressed as part of our on-going maintenance agreement with ES&S. We recognize this is a brand new system in its configuration of hardware and software. In such a circumstance, we understand that there may be hardware or software issues to resolve. The team at ES&S is working with us to fulfill their obligations in a timely manner, and we are confident ES&S will satisfy our remaining concerns.

Describe any feedback (positive or negative) received from poll officials about the system.

Our 2,200 Election Workers were very pleased with the new system. Their positive attitude toward the new voting machines was significant, since many are older citizens. They rose to the occasion to learn new equipment and a new system. This was also the first time our election workers had to handle paper ballot stock. Every process regarding the voting machine was a change of our previous procedures. They were happy.

Describe any feedback (positive or negative) received from voters about the system. The vast majority of the voters gave no feedback. We received a significant number of unsolicited comments of appreciation, praise and satisfaction from voters after their voting experience. The voters liked the ease of the system, the paper ballot feature, and the touch screen was easy to read and manipulate. A very small number did not like the machine and expressed their opinion - (we recognized that many people simply did not like change of any kind). Some simply did not like voting machines in any form and would not be satisfied until we have converted to voting on paper with a pencil and tabulating manually. We sought feedback informally by asking for voters' opinions; responses were overwhelmingly positive, very few or no negative responses. This was not a scientific survey.

Do you feel like you have gotten your money's worth for the system?

N/A. It is too soon to respond to this with data. Over a 10-15 year life expectancy, we believe this acquisition will be seen as a good value. ES&S has a long, rich history of producing quality equipment and servicing well, rendering longevity in service terms.

Would you recommend this system for use in other jurisdictions?

Yes, fully and without reservation. There are other equipment and software options available from this vendor that are also of fine quality. Johnson County has unique demographic and voter culture. Along with our other specific needs, our Election Office team chose this particular configuration (ExpressVote with tabulator and ver. 6020) because it fit our needs best. Other jurisdictions may be perfectly satisfied with other configurations of the software and the ExpressVote ballot marking device, which would also require use of the DS200 precinct scanner and tabulator. Additionally, using the kiosk is completely necessary in our county; other jurisdictions may find it just fine to omit the use of the kiosk in their system.



Voting System Reference Questions

Reference Name and Contact Information: **Brian McKenzie, Davis County Chief Deputy Clerk**

Jurisdiction Name: **Davis County Utah**

Quantity, type and version of voting equipment and software installed: **Electionware EVS 6.0.0.0, DS450 (qty. 3), DS200 (qty. 19), ExpressVote (qty.25), Ballotar (qty. 27)**

How many voters are in your jurisdiction? **Approximately 167,000 active voters**

When did your jurisdiction purchase the system? **2018**

How many elections have you used the system? **2**

Have any upgrades been made to the system since you purchased it? Why? **No**

Are you still using the same system? **Yes**

Describe your overall impression of the system based on experiences in your jurisdiction. **We have been very impressed by the system. It has been simple to use for us, election workers and the public. It has also provided increased efficiencies and transparency**

Are you satisfied with the training provided to your staff? **Absolutely!**

Are you satisfied with the training provided for poll officials? **We provide this training**

Are you satisfied with the support the vendor has provided for early voting (if applicable), Election Day, and post-election activities? **The service that has been provided has been outstanding. I have personally made several calls into customer service and have been thoroughly impressed with the professionalism of their customer support. They want to make sure they understand the issue and then follow up to ensure it is resolved.**

Are you satisfied with the cost of support? Do you feel the cost of support is competitive or too expensive? **Yes**

Describe any issues the vendor has had meeting your jurisdiction's requirements, if any. **NA**

Describe any issues your jurisdiction has had regarding equipment availability, if any. **NA**

Describe any issues your jurisdiction has had regarding the accuracy of election results, if any. **NA**

Describe any other issues your jurisdiction has had with the system, if any. **We did have some serious issues with our new printers used with our Ballot on Demand (BOD) system. Although this was extremely frustrating it also provided a perfect example of the level of**

support offered by ESS. During our Primary and General Elections they provided dedicated ESS Technicians and brought in Oki Technicians as well. They facilitated testing and made adjustments. In the end the problem wasn't able to be resolved, and ESS is replacing all printers with a different (more expensive) model at no additional cost to us. They stand behind their products and make sure things are done wright.

Has the vendor been responsive in addressing issues? **Yes, see above.**

Describe any feedback (positive or negative) received from poll officials about the system. **They love it. It has reduced set up time and take down time and reduced poll worker errors. Training is shorter and simpler and they really caught on to it well.**

Describe any feedback (positive or negative) received from voters about the system. **NA**

Do you feel like you have gotten your money's worth for the system? **Yes**

Would you recommend this system for use in other jurisdictions? **Yes**



Voting System Reference Questions

Reference Name and Contact Information: Kent Jones, Summit County Clerk – Coalville, Utah

435 336 3203

kentjones@summitcounty.org

Jurisdiction Name: Summit County Utah

Quantity, type and version of voting equipment and software installed: expressvote machines, 450 scanner

How many voters are in your jurisdiction? Approx.. 25,000

When did your jurisdiction purchase the system? 2018

How many elections have you used the system? 4 (demo 2017 and purchase 2018)

Have any upgrades been made to the system since you purchased it? Why? 0

Are you still using the same system? yes

Describe your overall impression of the system based on experiences in your jurisdiction. We do all by-mail election, all ballots are sent back to our office for processing. Early vote and election day we use expressvote machines, and those ballots are brought back and treated the same as mail in ballots. The system has worked superb, fits our jurisdiction right. I am very impressed with the 450, no issues.

Are you satisfied with the training provided to your staff? Very satisfied

Are you satisfied with the training provided for poll officials? Very satisfied

Are you satisfied with the support the vendor has provided for early voting (if applicable), Election Day, and post-election activities? All training has been great

Are you satisfied with the cost of support? Do you feel the cost of support is competitive or too expensive? Satisfied, not compared to anything else

Describe any issues the vendor has had meeting your jurisdiction's requirements, if any. none

Describe any issues your jurisdiction has had regarding equipment availability, if any. None, we have ordered and received additional expressvotes, no issue

Describe any issues your jurisdiction has had regarding the accuracy of election results, if any. None, all audit and reporting data and testing has been perfect

Describe any other issues your jurisdiction has had with the system, if any. none

Has the vendor been responsive in addressing issues? Very, I have had experience with a vendor that does not respond. ESS has always been there and never left us hanging on anything

Describe any feedback (positive or negative) received from poll officials about the system. Simple to set up and operate

Describe any feedback (positive or negative) received from voters about the system. Very little feedback (that is a good thing)

Do you feel like you have gotten your money's worth for the system? yes

Would you recommend this system for use in other jurisdictions? Absolutely



Voting System Reference Questions

Reference Name and Contact Information: **Ryan Cowley**, rcowley@co.weber.ut.us **801-399-8036**

Jurisdiction Name: **Weber County, UT**

Quantity, type and version of voting equipment and software installed:

EVS 6.0.0.0

9 ExpressVote

14 DS200

2 DS450

How many voters are in your jurisdiction? **125,000 registered voters**

When did your jurisdiction purchase the system? **2018**

How many elections have you used the system? **2**

Have any upgrades been made to the system since you purchased it? Why? **No.**

Are you still using the same system? **Yes**

Describe your overall impression of the system based on experiences in your jurisdiction. **The ES&S system we purchased last years has exceeded our expectations. It has allowed us to streamline our processes, save money, and improve the accuracy of our elections. It is also very simple for our poll workers.**

Are you satisfied with the training provided to your staff? **Yes**

Are you satisfied with the training provided for poll officials? **N/A - we trained our own poll workers.**

Are you satisfied with the support the vendor has provided for early voting (if applicable), Election Day, and post-election activities? **Yes. This is by far one of the biggest advantages of partnering with ES&S. They have been there at every turn for us and have provided quick and effective responses to every question and issue we have encountered.**

Are you satisfied with the cost of support? Do you feel the cost of support is competitive or too expensive? **The cost of support is reasonable and the level of support they provide is unmatched.**

Describe any issues the vendor has had meeting your jurisdiction's requirements, if any. **ES&S has met or exceeded our needs. We have made several suggestions to them which are being incorporated into future product releases.**

Describe any issues your jurisdiction has had regarding equipment availability, if any. **All equipment has been delivered on time as promised.**

Describe any issues your jurisdiction has had regarding the accuracy of election results, if any. **Our accuracy and confidence has increased with our system. The fact that we can simultaneously and digitally view every ballot, a record of how the machine read the ballot, and a record of any adjudication is remarkable.**

Describe any other issues your jurisdiction has had with the system, if any. **We have only experienced minor issues that were easily resolved. We had some minor issues with printing in a neighboring county in the primary election. ES&S sent us an excess of spare parts and brought a printing specialist in from Oki Data to provide us training and information so that we would not have any issues in the general election, and if we did have any issues we would be prepared to handle them.**

Has the vendor been responsive in addressing issues? **Yes, all issues have been resolved in a timely manner and with ample follow up to ensure that it has really been fixed.**

Describe any feedback (positive or negative) received from poll officials about the system. **Our poll workers love how easy the system is to setup. They also love that we configure all of the reports that are printed for them so all they have to do is turn it on and off and sign whatever reports are printed for them.**

Describe any feedback (positive or negative) received from voters about the system. **Voters liked the system. We moved from touchscreens (TSX machines) to printing ballots on demand and some voters didn't like that change, but once they scanned their ballot they generally liked how easy it was to use.**

Do you feel like you have gotten your money's worth for the system? **Not yet. I only say that because we have had it for 1 year and we plan on using it for at least 10.**

Would you recommend this system for use in other jurisdictions? **Absolutely. I have seen a lot of other systems and was on the evaluation committee that selected ES&S. I can confidently say there is not another system that provides a better value or better service. I view ES&S as a partner, not as a vendor.**

ES&S

PowerProfile Voter Registration System

Demonstration and

Request for Certification in Tennessee

April 1, 2019

Presenter: Victor Williams - Vice President,
Election Systems & Software Voter Registration



ESSVR, LLC

11128 John Galt Blvd, Suite 200 · Omaha, NE 68137 · P: 402-970-1100

February 8, 2019

Sent via UPS and Email

Mr. Steve Griffy
Division of Elections
Tennessee Department of State
312 Rosa L. Parks Avenue
7th Floor, William R. Snodgrass Tower
Nashville, TN 37243

RE: Request for State Certification of ESSVR, LLC's PowerProfile Voter Registration System

Dear Mr. Griffy:

ESSVR, LLC is pleased to present this request to the Tennessee State Election Commission for state certification consideration of our most PowerProfile Voter Registration System.

ESSVR offers the most mature and robust technology on the market. At ESSVR, we recognize the incredible responsibility we have to serve state and local governments around the world, and we hold ourselves to the highest standard for security and reliability.

ESSVR has proven that we meet or exceed all mandates, rules, and regulations such as National Voter Registration Act (NVRA), Help America Vote Act (HAVA), and Uniformed and Overseas Citizens Absentee Voting Act (UOCAVA). With over 125 combined years of elections experience within the ESSVR team, the State of Tennessee can be assured we will surpass your expectations.

PowerProfile is currently installed in 6 statewide customers and 19 individual county customers. Our statewide installs include, Alabama, Arizona, Arkansas, Kansas, Nebraska and the U.S. Virgin Islands. Our standalone county accounts are located throughout Illinois, Ohio, and Nevada.

No other election company can compare to the level of experience ESSVR has providing voter registration systems with multiple state and large jurisdictions, serving counties and states for decades. Our PowerProfile Voter Registration system has been in constant customer use since the 2004 General Election.

Included with this cover letter are two enclosed attachments: the requested Vendor Documentation and System Documentation (Attachment A) and our company's financial reports (Attachment B). In pursuant to Step 1 under the Certification Procedures for Voter Registration Systems in Tennessee, we respectfully request the examination and approval of PowerProfile be scheduled at the Tennessee State Election Commission Meeting at your earliest convenience.



ESSVR, LLC

11128 John Galt Blvd, Suite 200 · Omaha, NE 68137 · P: 402-970-1100

If you require any additional documentation or clarification, please do not hesitate to contact me via telephone at (402) 970-1151 or email at victor.williams@essvrlc.com.

Sincerely,

A handwritten signature in black ink, appearing to read 'Victor Williams', written in a cursive style.

Victor Williams
Vice President
Election Systems & Software Voter Registration



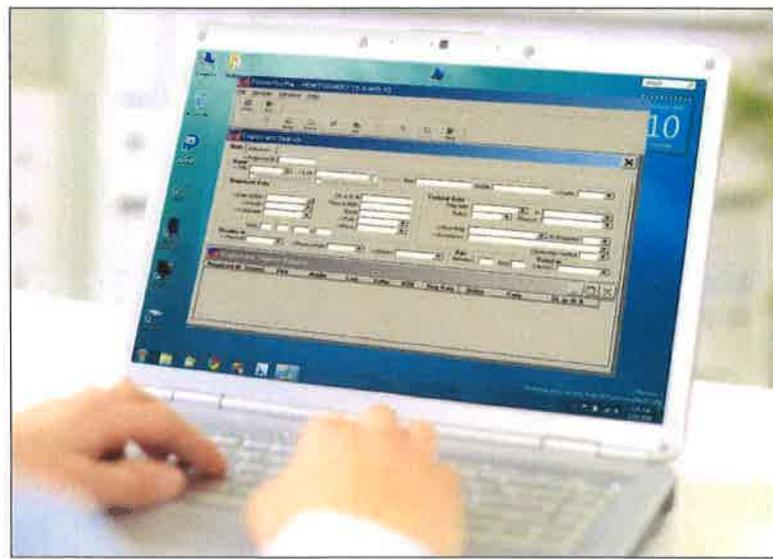
PowerProfile[®]

TURN-KEY ELECTION MANAGEMENT

PowerProfile is a voter registration and election management application that enables election officials to register voters and conduct elections from a central data store.

This system allows for both single jurisdictions and states to manage elections from the same interface. Election officials are able to register voters, check eligibility, conduct election activities such as prepare absentee and early voting, recruit election workers, create poll books and rosters, verify petitions, and maintain voter records using a single software solution.

Because PowerProfile is HAVA compliant, it provides unique statewide identifiers to voter records, allows for statewide duplicate checking, and is customizable to meet specific requirements of the customer. PowerProfile also provides individual jurisdictions within a state total control over their voter registration data through role-based access controls. PowerProfile is also scalable and can be deployed for a single county, as well as for an entire state and all counties within that state.



Key Features & Benefits

- User-friendly interface designed to facilitate quick and accurate data entry
- Real-time comparisons of new and existing registrations against external agencies such as Department of Motor Vehicles, Department of Corrections, and others
- HAVA and NVRA compliant
- Seamless voter record transfers between counties in the same state



- Integrated scanning functionality to attach additional image data to voter records, polling places, and petitions

- Audit / Activity / Notice logging and reporting
- Numerous interfaces for external products such as electronic poll books, ballot-on-demand printing, and electronic ballot delivery
- NCOA (National Change of Address) support

- Full absentee tracking from application request through ballot return (including all mail elections)



Robust reporting, with the ability to produce notices/labels/reports and data exports

- Generation of notices such as ID cards, poll worker notices, and others
- Coding Accuracy Support System (CASS) interface allows jurisdictions using it to take advantage of postal discounts for CASS-certified mail
- GIS interface allowing bi-directional data exchange between GIS applications and PowerProfile
- Granular security utilizing role-based access controls as well as encryption of data at rest and in-transit



A mobile-friendly web interface allowing voters to look up provisional and absentee ballot status, view sample ballots, and look up precinct and polling location information

WHY CHOOSE POWERPROFILE AND ES&S?

OUR PEOPLE! ES&S' experience working with government reaches back over four decades. Through the continual development and introduction of innovative elections products, our company has emerged as the leading provider of end-to-end, fully integrated voting solutions serving four countries and 39 states in the USA. Our team is composed of seasoned experts whose mission is to support our customers' election processes from start to finish. Access to this experience is a critical component in ensuring your elections run smoothly.

Because elections are all we do, ES&S provides 24/7 support by elections experts located in the United States, dedicated exclusively to voter registration. In addition to customer support, ES&S also provides comprehensive training programs and tools, software enhancements and upgrades, systems and procedures documentation, and user group meeting facilitation and coordination.

Certification Procedures for Voter Registration Systems In Tennessee 2017 Updates

Before a voter registration system may be sold in Tennessee, the Coordinator of Elections and the State Election Commission must certify the voter registration system. These systems include, but may not be limited to, voter registration management and election management systems. In determining whether a voter registration system may be certified, the Coordinator of Elections and the State Election Commission shall consider, at a minimum, the following:

- (1) The compatibility of the voter registration system with any statewide system being operated by the Secretary of State's office;
- (2) The history of ethical conduct in the sales of the voter registration system by the manufacturer or seller; and
- (3) The ability of the manufacturer or seller of the voter registration system to provide adequate professional assistance and service to the counties of Tennessee.

The following are the steps to be followed to certify a voter registration system for purchase and use in Tennessee:

Step 1:

Any interested vendor must submit a written request to the Coordinator of Elections and State Election Commission requesting certification of the voter registration company and system. The request should include documentation to support the company and the system. At a minimum, the vendor must provide to the Coordinator of Elections and the State Election Commission evidence of the following:

- I. **Vendor Documentation** - The vendor must supply background information concerning the parent company. This information must be presented to the Coordinator of Elections and the State Election Commission in written form. The document submitted must include the information outlined below as minimal.

A. Company Overview

1. Description
2. Form of Business - sole proprietor, partnership, corporation, etc.
3. Office locations
4. Size/type of staff
5. Products and services offered
6. Financial report

B. Client Base

1. Estimated number of clients served in the last 10 years
2. List of 3 client referrals (preferably of users of the voter registration system)

- II. **System Documentation** - The vendor must supply information concerning the voter registration system. This information must be presented to the Coordinator of Elections and the State Election Commission in a written form. At a minimal, the document submitted must include the information outlined below:

- A. Years in production
- B. Growth of the system
- C. Functions performed by the system
- D. Number of installations in production
- E. Support staff provided for installation and support
- F. Hardware and software requirements

Step 2:

Following the receipt of the request to certify a voter registration system, the Coordinator of Elections will send to the vendor an "Electoral System Specifications Manual" and preparations for a demonstration of the system will begin.

- I. **Review of the "Electoral System Specifications Manual"** - The vendor must review the requirements found in the "Electoral System Specifications Manual" and ensure that the software and operations system of the voter registration system seeking certification meets the minimum requirements listed in the manual
- II. **Demonstration** - A demonstration of the system must be performed. The system is expected to minimally perform to the specifications outlined in the "Electoral System Specifications Manual." Additional functions, not outlined in the manual, may be demonstrated. The Coordinator of Elections and Elections System Administrator must be present at the demonstration. The demonstration should be held in an office or conference room within or near the office of the Coordinator of Elections. Requests for alternate locations must be approved by the Coordinator of Elections.

Step 3:

After the demonstration, the product must be placed on the agenda for a presentation the State Election Commission. The Coordinator of Elections and the State Election Commission will determine whether the voter registration system may be certified. A vendor's status is considered certified or not certified. Categories of pending or partial certification do not exist.

- I. **Notice of Certification** - The vendor will be notified in writing of the certification. Once a vendor has been certified, all actual purchasing decisions are made by the individual counties rather than the state government.
- II. **Notice of Denial of Certification** - In the event that the vendor's system is not certified, documentation will be supplied to the vendor outlining system deficiencies. Any vendors not certified may request another demonstration. The request for another demonstration may be accepted at the discretion of the Coordinator of Elections and the State Election Commission.

Step 4:

- I. **Required Revisions** - Certification criteria will require modification due to Federal or State Legislative decisions. Vendors are not required to reapply for certification, but are expected to make the appropriate system modifications for all locations within in a reasonable period of time for the counties. Failure to make the required system modifications may result in decertification.
- II. **Evaluations** - Voter Registration systems in use throughout the State of Tennessee will be periodically evaluated to insure compliance to the certification specification requirements and insure continued service and support is maintained to assist County Election Commission offices to perform the system functions defined by the documentation (original and updates) of the system.

Correspondence for the Coordinator of Elections and the State Election Commission must be sent to the following address:

Coordinator of Elections Office
312 Rosa L. Parks Avenue
7th Floor, William R. Snodgrass Tower
Nashville, TN 37243

Any questions may be directed to the Coordinator of Election's office at (615) 741-7956.

STATE OF TENNESSEE- REQUEST FOR CERTIFICATION

ATTACHMENT A

ESSVR, LLC is excited to present the State of Tennessee the required documentation for certification of PowerProfile.

To successfully implement a new registration system, Tennessee needs a partner with a proven track record of experience implementing integrated systems.

VENDOR DOCUMENTATION

COMPANY OVERVIEW

DESCRIPTION

In late 2017, Election Systems & Software, LLC (ES&S) organized its voter registration business into a sister company, ESSVR, LLC. No other election company can compare to the level of experience ES&S/ESSVR has with the various states and jurisdictions throughout the United States.

ESSVR has an unprecedented amount of knowledge with providing voter registration systems with state and large jurisdictions, serving our counties and states for decades. PowerProfile is currently supports six centralized statewide voter registration systems and nineteen individual county systems within 3 states. Our PowerProfile system has been in constant customer use since the 2004 General Election.

FORM OF BUSINESS

Limited Liability Company (LLC)

OFFICE LOCATIONS

Omaha, Nebraska (Headquarters)

SIZE/TYPE OF STAFF

56 exempt full time employees

PRODUCTS AND SERVICES OFFERED

ES&S' PowerProfile voter registration system consists of fully integrated modules that enable Tennessee's election officials to register voters and to conduct elections by connecting to a central database of registered voters. The system meets all Help America Vote Act (HAVA) requirements and is built to handle the specific requirements of a statewide system that emphasizes security, scalability, and flexibility.

FINANCIAL REPORT

To be supplied the week of February 11, 2019.

CLIENT BASE

ESTIMATED NUMBER OF CLIENTS SERVED IN THE LAST 10 YEARS

- ✔ 7 statewide and 25 individual counties

LIST OF 3 CLIENT REFERRALS

- ✔ Nebraska Secretary of State's office
Wayne Bena
Deputy Secretary of State of Nebraska
Elections Division
1221 N Street, Suite 103, Lincoln NE 68508
Mailing address: P.O. Box 94608, Lincoln NE 68509-4608
402-471-4127
waync.bena@nebraska.gov

- ✔ Arkansas Secretary of State's office
Leslie Bellamy
Director, Elections Division
State Capitol, Room 26
500 Woodlane Avenue
Little Rock, AR 72201
501-683-3721
leslie.bellamy@sos.arkansas.gov

- ✔ Kansas Secretary of State's office
Bryan Caskey
Director of Elections
Memorial Hall, 1st Floor
120 S.W. 10th Avenue, Topeka KS 66612-1594
785-296-3488
Bryan.Caskey@ks.gov

SYSTEM DOCUMENTATION

COMPANY OVERVIEW

YEARS IN PRODUCTION

PowerProfile system has been in constant customer use since the 2004 General Election.

GROWTH OF THE SYSTEM

The PowerProfile System has been in constant use since 2004 and continues to be updated and supported

FUNCTIONS PERFORMED BY THE SYSTEM

ES&S' PowerProfile® Voter Registration System consists of fully integrated modules that enable your election officials to register voters and to conduct elections by connecting to a central database of registered voters. Our system meets all HAVA (Help America Vote Act) requirements and is built to handle the specific requirements of a large jurisdiction system that emphasizes security, scalability, flexibility and proven results during elections.

PowerProfile offers the following key features and benefits:

- ✔ Statewide duplicate checking, either in batches or on data entry in real time
- ✔ Compares new registrants against a database of known felons and deceased persons in real time
- ✔ Verifies drivers' license numbers and Social Security numbers in real time through our Agency Central module
- ✔ Transfers voters within the state in real time without having to re-enter data
- ✔ Features a user-friendly interface designed to facilitate accurate and rapid data entry
- ✔ Integrates with other products to allow for ballot-on-demand processing, electronic poll book data transfers, electronic ballot delivery, and more
- ✔ Imaging module allows you to scan documents, such as voter registration applications or polling place maps, either individually or in batches, attaching those documents to registrant or polling place records

NUMBER OF INSTALLATIONS IN PRODUCTION

PowerProfile is currently has 3 versions installed in 6 statewide customers and 19 individual county customers

SUPPORT STAFF PROVIDED FOR INSTALLATION & SUPPORT

ESSVR, LLC offers the most experienced team of elections professionals in the industry:

- ✔ Heather Brooks – Quality Assurance Director – 19 years
- ✔ Perry Gaddis – Voter Registration Account Manager – 20 years
- ✔ Kyle Grove – Software Development Manager – 9 years
- ✔ Laura Jorgensen – Project Manager – 9 years
- ✔ Julie Johnson – Software Release Manager – 23 years
- ✔ Alexia Scott Morrison – Manager, Account Management & Customer Support – 11 years

- Victor Williams – Vice President, ESSVR – 15 years
- Melissa Winchester – Sr. Software Designer/Analyst – 24 years

HARDWARE & SOFTWARE REQUIREMENTS

- Hardware/Software Onsite Solution Requirements

Job Processor Server

CPU: 4 Core 2.0 GHz or better

Memory: 4GB

Hard Disk: 40GB

Operating System: Windows Server 2012

File System Server

CPU: 4 Core 2.0 GHz or better

Memory: 8GB

Hard Disk: 500GB

Operating System: Windows Server 2012, 2016

Database Server

CPU: 4 Core 2.0 GHz or better

Memory: 32GB

Hard Disk: 1TB

Raid: 1

Operating System: Windows Server 2012, 2016

Database: SQL Server 2016

IIS Server

CPU: 4 Core 2.0 GHz or better

Memory: 8GB

Hard Disk: 80GB

Operating System: Windows Server 2012, 2016

Application Server: IIS 8.0

PC Specifications

CPU: 4 Core 2.0 GHz or better

Memory: 4GB

Hard Disk: 40GB

Operating System: Windows 7, 8.1, 10

Browser: Latest Chrome, Latest Firefox, Internet Explorer 11, Microsoft Edge

- Hardware/Software Private Cloud Solution Requirements

PC Specifications

CPU: 2 Core 2.0 GHz or better

Memory: 4GB

Hard Disk: 40GB

Operating System: Windows 7, 8.1, 10

Software: Citrix Receiver 4.5+, Dynamic Web Twain 13.4+, ScrewDrivers 4.7+, .NET Framework 3.5+

Hart

Verity Voting 2.3 – Voting System
Demonstration and
Certification Request

April 1, 2019

Alli Fick – Hart – Certification Project Manager

Julian Montoya – Hart – Project Manager

Survey Responses:

-
-

- EAC – Certification Number
HRT-VERITY-2.3

PROCEDURES FOR CERTIFYING VOTING MACHINES BY THE TENNESSEE STATE ELECTION COMMISSION

All voting machines/vendors must receive certification from the state election commission and the coordinator of elections before any voting machines or systems may be sold in the State of Tennessee.

First Step:

Any interested vendor should submit a written request to the coordinator of elections and the state election commission requesting certification of your company together with the EAC certification number, a financial report and a list of all states that have already bought your voting machines or systems. If you would like to demonstrate your product at a meeting of the state election commission, please make that request in your letter. You will be notified of the date, time, and place of the meeting where you may make your presentation.

Second Step:

A. Voting Machine Procedure

Following verification of EAC certification and an initial presentation of your product and/or services, you would need to arrange for at least two (2) State Election Commissioners (of opposite parties) and the coordinator of elections (or designee) to view your machines or system in use in an election of a substantial size in another state. An election of a substantial size involves at the minimum the following characteristics:

- The jurisdiction has a population of at least 10,000 persons;
- The jurisdiction has at least two (2) or more district races on the ballots; and
- There are at least two (2) contested races involving both at large and district races on the ballot.

B. Voting Machine Software or Hardware Upgrade

- EAC Certification;
- Presentation of upgrade before State Election Commission at a meeting; and
- Viewing of upgrade in another state (In lieu of viewing machine in another state, at the discretion of the State Election Commission, letters of recommendation from users in other jurisdiction may be used as support for approval.)

C. De Minimis Voting System Changes

- Any De Minimis change to an EAC certified voting system shall be submitted to the state election commission and coordinator of elections to be approved. For purposes of approval of the de minimis change to the voting system, all that will be required is a letter from the EAC stating the change is de minimis, unless further information is requested by the state election commission or coordinator of elections.

Third Step:

The State Election Commission must vote to certify the machine in order for the machines to be used in an election in Tennessee.

You may send any correspondence for both the state election commission and the coordinator of elections to the following address:

312 Rosa L.Parks Avenue, 7th Floor
William R. Snodgrass Tower
Nashville, Tennessee 37243
(615) 741-7956

If you have any further questions regarding certification of your company, please feel free to contact the office of the state election coordinator at the phone number listed above.



March 15, 2019

Mark Goins
Coordinator of Elections
Division of Elections, Office of Tennessee Secretary of State Tre Hargett
312 Rosa L. Parks Avenue, 7th Floor - William R. Snodgrass Tower
Nashville, TN 37243

Via: Federal Express

RE: Application for Certification of Verity Voting 2.3

Dear Mr. Goins,

Hart InterCivic, Inc. is seeking certification of Verity Voting 2.3 in the State of Tennessee. Verity Voting 2.3 is certified by the EAC as conformant with the federal *Voluntary Voting System Guidelines (VVSG)*, Version 1.0 (2005). We would also like the opportunity to demonstrate Verity Voting 2.3 at the April 1, 2019 meeting of the State Election Commission.

Verity Voting 2.3 includes the following components:

- Verity Election Management – Election management software application
- Verity User Management – User management software application
- Verity Desktop – Secure desktop management application
- Verity Data – Data management software application
- Verity Build – Election definition software application
- Verity Central – Central scanning software application
- Verity Count – Tabulation and reporting software application
- Verity Scan – Digital scanning voting device
- Verity Print – Pre-voting ballot production device
- Verity Controller – Polling place management device for use with Verity Touch and Verity Touch Writer Duo
- Verity Touch – Direct Recording Electronic (DRE) device
- Verity Touch Writer Duo – Ballot marking device with integrated COTS printer
- Verity Touch Writer with Access – Ballot marking device, with audio tactile interface and attached COTS printer

Testing and Deployment Status:

- Verity Voting 2.3 was certified to the 2005 *Voluntary Voting System Guidelines* by the Election Assistance Commission on March 15, 2019. The Certificate of Conformance and Scope of Certification are included with this application.

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SECRETARY OF STATE
ELECTIONS

- Verity Voting 2.3 was tested by SLI Compliance (Wheat Ridge, Colorado) and its compliance with VVSG 2005 standards has been documented in a test report. The VSTL test report is included with this application.
- Verity Voting 2.3 is currently in the certification process in the State of Indiana, the Commonwealth of Pennsylvania, the State of Missouri, and the State of South Carolina.

Overview of the Verity Voting system

The Verity Voting system includes software, hardware, devices, and peripheral components that allow election professionals to accomplish the following high-level tasks:

- Election definition
- Ballot production
- Flash media production
- Voting machine configuration and use
- Central scanning and adjudication of ballots
- Counting of votes
- Consolidation and reporting of results and audit logs

Identification of the Verity Voting system

Software Applications

- **Verity Data** is a component of the Verity Voting system used by officials to enter election data for contests, candidates, proposition text, translations, and audio. Data also provides the user with controls for proofing of data and layout and performs validation prior to locking the data to ensure its readiness for use in Verity Build.
- **Verity Build** enables election officials to define ballot styles and generate election definitions. In addition to producing paper and electronic ballot styles, Build allows users to program voting device behavior in a variety of ways. After ballot generation, Build electronically writes the election data file (including all ballot styles) to portable flash media known as vDrives, which can then be deployed for a variety of different voting types, such as central scanning with Verity Central or in-person voting with Verity Scan, Verity Touch, Verity Touch Writer, and Verity Touch Writer Duo. After generating election definitions, Verity Build can also print ballots or output them electronically for third-party printers.
- **Verity Central** enables election officials to scan paper ballots at a central location using a commercial-off-the-shelf (COTS) scanner, adjudicate voter selection marks as necessary, and convert voter selection marks to electronic Cast Vote Records (CVRs). Central is especially well-suited for scanning and adjudicating by-mail ballots. When all ballots have been scanned and adjudicated, Central writes Cast Vote Records to vDrive portable flash media, which can be tabulated in Verity Count tabulation software. It is important to note that Central does not tabulate votes; because it simply scans and records Cast Vote Records, this allows jurisdictions to begin scanning before the close of polls, thereby greatly accelerating the scanning workflow. While Central does produce a variety of reports, because it does not tabulate, it does not produce reports containing results totals.
- **Verity Count** allows election officials to tabulate and report the results of Cast Vote Records stored on vDrives. vDrives inserted into the tabulation workstation can contain by-mail votes from Central,

or in-person votes from Scan or Controller devices. Once the CVRs have been read and tabulated, Count can produce a variety of standard and customized reports. Count also allows officials to adjudicate write-in votes from Scan, Controller, or Central. Finally, Count also collects and stores audit logs from Verity voting devices, allowing for post-election audit and/or analysis.

- **Verity User Management** enables users with administrative permissions to create and manage user accounts within the Verity Voting system. Depending on the component for which the accounts are created, permissions may be managed by various roles. Depending on the role, each user has access to different features of the Verity software applications and other components.
- **Verity Election Management** enables users with administrative permissions to add, copy, delete, import, export, archive, restore, and manage elections in the Verity system.
- **Verity Desktop** allows authorized users to set the system date and time, export Verity application file hashes to removable USB media for software validation and import printer configuration files.

Voting Devices and Peripheral Equipment

- **Verity Print** is a pre-voting ballot production device for use by election officials and/or poll workers. Verity Print produces unmarked paper ballots. Print is paired with a commercial off-the-shelf printer to allow the user to select and print the desired ballot style based on the precinct and voter registration information. The Verity Print device is activated so the election official can print one or more blank ballots from one selected precinct at a time. Ballots can be printed on-demand for immediate use, or they can be printed in advance for additional inventory.
- **Verity Scan** is a digital scanner for paper ballots. Scan is paired with a purpose-built ballot box to ensure accurate, secure, and private ballot scanning and vote casting for each voter. Poll workers perform a minimal number of steps to open the polls and activate the Verity Scan device so that it can receive paper ballots. Once the polls are open, to vote, voters insert their ballots when Scan indicates it is appropriate, and then voters wait for Scan to indicate that the ballot has been successfully cast. Scan also supports “second chance” voting for mismarked ballots. During the election definition process in Verity Build, election officials may specify the types of mismarks for which Verity Scan should reject ballots and present voter instruction messages for “second chance voting;” officials can choose to flag undervotes, overvotes, and blank ballots, and they can also specify whether voters are required to have poll worker assistance to cast a mismarked ballot. After scanning, each ballot’s Cast Vote Record is stored on vDrive portable flash media, which can be tabulated by the Verity Count software application.
- **Verity Controller** is a polling place management device that is used to generate random Access Codes for voters. Access Codes are used to activate a ballot session on Verity Touch and Verity Touch Writer Duo. Up to twelve Touch or Touch Writer Duo devices can be connected to a single Verity Controller via a daisy-chain network.
- **Verity Touch Writer and Touch Writer Duo** are ballot marking devices for paper ballots. Voters use the electronic interface to privately and independently make their selections on the ballot. Voters can also make selections with Verity Access, an Audio-Tactile interface (ATI) component with three

tactile buttons, one audio port (for headphones), and one port for external two-switch devices. When voters finish making their selections, they print the marked ballot.

Verity Touch Writer is configured as a standalone device with a separate COTS printer, and Verity Touch Writer Duo, which has an integrated printer, is configured for use in a daisy-chained network with Verity Controller. Using Verity Touch Writer or Touch Writer Duo in conjunction with Verity Scan provides the voter with a reviewable paper ballot that is accurately captured through reviewing, scanning, and acceptance for tabulation as a voter's cast vote record (CVR). As ballot marking devices, the Verity Touch Writer and Touch Writer Duo do not record electronic cast vote records.

- **Verity Touch** is a Direct Recording Electronic (DRE) device. After polls have been opened, poll worker(s) use the Controller to create anonymous voter Access Codes that are associated with various ballot styles. Access Codes are used by voters to activate their ballot session and cast a vote in private. After the voter privately and independently marks and reviews the ballot, he or she will electronically cast the ballot. The poll worker uses the Controller to manage any combination of Touch devices, up to a total of 12, that are connected via a daisy-chain network.
- **Verity Access** is an audio tactile interface (ATI) controller that is connected to Verity Touch Writer ballot marking devices as a complement to the touchscreen display, to provide additional options for accessible voting. Access has three tactile buttons, one audio port, one port for two-switch adaptive devices (such as "jelly switches" or sip-and-puff devices), and a custom USB cable. Jacks for headphones and adaptive devices are located on the top edge of the device, and the device has gripping surfaces on either side.
- **Ballot Box.** Designed to work seamlessly with the Scan device, the Verity Ballot Box is designed for security, light weight, and ease of deployment. Using an innovative folding design, the durable ballot box includes separate secure compartments for scanned and un-scanned ballots, and it folds to just 5" thin, for easy transportation and storage.
- **Voting Booth.** Like the Ballot Box, the specially designed voting booth for Touch Writer and Touch is designed for light weight and easy set up. The booth includes only three parts to assemble, and it also includes durable nylon privacy screens. ADA-compliant versions of the Verity Voting Booth are also designed to comply with VVSG requirements for accessibility and controls within reach.
- **Verity vDrive.** vDrives are flash memory media devices that carry the election definition from Verity to Verity devices, including Scan, Touch Writer, and Controller. vDrives also store Cast Vote Records (CVRs) and audit information. After polls are closed, vDrives can be removed from Controller, Scan or Touch Writer to transfer CVRs and/or audit logs to Count. vDrives are also used to store CVRs associated with scanned ballots in Central. vDrives from Controller, Scan and Central are read into Count, which tabulates votes and reports results.
- **Verity Key** is a two-factor authentication device used to secure access to critical functions throughout the election. Two-factor authentication means that users must have the physical Key device, which is similar to a USB token, as well as knowing the passcode associated with the physical security device. This electronic device is required for access to secure functions in the Build, Central,

and Count applications, including tasks such as accepting ballot styles, opening new election functions, and tabulating votes.

Additional Materials

Hart has included the following items with this application submission:

- Certificate of Conformance and Scope of Certification Document from the U.S. Election Assistance Commission
- Test report by an independent testing authority indicating conformance to standards for voting equipment issued by the U.S. Election Assistance Commission.
- List of all jurisdictions that have purchased Verity Voting.

I look forward to your favorable review of this application and the opportunity to demonstrate Verity Voting 2.3 before the State Election Commission at its April 1st meeting. For questions or additional information, please feel free to contact me.

Respectfully submitted,



Alli Fick
Certification Project Manager
Hart InterCivic
(512) 252-6457
afick@hartic.com



United States Election Assistance Commission



Certificate of Conformance

Hart Verity Voting 2.3

The voting system identified on this certificate has been evaluated at an accredited voting system testing laboratory for conformance to the 2005 *Voluntary Voting System Guidelines (2005 VVSG)*. Components evaluated for this certification are detailed in the attached Scope of Certification document. This certificate applies only to the specific version and release of the product in its evaluated configuration. The evaluation has been verified by the EAC in accordance with the provisions of the *EAC Voting System Testing and Certification Program Manual* and the conclusions of the testing laboratory in the test report are consistent with the evidence adduced. This certificate is not an endorsement of the product by any agency of the U.S. Government and no warranty of the product is either expressed or implied.

Product Name: Verity Voting _____

Model or Version: 2.3 _____

Name of VSTL: SLI Compliance _____

EAC Certification Number: HRT-VERITY-2.3 _____

Date Issued: March 15, 2019 _____

Executive Director
U.S. Election Assistance Commission

Scope of Certification Attached

Manufacturer: *Hart InterCivic*
System Name: *Verity Voting 2.3*
Certificate: *HRT-Verity-2.3*

Laboratory: *SLI Compliance*
Standard: *2005 VVSG*
Date: *3/14/2019*



Scope of Certification

This document describes the scope of the validation and certification of the system defined above. Any use, configuration changes, revision changes, additions or subtractions from the described system are not included in this evaluation.

Significance of EAC Certification

An EAC certification is an official recognition that a voting system (in a specific configuration or configurations) has been tested to and has met an identified set of Federal voting system standards. An EAC certification is **not**:

- An endorsement of a Manufacturer, voting system, or any of the system's components.
- A Federal warranty of the voting system or any of its components.
- A determination that a voting system, when fielded, will be operated in a manner that meets all HAVA requirements.
- A substitute for State or local certification and testing.
- A determination that the system is ready for use in an election.
- A determination that any particular component of a certified system is itself certified for use outside the certified configuration.

Representation of EAC Certification

Manufacturers may not represent or imply that a voting system is certified unless it has received a Certificate of Conformance for that system. Statements regarding EAC certification in brochures, on Web sites, on displays, and in advertising/sales literature must be made solely in reference to specific systems. Any action by a Manufacturer to suggest EAC endorsement of its product or organization is strictly prohibited and may result in a Manufacturer's suspension or other action pursuant to Federal civil and criminal law.

System Overview:

Verity Voting is a comprehensive voting system that includes software and hardware components to support paper-based, electronic, and by-mail voting. These components allow election professionals to accomplish the following high-level tasks:

- Input of election data
- Definition and maintenance of election databases
- Formatting of ballots
- Setup and deployment of voting devices

- Counting of votes
- Consolidation and reporting of results and election audits

Verity Scan is a scanning device (tabulator) that is used in conjunction with an external ballot box. The unit is designed to scan marked paper ballots, interpret and record voter marks on the paper ballot and deposit the ballots into the secure ballot box. Verity Scan is capable of tabulating votes, or producing a ballot count report which includes quantities of ballots scanned.

Verity Touch Writer is a standalone Ballot Marking Device (BMD) which also includes an Audio Tactile Interface (ATI). Touch Writer allows voters who cannot hand-mark a paper ballot to generate a machine-readable and human readable paper ballot, based on vote selections made through the accessible electronic interface.

Verity Touch Writer Duo is a Ballot Marking Device (BMD) which may include a Verity Access Audio Tactile Interface (ATI), has an integrated printer, and is configured for use in a daisy-chained network with Verity Controller. Touch Writer Duo generates a machine-readable and human-readable printed vote record, based on vote selections made through the electronic interface.

Verity Print is an on-demand ballot production device for unmarked paper ballots.

Verity Election Management allows users to manage and import elections. Elections are available through the “Elections” chevron in Verity Build. Users can also delete, archive, restore, and rename the elections.

Verity User Management enables users with the correct role and permissions to create and manage user accounts within the Verity Voting system for the local workstation in a standalone configuration, or for the network in a networked configuration.

Verity Desktop enables users with the correct roles to set the workstations’ date and time, gather Verity software application hash codes (in order to validate the correctness of the installed applications), and access to Windows desktop.

Verity Data provides users capabilities to input jurisdiction- and election-specific data for paper and accessible electronic ballots, as well as audio for accessible electronic ballots. Verity Data also includes capabilities to allow proofing of data, layout, and audio that has been created. Verity Data also performs validation on the entered information to ensure that it is ready for use in Verity Build.

Verity Build allows users to proof data, view reports, create election definitions, print ballots, and create election media (vDrives). Build also allows users to configure settings for Verity Scan digital scanners and Verity Touch Writer BMD devices.

Verity Central is a high-speed, central digital ballot scanning system used for high volume processing of ballots (such as vote by mail). Verity Central is based on COTS scanning hardware coupled with the custom Hart-developed ballot processing application software, which resides on an attached COTS work-station.

Verity Count is an application that tabulates election results and generates reports. Verity Count can also be used to collect and store all election logs from every Verity component/device used in the election, allowing for complete election audit log reviews.

Verity Controller is a polling place device used by the poll worker to monitor the operation and create access codes for Verity Touch, Touch with Access, and Touch Writer Duo systems. Access codes allow each voter to activate a ballot session and cast a vote (or mark a ballot, for Touch Writer Duo) in private. The poll worker uses the Verity Controller to manage up to 12 devices that are connected via a daisy-chain network.

Verity Touch is a Direct Recording Electronic (DRE) device controlled via a touch screen. It is networked to Controllers and other DRE devices via a daisy-chain network. After the voter privately and independently marks and reviews the ballot, that ballot is electronically cast.

Verity Touch with Access is a DRE device identical to the Verity Touch device, except that it adds a Verity Access Audio Tactile Interface (ATI) to provide additional options for accessible voting. Access has three tactile buttons, one audio port, and one port for two-switch adaptive devices (such as "jelly switches" or sip-and-puff devices). Jacks for headphones and adaptive devices are located on the top edge of the ATI device.

Verity AutoBallot is an optional barcode scanning kit for Verity Controller, Verity Print, and Verity Touch Writer that allows air-gapped integration between an e-pollbook check-in process and the task of selecting the proper ballot style for the voting system.

vDrive is a required Verity Voting component, used as a portable media device generated by Verity Build. vDrive allows election definitions to be moved from Verity Build to Verity Controller, Verity Scan, Verity Touch Writer, and Verity Print. vDrive supports the transfer of Cast Vote Records (CVRs) in Verity Controller (DRE configuration), Verity Scan, and Verity Central.

Verity Key is an electronic media that is created by Verity Build for a specific election. Verity Key is the electronic media that provides user authentication and configures election security throughout the Verity voting system.

Certified System before Modification (If applicable):
Verity Voting 2.0

Anomalies and/or Additions addressed in Verity Voting 2.3:
N/A

Mark definition:

System supports marks that cover a minimum of 4% of the rectangular marking area.

Tested Marking Devices:

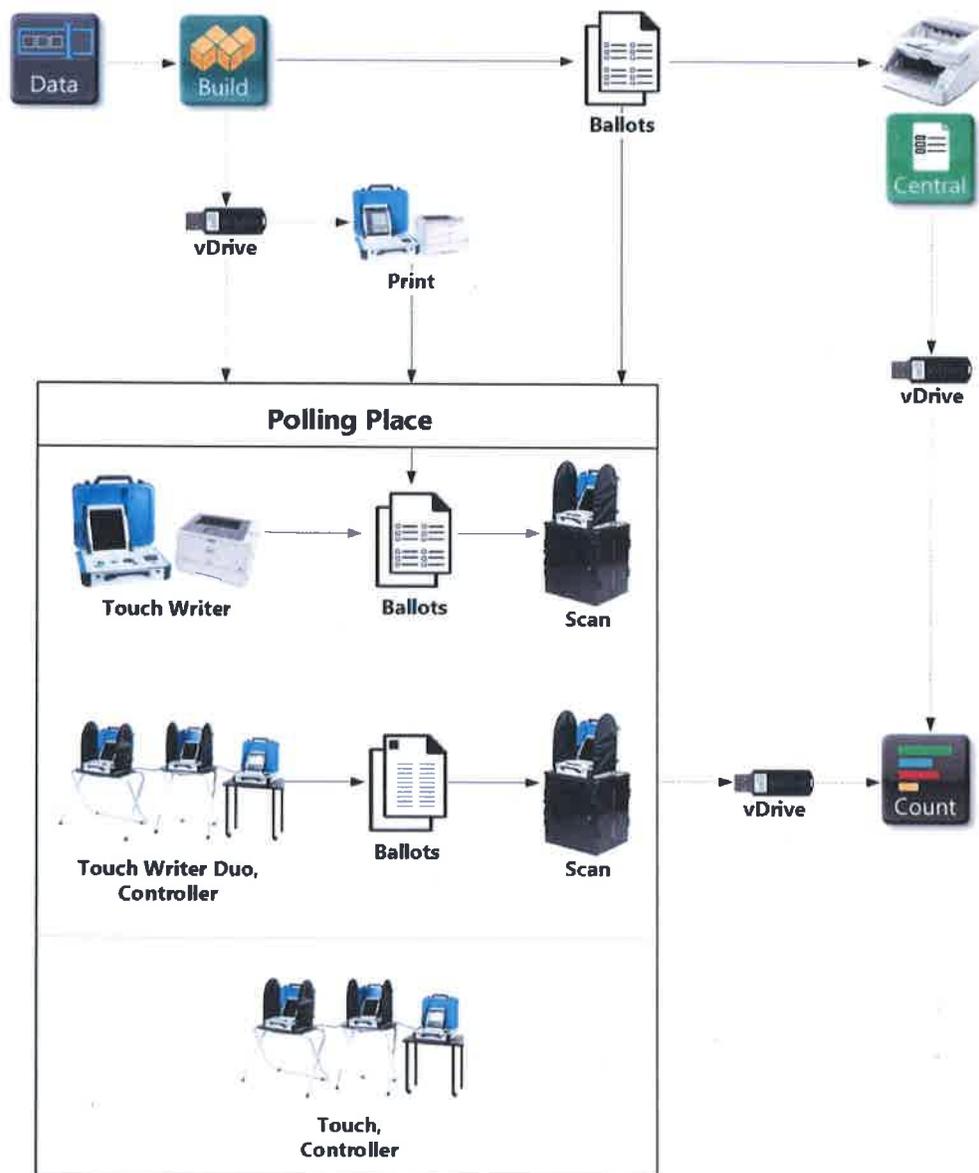
System supports Black and Blue ballpoint pens; testing was performed with black, blue, dark blue, pink, light green, green, orange, and red pens, as well as #2 pencil lead.

Language capability:

System supports English, Spanish, Chinese, Japanese, Korean, Khmer, Thai, Vietnamese, Tagalog, Ilocano, and Hindi.

Components Included:

This section provides information describing the components and revision level of the primary components included in this Certification.



System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comments
Verity Data	2.3.1			Data management software
Verity Build	2.3.1			Election definition software
Verity Central	2.3.1			High speed digital scanning software
Verity Count	2.3.1			Tabulation and reporting software
Verity Print	2.3.1			On-demand ballot printing device firmware
Verity Scan	2.3.1			Digital scanning device firmware
Verity Touch Writer	2.3.1			Accessible BMD firmware
Verity Touch Writer Duo	2.3.1			Ballot marking device, with internal COTS ballot summary printer and optional audio tactile interface
Verity Controller	2.3.2			Polling place management device
Verity Touch	2.3.1			Direct Recording Electronic (DRE) voting device
Verity Touch with Access	2.3.1			Accessible DRE voting device, with audio tactile interface
Verity Device Microcontroller	V17			Firmware for Verity devices
Verity Touch Writer Duo Microcontroller	V1			Firmware for Verity Touch Writer Duo
Application control – Data/Build, Central, Count, Print, Scan, Touch Writer, Touch Writer Duo, Controller, Touch, Touch w/ Access	6.1.1.369		COTS: McAfee Application Control for Devices	Configured for Verity workstations and devices
Database- Data/Build, Central, Count	11.00.2100		COTS: Microsoft SQL Server 2012 for Embedded Systems	
Database - Print, Scan, Touch Writer, Touch Writer Duo, Controller, Touch, Touch w/ Access	11.00.2100		COTS: Microsoft SQL Server 2012 Express	
Verity Operating System – Data/Build, Central, Count, Print, Scan, Touch Writer, Touch Writer Duo, Controller, Touch,	6.1.7601		Microsoft Operating System	Microsoft Windows Embedded Standard 7 w/ service pack 1 – 64 bit

System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comments
Touch w/ Access				
Verity Scan		Revision H		
Verity Scan – Update for scanner mechanism and tablet electronics obsolescence		Revision A		
Verity Touch Writer		Revision G		
Verity Print		Revision D		
Verity Touch Writer Duo		Revision A		
Verity Controller		Revision D		
Verity Controller – Update for tablet electronics obsolescence		Revision A		
Verity Touch		Revision D		
Verity Touch w/ Access		Revision E		
OKI Data	N22202A		B431d Printer Driver	Data/Build, Central, Count, Print, Touch Writer
OKI Data	N22500A		B432dn Printer Driver	Data/Build, Central, Count, Print, Touch Writer
OKI Data	N35100A		C831dn Printer Driver	Print
TWAIN Working Group	2.0.1		Twacker 32 Scanner Driver	Central
Canon	M111181		DR-G1100 Scanner Driver	Data/Build, Central
Canon	M111171		DR-G1130 Scanner Driver	Data/Build, Central
	1405-8GV3		8-port Ethernet Switch	Data/Build, Central, Count
Vinpower Digital USB Duplicator 7-targets	USBShark-7T-BK			Data/Build
Vinpower Digital USB Duplicator 23-targets	USBShark-23T-BK			Data/Build
Verity Ballot Box	Revision B			Scan
Accessible Voting Booth	Revision D			Touch Writer, Touch Writer Duo, Touch Writer w/ Access
Standard Voting Booth	Revision D			Touch Writer Duo, Touch
Thermal Printer	PJ723		Brother PJ700	Touch Writer Duo
Verity Key		N/A	COTS: Maxim iButton	Security key used with voting system
Verity vDrive		N/A	COTS: Apacer	4GB USB flash drive, portable electronic media used for transportation of voting system data
Ballot/Report Printer		B431d	COTS: OKI Data	

System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comments
- Data/Build, Central, Count, Print, Touch Writer		B432dn		
Ballot Printer – Build, Print		C831dn	COTS: OKI Data	
Scanner – Central		DR-G1100	COTS: Canon	
Scanner – Central		DR-G1130	COTS: Canon	
Workstation – Data, Build, Central, Count			COTS: HP Z240 Workstation; HP Z230 Workstation	Min. Requirements: Processor – Intel Celeron D 420 3.06GHz Dual Core Memory – 2GB Hard Drive – 120 GB Removable Storage – 8xDVD+/-RW Slim line USB Ports – 4 ports Video Card - Integrated Graphics Keyboard - USB Keyboard Mouse - USB Mouse
Monitor – Data, Build, Central, Count			COTS: Monitor	Min. Requirements: Panel Size - 50.8 cm Aspect Ratio - Widescreen (16:9) Optimal Resolution - 1600 x 900 at 60Hz Contrast Ratio - 1000: 1 Brightness - 250 cd/m2 (typical)

System Limitations

This table depicts the limits the system has been tested and certified to meet.

Element	Testing Limit/Requirement Z240 64GB Systems (does not include Data/Build/Count combined system)	Testing Limit/Requirement Z230 32GB Systems (includes Z240 64GB Data/Build/Count combined system)
Precincts	3,000	2,000
Splits per Precinct	20	20
Total Precincts + Splits in an election	3,000	2,000
Districts for voting devices and applications	400	75
Parties in a General Election	24	24
Parties in a Primary Election	10	10
Contests in an election	2,000	200
Choices in a single contest	300	75
Total contest choices (voting positions) in an election	5,000	600
Max length of choice name	100 characters	100 characters

Element	Testing Limit/Requirement Z240 64GB Systems (does not include Data/Build/Count combined system)	Testing Limit/Requirement Z230 32GB Systems (includes Z240 64GB Data/Build/Count combined system)
Max write-in length	25 characters	25 characters
Voting Types	5	5
Max polling places per election	3,050	1,200
Max devices per election	N/A	N/A
vDrive capacity – Scan voting device	9,999 sheets per vDrive	9,999 sheets per vDrive
vDrive capacity – Verity Central	80,000 sheets per vDrive	80,000 sheets per vDrive
Number of voters definable per election	2,500,000	1,000,000
Number of total ballots cast per election	1,750,000	1,000,000
Max number of sheets per ballot	4 sheets	4 sheets
Max number of sheets – Verity Scan	9,999	9,999
Max number of CVRs – Verity County	7,000,000	7,000,000
Ballot Sizes	8.5"x11", 8.5"x14", 8.5"x17", 8.5"x20", 11"x17" (Central only)	8.5"x11", 8.5"x14", 8.5"x17", 8.5"x20", 11"x17" (Central only)
Number of languages in a single election (including English)	11	11

Functionality

2005 VVSG Supported Functionality Declaration

Feature/Characteristic	Yes/No	Comment
Voter Verified Paper Audit Trails		
VVPAT	No	
Accessibility		
Forward Approach	Yes	
Parallel (Side) Approach	Yes	
Closed Primary		
Primary: Closed	Yes	Supports standard closed primary and modified closed primary
Open Primary		
Primary: Open Standard (provide definition of how supported)	Yes	Open Primary
Primary: Open Blanket (provide definition of how supported)	Yes	General "top two"
Partisan & Non-Partisan:		
Partisan & Non-Partisan: Vote for 1 of N race	Yes	
Partisan & Non-Partisan: Multi-member ("vote for N of M") board races	Yes	
Partisan & Non-Partisan: "vote for 1" race with a single candidate and write-in voting	Yes	
Partisan & Non-Partisan "vote for 1" race with no declared candidates and write-in voting	Yes	
Write-In Voting:		

Feature/Characteristic	Yes/No	Comment
Write-in Voting: System default is a voting position identified for write-ins.	No	By default, the number of write-ins available in a contest is zero, users may increment as necessary
Write-in Voting: Without selecting a write in position.	No	
Write-in: With No Declared Candidates	Yes	
Write-in: Identification of write-ins for resolution at central count	Yes	
Primary Presidential Delegation Nominations & Slates:		
Primary Presidential Delegation Nominations: Displayed delegate slates for each presidential party	Yes	
Slate & Group Voting: one selection votes the slate.	Yes	
Ballot Rotation:		
Rotation of Names within an Office; define all supported rotation methods for location on the ballot and vote tabulation/reporting	Yes	Rotation by precinct and precinct split
Straight Party Voting:		
Straight Party: A single selection for partisan races in a general election	Yes	
Straight Party: Vote for each candidate individually	Yes	
Straight Party: Modify straight party selections with crossover votes	Yes	
Straight Party: A race without a candidate for one party	Yes	
Straight Party: "N of M race (where "N">1)	Yes	
Straight Party: Excludes a partisan contest from the straight party selection	Yes	
Cross-Party Endorsement:		
Cross party endorsements, multiple parties endorse one candidate.	No	
Split Precincts:		
Split Precincts: Multiple ballot styles	Yes	
Split Precincts: P & M system support splits with correct contests and ballot identification of each split	Yes	
Split Precincts: DRE matches voter to all applicable races.	Yes	
Split Precincts: Reporting of voter counts (# of voters) to the precinct split level; Reporting of vote totals is to the precinct level	Yes	
Vote N of M:		
Vote for N of M: Counts each selected candidate, if the maximum is not exceeded.	Yes	
Vote for N of M: Invalidates all candidates in an overvote (paper)	Yes	
Recall Issues, with options:		
Recall Issues with Options: Simple Yes/No with separate race/election. (Vote Yes or No Question)	Yes	
Recall Issues with Options: Retain is the first option, Replacement candidate for the second or more options (Vote 1 of M)	Yes	
Recall Issues with Options: Two contests with access to a second contest conditional upon a specific vote in contest one. (Must vote Yes to vote in 2 nd contest.)	Yes	

Feature/Characteristic	Yes/No	Comment
Recall Issues with Options: Two contests with access to a second contest conditional upon any vote in contest one. (Must vote Yes to vote in 2 nd contest.)	Yes	
Cumulative Voting		
Cumulative Voting: Voters are permitted to cast, as many votes as there are seats to be filled for one or more candidates. Voters are not limited to giving only one vote to a candidate. Instead, they can put multiple votes on one or more candidate.	Yes	
Ranked Order Voting		
Ranked Order Voting: Voters can write in a ranked vote.	Yes	
Ranked Order Voting: A ballot stops being counting when all ranked choices have been eliminated	N/A	Tabulation rules are unique per jurisdiction
Ranked Order Voting: A ballot with a skipped rank counts the vote for the next rank.	N/A	Tabulation rules are unique per jurisdiction
Ranked Order Voting: Voters rank candidates in a contest in order of choice. A candidate receiving a majority of the first choice votes wins. If no candidate receives a majority of first choice votes, the last place candidate is deleted, each ballot cast for the deleted candidate counts for the second choice candidate listed on the ballot. The process of eliminating the last place candidate and recounting the ballots continues until one candidate receives a majority of the vote	N/A	Tabulation rules are unique per jurisdiction
Ranked Order Voting: A ballot with two choices ranked the same, stops being counted at the point of two similarly ranked choices.	Yes	
Ranked Order Voting: The total number of votes for two or more candidates with the least votes is less than the votes of the candidate with the next highest number of votes, the candidates with the least votes are eliminated simultaneously and their votes transferred to the next-ranked continuing candidate.	N/A	Tabulation rules are unique per jurisdiction
Provisional or Challenged Ballots		
Provisional/Challenged Ballots: A voted provisional ballots is identified but not included in the tabulation, but can be added in the central count.	Yes	
Provisional/Challenged Ballots: A voted provisional ballots is included in the tabulation, but is identified and can be subtracted in the central count	Yes	
Provisional/Challenged Ballots: Provisional ballots maintain the secrecy of the ballot.	Yes	
Overvotes (must support for specific type of voting system)		
Overvotes: P & M: Overvote invalidates the vote. Define how overvotes are counted.	Yes	If the system detects more than the valid number of marks in a contest, it is counted as an overvote
Overvotes: DRE: Prevented from or requires correction of overvoting.	Yes	

Feature/Characteristic	Yes/No	Comment
Overvotes: If a system does not prevent overvotes, it must count them. Define how overvotes are counted.	Yes	If the system detects more than the valid number of marks in a contest, it is counted as an overvote
Overvotes: DRE systems that provide a method to data enter absentee votes must account for overvotes.	Yes	
Undervotes		
Undervotes: System counts undervotes cast for accounting purposes	Yes	
Blank Ballots		
Totally Blank Ballots: Any blank ballot alert is tested.	Yes	
Totally Blank Ballots: If blank ballots are not immediately processed, there must be a provision to recognize and accept them	Yes	
Totally Blank Ballots: If operators can access a blank ballot, there must be a provision for resolution.	Yes	
Networking		
Wide Area Network – Use of Modems	No	
Wide Area Network – Use of Wireless	No	
Local Area Network – Use of TCP/IP	Yes	
Local Area Network – Use of Infrared	No	
Local Area Network – Use of Wireless	No	
FIPS 140-2 validated cryptographic module	Yes	
Used as (if applicable):		
Precinct counting device	Yes	
Central counting device	Yes	



Certification Test Report - Modification

Report Number *HRT-18002-CTR-01*

Hart InterCivic Verity Voting 2.3

Modification Certification Test Report version 1.3

February 26th, 2019

Prepared for:

Vendor Name	<i>Hart InterCivic Inc. (Hart)</i>
Vendor System	<i>Verity Voting 2.3</i>
EAC Application No.	<i>HRT-Verity-2.3</i>
Vendor Address	<i>15500 Wells Port Drive Austin, TX 78728</i>

Prepared by:



SLI ComplianceSM
4720 Independence St.
Wheat Ridge, CO 80033
303-422-1566
www.SLICompliance.com



Accredited by the National Institute of Standards and Technology (NIST) National Voluntary Lab Accreditation Program (NVLAP), and accredited by the Election Assistance Commission (EAC) for VSTL status.



Revision History

Release	Author	Revisions
v1.0	M. Santos	Initial Release; submitted to EAC for approval
v1.1	M. Santos	Updates for EAC comments
v1.2	M. Santos	Updates for additional EAC comments
v1.3	M. Santos	Updated for Hardware test report listing in "Attachments"

Disclaimer

The Certification Test results reported herein must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. Results herein relate only to the items tested.

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The tests referenced in this document were performed in a controlled environment using specific systems and data sets, and results are related to the specific items tested. Actual results in other environments may vary.

Opinions and Interpretations

There are no SLI opinions or interpretations included in this report beyond the final recommendation.



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1 Introduction

SLI Compliance is submitting this test report as a summary of the certification testing efforts for the **Hart Verity Voting 2.3** system, a modified system from **Verity Voting 2.0**, as detailed in the section System Identification. The purpose of this document is to provide an overview of the certification testing effort and the findings of the testing effort for the **Hart Verity Voting 2.3** system.

This effort included documentation review of the Technical Data Package, source code review, and testing of the **Hart Verity Voting 2.3** voting system. Testing consisted of the development of a test plan, managing system configurations, hardware testing, component and system level tests prepared by SLI, and analysis of results. The review and testing was performed at SLI's Denver, Colorado facility.

1.1 References

1. Election Assistance Commission Voluntary Voting System Guidelines version 1.0 (EAC VVSG 1.0), Volumes I & II
2. NIST NVLAP Handbook 150: 2016
3. NIST NVLAP Handbook 150-22: 2008
4. EAC Voting System Testing and Certification Program Manual, United States Election Assistance Commission, v 2.0, May 2015
5. EAC Voting System Test Laboratory Program Manual, United States Election Assistance Commission, v 2.0, May 2015
6. SLI VSTL Quality System Manual, v 2.6, prepared by SLI, March 28, 2018

1.2 Document Overview

This document contains:

- The "Introduction", which discusses the applications tested/reviewed.
- The "Certification Test Background", which discusses the testing process.
- The "System Identification", which identifies hardware and software for the **Hart Verity Voting 2.3** system.
- The "System Overview", which discusses the functionality of **Hart Verity Voting 2.3** system software and firmware.
- The "Certification Tests Results and Summary", which is a summary of the testing effort.
- The "Recommendations" section, which contains the final analysis of the testing effort.
- Attachments as follows:
 - Attachment A – Warrant of Change Control for Verity Voting 2.3
 - Attachment B - Attestation of Durability for Verity Voting 2.3
 - Attachment C - Attestation of Integrity for Verity Voting 2.3
 - Attachment D - Attestation of Production Hardware and Software for Verity Voting 2.3
 - Attachment E1 - Record of Trusted Build for Verity Voting 2.3.1



- Attachment E2 - Record of Trusted Build for Verity Voting 2.3.2
- Attachment F - Modification of Certified System Analysis Summary Verity 2.3
- Attachment G – As Run Hart Verity 2.3 EAC Modification Test Plan v1.1
- Attachment G1 - As Run Hart Verity 2.3 EAC Electrical Hardware Test Plan v2.0
- Attachment G2 – As Run Hart Verity 2.3 EAC Environmental Hardware Test Plan v2.0
- Attachment H1 - HRT_C#_MSAllInOneStandard_SCRF
- Attachment H2 - HRT_C_&_C++_MSAllInOneStandard_SCRF
- Attachment I – List of Source Code Reviewed and Results
- Attachment J – Verity Voting 2.0 to 2.3 System Modifications
- Attachment K1 - Immunity Testing for Verity Scan, Controller and TW Duo Rev 1
- Attachment K2 - Immunity Testing for Verity Scan Rev 1
- Attachment K3 -Radiated and Conducted Emissions for Verity Controller and TW Duo Rev 1
- Attachment K4 -Radiated and Conducted Emissions for Verity Scan Rev 1
- Attachment L - Hart Verity 2.3 EAC Environmental Hardware Test Report

2 Certification Test Background

This section provides a brief overview of the EAC Certification Program and the activities involved in order for a voting system to be considered for certification against the VVSG 1.0 and the current EAC program manuals.

2.1 PCA - Document and Source Code Reviews

The Physical Configuration Audit (PCA) review of the **Hart Verity Voting 2.3** documentation, submitted in the requisite Technical Data Package (TDP), was performed in order to verify conformance with the VVSG 1.0. Source code was reviewed for each software and firmware application declared within the **Verity Voting 2.3** voting system. As this is a modification test campaign, the source code was compared against the final code base of **Verity Voting 2.0**, and changes were subject to review.

All PCA reviews were conducted in accordance with *Volume II Section 2* of the VVSG 1.0, to demonstrate that the system meets the requirements. Results of the PCA documentation review can be found in section 5.2 of this Certification Test Report.

All PCA source code reviews were conducted in accordance with *Volume I Section 5.2 and Volume II Section 5* of the VVSG 1.0, to demonstrate that the system meets the requirements. Results of the PCA source code reviews can be found in *Attachment I – List of Source Code Reviewed and Results*. Inconsistencies or errors in the source code were identified to Hart for resolution or comment. Additional details of the source code review criteria can be found in *Attachments H1-H2*.



2.2 FCA - Functional & System Testing and Sampling

The Functional Configuration Audit (FCA) review of the test documentation submitted by Hart in the TDP was reviewed in order to verify testing of the voting system.

SLI's standard Test Suites were customized for the **Hart Verity Voting 2.3** voting system and conducted in accordance with *Volume II Section 6 of the VVSG 1.0*. Simulations of elections were conducted to demonstrate a beginning-to-end business use case process for the **Hart Verity Voting 2.3** voting system.

2.2.1 Test Methods

All test methods employed are within the scope of SLI's VSTL accreditation.

The following validated test methods were employed during this test campaign:

Table 1 – Test Methods

SLI VSTL Test Method Name
TM_Accuracy v1.2
TM_Basic_Election_Components v1.1
TM_Ballot Formatting and Production v1.1
TM_Error Message and Recovery v1.3
TM_HW Integrity v1.2
TM_Maintainability v1.1
TM_Readiness v1.1
TM_Tally_and_Reporting v1.1
TM_Security Access Control v1.1
TM_Security Physical Security Measures v1.1
TM_Security Software v1.1
TM_Security Telecommunications and Data Transmission v1.2
TM_Stress v1.1
TM_System Audit v1.1
TM_Telecommunications v1.1
TM_Volume v1.1
TM_Voting Capabilities v1.3
TM_Voting Straight Party v1.2

The above listed test methods are implemented in a complementary fashion: modules are employed from various methods to form suites. Suites included the logical sequence of functionality that was used to validate the requirements addressed by each module within the suite. Please see Table 3 - Terms and Abbreviations below for additional information about Test Modules and Test Suites.



- **Deviations from, to, or exclusions from the test methods**

The test methods listed in Table 1 above, contain the requirements listed in section 4.6 below. The established and validated test methods did not have any deviations. Test cases utilizing those methods were selected and grouped into test suites to validate the requirements in section 4.6.

2.2.2 Terms and Abbreviations

This section details pertinent terms applicable within this report.

Table 2 – Terms and Abbreviations

Term	Abbreviation	Description
Ballot Marking Device	BMD	An accessible computer-based voting system that produces a marked paper ballot that is the result of voter interaction with visual or audio prompts.
Cast Vote Record	CVR	Record of all selections made by a single voter whether in electronic or paper. Also referred to as a ballot image when used to refer to electronic ballots.
Central Count Scanner	CCS	High Speed Digital Scanner is a ballot scanning device typically located at a central count facility and is operated by an automated multi-sheet feeding capability.
Chevron (Arrows at top of current screen)	No Abbreviation	Verity software applications are organized around easy-to-follow workflows, with specific activities associated with “chevrons” or “arrows” in the application user interface.
Compact Flash card	CF	This is a type of flash memory card in a standardized enclosure often used in voting systems to store ballot and/or vote results data.
Compact Flash AST	CFAST	A compact flash media based on the Serial ATA bus rather than the Parallel ATA bus, used by the original Compact Flash.
Commercial Off the Shelf	COTS	Commercial, readily available hardware devices (such as card readers, printers or personal computers) or software products (such as operating systems, programming language compilers, or database management systems).
Election Assistance Commission	EAC	An independent, bipartisan commission created by the Help America Vote Act (HAVA) of 2002 that operates the federal government's voting system certification program.



Term	Abbreviation	Description
Election Management System	EMS	Typically utilizes a database management system to enter jurisdiction information (district, precincts, languages, etc.) as well as election specific information (races, candidates, voter groups (parties), etc.). In addition, the EMS is also used to lay out the ballots, download the election data to the voting devices, upload the results and produce the final results reports.
Electromagnetic Compatibility	EMC	The goal of EMC is to validate the correct functioning of different equipment in the same environment and the avoidance of any interference effects between them.
Functional Configuration Audit	FCA	Exhaustive verification of every system function and combination of functions cited in the vendor's documentation. The FCA verifies the accuracy and completeness of the system's Voter Manual, Operations Procedures, Maintenance Procedures, and Diagnostic Testing Procedures.
National Institute of Standards and Technology	NIST	A non-regulatory federal agency within the U.S. Dept. of Commerce. Its mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life.
National Voluntary Laboratory Accreditation Program	NVLAP	A division of NIST that provides third-party accreditation to testing and calibration laboratories.
Physical Configuration Audit	PCA	The testing activities associated with the physical aspects of the system (hardware, documentation, builds, source code, etc.).
Primary – Closed	No Abbreviation	The Closed Primary election segregates each political party onto its own ballot, along with all pertinent non-political contests and referendums.
Primary - Open	No Abbreviation	The Open Primary election combines all political parties' contests onto a single ballot, along with all pertinent non-political contests and referendums.
Precinct Count Scanner	PCS	A precinct-count optical scanner is a mark sense-based ballot and vote counting device located at a precinct and is typically operated by scanning one ballot at a time.
Request For Information	RFI	A form used by testing laboratories to request, from the EAC, interpretation of a technical issue related to testing of voting systems.



Term	Abbreviation	Description
Requirements Matrix	N/A	This is the matrix created by the EAC and maintained by SLI that traces the requirements to the various test modules and test methods.
Standard Lab Procedure	SLP	SLI's quality system documentation is made up of standard lab procedures (SLPs), which are procedures required to ensure a systematic, repeatable and accurate approach to voting systems testing and governing the actual performance of SLI's work.
(Verity) Tab	No Abbreviation	Verity software applications are organized around easy-to-follow workflows and activities; a "Tab" provides specific activities associated with "chevron" workflows in the application user interface.
Voting Center	No Abbreviation	Typically, a convenient voting location that manages multiple ballot styles.
Technical Data Package	TDP	This is the data package that is supplied by the vendor and includes: Functional Requirements, Specifications, End-user documentation, Procedures, System Overview, Configuration Management Plan, Quality Assurance Program, and manuals for each of the required hardware, software, firmware components of each voting system.
Test Method	No Abbreviation	SLI proprietary documents which are designed to group sets of EAC VVSG requirements in a logical manner that can be utilized to efficiently validate where and how requirements, or portions of a requirement, are met.
Test Module	No Abbreviation	An actionable component of a Test Method, that functionally verifies that a requirement is met within a voting system. Test Modules are at a generic level within the Test Method, and are customized for a particular voting system, within a Test Suite.
Test Suite	No Abbreviation	An actionable grouping of test modules designed to test a set of functions of a voting system or component in a specific way.
Validation	No Abbreviation	Confirmation by examination and through provision of objective evidence that the requirements for a specific intended use or application have been fulfilled (ISO 9000).
Verification	No Abbreviation	Confirmation by examination and through provision of objective evidence that specified requirements have been fulfilled (ISO 9000).



Term	Abbreviation	Description
Voluntary Voting Systems Guidelines Volumes I & II	VVSG	A set of specifications and requirements against which voting systems can be tested to determine if the systems provide all of the basic functionality, accessibility and security capabilities required of these systems.
Voting System Test Lab	VSTL	The accredited lab where the voting system is being tested.
Voting System Under Test	VSUT	The designation for a voting system that is currently being tested.
Voting Test Specialist	VTS	An SLI Compliance employee who has been qualified to perform EAC voting system certification testing.

3 System Overview

3.1 Scope of the Hart Verity Voting 2.3 Voting System

This section provides a description of the scope of **Hart Verity Voting 2.3** voting system components:

- The **Hart Verity Voting 2.3** voting system represents a set of software applications for pre-voting, voting and post-voting election project activities for jurisdictions of various sizes and political division complexities. **Verity Voting 2.3** functions include:
 - Defining the political divisioning of the jurisdiction and organizing the election with its hierarchical structure, attributes and associations.
 - Defining the election events with their attributes such as the election name, date and type, as well as contests, candidates, referendum questions, voting locations and their attributes.
 - Preparing and producing ballots for polling place and absentee voting or by-mail voting.
 - Preparing media for precinct voting devices and central count devices.
 - Configuring and programming the **Verity Scan** digital scanners for marked paper ballots and Verity Touch Writer printed vote records..
 - Configuring and programming the **Verity Touch Writer** BMD devices.
 - Configuring and programming the **Verity Controller** with **Verity Touch Writer Duo** BMD devices.
 - Configuring and programming the **Verity Controller** with **Verity Touch** and **Touch Writer Duo** DRE devices.
 - Configuring and programming the **Verity Print** on-demand ballot production device.
 - Producing the election definition and auditing reports.



- Providing administrative management functions for user, database, networking and system management.
 - Import of the Cast Vote Records from **Verity Scan** devices and **Verity Central**.
 - Preview and validation of the election results.
 - Producing election results tally according to voting variations and election system rules.
 - Producing a variety of reports of the election results in the desired format.
 - Publishing of the official election results. Auditing of election results including ballot images and log files.
- **Verity Scan** is a digital scan precinct ballot counter (tabulator) that is used in conjunction with an external ballot box. The unit is designed to scan marked paper ballots or Verity Touch Writer Duo printed vote records, interpret and record voter marks on the marked paper ballot or record voter selections on the printed vote records, and deposit into the secure ballot box.
 - The **Verity Touch Writer** is a standalone precinct level Ballot Marking Device (BMD) which also includes an Audio Tactile Interface (ATI), which allows voters who cannot complete a paper ballot to generate a machine-readable and human readable paper ballot, based on vote selections made, using the ATI.
 - The **Verity Touch Writer Duo** is a daisy chained configuration of a **Verity Controller** device configured with up to twelve **Verity Touch Writer Duo** BMD devices, which allows voters to utilize the touchscreen or optional Audio Tactile Interface to generate a machine-readable and human readable printed vote record, based on vote selections made.
 - The **Verity Touch** is a Direct Recording Electronic (DRE) device chained configuration of a **Verity Controller** device configured with up to twelve **Verity Touch** devices, which allows voters to cast their vote electronically via a touchscreen.
 - The **Verity Touch with Access** is a DRE device chained configuration of a **Verity Controller** device configured with up to twelve **Verity Touch** or **Touch with Access** devices, which allows voters to cast their vote electronically via a touchscreen or Audio Tactile Interface (ATI).
 - **Verity Print** is an on-demand ballot production device for unmarked paper ballots.
 - **Verity Election Management** allows users with the Administrator role to import and manage election definitions. Imported election definitions are available through the Elections chevron in Build. Users can also delete, archive, and manage the election definitions.
 - **Verity User Manager** enables users with the correct role and permissions to create and manage user accounts within the **Verity Voting** system for the local workstation in a standalone configuration, or for the network in a networked configuration.
 - **Verity Desktop** enables users, with the correct roles, to set the workstations' date and time, gather **Verity** application hash codes (in order to validate the correctness of the installed applications), and access to Windows desktop.
 - **Verity Data** provides the user with controls for entering and proofing data and audio. **Verity Data** also performs validation on the exported information to ensure that it will successfully import into **Verity Build**.



- **Verity Build** opens the election to proof data, view reports, and print ballots, and allows for configuring and programming the **Verity Scan** digital scanners, and **Verity Touch Writer** and **Controller/Touch Writer Duo** BMD devices, **Verity Print**, **Verity Controller/Touch** series devices, as well as producing the election definition and auditing reports.
- **Verity Central** is a high-speed, central digital ballot scanning system used for high-volume processing of ballots (such as vote by mail). The unit is based on COTS scanning hardware coupled with custom **Hart**-developed ballot processing application software which resides on an attached work-station.
- **Verity Count** is an application that tabulates election results and generates reports. **Verity Count** can be used to collect and store all election logs from every **Verity** component/device used in the election, allowing for complete election audit log reviews.

3.1.1 Supported Languages

The **Hart Verity Voting 2.3** voting system supports English, Spanish, Chinese, Japanese, Korean, Khmer, Thai, Vietnamese, Tagalog, Ilocano, Hindi.

3.2 Changes from Verity 2.0 to Verity 2.3

3.2.1 Modifications new to Verity 2.3

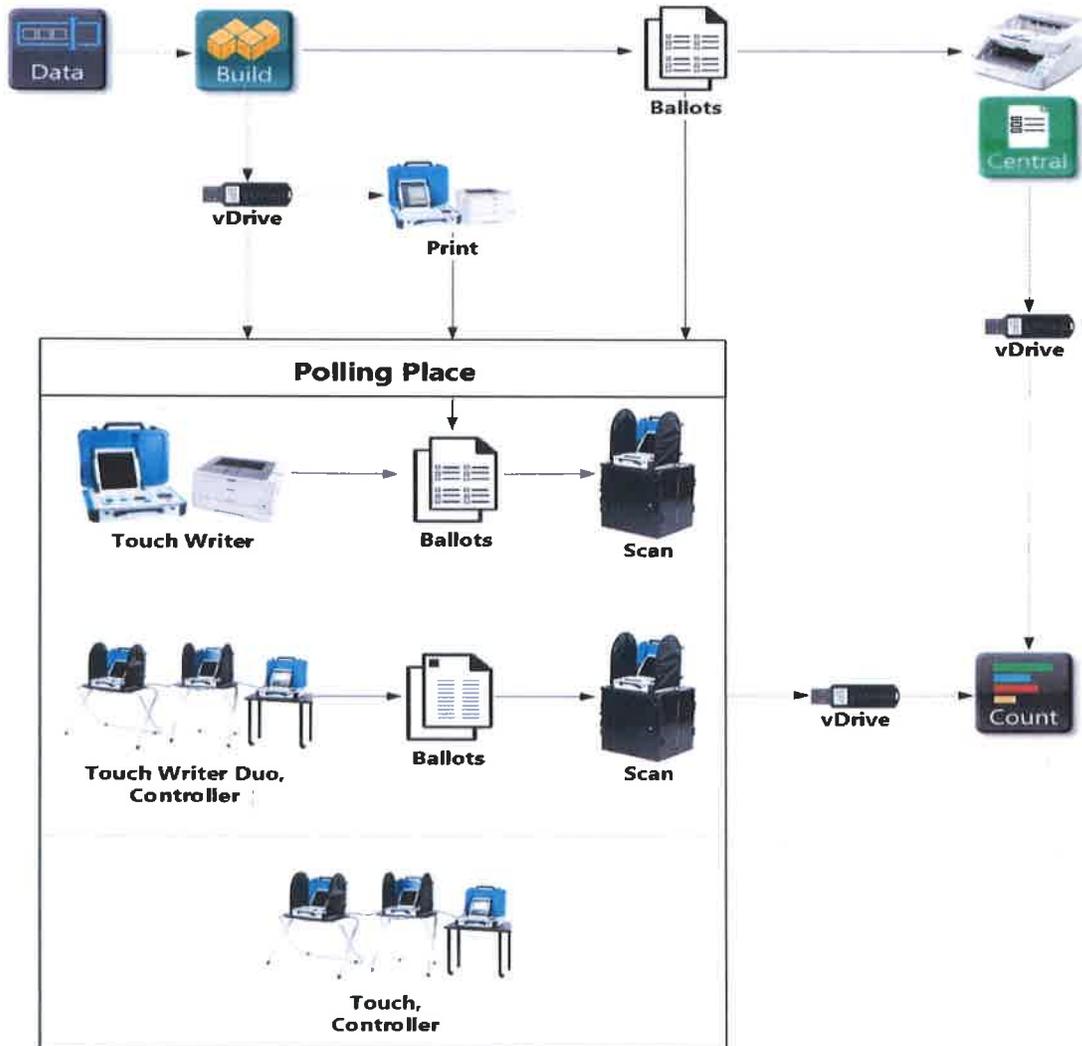
Verity Voting 2.3 is a modification of the EAC-certified **Verity Voting 2.0** system.

The modifications to **Verity 2.3** address multiple facets of the system, including state specific features, new features for **Verity Scan**, **Verity Touch Writer**, **Verity Controller**, **Verity Touch**, **Verity Touch with Access**, **Verity Data**, **Verity Build**, **Verity Central**, **Verity Count**, **Verity User**, **Verity Desktop**, as well as associated documentation updates. **Touch Writer Duo** is a newly introduced ballot mark device based off of **Touch Writer** with an output of a print vote record rather than a marked ballot. Specific details on all implemented modifications can be found in Attachment J – Verity Voting 2.0 to 2.3 System Modifications.

4 System Identification

The Hart Verity Voting 2.3 voting system was submitted for certification testing with the documentation, hardware and software listed below.

4.1 System Topology Diagram



Overview of the diagram:

- The components are displayed as touch points of data access, transfers, and verification.
- Dotted lines show the flow of data and air gaps using vDrives and are also used to separate the deployment models shown within the polling place.



- Verity Print is a ballot production device that provides unmarked printed ballots.
- Verity Touch Writer and Scan may be installed in polling places to support paper-based voting.
- Verity Controller, Touch Writer Duo, and Scan may be installed in polling places to support paper-based voting.
- Verity Controller and Touch may be installed in polling places to support DRE voting.
- Verity Key (not shown) is required for user access into components to load election elections, to use critical features, and to generate reports. Feature access depends on the roles applied to user accounts.
- vDrive Duplicator (not shown) is an optional device, used for populating multiple vDrives simultaneously.

4.2 Documentation

The TDP documentation listed below are deliverables of the certified system delivered as part of the examined system, as follows:

Document Title	Version
All-In-One Code Framework Coding Standards	© 2014 Microsoft Corporation
Verity Voting 2.3 Change Notes: Update from 2.0 to 2.3.0	A.00
Verity Voting 2.3 Change Notes: Update from 2.3.0 to 2.3.1	A.00
Verity Voting 2.3 Change Notes: Verity Controller Update from 2.3.1 to 2.3.2	A.00
Configuration Management Process	D.01
Continual Improvement Process	E.02
Control of Nonconforming Product Procedure	B.02
DEVICE CONFIGURATION PROCESS DOCUMENT	B.00
DEVICE OS CREATION AND CONFIGURATION PROCESS DOCUMENT	A.01
DEVICE WES7 CREATION PROCESS DOCUMENT	A.01
Document Control Procedure	E.05
Factory TUV SUD inspection 2018 June report	N/A
Hardware 2005713-CFAST Door Security Kit Design.pdf	B
Hardware 3005018-ATI Kit Design.pdf	A



Hardware 3005174-AutoBallot Kit Design.pdf	B
Hardware 3005350-Scan Design.pdf	H
Hardware 3005351-Controller Design.pdf	D
Hardware 3005352-Touch Writer Design.pdf	G
Hardware 3005353-Touch with Access Design.pdf	E
Hardware 3005355-Touch Design.pdf	D
Hardware 3005356-Print Design.pdf	D
Hardware 3005357-Ballot Box Design.pdf	D
Hardware 3005358-Standard Booth Design.pdf	C
Hardware 3005359-Accessible Booth Design.pdf	D
Hardware 3005700-Touch Writer Duo Design.pdf	A
Hardware 3005800-Scan Design.pdf	A
Hardware 3005801-Accessible Booth With ATI Tray Design.pdf	A
Hardware 3005825-Controller Design.pdf	A
Hardware Design and Development Procedure	D.01
Hardware PCB Photos	N/A
Hardware Verification and Validation Process	D.01
Hart NRTL Safety Certificate U8 17 10 90917 004	N/A
Hart Secure Ballot Stock Specification	A.01
Verity 2.3 Test Cases	N/A
Verity Voting 2.3 Notice of Protected Information	A.00
Quality Manual	D.04
Records Retention Matrix	E.02
Software Design and Development Procedure	D.02
Software Production Procedure	E.01
Software Test Design and Development Procedure	D.02
Software Verification and Validation Process	D.02
Software Versioning Procedure	C.04
Hart Requirements Management Requirements Management Process	A.02



Supplier Qualification and Management Procedure	C.02
THE VERITY ACCESS FIRMWARE BUILD PROCEDURE	A.01
THE VERITY MCU FIRMWARE BUILD PROCEDURE	A.02
THE CREATION AND CONFIGURATION OF THE TRUSTED BUILD ENVIRONMENT	A.03
Verity Voting 2.3 TDP Abstract	A.01
Verity 2.3 VVSG 1.0 TDP Trace	N/A
Verity 2.3.X COTS List	N/A
Airgap Interface for Portable Electronic Media Technical Reference	A.02
Verity Application Framework Technical Requirements Document (TRD)	A.00
THE VERITY APPLICATION BUILD PROCESS FOR VERITY 2.3.1	A.01
Verity Application Programming Interface Specification Technical Document	A.04
Verity Ballot Creation Technical Requirements Document (TRD)	A.00
Verity Base Station Microcontroller Specification	A.01
Verity Build Technical Requirements Document (TRD)	A.00
Verity Central Technical Requirements Document (TRD)	A.00
Verity Coding Standard Standards Document	A.14
Verity Controller Technical Requirements Document (TRD)	A.01
Verity Count Technical Requirements Document (TRD)	A.01
Verity Data Technical Requirements Document (TRD)	A.00
Verity Database Attributes	C.02
Verity Device Suite Technical Requirements Document (TRD)	A.00
Verity Election Definition Data Technical Requirements Document (TRD)	A.01
Verity Election Management Technical Requirements Document (TRD)	A.00
Verity System Design Verity Electronics Specification	A.15
Verity Entity Relationship Diagram Database - Devices	N/A



Verity Entity Relationship Diagram Database - Servers (Count Only)	N/A
Verity Entity Relationship Diagram Database - Servers (No Count)	N/A
Verity Key Design Technical Document	A.02
Verity Logging Design Technical Document	1.03
Verity Logging Technical Requirements Document (TRD)	A.00
Verity Voting Verity Operational Environment	C.05
PC Application Framework UI Design Document	5
Verity Voting Performance Characteristics	C.02
Verity Print Technical Requirements Document (TRD)	A.00
Verity Risk Assessment	B.01
Verity Scan Technical Requirements Document (TRD)	A.00
Verity Security Requirements Document	A.07
Verity Shared Device User Interface Design Document	7
Verity Software Architecture-Design 4005463 B01	B.01
Usability Test Report of Verity Touch/Touch Writer and Verity Scan	N/A
Verity Voting Summative Usability Test Plan	A.01
Verity – Supply Chain PRD Supply Chain / Operations / Services Planning Document	C.01
Verity Voting 2.3 System Limits	C.01
Verity Touch Technical Requirements Document (TRD)	A.00
Verity Touch Writer Duo Base Station Microcontroller Specification	A.00
Touch Writer Duo Technical Requirements Document (TRD)	A.00
Verity Touch Writer Technical Requirements Document (TRD)	A.00
Verity User Management Technical Requirements Document (TRD)	A.00
Verity Vote Counting and Cast Vote Records Technical Requirements Document (TRD)	A.00
Verity Voting 2.3 Implementation Statement	A.00



Application for Certification – Verity Voting 2.3 Usability Impact Statement	N/A
Verity Voting 2.3.1, 2.3.2 Source Documentation.zip	N/A
Verity Voting National Certification Test Specification	B.02
Verity Workstation Manufacturing Process Document	B.01
Administrator’s Guide VERSION 2.3 (Build)	A.01
Administrator’s Guide VERSION 2.3 (Central)	A.02
Administrator’s Guide VERSION 2.3 (Count)	A.03
Administrator’s Guide VERSION 2.3 (Data)	A.02
Device Troubleshooting Field Guide VERSION 2.3	A.03
Polling Place Field Guide VERSION 2.3 (CDS)	A.02
Polling Place Field Guide VERSION 2.3 (CT)	A.02
Polling Place Field Guide VERSION 2.3 (SW)	A.01
Support Procedures Guide VERSION 2.3	A.03
System Administrator’s Guide VERSION 2.3	A.02
Verity Print Field Guide VERSION 2.3	A.01
VIRTEX ENTERPRISES LP QUALITY SYSTEM MANUAL	R
Voting System Implementation And Maintenance Process Document	C.02
VSTL Product Submission Procedure	D.02
Verity 2.3 Workstation Configuration Process Document	A.01
WORKSTATION WES7 CREATION PROCESS DOCUMENT	A.00

4.3 Software and Firmware

Any and all software/firmware that is to be used by the declared voting system whether directly or indirectly, in a production environment, must be validated during the certification process.

The software and firmware employed by **Hart Verity Voting 2.3** consists of 2 types, custom and commercial off the shelf (COTS). COTS applications were verified to be pristine, or were subjected to source code review for analysis of any modifications and verification of meeting the pertinent standards. The COTS software and firmware was either obtained directly from the 3rd party manufacturer, or was verified against digital signatures obtained from the 3rd party manufacturer. No modified COTS were implemented.

Tables 3 and 4 below detail each application employed by the **Hart Verity Voting 2.3** voting system.



Table 3 – Hart Verity Voting 2.3 Custom Software and Firmware

Application	Version
Verity Data	2.3.1
Verity Build	2.3.1
Verity Central	2.3.1
Verity Count	2.3.1
Verity Print	2.3.1
Verity Scan	2.3.1
Verity Touch Writer	2.3.1
Verity Touch Writer Duo	2.3.1
Verity Controller	2.3.2
Verity Touch	2.3.1
Verity Touch with Access	2.3.1

Table 4 – COTS Software

Verity Data/Build	
Description	Version
Microsoft Windows Embedded Standard 7, Service Pack 1	6.1.7601
Microsoft SQL Server 2012 for Embedded Systems License	11.00.2100
McAfee Application Control for Devices	6.1.1.369
Verity Central	
Microsoft Windows Embedded Standard 7, Service Pack 1	6.1.7601
Microsoft SQL Server 2012 for Embedded Systems License	11.00.2100
McAfee Application Control for Devices	6.1.1.369
Verity Count	
Microsoft Windows Embedded Standard 7, Service Pack 1	6.1.7601
Microsoft SQL Server 2012 for Embedded Systems License	11.00.2100
McAfee Application Control for Devices	6.1.1.369
Verity Print	
Microsoft Windows Embedded Standard 7, Service Pack 1	6.1.7601



Microsoft SQL Server 2012 Express License	11.00.2100
McAfee Application Control for Devices	6.1.1.369
Verity Scan – Paper Ballot Scanner	
Microsoft Windows Embedded Standard 7, Service Pack 1	6.1.7601
Microsoft SQL Server 2012 Express License	11.00.2100
McAfee Application Control for Devices	6.1.1.369
Nuance Western OCR, Desktop, OEM	V20
Verity Touch Writer – Electronic BMD Device	
Microsoft Windows Embedded Standard 7, Service Pack 1	6.1.7601
Microsoft SQL Server 2012 Express License	11.00.2100
McAfee Application Control for Devices	6.1.1.369
Verity Touch Writer Duo – Electronic BMD Device	
Microsoft Windows Embedded Standard 7, Service Pack 1	6.1.7601
Microsoft SQL Server 2012 Express License	11.00.2100
McAfee Application Control for Devices	6.1.1.369
Verity Controller – Networked Centralized Management Device	
Microsoft Windows Embedded Standard 7, Service Pack 1	6.1.7601
Microsoft SQL Server 2012 Express License	11.00.2100
McAfee Application Control for Devices	6.1.1.369
Verity Touch - Electronic DRE Device	
Microsoft Windows Embedded Standard 7, Service Pack 1	6.1.7601
Microsoft SQL Server 2012 Express License	11.00.2100
McAfee Application Control for Devices	6.1.1.369
Verity Touch with Access - Electronic DRE Device	
Microsoft Windows Embedded Standard 7, Service Pack 1	6.1.7601
Microsoft SQL Server 2012 Express License	11.00.2100
McAfee Application Control for Devices	6.1.1.369



4.4 Equipment (Hardware)

The hardware employed by **Hart Verity Voting 2.3** consists of 2 types, custom and commercial off the shelf (COTS). COTS hardware was verified to be unmodified, or was subjected to review for analysis of any modifications and verification of meeting the pertinent standards.

Tables 5 and 6 below detail each device employed by the **Hart Verity Voting 2.3** voting system.

Table 5 – Hart Verity Voting 2.3 Custom Voting Equipment

Description	Version
Verity Print – Ballot Printer	3005356 Rev D
Verity Scan – Paper Ballot Scanner	3005350 Rev H
Verity Scan – Paper Ballot Scanner – Update for scanner mechanism and tablet electronics obsolescence.	3005800 Rev A
Verity Touch Writer – Electronic BMD Device	3005352 Rev G
Verity Touch Writer Duo – Electronic BMD Device	3005700 Rev A
Verity Controller – Networked Centralized Management Device	3005351 Rev D
Verity Controller – Networked Centralized Management Device – Update for tablet electronics obsolescence.	3005825 Rev A
Verity Touch - Electronic DRE Device	3005355 Rev D
Verity Touch with Access - Electronic DRE Device	3005353 Rev E

Table 6 – Hart Verity Voting 2.3 COTS Equipment

Verity Data/Bulld	
Description	Version
Verity Central Applications and Workstation Kit <ul style="list-style-type: none"> • HP Z240 Workstation • HPZ230 Workstation supported for existing customers only • Verity Central Software (see below) 	C
Canon DR G1100 High-Speed Scanner	M111181
Canon DR G1130 High-Speed Scanner	M111171
OKI Data B432dn Mono Printer Report printer	N22500A
OKI Data B431d Mono Printer for existing customers only Report printer	N22202A



8-port Ethernet Switch	1405-8GV3
Vinpower Digital USB Duplicator 7-targets	USBShark-7T-BK
Vinpower Digital USB Duplicator 23-targets	USBShark-23T-BK
Verity Central	
Verity Central Applications and Workstation Kit <ul style="list-style-type: none"> • HP Z240 Workstation • HPZ230 Workstation supported for existing customers only • Verity Central Software (see below) 	C
Canon DR G1100 High-Speed Scanner	M111181
Canon DR G1130 High-Speed Scanner	M111171
OKI Data B432dn Mono Printer Report printer	N22500A
OKI Data B431d Mono Printer for existing customers only Report printer	N22202A
8-port Ethernet Switch	1405-8GV3
Verity Count	
Verity Count Applications and Workstation Kit <ul style="list-style-type: none"> • HP Z240 Workstation or HP Z230 Workstation • HPZ230 Workstation supported for existing customers only • Verity Count Software (see below) 	C
OKI Data B432dn Mono Report printer	N22500A
OKI Data B431d Mono Report Printer for existing customers only.	N22202A
8-port Ethernet Switch	1405-8GV3
Verity Print	
OKI Data C831dn Color Printer	N35100A
OKI Data B432dn Mono Blank Ballot Printer	N22500A
OKI Data B431d Mono Printer for existing customers only	N22202A
Verity Scan – Paper Ballot Scanner	
Verity Ballot Box	B
Verity Touch Writer – Electronic BMD Device	
OKI Data B432dn Mono Marked Ballot Printer	N22500A
OKI Data B431d Mono Printer for existing customers only Report printer	N22202A



Accessible Voting Booth	D
Verity Touch Writer Duo – Electronic BMD Device	
Brother PJ700 Series Thermal Printer	PJ723
Accessible Voting Booth	D
Standard Voting Booth	D
Verity Touch - Electronic DRE Device	
Standard Voting Booth	D
Verity Touch with Access - Electronic DRE Device	
Accessible Voting Booth	D

4.5 Test Materials

The following test materials are required for the performance of testing including, as applicable, test ballot layout and generation materials, test ballot sheets, and any other materials used in testing.

- Ballots & Blank Ballot grade paper
- Thumb Drives
- USB Dongle
- Ballot marking pens
- Printer paper rolls

4.6 Requirements

4.6.1 VVSG Requirements

The **Verity Voting 2.3** modifications were tested to applicable 2005 VVSG 1.0 requirements. This section details the requirements reviewed for **Verity Voting 2.3**.

The **Verity Voting 2.3** modification will be tested to the 2005 VVSG 1.0 requirements listed below:

Volume I:

- 2.1.2.a,b,c Accuracy
- 2.1.7.1.c Functions
- 2.2.1.2.b Ballot Formatting
- 2.2.2.d Election Programming
- 2.2.4.a-e Readiness Testing
- 2.3.3.1.c,d Common Requirements
- 2.3.3.2.b,e,h Paper based System Requirements
- 2.3.3.3.c,d,e,h,j,k,o DRE System Requirements
- 4.1.5.2 Ballot Reading Accuracy



Volume II

- 3.2.3 Testing to Reflect Additional Capabilities
- 3.2.4 Testing to Reflect Previously Tested Capabilities
- 6.2.2 System Baseline for Testing
- 6.2.3 Testing Volume

4.6.2 Hardware Requirements

Volume I:

- 2.1.4 (b,c,d) Integrity
- 4.1.2.5-12 Environmental Requirements
- 4.1.7.1 Removable Storage Media
- 4.3.3 Reliability

Volume II:

- 4.6.2-6 Non-operating Environmental
- 4.7.1&3 Environmental Tests, Operating
- 4.8 Other Environmental Tests

4.7 Hart State Specific Modification Requirements

The modifications addressed represent Hart internally developed features designed to satisfy these jurisdictional requests.

Pertinent Hart requirements are listed in Attachment J – Verity Voting 2.0 to 2.3 System Modifications.

5 Certification Test Results Summary

5.1 Source Code Review Summary

SLI reviewed the software source code for each application in the **Hart Verity Voting 2.3** voting system to determine the code's compliance with Volume I Sections 5, 9 and Volume II Section 5.4 of the VVSG 1.0 and for compliance with **Hart's** internally developed coding standards. **Verity Voting 2.3** is implemented with the C, C++ and C# languages. Results of the source code review are detailed in *Attachment I – List of Source Code Reviewed and Results*.

5.1.1 Evaluation of Source Code

The source code was reviewed for compliance per the guidelines defined in *Volume II, Section 5.4* of the VVSG 1.0. As a modification project, the **Verity Voting 2.3** code base was reviewed using the final **Verity Voting 2.0** code base as the baseline, to which the initial **Verity Voting 2.3** code base was compared. The differences found between those



two code bases served as the starting point of the code review. The source code was found to be in compliance with the terms of the VVSG 1.0, and Hart declared industry standards.

5.2 Technical Data Package Review Summary

SLI reviewed the **Hart Verity Voting 2.3** TDP, as detailed in sections 3.1 and 3.4, for compliance according to *Volume II Section 2* of the VVSG 1.0.

The review was conducted for the required content and format of:

- **System Change Notes:** Changes to certified system **Verity Voting 2.3**.
- **System Test and Verification Specifications:** Development and certification test specifications that Hart applied to their testing efforts. **Verity Voting 2.3**
- **Application Usability Impact statement:** Updated for **Verity Voting 2.3**
- **Performance Characteristics:** Updated for **Verity Voting 2.3**
- **System Description:** Updated for **Verity Voting 2.3**
- **Verity System Limits:** Updated for **Verity Voting 2.3**
- **Verity Operational Environment:** Updated for **Verity Voting 2.3**
- **Verity COTS List:** Updated for **Verity Voting 2.3**
- **Verity Data Technical Reference:** Updated for **Verity Voting 2.3**.
- **Verity Build Technical Reference Manual:** Updated for **Verity Voting 2.3**
- **Verity Central Technical Reference Manual:** Updated for **Verity Voting 2.3**
- **Verity Count Technical Reference Manual:** Updated for **Verity Voting 2.3**
- **Verity Service and Maintenance Operations Technical Reference Manual:** Updated for **Verity Voting 2.3**

5.2.1 Evaluation of TDP

The Technical Data Package for the **Hart Verity Voting 2.3** voting system was found to comply with the standards. A jurisdiction would be able to deploy the **Hart Verity Voting 2.3** voting system using the TDP.

5.3 Hardware Testing

Hardware testing was performed on **Verity Scan** and **Verity Controller/Touch Writer Duo**. Each device was subjected to: Electrical Power Disturbance, Electrical Fast Transient, Lightning Surge, Electrostatic Disruption, Electromagnetic Emissions, Electromagnetic Susceptibility, Conducted RF Immunity, Magnetic Fields Immunity, Bench Handling, Vibration, Low Temperature, High Temperature Test, Humidity Test, Temperature and Power Variation and Maintainability testing. Both devices successfully completed hardware testing.



5.4 Functional Testing Summary

Functionality was tested as identified below for the **Verity Voting 2.3** system.

5.4.1 Test Suites Utilized

The following test suites were executed:

Verity Data/Build test suite – The **Verity Data/Build** component was re-tested in depth in order to verify that the modifications implemented, and the subsequent Trusted Build of the software, did not adversely affect operations within this application. This testing was completed without issue.

Verity Desktop test suite – The **Verity Desktop** component was re-tested in depth in order to verify that the modifications implemented, and the subsequent Trusted Build of the software, did not adversely affect operations within this application. This testing was completed without issue.

Verity User Management test suite – The **Verity User Management** component was re-tested in depth in order to verify that the modifications implemented, and the subsequent Trusted Build of the software, did not adversely affect operations within this application. This testing was completed without issue.

Verity Touch Writer test suite – The **Verity Touch Writer** component was re-tested in depth in order to verify that the modifications implemented, and the subsequent Trusted Build of the firmware, did not adversely affect operations within this application. This testing was completed without issue.

Verity Touch Writer Duo test suite – The **Verity Touch Writer Duo** component was tested in depth in order to verify that the modifications implemented, and the subsequent Trusted Build of the firmware, did not adversely affect operations within this application. This testing was completed without issue. Note that basic functionality of this device mirrors that of **Verity Touch Writer**.

Verity Touch test suite – The **Verity Touch** component was re-tested in depth in order to verify that the modifications implemented, and the subsequent Trusted Build of the firmware, did not adversely affect operations within this application. This testing was completed without issue.

Verity Print test suite – The **Verity Print** component was re-tested in depth in order to verify that the modifications implemented, and the subsequent Trusted Build of the firmware, did not adversely affect operations within this application. This testing was completed without issue.

Verity Scan test suite – The **Verity Scan** component was re-tested in depth in order to verify that the modifications implemented, and the subsequent Trusted Build of the firmware, did not adversely affect operations within this application. This testing was completed without issue.

Verity Central test suite – The **Verity Central** application component was re-tested in depth in order to verify that the modifications implemented, and the subsequent Trusted Build of the software, did not adversely affect operations within this application. This testing was completed without issue.



Verity Count test suite – The **Verity Count** application component was re-tested in depth in order to verify that the modifications implemented, and the subsequent Trusted Build of the software, did not adversely affect operations within this application. This testing was completed without issue.

Modifications test suite – The **Modification** test suite explicitly examined each modification introduced into **Verity Voting 2.3** in order to verify that the modifications implemented, and the subsequent Trusted Build of the firmware, did not adversely affect operations. This testing was completed without issue

General Election test suite – The full **Verity Voting 2.3** voting system was reviewed in order to verify continued integration of the voting system and that all components continue to work as expected. This test was completed without issue.

Closed Primary Election test suite – The full **Verity Voting 2.3** voting system was reviewed in order to verify continued integration of the voting system and that all components continue to work as expected. This test was completed without issue.

Open Primary Election test suite – The full **Verity Voting 2.3** voting system was reviewed in order to verify continued integration of the voting system and that all components continue to work as expected. This test was completed without issue.

Language test suite – Testing was conducted to ensure the voting system is capable of presenting the ballot, ballot selections, review screens and instructions in the required languages. The system's ability to handle the prescribed foreign languages that have been declared to be supported, English, Spanish, Chinese, Japanese, Korean, Khmer, Thai, Vietnamese, Tagalog, Ilocano, and Hindi were validated. This test was completed without issue.

Accuracy test suite – **Verity Scan** was tested for accuracy of ballot marks reading in association with updated hardware. **Verity Central** was also tested to verify ability to read 8.5"x20" ballots accurately. This test was completed without issue.

Volume test suite – The full **Verity Voting 2.3** voting system was reviewed in order to verify compliance with the updated stated system limits. This test was completed without issue.

Stress test suite - The full **Verity Voting 2.3** voting system was reviewed in order to verify appropriate responses. This test was completed without issue.

5.5 Evaluation of Testing

The above tests were successfully conducted using the executables created in the Trusted Build, in association with the appropriate hardware versions as declared in this Test Report for the **Hart Verity Voting 2.3** voting system.

5.6 Quality Assurance and Configuration Management Audits

The review process verified that the manufacturer has written processes and procedures for Quality Assurance and Configuration Management. The processes and procedures were implemented within the software development life cycle used to produce the **Hart Verity Voting 2.3** system.



Coverage of tests employed by **Hart** was deemed satisfactory for meeting the requirements of the VVSG 1.0, as well Hart internal requirements for state specific feature implementations. The CM portion of the review focused on the organization's understanding and implementation of the declared configuration management processes, procedures and policies. Deliverables were reviewed against all pertinent CM processes employed by **Hart**. Implementation of the **Hart** configuration processes was adequately documented and followed throughout the course of the **Verity Voting 2.3** project, and no issues were encountered.

5.7 Discrepancies Found During Testing

Discrepancies found fall into 4 major categories, Hardware, Documentation, Source Code, and Functional.

Hardware discrepancies are issues that occur specifically in the hardware arena, and are usually found during the hardware testing phase.

Documentation discrepancies are issues that occur during the PCA documentation (TDP) review phase and are issues that are resolved by updates to the documentation.

Source Code discrepancies are issues that occur during source code review and are issues that must be fixed in the source code prior to the Trusted Build.

Functional discrepancies are issues that occur during functional testing and can be related to any software or firmware within the system. Functional discrepancies often lead to source code modifications, additional source code review and an additional Trusted Build.

5.7.1 Documentation Discrepancies

Twenty-nine documentation discrepancies were written during this campaign, all were satisfactorily resolved

5.7.2 Source Code Discrepancies

Six source code discrepancies were written during this campaign, all were satisfactorily resolved.

5.7.3 Hardware Discrepancies

Four hardware discrepancies were written during this campaign, all were satisfactorily resolved.

- Verity Scan Failed ESD Causing Display Screen to Freeze
 - Resolved by:
 - Debug/Development components that were inadvertently left on the assembly were removed. These components serve no purpose in the product functionality and were present only for the development portion of the project.
 - Shielding of sensitive signals on the PCB was implemented through additional metal shields and conductive metal shielding tape.
 - Insulating the LCD metal frame from the seam between the LCD and the plastic enclosure.

- Verity Controller / TW Duo Failed ESD Causing Display Screen to Freeze



- Resolved by:
 - Debug/Development components that were inadvertently left on the assembly were removed. These components serve no purpose in the product functionality and were present only for the development portion of the project.
 - Shielding of sensitive signals on the PCB was implemented through additional metal shields and conductive metal shielding tape.
 - Insulating the LCD metal frame from the seam between the LCD and the plastic enclosure.
- Verity Scan Failed ESD, Scanner Diag Test Utility Lost Connection
 - Resolved by:
 - The test utility provided the scanning function for automation purposes during ESD testing. When the utility lost connection, it was able to be restarted. ESD testing was completed successfully with the anomaly noted, and all other applications and functions on the Verity Scan continued to operate without disruption. For future endeavors, however, Hart will develop an automated test utility in order to remove this occurrence.
- Verity Scan S1801828110 Fail Temperature and Power Variation Tests
 - Resolved by:
 - The scanner mechanism was determined to be part of an initial production run of the PageScan V scanner mechanism, in which the MSD boards were hand soldered. The less precise hand soldering method resulted in a cold solder joint on the MSD board, causing it to lose communication and cause the anomaly. All MSD boards after the initial production run are manufactured with a uniform and automated wave soldering process.

5.7.4 Functional Discrepancies

Four functional discrepancies were encountered during this campaign, all were satisfactorily resolved.

- In Data, Help incorrectly describes Add Party Selection
 - The Help menu now accurately describes the button that is available to the user. The "Add Party Selector" button is described as, "Click the Add Party Selector button to add a straight party selection contest."
- In Controller & Duo, Robustness Error does not accurately describe device
 - The warning message now displays the following: "WARNING: A **device** with an active voting session was disconnected and never reconnected. There may be a stranded ballot or unreported session on that device. This situation can be resolved by reconnecting the device while polls are still open.
The polls cannot be reopened once they are closed."
- In Controller, Reset Booth numbering Incorrectly describes device
 - The controller screen was updated to no longer display the 'Touch' device and now states, "If you reset your booth numbers, you will need to reassign a booth number to each connected device before voting can continue. "



- In Controller, Incorrectly Displayed ballot Cast on Message
 - The controller now allows the user to deactivate an access code that has not been used.

6 Recommendations

SLI has successfully completed the testing of the **Hart Verity Voting 2.3** voting system. It has been determined that the **Verity Voting 2.3** voting system meets the required acceptance criteria of the Election Assistance Commission Voluntary Voting System Guidelines 1.0 (2005).

It is SLI's recommendation that the EAC grant certification of **Hart Verity Voting 2.3** voting system. This recommendation reflects the opinion of SLI Compliance based on the testing scope and results.

SLI:

A handwritten signature in blue ink, appearing to read 'Traci Mapps'.

Traci Mapps

Director

February 26th, 2019



March 15, 2019

Mark Goins
Coordinator of Elections
Division of Elections, Office of Tennessee Secretary of State Tre Hargett
312 Rosa L. Parks Avenue, 7th Floor - William R. Snodgrass Tower
Nashville, TN 37243

Via: Federal Express

RE: Application for Certification of Verity Voting 2.3

Dear Mr. Goins,

Hart InterCivic, Inc. is seeking certification of Verity Voting 2.3 in the State of Tennessee. Verity Voting 2.3 is certified by the EAC as conformant with the federal *Voluntary Voting System Guidelines (VVSG)*, Version 1.0 (2005). We would also like the opportunity to demonstrate Verity Voting 2.3 at the April 1, 2019 meeting of the State Election Commission.

Verity Voting 2.3 includes the following components:

- Verity Election Management – Election management software application
- Verity User Management – User management software application
- Verity Desktop – Secure desktop management application
- Verity Data – Data management software application
- Verity Build – Election definition software application
- Verity Central – Central scanning software application
- Verity Count – Tabulation and reporting software application
- Verity Scan – Digital scanning voting device
- Verity Print – Pre-voting ballot production device
- Verity Controller – Polling place management device for use with Verity Touch and Verity Touch Writer Duo
- Verity Touch – Direct Recording Electronic (DRE) device
- Verity Touch Writer Duo – Ballot marking device with integrated COTS printer
- Verity Touch Writer with Access – Ballot marking device, with audio tactile interface and attached COTS printer

Testing and Deployment Status:

- Verity Voting 2.3 was certified to the 2005 *Voluntary Voting System Guidelines* by the Election Assistance Commission on March 15, 2019. The Certificate of Conformance and Scope of Certification are included with this application.

- Verity Voting 2.3 was tested by SLI Compliance (Wheat Ridge, Colorado) and its compliance with VVSG 2005 standards has been documented in a test report. The VSTL test report is included with this application.
- Verity Voting 2.3 is currently in the certification process in the State of Indiana, the Commonwealth of Pennsylvania, the State of Missouri, and the State of South Carolina.

Overview of the Verity Voting system

The Verity Voting system includes software, hardware, devices, and peripheral components that allow election professionals to accomplish the following high-level tasks:

- Election definition
- Ballot production
- Flash media production
- Voting machine configuration and use
- Central scanning and adjudication of ballots
- Counting of votes
- Consolidation and reporting of results and audit logs

Identification of the Verity Voting system

Software Applications

- **Verity Data** is a component of the Verity Voting system used by officials to enter election data for contests, candidates, proposition text, translations, and audio. Data also provides the user with controls for proofing of data and layout and performs validation prior to locking the data to ensure its readiness for use in Verity Build.
- **Verity Build** enables election officials to define ballot styles and generate election definitions. In addition to producing paper and electronic ballot styles, Build allows users to program voting device behavior in a variety of ways. After ballot generation, Build electronically writes the election data file (including all ballot styles) to portable flash media known as vDrives, which can then be deployed for a variety of different voting types, such as central scanning with Verity Central or in-person voting with Verity Scan, Verity Touch, Verity Touch Writer, and Verity Touch Writer Duo. After generating election definitions, Verity Build can also print ballots or output them electronically for third-party printers.
- **Verity Central** enables election officials to scan paper ballots at a central location using a commercial-off-the-shelf (COTS) scanner, adjudicate voter selection marks as necessary, and convert voter selection marks to electronic Cast Vote Records (CVRs). Central is especially well-suited for scanning and adjudicating by-mail ballots. When all ballots have been scanned and adjudicated, Central writes Cast Vote Records to vDrive portable flash media, which can be tabulated in Verity Count tabulation software. It is important to note that Central does not tabulate votes; because it simply scans and records Cast Vote Records, this allows jurisdictions to begin scanning before the close of polls, thereby greatly accelerating the scanning workflow. While Central does produce a variety of reports, because it does not tabulate, it does not produce reports containing results totals.
- **Verity Count** allows election officials to tabulate and report the results of Cast Vote Records stored on vDrives. vDrives inserted into the tabulation workstation can contain by-mail votes from Central,

or in-person votes from Scan or Controller devices. Once the CVRs have been read and tabulated, Count can produce a variety of standard and customized reports. Count also allows officials to adjudicate write-in votes from Scan, Controller, or Central. Finally, Count also collects and stores audit logs from Verity voting devices, allowing for post-election audit and/or analysis.

- **Verity User Management** enables users with administrative permissions to create and manage user accounts within the Verity Voting system. Depending on the component for which the accounts are created, permissions may be managed by various roles. Depending on the role, each user has access to different features of the Verity software applications and other components.
- **Verity Election Management** enables users with administrative permissions to add, copy, delete, import, export, archive, restore, and manage elections in the Verity system.
- **Verity Desktop** allows authorized users to set the system date and time, export Verity application file hashes to removable USB media for software validation and import printer configuration files.

Voting Devices and Peripheral Equipment

- **Verity Print** is a pre-voting ballot production device for use by election officials and/or poll workers. Verity Print produces unmarked paper ballots. Print is paired with a commercial off-the-shelf printer to allow the user to select and print the desired ballot style based on the precinct and voter registration information. The Verity Print device is activated so the election official can print one or more blank ballots from one selected precinct at a time. Ballots can be printed on-demand for immediate use, or they can be printed in advance for additional inventory.
- **Verity Scan** is a digital scanner for paper ballots. Scan is paired with a purpose-built ballot box to ensure accurate, secure, and private ballot scanning and vote casting for each voter. Poll workers perform a minimal number of steps to open the polls and activate the Verity Scan device so that it can receive paper ballots. Once the polls are open, to vote, voters insert their ballots when Scan indicates it is appropriate, and then voters wait for Scan to indicate that the ballot has been successfully cast. Scan also supports “second chance” voting for mismarked ballots. During the election definition process in Verity Build, election officials may specify the types of mismarks for which Verity Scan should reject ballots and present voter instruction messages for “second chance voting;” officials can choose to flag undervotes, overvotes, and blank ballots, and they can also specify whether voters are required to have poll worker assistance to cast a mismarked ballot. After scanning, each ballot’s Cast Vote Record is stored on vDrive portable flash media, which can be tabulated by the Verity Count software application.
- **Verity Controller** is a polling place management device that is used to generate random Access Codes for voters. Access Codes are used to activate a ballot session on Verity Touch and Verity Touch Writer Duo. Up to twelve Touch or Touch Writer Duo devices can be connected to a single Verity Controller via a daisy-chain network.
- **Verity Touch Writer and Touch Writer Duo** are ballot marking devices for paper ballots. Voters use the electronic interface to privately and independently make their selections on the ballot. Voters can also make selections with Verity Access, an Audio-Tactile interface (ATI) component with three

tactile buttons, one audio port (for headphones), and one port for external two-switch devices. When voters finish making their selections, they print the marked ballot.

Verity Touch Writer is configured as a standalone device with a separate COTS printer, and Verity Touch Writer Duo, which has an integrated printer, is configured for use in a daisy-chained network with Verity Controller. Using Verity Touch Writer or Touch Writer Duo in conjunction with Verity Scan provides the voter with a reviewable paper ballot that is accurately captured through reviewing, scanning, and acceptance for tabulation as a voter's cast vote record (CVR). As ballot marking devices, the Verity Touch Writer and Touch Writer Duo do not record electronic cast vote records.

- **Verity Touch** is a Direct Recording Electronic (DRE) device. After polls have been opened, poll worker(s) use the Controller to create anonymous voter Access Codes that are associated with various ballot styles. Access Codes are used by voters to activate their ballot session and cast a vote in private. After the voter privately and independently marks and reviews the ballot, he or she will electronically cast the ballot. The poll worker uses the Controller to manage any combination of Touch devices, up to a total of 12, that are connected via a daisy-chain network.
- **Verity Access** is an audio tactile interface (ATI) controller that is connected to Verity Touch Writer ballot marking devices as a complement to the touchscreen display, to provide additional options for accessible voting. Access has three tactile buttons, one audio port, one port for two-switch adaptive devices (such as "jelly switches" or sip-and-puff devices), and a custom USB cable. Jacks for headphones and adaptive devices are located on the top edge of the device, and the device has gripping surfaces on either side.
- **Ballot Box.** Designed to work seamlessly with the Scan device, the Verity Ballot Box is designed for security, light weight, and ease of deployment. Using an innovative folding design, the durable ballot box includes separate secure compartments for scanned and un-scanned ballots, and it folds to just 5" thin, for easy transportation and storage.
- **Voting Booth.** Like the Ballot Box, the specially designed voting booth for Touch Writer and Touch is designed for light weight and easy set up. The booth includes only three parts to assemble, and it also includes durable nylon privacy screens. ADA-compliant versions of the Verity Voting Booth are also designed to comply with VVSG requirements for accessibility and controls within reach.
- **Verity vDrive.** vDrives are flash memory media devices that carry the election definition from Verity to Verity devices, including Scan, Touch Writer, and Controller. vDrives also store Cast Vote Records (CVRs) and audit information. After polls are closed, vDrives can be removed from Controller, Scan or Touch Writer to transfer CVRs and/or audit logs to Count. vDrives are also used to store CVRs associated with scanned ballots in Central. vDrives from Controller, Scan and Central are read into Count, which tabulates votes and reports results.
- **Verity Key** is a two-factor authentication device used to secure access to critical functions throughout the election. Two-factor authentication means that users must have the physical Key device, which is similar to a USB token, as well as knowing the passcode associated with the physical security device. This electronic device is required for access to secure functions in the Build, Central,

and Count applications, including tasks such as accepting ballot styles, opening new election functions, and tabulating votes.

Additional Materials

Hart has included the following items with this application submission:

- Certificate of Conformance and Scope of Certification Document from the U.S. Election Assistance Commission
- Test report by an independent testing authority indicating conformance to standards for voting equipment issued by the U.S. Election Assistance Commission.
- List of all jurisdictions that have purchased Verity Voting.

I look forward to your favorable review of this application and the opportunity to demonstrate Verity Voting 2.3 before the State Election Commission at its April 1st meeting. For questions or additional information, please feel free to contact me.

Respectfully submitted,



Alli Fick
Certification Project Manager
Hart InterCivic
(512) 252-6457
afick@hartic.com



List of Jurisdictions

Verity 2.0.2

Ada County, ID
Alexandria, VA
Amherst County, VA
Aransas County, TX
Asotin County, WA
Bandera County, TX
Bee County, TX
Benton County, TN
Big Lake, TX
Boise ISD, ID
Bonner County, ID
Brazoria County, TX
Brooks County, TX
Callahan County, TX
Cameron, TX
Campbell County, VA
Chambers County, TX
Charlottesville, VA
Chelan County, WA
Chesapeake, VA
Clackamas County, OR
Clark County, WA
Columbia County, WA
Comal County, TX
Comanche Nation, OK
Concho County, TX
Denton County, TX
DeWitt County, TX
Douglas County, WA
Eastland County, TX
Essex County, VA
Falls Church, VA
Floyd County, TX
Floyd County, VA
Gaines County, TX
Galveston County, TX
Garfield County, WA
Hale County, TX
Hamilton County, OH
Henry County, VA

Hidalgo County, TX
Hopkins County, TX
Irion County, TX
Island County, WA
Jack County, TX
Kerr County, TX
King and Queen County, VA
King George County, VA
Kittitas County, WA
Klickitat County, WA
Lexington, VA
Liberty County, TX
Lubbock County, TX
Madison County, TX
Madison County, VA
Marion County, TN
Marshall County, KY
Martin County, TX
Medina County, TX
Milam County, TX
Milano ISD, TX
Norfolk, VA
Northumberland County, VA
Nueces County, TX
Okanogan County, WA
Osage Nation, OK
Palo Pinto County, TX
Polk County, TX
Port Arthur, TX
Potter County, TX
Prince William County, VA
Rains County, TX
Randall County, TX
Reagan County, TX
Red River County, TX
Refugio County, TX
Richmond County, VA
Roberts County, TX
Rockbridge County, VA
Rockdale, TX

San Jacinto County, TX
San Juan County, WA
San Patricio County, TX
Skagit County, WA
Sterling County, TX
Stevens County, WA
Sulphur Springs, TX
Taft ISD, TX
Thorndale ISD, TX
Thorndale, TX
Titus County, TX
Tom Green County, TX
Trimble County, KY
Waller County, TX
Westmoreland County, VA
Young County, TX
Zapata County, TX

Verity 2.2.0

Chisago County, MN
Ramsey County, MN
Rankin County, MS

Verity 2.2.1

Allendale Charter Township, MI
Argentine Township, MI
Atlas Township, MI
Bath Charter Township, MI
Belding, MI
Belvidere Township, MI
Bengal Township, MI
Berlin Township, MI
Bingham Township, MI
Blendon Township, MI
Bloomer Township, MI

Boston Township, MI
Burton, MI
Bushnell Township, MI
Campbell Township, MI
Carson City, MI
Cato Township, MI
Chester Township, MI
Clayton Charter Township,
MI
Clio, MI
Coopersville, MI
Crockery Township, MI
Crystal Township, MI
Dallas Township, MI
Danby Township, MI
Davison Township, MI
Davison, MI
Day Township, MI
DeWitt Charter Township, MI
DeWitt, MI
Douglass Township, MI
Duplain Township, MI
Eagle Township, MI
Easton Township, MI
Essex Township, MI
Eureka Charter Township, MI
Evergreen Township, MI
Fairplain Township, MI
Fenton Charter Township, MI
Fenton, MI
Ferris Township, MI
Ferrysburg, MI
Flint Charter Township, MI
Flint, MI
Flushing Charter Township,
MI
Flushing, MI
Forest Township, MI
Gaines Township, MI
Genesee Charter Township,
MI
Georgetown Charter
Township, MI
Grand Blanc Charter
Township, MI
Grand Blanc, MI
Grand Haven Charter
Township, MI

Grand Haven, MI
Greenbush Township, MI
Greenville, MI
Holland Charter Township,
MI
Holland, MI
Home Township, MI
Hudsonville, MI
Ionia Township, MI
Ionia, MI
Jamestown Charter
Township, MI
Keene Township, MI
Lebanon Township, MI
Linden, MI
Lyons Township, MI
Maple Valley Township, MI
Montcalm Township, MI
Montrose Charter Township,
MI
Montrose, MI
Mount Morris Charter
Township, MI
Mount Morris, MI
Mundy Township, MI
North Plains Township, MI
Oakland County, MI
Odessa Township, MI
Olive Township, MI
Olive Township, MI
Orange Township, MI
Orleans Township, MI
Otisco Township, MI
Ovid Township, MI
Ovid, MI
Park Township, MI
Pierson Township, MI
Pine Township, MI
Polkton Charter Township,
MI
Port Sheldon Township, MI
Portland Township, MI
Portland, MI
Reynolds Township, MI
Richfield Township, MI
Richland Township, MI
Riley Township, MI
Robinson Township, MI

Ronald Township, MI
Sebewa Township, MI
Sidney Township, MI
Spring Lake Township, MI
St. Johns, MI
Stanton, MI
Swartz Creek, MI
Tallmadge Charter Township,
MI
Thetford Township, MI
Victor Township, MI
Vienna Charter Township, MI
Watertown Charter
Township, MI
Westphalia Township, MI
Winfield Township, MI
Wright Township, MI
Zeeland Charter Township,
MI
Zeeland, MI

Verity 2.2.2

Adams Township, MI
Addison Township, MI
Allen Township, MI
Amboy Township, MI
Ann Arbor Charter Township,
MI
Ann Arbor, MI
Auburn Hills, MI
Augusta Charter Township,
MI
Bellevue Township, MI
Benton Township, MI
Berkley, MI
Birmingham, MI
Bloomfield Charter
Township, MI
Bloomfield Hills, MI
Blue Lake Township, MI
Brandon Charter Township,
MI
Bridgewater Township, MI
Brighton Township, MI
Brighton, MI
Brookfield Township, MI

Cambria Township, MI
Camden Township, MI
Carmel Township, MI
Casnovia Township, MI
Cedar Creek Township, MI
Charlotte, MI
Chelsea, MI
Chester Township, MI
Clarkston, MI
Clawson, MI
Clinton County, MI
Cohoctah Township, MI
Commerce Charter Township, MI
Conway Township, MI
Dalton Township, MI
Deerfield Township, MI
Delta Charter Township, MI
Dexter Township, MI
Dexter, MI
Eaton County, MI
Eaton Rapids Township, MI
Eaton Rapids, MI
Eaton Township, MI
Egelston Township, MI
Farmington Hills, MI
Farmington, MI
Fayette Township, MI
Ferndale, MI
Freedom Township, MI
Fruitland Township, MI
Fruitport Charter Township, MI
Genesee County, MI
Genoa Charter Township, MI
Grand Ledge, MI
Green Oak Township, MI
Groveland Township, MI
Hamburg Township, MI
Hamlin Township, MI
Handy Township, MI
Hartland Township, MI
Hazel Park, MI
Highland Charter Township, MI
Hillsdale County, MI
Hillsdale Township, MI
Hillsdale, MI

Holly Township, MI
Holton Township, MI
Howell Township, MI
Howell, MI
Huntington Woods, MI
Independence Charter Township, MI
Ionia County, MI
Iosco Township, MI
Jefferson Township, MI
Jonesville, MI
Kalamo Township, MI
Keego Harbor, MI
Lake Angelus, MI
Laketon Township, MI
Lathrup Village, MI
Lima Township, MI
Litchfield Township, MI
Litchfield, MI
Livingston County, MI
Lodi Township, MI
Lyndon Township, MI
Lyon Charter Township, MI
Madison Heights, MI
Manchester Township, MI
Marion County, OR
Marion Township, MI
Milan, MI
Milford Charter Township, MI
Montague Township, MI
Montague, MI
Montcalm County, MI
Moorland Township, MI
Moscow Township, MI
Muskegon Charter Township, MI
Muskegon County, MI
Muskegon Heights, MI
Muskegon, MI
North Muskegon, MI
Northfield Township, MI
Northville, MI
Norton Shores, MI
Novi Township, MI
Novi, MI
Oak Park, MI

Oakland Charter Township, MI
Oceola Township, MI
Olivet, MI
Oneida Charter Township, MI
Orchard Lake Village, MI
Orion Charter Township, MI
Ottawa County, MI
Oxford Charter Township, MI
Pittsfield Charter Township, MI
Pittsford Township, MI
Pleasant Ridge, MI
Pontiac, MI
Potterville, MI
Putnam Township, MI
Ransom Township, MI
Ravenna Township, MI
Reading Township, MI
Reading, MI
Rochester Hills, MI
Rochester, MI
Roosevelt Park, MI
Rose Township, MI
Roxand Township, MI
Royal Oak Charter Township, MI
Royal Oak, MI
Salem Township, MI
Saline Township, MI
Saline, MI
Scio Township, MI
Scipio Township, MI
Sharon Township, MI
Somerset Township, MI
South Lyon, MI
Southfield Township, MI
Southfield, MI
Springfield Charter Township, MI
Sullivan Township, MI
Sunfield Township, MI
Superior Charter Township, MI
Sylvan Lake, MI
Sylvan Township, MI
Troy, MI
Tyrone Township, MI

Unadilla Township, MI
Vermontville Township, MI
Walled Lake, MI
Walton Township, MI
Washtenaw County, MI
Waterford Charter Township,
MI
Webster Township, MI
West Bloomfield Charter
Township, MI
Wheatland Township, MI
White Lake Charter
Township, MI
White River Township, MI
Whitehall Township, MI
Whitehall, MI
Windsor Charter Township,
MI
Wixom, MI
Woodbridge Township, MI
Wright Township, MI
York Charter Township, MI
Ypsilanti Charter Township,
MI
Ypsilanti, MI

Unisyn

Request to Approve

De Minimis Change

Freedom Vote Tablet

OpenElect – 2.0 and 2.0.A

April 1, 2019

2/8/19

Mark Goins
Director of Elections
312 Rosa L. Parks Avenue, 9th Floor
William R. Snodgrass Tower
Nashville, Tennessee 37243

Dear Mr. Goins,

Unisyn Voting Solutions submitted an Engineering Change Order (ECO) to Pro V&V and the EAC documenting a modification to the layout of the Freedom Vote (FVT) Keypad (ECO #16979). The ECO was reviewed and determined to be a De Minimis change. A technical documentation review and source code review were performed to approve the change. No additional testing was required by the VSTL. This De Minimis change applies to OpenElect versions 2.0 and 2.0.A

This table depicts the ECO's certified with the voting system:

Change ID	Date	Component	Description	Inclusion
ECO #16979	8/3/2018	FVT, Rev B	New Keypad Layout	Mandatory

Thank you in advance for your assistance with this matter.

Sincerely,

Chris Ortiz
Director, Business Development & Certification

Attachments:

- Pro V&V Analysis
- Unisyn ECO
- EAC Approval Email

PROCEDURES FOR CERTIFYING VOTING MACHINES BY THE TENNESSEE STATE ELECTION COMMISSION

All voting machines/vendors must receive certification from the state election commission and the coordinator of elections before any voting machines or systems may be sold in the State of Tennessee.

First Step:

Any interested vendor should submit a written request to the coordinator of elections and the state election commission requesting certification of your company together with the EAC certification number, a financial report and a list of all states that have already bought your voting machines or systems. If you would like to demonstrate your product at a meeting of the state election commission, please make that request in your letter. You will be notified of the date, time, and place of the meeting where you may make your presentation.

Second Step:

A. Voting Machine Procedure

Following verification of EAC certification and an initial presentation of your product and/or services, you would need to arrange for at least two (2) State Election Commissioners (of opposite parties) and the coordinator of elections (or designee) to view your machines or system in use in an election of a substantial size in another state. An election of a substantial size involves at the minimum the following characteristics:

- The jurisdiction has a population of at least 10,000 persons;
- The jurisdiction has at least two (2) or more district races on the ballots; and
- There are at least two (2) contested races involving both at large and district races on the ballot.

B. Voting Machine Software or Hardware Upgrade

- EAC Certification;
- Presentation of upgrade before State Election Commission at a meeting; and
- Viewing of upgrade in another state (In lieu of viewing machine in another state, at the discretion of the State Election Commission, letters of recommendation from users in other jurisdiction may be used as support for approval.)

C. De Minimis Voting System Changes

- Any De Minimis change to an EAC certified voting system shall be submitted to the state election commission and coordinator of elections to be approved. For purposes of approval of the de minimis change to the voting system, all that will be required is a letter from the EAC stating the change is de minimis, unless further information is requested by the state election commission or coordinator of elections.

Third Step:

The State Election Commission must vote to certify the machine in order for the machines to be used in an election in Tennessee.

You may send any correspondence for both the state election commission and the coordinator of elections to the following address:

312 Rosa L.Parks Avenue, 7th Floor
William R. Snodgrass Tower
Nashville, Tennessee 37243
(615) 741-7956

If you have any further questions regarding certification of your company, please feel free to contact the office of the state election coordinator at the phone number listed above.

® ENGINEERING CHANGE ORDER

ECO NO: 16979

SHEET 1 OF 3

DOCUMENT / PART NUMBER	NEW REV	DOCUMENT/PART DESCRIPTION	CHANGES TO BOM
8033-93200	B	ASSY, FREEDOM VOTE TABLET, FVT	YES

MODELS AFFECTED	REASON FOR CHANGE
FVT	CHANGE TO POSITIONS OF KEYS ON ADA KEYPAD
CHARGE NUMBER	
ME-GENL-00	

AFFECTED ASSEMBLIES	STATUS OF PARTS/ASSEMBLIES					
WHERE USED PART NUMBERS	PRODUCTION PHASE	IMPLEMENTATION		DISPOSITION		STATUS
		USE AS IS	MUST CNFRM	REWK	SCRAP	N/A
NO HIGHER ASSEMBLY	PLANNING		X			
	PROCESS			X		
	STOCK			X		
	NEXT ASSY			X		
	FINAL ASSY			X		
	FIELD			X		

COMMENTS:				ECR REF. NO. 6672			
PRIORITY	COG ENG	DATE	APPROVALS	DATE	DIST	COMMENTS	
1 2 3	NAME: LACHNIT	6/21/2018	ENG:				
	SIGN:		MFG:				
FIELD CHANGE ORDER	INCORPORATION	DATE	QA:				
FCO REQUIRED YES NO	DRAFTER:		*PUR:				
	CHECKER:		*MATL:				
	COG ENG:		**CUST SERV:				
FCO NO	RELEASED BY	DATE	* Not Required for New Releases				
			** Necessary Only if "FCO" is Required				

ENGINEERING CHANGE ORDER

ECO NO: 16979

SHEET 2 OF 3

DESCRIPTION OF CHANGE

8033-93200

MAKE CHANGES TO BOM INDICATED ON WORKSHEET

RAISE REV. FROM: A TO: B

Re: Unisyn ECO Analysis



Brian Hancock <bhancock@eac.gov>

7/5/2018 9:53 AM



To: Wendy Owens Cc: Jack Cobb; Ryan Macias; Jerome Lovato; Chris Ortiz

Good afternoon Wendy. Hope you had a great 4th of July holiday.

This notification constitutes EAC approval of Unisyn ECO # 16979 - "Change positions of keys on ADA Keypad."

Please let us know if you have any questions.

Brian

Brian J. Hancock

Director, Testing & Certification
U.S. Election Assistance Commission

202-459-7861

www.eac.gov

Background

Unisyn Voting Systems submitted ECO# 16979 to Pro V&V, Inc. for evaluation. This Engineering Change Order (ECO) documented a change to the FVT keypad. The change was to physically switch the position and functionality of two buttons on the keypad. It included both changes to the hardware and source for the Open Voting Solution (OVS) version 2.0A.

Evaluation

Pro V&V perform a source code review comparing the changes to the baseline source code for OVS 2.0A. This review showed modifications to two files: Constants.java and Activity_test_keypad.xml. These changes consisted of switching assignment of two constants, KEY_RIGHT and KEY_ENTER, in the Constants.java file. Below is the comparison for this change:

```
603 * up key code
604 //
605 public static final int KEY_UP = KeyEvent.KEYCODE_NUMPAD_8;
606 //
607 * right key code
608 //
609 public static final int KEY_RIGHT = KeyEvent.KEYCODE_NUMPAD_6;
610 //
611 * left key code
612 //
613 public static final int KEY_LEFT = KeyEvent.KEYCODE_NUMPAD_4;
614 //
615 * enter key code
616 //
617 public static final int KEY_ENTER = KeyEvent.KEYCODE_E;
618 //
619 * repeat key code
620 //
621 public static final int KEY_REPEAT = KeyEvent.KEYCODE_NUMPAD_ADD;

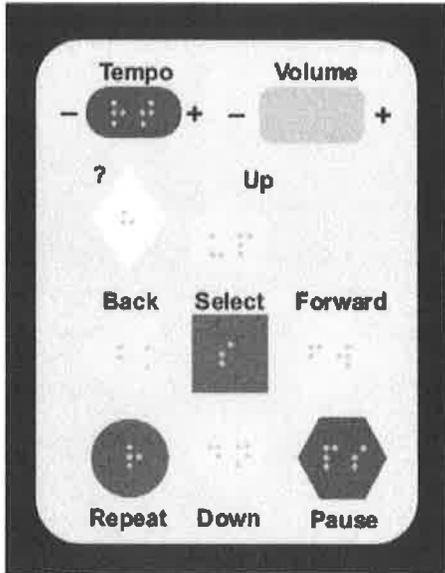
605 * up key code
606 //
607 public static final int KEY_UP = KeyEvent.KEYCODE_NUMPAD_8;
608 //
609 * right key code
610 //
611 public static final int KEY_RIGHT = KeyEvent.KEYCODE_E;
612 //
613 * left key code
614 //
615 public static final int KEY_LEFT = KeyEvent.KEYCODE_NUMPAD_4;
616 //
617 * enter key code
618 //
619 public static final int KEY_ENTER = KeyEvent.KEYCODE_NUMPAD_6;
620 //
621 * repeat key code
622 //
623 public static final int KEY_REPEAT = KeyEvent.KEYCODE_NUMPAD_ADD;
```

The second change was to Activity_test_keypad.xml. This change consisted of switching the two data elements for buttonNext and buttonEnter to the value of FORWD and SELECT. Below is the comparison for this change:

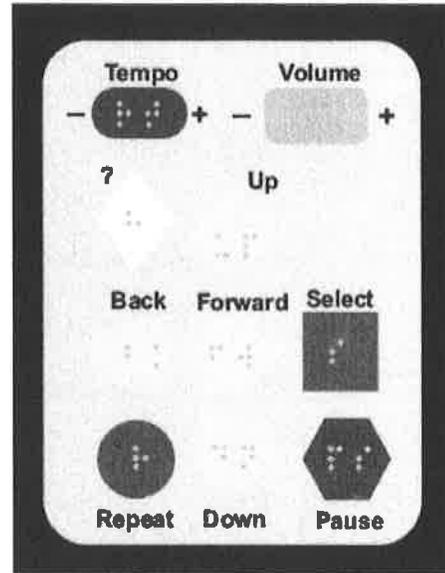
```
65 android:id="@+id/buttonPrev" android:layout_width="14
66 android:layout_height="140dp" android:clickable="false
67 android:focusable="false" android:text="BACK"
68 android:layout_alignTop="@+id/buttonEnter"
69 android:layout_toStartOf="@+id/textViewTitle" />
70 <Button style="@style/customButtonStyleBw"
71 android:id="@+id/buttonEnter" android:layout_width="14
72 android:layout_height="140dp" android:clickable="false
73 android:focusable="false" android:text="SELECT"
74 android:layout_below="@+id/buttonUp"
75 android:layout_alignStart="@+id/buttonUp"
76 android:layout_marginTop="30dp" />
77 <Button style="@style/customButtonStyleBw"
78 android:id="@+id/buttonNext" android:layout_width="14
79 android:layout_height="140dp" android:clickable="false
80 android:focusable="false" android:text="FORWD"
81 android:layout_above="@+id/buttonDown"
82 android:layout_toEndOf="@+id/textViewTitle" />
83 <Button style="@style/customButtonStyleBw"
84 android:id="@+id/buttonVolumeUp" android:layout_width

65 android:id="@+id/buttonPrev" android:layout_width="140dp"
66 android:layout_height="140dp" android:clickable="false"
67 android:focusable="false" android:text="BACK"
68 android:layout_alignTop="@+id/buttonNext"
69 android:layout_toStartOf="@+id/textViewTitle" />
70 <Button style="@style/customButtonStyleBw"
71 android:id="@+id/buttonNext" android:layout_width="140dp"
72 android:layout_height="140dp" android:clickable="false"
73 android:focusable="false" android:text="FORWD"
74 android:layout_below="@+id/buttonUp"
75 android:layout_alignStart="@+id/buttonUp"
76 android:layout_marginTop="30dp" />
77 <Button style="@style/customButtonStyleBw"
78 android:id="@+id/buttonEnter" android:layout_width="140dp"
79 android:layout_height="140dp" android:clickable="false"
80 android:focusable="false" android:text="SELECT"
81 android:layout_above="@+id/buttonDown"
82 android:layout_toEndOf="@+id/textViewTitle" />
83 <Button style="@style/customButtonStyleBw"
84 android:id="@+id/buttonVolumeUp" android:layout_width="140dp"
```

ECO# 16979 also includes the repositioning for the yellow 'Forward' button and the green 'Select' button. Below is a side-by-side comparison of the diagrams depicting the old and new keypads.



Old Keypad Layout



New Keypad Layout

Unisyn also provided Pro V&V with internal test cases detailing how the functionality of the switched button was tested.

Conclusion

Pro V&V concludes from the analysis that this change is **De Minimis** as defined in section 3.4.2 of the EAC Voting System Testing and Certification Program Manual, Version 2.0. This conclusion is based on the following points:

- The hardware change consists of the repositioning of the physical button. These buttons have no electronic components associated with them. Although in different positions at the time, the buttons were present for all testing in the original test campaign.
- It is Pro V&V's determination that the software modifications implemented to switch the assignment of the functionality of the buttons pressed for the 'Forward' key and the 'Select' key do not alter the functionality for these components (the buttons are still being pressed to make a selection or to navigate the ballot). The original system tested utilized the same code; the functionality has just been reassigned to different positions.

Kathy Summers

From: Mark Goins
Sent: Monday, February 25, 2019 8:20 AM
To: Kathy Summers
Subject: Fwd: Unisyn

Mark Goins
Coordinator of Elections
Division of Elections
Office of Tennessee Secretary of State Tre Hargett
312 Rosa L. Parks Ave., 7th Floor
William R. Snodgrass Tower
Nashville, TN 37243
(615) 741-7956
(615) 741-1278 (fax)

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www.facebook.com/TennesseeSecretaryofState
www.facebook.com/TNStateLibraryArchives/timeline

Begin forwarded message:

From: Mark Goins <Mark.Goins@tn.gov>
Date: February 25, 2019 at 8:19:05 AM CST
To: Chris Ortiz <cortiz@unisynvoting.com>
Subject: Re: Unisyn

Chris,

I received the application. The SEC is scheduled to meet the first Monday in April and should have time to consider the application.

Sincerely,

Mark Goins
Coordinator of Elections
Division of Elections
Office of Tennessee Secretary of State Tre Hargett
312 Rosa L. Parks Ave., 7th Floor

William R. Snodgrass Tower
Nashville, TN 37243
(615) 741-7956
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On Feb 12, 2019, at 9:37 AM, Chris Ortiz <cortiz@unisynvoting.com> wrote:

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Mark

Great seeing you at NASED last week.

I wanted to let you both know I sent an application for consideration on a Deminimus change to the FVT keypads. It was reviewed by the VSTL and approved by the EAC as Deminimus.

If you have any questions please let me know

Chris Ortiz

Director, Business Development & Certification

☎ Tel 760.734.3218

☎ Cell 760.419.7516

✉ Email: cortiz@unisynvoting.com

<image001.gif> <http://www.linkedin.com/in/christortiz>

<image002.jpg>

www.unisynvoting.com