



Exhibit 2 to Schedule A

Technical Requirements

Attachment 1.1 Voting System HARDWARE Technical Requirements

CATEGORY A. BALLOT COUNTER/TABULATOR

- 1.1.A.1** The Contractor must provide a complete description of the voting system, including all components, make/model, covering all functionality and specific abilities of the system to meet all requirements listed in this Contract. The Contractor must provide a digital optical scan system.

Contractor's turnkey Verity solution for the State of Michigan fulfills the functionality of an optical scan system, using digital scan technology.

Verity includes accessible ballot marking devices and paper ballot scanning at polling places, and high-speed paper ballot scanning at the central elections office and/or Absent Voter Counting Boards (AVCBs). In addition, it includes electronic transmission of Cast Vote Records directly from the precinct tabulator to the central elections office, and central count tabulation and reporting software.

Contractor's Verity solution delivers the following benefits for the State of Michigan:

Faster, more intuitive ballot definition and production software, which saves time and reduces cost. These features also maximize options for user self-sufficiency and independence from the vendor, to the extent desired.

An advanced software platform to streamline end-to-end election management tasks.

Compact, portable hardware for easier, less costly equipment storage, transportation, setup and use

Intuitive plain language ballots that result in a more efficient voting process and shorter lines.

Universal accessibility for all voters, with no segregated ballots.

Modern adjudication technology for streamlined ballot resolution for AVCBs.

High-performance tabulation software for fast reporting of results on Election Night, with user-friendly dashboards that display real time progress toward completion

Plain-language audit reporting that provides transparency into all election operations and results

Unique "defense-in-depth" security strategy

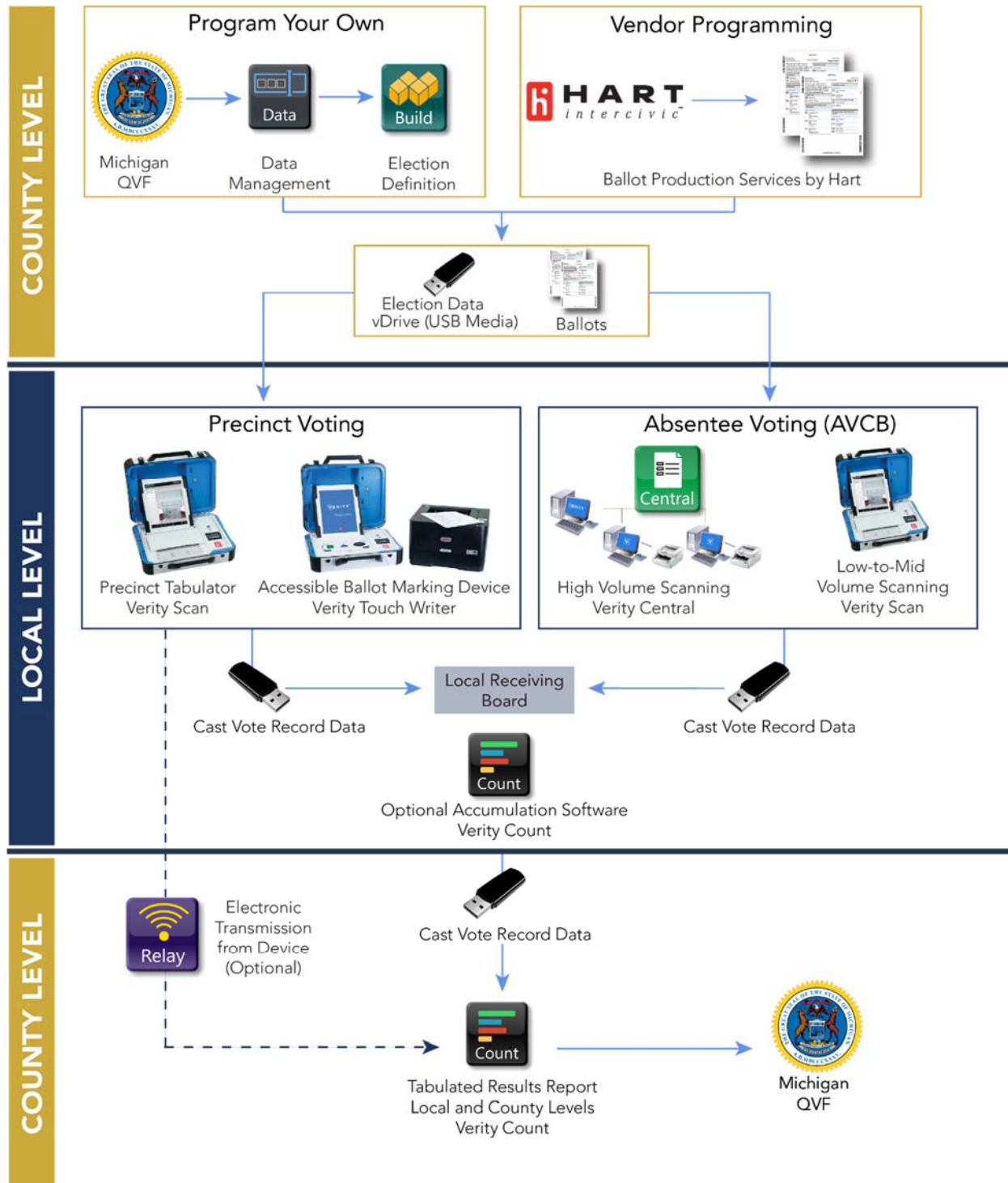
Michigan Verity Configuration

Contractor's Verity configuration for the State of Michigan provides the flexibility to accommodate the varied needs of Michigan's counties and local jurisdictions, as well as those of the State.

As shown in the following diagram, Verity supports a seamless workflow among the State, counties and local jurisdictions within those counties. The State's Qualified Voter File (QVF) provides input data for creating ballots and defining the election. Election managers create ballot and election definitions once; these definitions flow throughout the remaining process, whether vote capture occurs at the precinct or the Absentee Voter Counting Board (AVCB). Votes can be accumulated at the local jurisdiction or the county level, according to the needs of those localities. Finally, tabulated results are reported to the QVF.

The diagram also illustrates how Contractor's Michigan Verity configuration allows counties and their local jurisdictions to choose from among various options to configure a solution tailored to their needs. These options include:

- Contractor-provided ballot and election programming **OR** "program your own" capabilities
- Electronically transmitting results from the precinct tabulator (Verity Scan with Relay) **OR** transmitting results via the vDrive USB media
- Selecting Verity Central for high-speed scanning of a high volume of ballots at the AVCB **OR** selecting Verity Scan for scanning of a medium to low volume of ballots there
- Accumulating votes at both the local and county levels with Verity Count accumulation software **OR** using Verity Count only at the county level to accumulate votes





MICHIGAN VERITY CONFIGURATION

The Contractor's Verity configuration for the State of Michigan supports a seamless workflow and accommodates the varied needs of the State's counties and local jurisdictions.

VERITY VOTING SYSTEM HARDWARE

Precinct Based Scanning Tabulator – Verity Scan

For use at polling places, Verity Scan is a digital scanning solution for paper ballots. After marking a paper ballot, the voter feeds it directly into Verity Scan. Scan uses a touchscreen interface based on EAC/AIGA Design for Democracy styles.

Verity Scan can print ballot count totals or tabulated results in the polling place. The ballot image is stored as a Cast Vote Record (CVR) on a Verity vDrive flash memory device that can be read by the Verity Count tabulation and reporting software. Verity Scan includes a compact and durable integrated storage case for transportation and storage.



Verity Scan with Relay (Option)

For Michigan, Verity Scan is available with the Relay option, which enables electronic transmission of cast vote records directly from the device to the central election office. Relay automatically starts the data transmission process when polls close and requires no technical engagement by poll workers.

Adaptable. Relay utilizes broadband technology in the form of secure, COTS modems that are compatible with local jurisdictions' preferred telecommunications carrier.



COTS mobile broadband modem with USB connectivity. Available for both CDMA and GSM carriers.



Verity Scan's vDrive/USB/Modem compartment, open, showing modem with USB connection and vDrive.



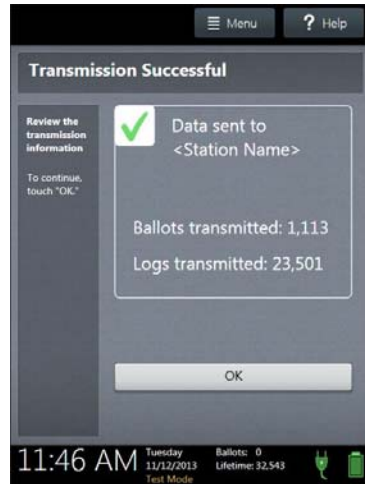
Verity Scan's vDrive/USB/Modem compartment, closed and locked.

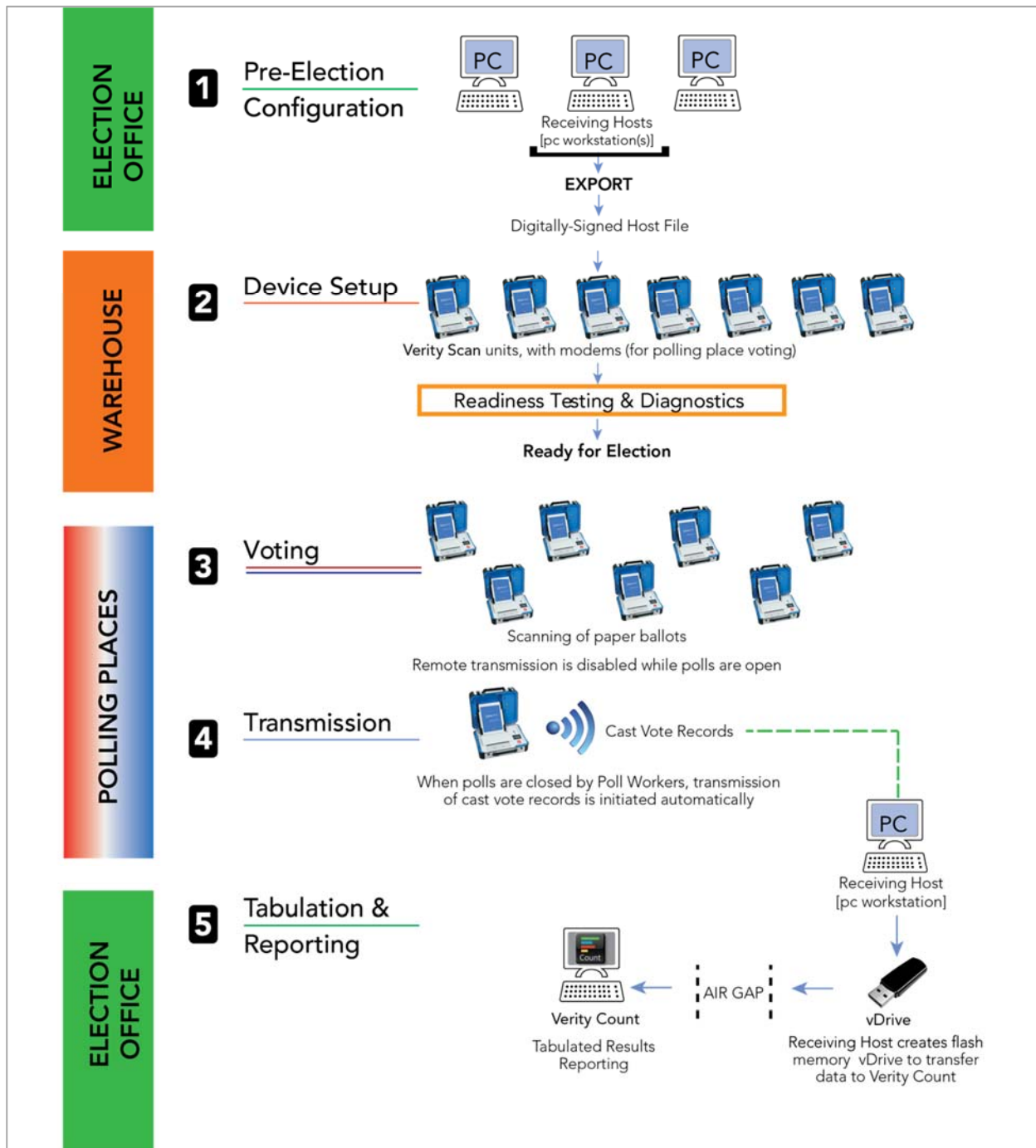
Secure. Like other Verity components, Relay includes Hart and Verity FIPS-compliant encryption and digital signatures for authentication.

Automatic transmission of data. After the poll worker closes the polls and prints a tally, the data transmission process automatically launches.



Results and audit log data are securely transmitted to a receiving host at the central elections office. Data is then transferred from the receiving host to the Verity Count tabulation and reporting workstation.



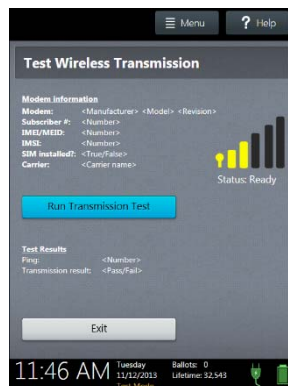


VERITY REMOTE TRANSMISSION WORKFLOW

Remote transmission functionality is integrated into each step of the election process, from pre-election preparation through Election Day through post-election tabulation and reporting.



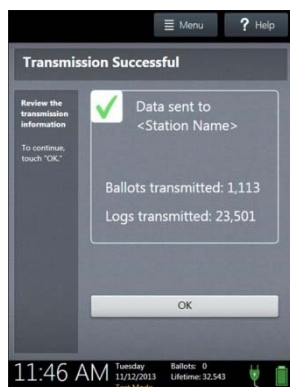
Preparing for test transmission during pre-election diagnostic testing.



Run transmission test.



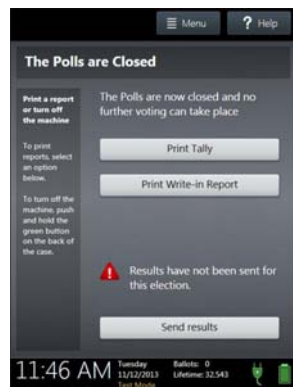
After polls close, automated transmission begins and animated status is displayed.



Automated transmission successful.



After successful automated transmission, on-device report printing can proceed.



If automated transmission is unsuccessful, on-device reports can be printed and remote transmission can be manually restarted.



Ballot Marking Device (BMD) – Verity Touch Writer with Access

Verity Touch Writer is an accessible paper ballot marking device that provides accessibility at the polling place. Verity Touch Writer provides the same paper ballot for all voters; there are no segregated ballots. Like Verity Scan, Verity Touch Writer uses a plain-language interface based on EAC/AIGA Design for Democracy styles.

Additionally, Verity supports switching between languages. For example, the voter can look at contests in English and switch to Spanish for questions.

Touch Writer is paired with a commercial printer. After the voter uses the electronic interface to mark and review selections, the device prints a marked, full ballot from blank stock. This means that no preprinted ballots are necessary, there are no ballots to load into the machine, and Touch Writer prints only the ballots you need.

Using Touch Writer in conjunction with Verity Scan provides the voter with a reviewable paper ballot that is accurately captured through scanning, reviewing, and acceptance for tabulation as a voter's cast vote record.



Touch Writer is equipped with the Verity Access controller, which includes tactile buttons and audio ballot capability, as well as compatibility with other adaptive devices, such as jelly switches or sip-and-puff devices. Like Verity Scan, Touch Writer includes a compact and durable integrated storage case, for transportation and storage.

Secure Ballot Box

Designed to work with the Verity Scan device, the Verity Ballot Box is secure and light-weight. The durable ballot box includes separate secure compartments for scanned and un-scanned ballots, and it folds to just 6 inches thin for transportation and storage. Because the digital Verity Scan captures and segregates marked write-in images electronically, a mechanical diverter is not needed in the secure ballot box.



Accessible Voting Booth for Touch Writer

The voting booth includes minimal parts and it can be locked into place in one easy motion. The Verity Voting booth includes fabric privacy screens and complies with VVSG requirements for accessibility and controls within reach. Because Verity Touch Writer is a standalone device with its own purpose-built booth, jurisdictions may locate the accessible voting station in the most optimal part of each individual polling place.





Verity Central also supports auditability, with filterable ballot image searches and access to original and annotated ballot images. When all ballots have been scanned and resolved, Central writes Cast Vote Records to vDrive portable flash media and can then be tabulated in Verity Count accumulation (tabulation and reporting) software.

It is important to note that Verity Central does not tabulate votes – it simply scans and records Cast Vote Records. This allows jurisdictions to begin scanning before the close of polls on Election Day when allowable, accelerating results reporting.

Ballot printer

A laser ballot printer is available for use at state or local entity offices. The printer's capabilities include:

Automatic duplex printing.

Black-and-white or color printing.

Uses commercially available paper stock.

VOTING SYSTEM ELECTION MANAGEMENT SYSTEM

Hart components of the VVSG 2005-compliant Verity Voting system are as follows (described in detail in **Attachment 1.2, SOFTWARE EMS Technical Requirements**):

Verity Data – election data management software

Verity Build – election definition software

Verity Central – high-speed scanning software for AVCBs

Verity Count – accumulation (tabulation and reporting) software

- 1.1.A.2** The Contractor's voting system hardware shall be new. Refurbished or used equipment will not be accepted.

All Contractor hardware will be new.

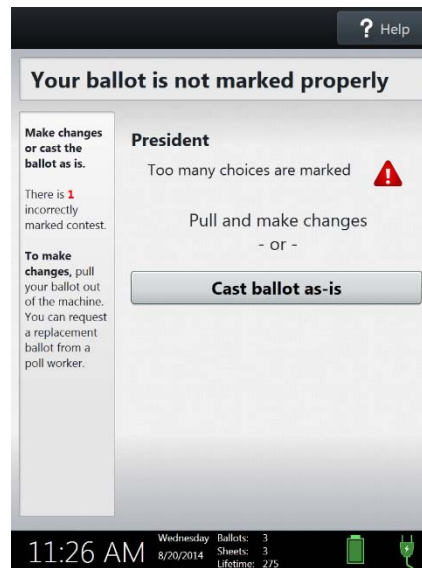
- 1.1.A.3** Replacement parts shall be readily available.

Contractor maintains a ready supply of all replacement parts. In addition, because Verity Voting is the first all-new platform to achieve EAC certification in several years, the supply chain for Verity parts is robust and current.

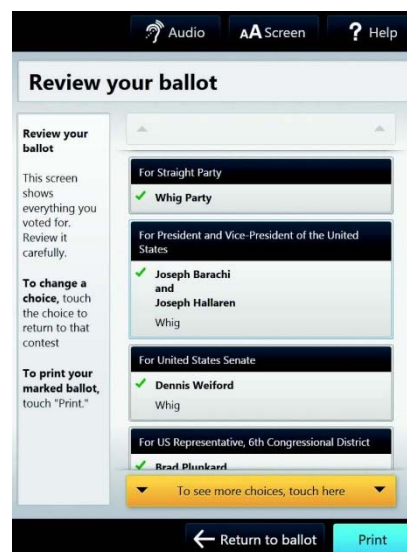
- 1.1.A.4** The Contractor's system shall permit the voter to verify the votes selected on the ballot in a private and independent manner, before the ballot is cast and counted.



All voters, including those voting on the accessible ballot marking device, receive second-chance notifications that allow them to correct any ballot mismarks before the ballot is cast. If ballots contain any marks that require voter attention (such as undervotes or overvotes), Verity Scan uses a combination of large-font, plain-language instructions, large graphic images, and unique audible sounds to indicate ballots that require voter attention. This gives voters a chance to make corrections before final votes are cast.



The Verity Touch Writer ballot marking device also provides a chance for the voter to review and change his/her selections before completing the ballot, with plain-language instructions and audible sounds.



1.1.A.5 The system shall provide the voter with an opportunity (in a private and independent manner) to change the ballot or correct any error before the ballot is cast and counted.

Please see Contractor's response to requirement **1.1.A.4**, above.



1.1.A.6 The system shall produce zero printouts before each election and precinct totals printouts at the close of the polls.

Verity Scan includes an onboard thermal reporting printer.



1.1.A.7. The system shall permit recounts to be conducted pursuant to the Michigan Election Law (MEL).

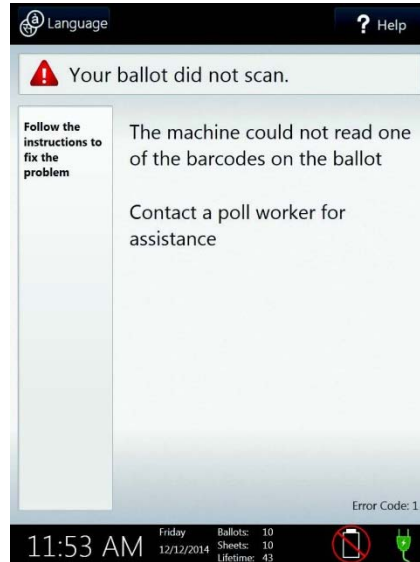
Recount Mode on Verity Scan was designed to accommodate recount laws in the State of Michigan. In accordance with Michigan Election Law Section 168.871, Verity Scan recount functionality allows users to specifically count only the office or ballot question subject to the recount. Additionally, it gives the user control over additional settings that support workflow changes needed during a recount. This includes the ability to change second-chance voting rules and report behaviors, so that ballots with undervotes, overvotes, invalid votes, blank ballots, and marked write-ins can also be subject to visual inspection by recount authorities, if desired.

Contractor looks forward to working closely with the State of Michigan to make additional optimizations or modifications to current procedures based on the capabilities of the Verity system, particularly if greater efficiencies can be realized, compared to the rules devised for the State's current voting system.



- 1.1.A.8** The system shall alert voters to any and all voter/ballot errors with clear language describing the error, before accepting the ballot for tabulation. Any notification to the voter during the process of casting a vote must be private and must indicate whether the ballot has been tabulated.

Verity Scan uses a combination of large-font, plain-language instructions, large graphic images, and unique audible sounds to indicate ballots that require voter attention. All voters receive second-chance notifications that allow them to correct any ballot mismarks before the ballot is cast.





1.1.A.9 The system shall provide for tabulation of votes cast in split precincts, where all voters are not voting the same ballot format.

In Verity's data management and election definition software applications, precinct splits are entered as separate precincts on individual line items. (For example, if Precinct 101 is split into A and B splits, 101-A and 101-B are entered as separate precincts.) Then the appropriate contests are assigned to each split, respectively. Paper and electronic formats of the ballot include the precinct label and the split identifier, so voters are always given access only to the contests that are appropriate for their ballot style. Device settings which are configured before the election allow election administrators to specify whether totals are consolidated, "rolled up" into the parent precinct, or reported down to the separate precinct split level.

The setting(s) to specify whether totals are consolidated, "rolled up" into the parent precinct, or reported down to the separate precinct split level are set in the EMS software and are not required to be made at the device in the polling place. The settings are made when the election is defined in Verity Build. With Verity, the election definition includes all settings for all devices – set once for all devices.

"Device" in this case refers to the Verity Scan precinct-based scanning/tabulator device. The setting(s) to specify whether totals are consolidated, "rolled up" into the parent precinct, or reported down to the separate precinct split level are set centrally and universally in the EMS software. The settings are made when the election is defined in Verity Build.

1.1.A.10 The system shall provide printed records regarding the opening and closing of the polls to include identification of the election, including opening and closing date and times; identification of the unit; identification of ballot format; identification of each candidate and/or issue, verifying zero start.

Verity Scan and Verity Touch Writer both comply with this requirement.

1.1.A.11 The system shall be easily portable and be transportable without damage to internal circuitry. The Contractor shall provide height and weight specifications of all components, as well as any features related to portability and ease of transport.

All Verity hardware components are compact and portable. Verity Scan and Verity Touch Writer include a durable, convenient carrying/storage case that is an integrated part of the device design. Corrugated plastic cases are also available for transportation and storage, as well as durable canvas bags for the voting booth and ballot box. All the equipment needed at the polling place is compact – easy to transport in ordinary cars.



The Verity
Ballot Box
folds to
6 inches thin.



The Verity
Voting Booth
can be
transported in a
small canvas bag.



Height and weight specifications are as follows:

Note: Heights are for each unit when stored.

Verity Scan (with battery)

Height: 7.7 inches

Weight: 29.1 pounds

Ballot Box (with bag)

Height: 28 inches

Weight: 31.8 pounds

Touch Writer (with battery)

Height: 7.7 inches

Weight: 28.5 pounds

Accessible Voting Booth (with bag)

Height: 36 inches

Weight: 17.1 pounds

Verity Ballot Printer (Okidata B43)

Height: 12 inches

Weight: 31 pounds

- 1.1.A.12** The system shall allow for omni-directional feed of the ballot and be fully capable of counting non-oriented ballots.

Verity Scan accepts ballots in a portrait orientation inserted face up, face down, header first, or footer first.

- 1.1.A.13** The system shall include a visible public counter that displays the number of ballots processed; the display must utilize a font and font size that can be clearly read by voters and precinct inspectors.

Verity Scan complies with this requirement. Each time a voter's ballot is successfully scanned and a CVR is created, Verity Scan displays the count at the bottom of the screen.

- 1.1.A.14** The system shall be capable of scanning one-sided ballots, two-sided ballots, and multiple page ballots while recording the event as one ballot cast. The Contractor must indicate how/when the tabulator's public counter increments (e.g., upon tabulation of page 1, page 2, or both pages 1 and 2)

Verity Scan scans two-sided ballots and multiple-page ballots while recording the event as one ballot cast. To preserve the security and multi-sheet feeding protection capabilities of the system, ballots that have content on only one side include security barcodes on the blank side of the sheet. In addition to the public counter that indicates the number of ballots cast for the election on the Scan device, Scan provides a sheet counter that indicates the number of sheets that have been scanned on the device for that election.



The public counter increments upon tabulation of the first sheet of a multi-sheet ballot.



Barcodes that are printed on all ballots in the Verity system are the same regardless of source (Precinct, Accessible, AVCB). In other words, all ballots for a precinct are identical, except for the unique identifier (if unique IDs are enabled), regardless of the situation in which they are produced or scanned: at the precinct, printed from Verity Touch Writer, or at the Central AVCB.

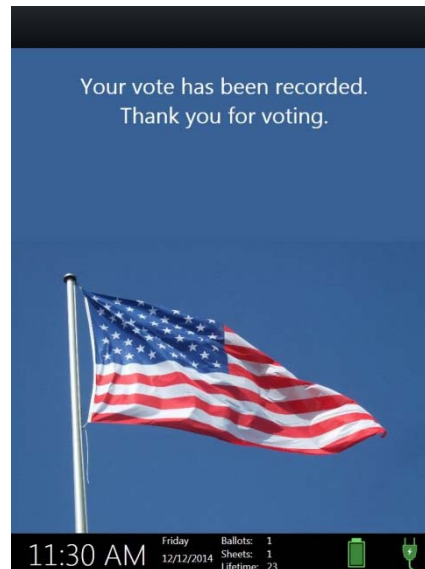
In addition to triangulating and identifying option boxes to determine voter marks, the barcodes contain the following information:

- Election ID
- Precinct
- Page Identifier (1-4)
- Mode – Test, Election, or Sample
- Unique Identifier (if enabled during ballot definition)

The sheet count displayed on Verity Scan represents the number of separate sheets of paper that have been scanned. In other words, one sheet contains two imaged sides, and a two-sided ballot registers as one sheet in the Verity Scan device.

1.1.A.15 The system shall provide an auditory and visual notification to the voter that the ballot has been cast.

Verity Scan complies with this requirement by displaying a visual message and auditory tone to notify the voter that the ballot has been cast. Auditory and visual notifications occur approximately five seconds after the voter feeds the ballot into Verity Scan.



- 1.1.A.16** All system visible messages and instructions displayed on the tabulator shall be in simple and plain language and shall be customizable.

Complies with modifications. Verity Scan displays messages and instructions in plain language. The modern user interface is based on EAC-commissioned Design for Democracy templates. Messages and instructions are not customizable due to the system's certified configuration status. We are open to working with the State regarding this issue in the future.

- 1.1.A.17** The tabulator hardware shall be capable of transmitting unofficial election results by cellular or analog modem at the close of polls on Election Night. Refer to **Section and Attachment 1.2 EMS SOFTWARE REQUIREMENTS** for additional detail.

Contractor's Verity Scan with Relay option provides electronic transmission of results from precinct scanning tabulators to the central elections office via cellular modem. The solution provides for an automated process to be launched with close of polls and requires no technical engagement by poll workers.

Detailed information is included in Contractor's response to requirement **1.1.A.1** above.

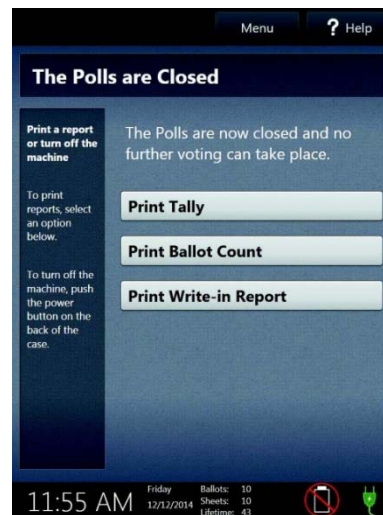
- 1.1.A.18** The Contractor shall document the speed at which ballots are processed (ballots per minute), based on ballot size and number of ballot faces.

Verity Scan reads both sides of the ballot at once, and its "tested to" ballot processing speed is a minimum of ten 8-1/2 x 11-inch sheets per minute; however, real-world processing is faster. Processing varies according to elements such as the number of write-in votes and images that must be saved.

- 1.1.A.19** The Contractor shall document customizable options for results tape printing - content, format, layout, number, etc. Tabulators must be capable of printing multiple copies of each result tape.



The printed results tape produced by Verity Scan can be customized in Verity Build. Scan can print as many copies of the results as needed.





Customizable options include:

- Ballot Count Report, or Tally Report
- Summary format or By-Precinct Results
- Sort within a contest by original ballot order or sort by winners
- Settings can also be applied differently for Zero Report, Ballot Count Report, and Tally Report.

All Verity Scan reports contain the following information in the report header:

- Device Type
- Device Serial Number
- Jurisdiction Name
- Election Date
- Polling Place Name
- The text "Polling Place Type," followed by the Voting Type associated with the polling place (for example, Election Day, etc.)
- Date the report was printed
- Time the report was printed
- Value of the public counter
- Value of the private counter

The Power-On Self-Test Report that is automatically printed when the device is powered on also includes the firmware version of the device.

1.1.A.20 The Contractor shall document all consumables and parts - e.g., printer paper, ink cartridges, memory media, battery, etc. All consumables/parts must be listed in Schedule C, Pricing, along with replacement part costs for each consumable and the estimated shelf life for each consumable/part.

Please see **Schedule C, Pricing, Cost Table 4**.

1.1.A.21 The Contractor shall document the type of printer utilized by the proposed tabulator (external or internal, thermal, inkjet, etc.).

The Verity Scan tabulator uses an integrated thermal printer.



- 1.1.A.22** The Contractor shall provide details on the system's process for determining valid marks on the ballot by the voter (in the target area), and the process for differentiating valid marks from marginal marks; including whether these functions are set by the system/software/program, or are manually adjustable.

Verity is Contractor's second-generation digital scanning solution. Contractor has consciously chosen to design its scanning logic without a customizable marginal mark threshold. Contractor has developed a high degree of confidence in their system's documented threshold, and Contractor's customers appreciate that this threshold is **not** customizable, because it allows for consistent performance. In Contractor's experience, customers do not want the risk of an election being called into question because of inconsistencies that create the possibility of contention about voter intent. All settings must be consistent across the election to ensure fairness and transparency.

Verity Scan is capable of recognizing any mark of at least 2 square millimeters within a configured mark-recognition area on the ballot.

As part of the election definition process in Verity Build, election managers set parameters that trigger notification that adjudication is required (write-ins, mismarks, overvotes, undervotes, blanks).

- 1.1.A.23** Write-in Votes: The Contractor shall describe in detail all aspects of the write-in vote and adjudication process. The tabulator shall allow for the voter to cast a write-in vote by marking the target area and writing the candidate name of their choice in a provided area. The tabulator shall store an image of the write-in vote, which can be separated out (as a group) for later determination and adjudication of valid write-in votes.

In addition to printing write-in images on the device reporting tape, write-in images can also be consolidated and managed in Verity Count tabulation and reporting software. When the vDrives containing write-in images are loaded into Verity Count tabulation and reporting software, users are informed of the number of write-in votes that require review and adjudication. The images are listed as Unresolved and are associated with specific contest titles. Users then have the ability to select from the available unresolved items and review each image. Based on the handwritten entry (or blank line), each write-in can be accepted and included in the tabulated totals by assigning it to a specific candidate name, or it can be rejected.

When Verity Scan detects a marked target area for a write-in selection on a paper ballot, the system automatically stores an image of the small cross-section of the ballot that includes the target area and the line on which voters can write their response. Images can be printed in the polling place, from the same reporting printing tape that is used for election results. On the printed tape, write-in images are sorted by contest within precincts, and the Write-In report includes an area where election officials can indicate whether the submitted write-in is accepted and included in totals, or not. Furthermore, these images are stored on the portable flash memory drives (vDrives) that also store cast vote records and audit logs.

- 1.1.A.24** The tabulator shall be capable of retaining a record of each voted ballot in a way that protects each voter's privacy. Proposals shall describe in detail, the storage process and storage capabilities and limitations (e.g., the maximum number of ballot records that may be retained on one device.)

Verity Scan complies with this requirement.

CVRs are stored in random order. They are assigned a random file name, and the modified/created timestamps are all set to be identical. It is impossible to reconstruct voting order.

CVRs are digitally signed.

If saved on the vDrive, ballot images are stored in PNG format.

When a voter casts a ballot, the information is recorded in three physically separate locations: internal memory (a compact flash card that is housed inside the device, and which is not customer accessible), paper ballot, and on the vDrive removable memory device. The different handling and usage profiles of these data storage components yield different risk profiles. These diverse risk profiles significantly increase the difficulty of compromising vote records in all three locations.

Verity Scan has the memory capacity to store 9,999 ballots.



- 1.1.A.25** The tabulator shall be capable of withstanding transport conditions that may include extremely bumpy roads, exposure to extreme heat, cold, humidity and dust without incurring damage during transportation or becoming inoperable as a result of such transport.

Verity Scan includes a compact, rugged, and durable integrated storage case, for secure transportation and storage. And as part of its EAC federal certification testing campaign, the Verity Voting system underwent rigorous power and temperature variation testing, in accordance with Volume 2 of the VVSG 2005 standard. Operational Ballot Logic and Accuracy testing is performed for 95 hours straight across power range of 105VAC to 129VAC, nominal 117VAC, and a temperature 50F to 95F. Verity Scan and all other Verity devices have been tested and comply with a series of environmental stress standards defined by the US Military.

The full list is included in the table below:

Test	Description
Bench handling (devices)	4" drop above the bench top or 45 degree angle whichever is less 24 drops total
Vibration (devices, ballot box, and booths)	3 axis, 30 min/axis Vertical at 10~500Hz, 1.04Grms Transverse at 10~500Hz, 0.20Grms Longitudinal at 10~500Hz, 0.74Grms Device in transit case Device removed from container and tested
Random Vibration (air profile - devices, ballot box, and booths)	3 axis, 3 hours/axis Vertical at 2~300Hz, 1.05Grms Transverse at 2~300Hz, 1.05Grms Longitudinal at 2~300Hz, 1.05Grms Device in transit case Device removed from container and tested
Low temperature (storage)	Temperature -4F runs for 4 hours after temp is stabilization Device in a shipping container Device removed from container and tested
High temperature (storage)	Temperature 140F Test runs for 4 hours after temp is stabilization Device in a shipping container Device removed from container and tested
Humidity	Temperature 88F Humidity 88 RH Tests runs for 1 cycle 24 hours, total 10 cycles Device in a shipping container Device removed from container and tested



Test	Description
Temperature and power variation	Units place inside of thermal chamber and tested for 48 hours Units running during all tests Temperatures during testing 50F to 95F Voltages tested at 105Vac, 117Vac and 129Vac 2 cycles at 24 hours per cycle, total 48 hours testing.

- 1.1.A.26** The tabulator shall be capable of withstanding frequent loading and unloading, stacking and unstacking, assembling, disassembling, reassembling, and other routing handling in the course of normal storage and operation.

Verity Scan and all other Verity devices have been tested and comply with a series of environmental stress standards defined by the U.S. Military. The full list is included in the table in Contractor's response to requirement **1.1.A.25**.

- 1.1.A.27** The Contractor shall document and explain any available special features of the proposed tabulator that demonstrates water resistance features.

Verity Scan is designed to withstand real-world conditions. As with many electronic devices, however, Verity Scan is not water resistant and should be protected from water and humidity.



CATEGORY B. BALLOT REQUIREMENTS

1.1.B.1 The Contractor's system shall utilize a paper ballot with a voter verifiable paper trail. Ballot-related requirements in this section relate to overall ballot features and functionality; additional technical requirements related to ballots can also be found in **Section and Attachment 1.2, EMS TECHNICAL REQUIREMENTS**.

The Verity Voting system meets this requirement.

1.1.B.2 The Contractor shall document ballot layout options, including support for number, types and placement of columns, portrait or landscape layout, number and placement of vote targets, header shading options, font types and sizes, independence of front/back designs, etc.

Verity ballot templates, which are based on EAC/AIGA Design for Democracy templates and recommendations from the Brennan Center for Justice, are designed for superior usability and accurate recording of voter intent.

- The Verity Central high-speed scanning solution reads paper ballots of the following sizes:
 - 8 ½" x 11" (letter)
 - 8 ½" x 14" (legal)
 - 8 ½" x 17" (super legal)
 - 11" x 17" (ledger)
- Ballots can include 1, 2, 3 or 4 columns.
- Verity Scan can accept ballots in portrait orientation (not landscape orientation).
- Ballot templates support use of grayscale and color images, which can also be used to customize headers and shading.
- Vote targets appear to the left of candidate names or proposition choices.
- Verity provides flexible design capabilities and a high degree of user control of specific ballot elements (including order on the ballot, forced column or page breaks, and applicability to paper vs. electronic ballot designs). Verity also enables creation of front and back designs that can be independent of each other.
- Within limitations in keeping with best practices as outlined by the EAC/AIGA Design for Democracy initiative. Verity supports a single font style on the ballot. Font sizes, however, can be adjusted without limitation other than the natural limits imposed by the physical size of the ballot. And if a separate font style is absolutely needed, this can be achieved through an image on the ballot.

1.1.B.3 The Contractor's system shall support a scalable ballot that ranges, at a minimum, from 8.5" x 11" to 8.5" x 17". The Contractor shall specify the range of ballot sizes the proposed system supports, as well as the minimum/maximum number of columns, races/proposals and candidate positions that can be placed on a ballot.

Yes. The Verity Central high-speed scanning solution includes the following capabilities:

- Reads paper ballots of the following sizes:
 - 8 ½" x 11" (letter)
 - 8 ½" x 14" (legal)
 - 8 ½" x 17" (super legal)
 - 11" x 17" (ledger)
- Ballots can include 1, 2, 3 or 4 columns.
- Supports a maximum of 200 contests and propositions, combined.



- Supports a maximum of 600 total voting positions
- NOTE: Contractor's engineering team has begun design explorations to determine the feasibility of supporting ballots up to 22" in length as part of Contractor's Verity 3.0 product.

1.1.B.4 The Contractor's system shall support ballot layouts that allow for the ballot to be one(1), two (2), three (3) or four (4) columns.

Verity complies with this requirement.

1.1.B.5 The Contractor's system must support ballot layouts in either portrait or landscape orientation.

Note: Verity Scan and Verity Central scanners accept only portrait-format ballots. However, Verity Data offers a wide variety of templates – including templates for creating ballots with one, two, three, or four columns. Contractor has designed Verity Data for adaptability that will provide Michigan the flexibility to create ballots for every election configuration and to adapt to changing requirements over time.

1.1.B.6 The Contractor shall include all pertinent ballot production specifications (e.g., ink, paper weight/thickness to prevent bleed through, etc.) and all other requirements related to ballot printing to allow counties and local jurisdictions to utilize commercial ballot print vendors of their choice. Any ballot printer certification requirements shall be outlined in detail in this Contract, and are subject to State approval. Contractor must list any pre-approved ballot printing vendors who are certified to print ballots for use with the proposed system.

Yes. Contractor has a certified printer program that allows us to manage ballot print quality with partners. Contractor supplies recommended Hart Official Ballot Paper, and shares specifications for that paper with customers and print partners so that customers can use certified Hart printers either with this official stock or with paper that meets Contractor paper's specifications. Contractor does not require that customers use Hart-certified printers; however, Contractor recommends that they do so for the assurance of ballot quality. Contractor will work with vendors their customers choose to complete certification requirements, if desired. Additionally, Contractor is a certified printer.

Contractor recommends the use of 28#/70# bond paper composed of virgin wood fiber with no recycled content. The following additional specifications apply to the type and composition of the recommended paper:

- Finish: Smooth Xerography
- Sheffield: 100-120
- Brightness: 91-96
- Florescent level: 4 percent
- Moisture content: 4.5 percent
- Packaging: Moisture resistant ream wrap
- Tolerance for trim and squareness: +/- 0.025 inches
- Ink: Any industry-standard black toner.

Hart certified ballot printers are usually professional print shops with production-level equipment. To receive Hart certification, these printers must complete and pass an annual Hart ballot printing test using Hart's exclusive official ballot paper for ballot production.

The testing Contractor performs as part of the ballot printer certification program includes ballot quality assurance testing, paper analysis, and ballot scanning and tabulation on the appropriate voting equipment. Contractor provides the print shop with quality assurance guidelines and tools.



1.1.B.7 OPTIONAL REQUIREMENT: The Contractor system offers an optional Ballot on Demand (BOD) system; functionality that allows for designated precinct ballots to be printed at the time of issuance to the voter, and a system that allows for the issuance and processing of numerous ballot styles in a single jurisdiction via a single BOD system.

The Contractor's system does offer an optional on-demand ballot printing system. Verity Print is an on-demand ballot printer designed on the same compact platform shared by other Verity devices. Verity Print will use an attached commercial printer to print full ballots from blank stock. Verity Print is suited for central office use or for convenience voting locations, where there is a need to manage many ballot styles electronically, with the correct style, on an as-needed basis.

Ballots printed from Verity Print can be processed by Verity Scan or Verity Central. The Contractor's system currently includes Verity Touch Writer for accessible ballot marking. This device may also print blank ballots one at a time and can be configured to host numerous ballot styles in a single jurisdiction or multiple jurisdictions.



CATEGORY C. MEMORY

- 1.1.C.1** The Contractor shall describe and detail the proposed memory device utilized by the proposed system. The memory device does not include batteries or removable parts. The Contractor must indicate make, model, storage capacity and security features of the memory device, and any special requirements related to the use and purchase of the memory device. The memory device must be included and separately listed in **Schedule C, Pricing** (including component costs for a single additional or replacement memory device).

The Verity Voting system utilizes two types of memory devices that can be accessed by the user:

- Disk drive in each workstation
- vDrives, which are USB flash drives that store election configuration information and the results of an election

The Contractor's portable flash USB media, vDrives, provide a method of transferring election definition data to Verity Scan and other Verity Voting devices and applications. vDrives do not include any batteries or removable parts. At the polling place, Cast Vote Records and audit data are stored on the vDrives, which can then be taken to the central elections office for use by the Verity Count tabulation and reporting software.

The following specifications apply to vDrives:

- Manufacturer: Apacer
- Description: USB2.0 Flash Drive
- Manufacturer's part number: 8T.ABD2B.1D30C
- Capacity: 4GB

Each vDrive has the capacity to store 9,999 single-sheet ballot images captured by Verity Scan, from an unlimited number of ballot styles.

Verity employs numerous security procedures to protect data written to vDrives. Cast Vote Records are digitally signed to allow for validation of the data.

In addition, to ensure no data loss can occur during a voting session, if power to the voting device is lost, the "write-behind" feature found within the controller of the USB device has been disabled by the manufacturer per Hart requirements.

The vDrive memory devices, like all components of the Verity Voting system, are configured by Hart as part of the integrated, holistically tuned voting system and must be obtained from Hart and not from any other source. The component cost for a single vDrive memory device is included in **Schedule C, Pricing**.

- 1.1.C.2** The Contractor's system shall provide for multiple ballot styles (multiple precincts and split precincts) to be stored on and processed by a single memory device. The Contractor must indicate any limitations or maximum capacity requirements related to a single memory device (e.g., maximum number of ballot styles on one memory device).

All election configuration information created in Verity Build, including multiple ballot styles for multiple precincts and split precincts, is written to a flash media vDrive. This method allows the shared election definition to be transferred to Verity Scan and other Verity Voting devices and applications. Each vDrive has a capacity of 4GB and can contain an unlimited number of ballot styles.

- 1.1.C.3** The Contractor shall describe any capabilities for processing additional ballots after the polls have been closed.

If there is a need to process additional ballots after the polls have closed, the process on the Verity Scan tabulator device is as follows:

1. Rebooting the device prompts the user to enter the "Open Polls" passcode.
2. When the user enters the Open Polls passcode, the device reverts to the "Ready to Scan" state; all previous data is retained, including Cast Vote Records, audit logs, and public counter data. Scan displays "Insert Ballot."



3. After scanning additional ballots, users follow normal procedures to close the polls again and re-print (updated) Tally report; the device will generate a consolidated totals tape that includes one combined total for each candidate/proposal on the ballot for all ballots processed in that precinct.

1.1.C.4 The Contractor shall describe any memory device security features (e.g., encryption, security seals or other features) which are available to secure data stored on the device.

Verity Voting devices have a variety of physical access controls and safeguards to ensure that sensitive equipment is accessed only by authorized personnel – not by voters. These access controls include keyed locks, features to support the use of tamper-evident seals, port protection, and non-standard electrical wiring in strategic areas. Cast vote records are written to Verity's removable vDrive memory devices at the precinct and central count locations and digitally signed using FIPS 140-2 SHA-2 NIST-approved methods to ensure non-repudiation.

Memory device security features

Verity Voting devices have a variety of physical access controls and safeguards to ensure that sensitive equipment is accessed only by authorized personnel – not by voters. These access controls include keyed locks, features to support the use of tamper-evident seals, port protection, and non-standard electrical wiring in strategic areas.

The following are details of security features for Verity's memory devices:

- Verity Scan and Verity Touch Writer include a compact and durable integrated storage case for secure, easy transportation and storage.



- Two keyed locks restrict a user's ability to open the integrated case that surrounds each voting device ("the suitcase").
- The exterior handle to each case was purposely designed with two mated parts that are easily surrounding by zip-tie, tamper-evident seals to prevent unauthorized users from opening the case.



- All ports on Verity voting devices can be covered with a metal security plate during storage and transport to prevent unauthorized access to ports. Although the metal plate can be easily secured without tools, it can also be sealed with zip-tie, tamper-evident seals so that the port cannot be removed without detection.



- Inside each voting device case, the compartment that contains the sensitive flash memory device (vDrive) that contains the election definition, cast vote records, and audit logs is secured by a keyed lock.
- The compartment that contains the vDrive also includes features that support the use of tamper-evident seals.
- The removable, dockable tablet display inside each voting device includes a keyed locking mechanism to manage the storage, removal, and configuration of the tablet. In addition, the dockable display is further protected with an electromechanical control that notifies the system software of any unauthorized disconnection.
- All ports on Verity voting devices (USB ports for peripheral printers, etc.) are physically shaped in non-standard ways (that is, they are also “keyed”) and accommodate only Hart-proprietary cables and devices in order to prevent unauthorized users from inserting unauthorized, standard, commercial off-the-shelf cables or devices into Verity voting machines.
- On/off power switches are located on a rear panel with a recessed indent that allows only authorized users to quickly and easily identify power controls. In our legacy systems and with Verity, Hart has always made a conscious design choice to use physical access controls and design features other than keyed locks to prevent unwanted shutoff of devices. We have done this primarily to reduce the risk that needed voting devices could be rendered unavailable for use if a required key for power controls is misplaced. This design strategy has been successful, as proven in over a decade of elections and millions of votes cast in 15 States that use Hart voting technology.
- In addition to physical access controls that prevent foreign devices from being inserted into Verity device ports, the internal components of the devices are also electronically wired in non-standard ways, so any foreign devices are recognized and the port is disabled in response to unauthorized insertions.
- All ports on Verity voting devices can be covered with a metal security plate during storage and transport to prevent unauthorized access to ports. Although the metal plate can be easily secured without tools, it can be sealed with zip-tie, tamper-evident seals so that the port cannot be removed without detection.
- The Verity Voting system includes features to ensure that data is protected at all times.
 - **Protection from power failure.** In the event of a power disruption, all images and cast vote records remain saved on the vDrive and on the internal memory of the Scan device. Verity Scan includes an onboard internal battery capable of providing backup power for a minimum of two hours. If power has not been restored by the time the backup battery has been fully discharged,



Scan commences a graceful shutdown process. Once power is restored, the device can be rebooted and resume normal operations. Scan does not retain tabulated results, but images can be recovered.

- **Protection against hardware failures and attempts to corrupt the device application.** The voting device components run continuous background monitoring to ensure the integrity of the executable firmware. Firmware is stored internal to the device in non-volatile memory along with a verification table that provides a cyclic redundancy check (CRC) code for each of several code sections. When code execution begins, an operating system task performs a CRC calculation of each code section. The system is halted with a failure message if the calculated CRC does not match the expected value from the verification table. This verification operation is performed continuously while the system is active and provides protection against hardware failures and attempts to corrupt the device application.

In addition, a secure BIOS on polling place devices ensures that the system will boot up only with the authentic, authorized Verity software.



1.1.C.5 The Contractor shall describe any physical security features that secure the memory device to the tabulator to ensure tamper resistance and full security for memory devices with the tabulator from the time of initial testing through Election Day.

Please see the response to item **1.1.C.4 above**.



CATEGORY D. BALLOT BOX

- 1.1.D.1** Each voting system must include a ballot box for storage of voted ballots. The Contractor shall document the size, weight and volume (ballot capacity of compartment based on ballot size, number of compartments) of the proposed ballot box.

The dimensions of the ballot box and bag (when stored) are 28"H x 25"W x 6"D. Together, the ballot box and bag weigh 31.8 pounds, and the volume is 2.4 cubic feet. The ballot box accommodates up to 4,000 sheets of 8 ½ x 17 inch paper.

The ballot box has a separate, secure "emergency" storage compartment to accept voted ballots that cannot be scanned at that time (i.e., due to loss of power, etc.). Access to the ballot box's emergency storage compartment is protected by a lock on the ballot box's rear maintenance panel, and the box has two places for tamper-evident seals. The ballot box's secure emergency ballot compartment accommodates up to 1,000 8-½ x 17 inch ballots.

- 1.1.D.2** The ballot box shall secure the voted paper ballots in locked and sealable compartments. The Contractor shall detail the use of all lockable compartments utilized by the proposed ballot box.



The Verity ballot box secures ballots in locked and sealable compartments.

The Verity ballot box's physical access controls include:

- Keyed lock to protect the main access door
- Keyed lock to protect the maintenance panel on the rear of the ballot box
- Support for tamper evident seals in the following areas:
 - Main access door
 - Rear access panel
 - Movable cover for emergency ballot slot.



- 1.1.D.3** The ballot box shall allow poll workers the ability to open, re-lock and reseal secure storage compartments.

Both the Ballot Box main door and the emergency ballot door can be locked and sealed.

- 1.1.D.4** The ballot box shall include a separate compartment for storage of voted ballots while ballot counter is inoperable.

The ballot box has a separate, secure "emergency" storage compartment to accept voted ballots that cannot be scanned at that time (due to power failure, etc.). Access to the ballot box's emergency storage compartment is protected by a lock on the ballot box's rear maintenance panel, and the box has two places for tamper-evident seals. The ballot box's secure emergency ballot compartment accommodates up to 1,000 8-½" x 17" ballots.

- 1.1.D.5** The Contractor shall describe any portability features of the ballot box that allow for easy transport.

To assist users in transporting the ballot box and maneuvering it into position, the Contractor designed the ballot box to be thin and lightweight. Because the ballot box can be folded to just 6 inches thin during transport, and because it includes a carrying handle, the box can be placed into position relatively easily before the simple assembly process. Like all Verity Voting devices and accessories, the ballot box can also be easily transported in typical private vehicles driven by polling place officials.



- 1.1.D.6** The ballot box shall be capable of withstanding transport conditions that may include extremely bumpy roads, exposure to extreme heat, cold, humidity and dust without incurring damage during transportation or becoming inoperable as a result of such transport.

Because the ballot box is designed to be stored in a thin, flat position, it facilitates compact stacking, with a compressed, durable design that easily accommodates the rigors of typical storage and transport conditions

- 1.1.D.7** The ballot box shall be capable of withstanding frequent loading and unloading, stacking and unstacking, assembling, disassembling, reassembling, and other routing handling in the course of normal storage and operation.

The design of Verity ballot boxes is based on the Contractor's understanding of the needs of elections staff and poll workers. The ballot boxes are durable, and compact in size. Their compact size creates greater efficiencies and cost savings in storage and transportation, by reducing the need for warehouse and trucking space. It also allows more flexible deployment by poll workers, as Verity Voting devices were specifically designed to comfortably fit within the confines of typical private vehicles.

- 1.1.D.8** The Contractor shall document and explain any available special features of the proposed ballot box that demonstrates water resistance features.

The Verity Ballot Box is designed to withstand real-world election conditions and is primarily constructed of durable, water-resistant plastic. However, to preserve the mechanisms that allow it to be collapsible, the ballot box should be protected from direct contact with water.

- 1.1.D.9** **OPTIONAL REQUIREMENT:** The Contractor shall document and explain any available ballot box storage-friendly options (such as the capability of collapsing or stacking boxes for more efficient storage).

Designed to work seamlessly with the Verity Scan device, the Verity Ballot Box is secure, light-weight, and easy to deploy. Using a folding design, the durable ballot box includes separate secure compartments for scanned and un-scanned ballots, and it folds to just 6 inches thin for easy transportation and storage. Because the digital Verity Scan captures and segregates marked write-in images electronically, a mechanical diverter is not needed in the secure ballot box.

CATEGORY E. COTS (COMMERCIAL OFF THE SHELF) OPTIONS

- 1.1.E.1** The Contractor shall identify any and all COTS **components** that are part of their overall voting systems solution (e.g., printers, tablets, etc.). Replacement purchase sources for all identified COTS components



are identified in Schedule C, Pricing; COTS parts identified shall be made available to counties and local jurisdictions.

The full list of COTS components is listed in **Schedule C, Pricing**.

- 1.1.E.2** The Contractor shall identify any and all COTS **supplies and replacement parts** that may be utilized by their system (e.g., memory devices, ink cartridges, batteries, etc.). .

All supplies and replacement parts are included in **Schedule C, Pricing**. Contractor will maintain an in-state repair depot. This location will have a ready supply of all replacement parts and will be linked to a central inventory management system in our Austin headquarters. It will allow the Contractor to expedite the service and support desired by Michigan counties and local jurisdictions.

- 1.1.E.3** The Contractor shall identify and describe in detail any plans under development for upgrades / enhancements to systems that further utilize COTS components, supplies and replacement parts.

- 1.1.E.4** The Contractor shall identify new COTS options over the course of this contract, as the market changes and/or as existing COTS components become obsolete. COTS options provided to other states must be identified to the State, with an option and plan for implementing other available COTS options through the life of this contract.

Contractor will comply with this requirement. Contractor continuously leverages the availability of commercial component upgrades to take advantage of improvements offered by new versions.



CATEGORY F. RELIABILITY REQUIREMENTS

- 1.1.F.1** All voting system components shall be able to perform in a wide range of climates and humidity levels without ballot jams or other malfunctions.

All Verity Voting system components comply with this requirement. As part of its EAC federal certification testing campaign, the Verity Voting system underwent rigorous power and temperature variation testing, in accordance with Volume 2 of the VVSG 2005 standard. Operational Ballot Logic and Accuracy testing is performed for 95 hours straight across power range of 105VAC to 129VAC, nominal 117VAC, and a temperature 50F to 95F. For more information, please see Contractor's response to requirement **1.1.A.25**.

- 1.1.F.2** The Contractor shall provide details of features of the system that are designed to avoid ballot jams.

- Paper jams are rare with Verity Scan. Verity Scan incorporates a number of features to help prevent ballot jams, including:
- Patented indicator landing lights inform the user when the system is ready for a ballot to be inserted. Lights blink red for "Do Not Present Ballot" and green for "Present Ballot." These indicator lights keep the paper path clear, preventing ballot jams.
- The system entryway guides the ballot into the scan head, greatly reducing the possibility for ballots to be presented in a misaligned way. If a user tries to present a crooked ballot, the scan head automatically sends the ballot back to the user.
- The path for the exit of the scanned ballot into the ballot box is designed to prevent static buildup on ballots. Static buildup can cause ballot stock to stick to a surface during transit from the scanner into the ballot box, causing a jam. The minimal exit path for the ballot (0.25in "throat") eliminates static buildup.
- No physical diverter that can cause jams.

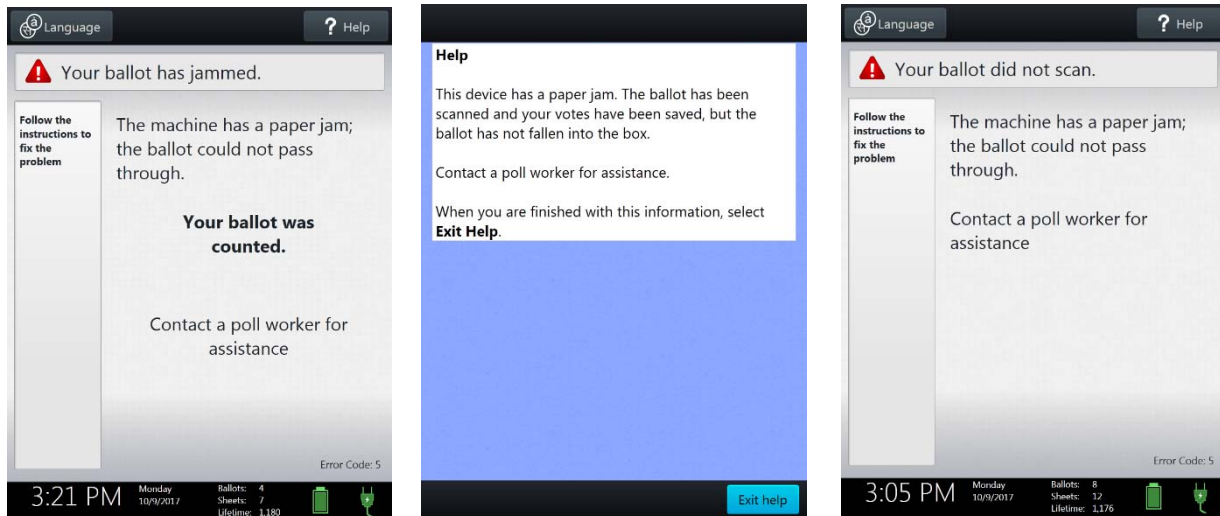


- Collapsible ballot box design means nothing is stored inside for transport – and nothing to block ballots as they enter the box.
- Verity uses common paper stock for ballots – not card stock that is susceptible to moisture/humidity.

- 1.1.F.3** In the event of a ballot jam, the tabulator shall accurately state whether the ballot was tabulated; this statement must also be available in the system audit log.



In the rare event of a jam, Verity Scan's screens indicate to the voter and poll worker exactly what happened.



1.1.F.4 In the event of a ballot jam, the ballot track shall be easy to clear.

Verity Scan complies with this requirement. Paper Jams are easily resolved on Verity Scan.

- If the ballot is still visible:
 - Pull the jammed ballot out of the scanner feed path. The device resets automatically and is ready to accept ballots.
- If the ballot has jammed inside:
 1. Check the display to confirm if the ballot was counted or not.
 2. Open the back compartment door on the ballot box and physically clear the jam.

or

 - Restart the machine. The rollers will reverse upon reboot to clear the scan path. Note: The rollers will be attempting to clear the scanner path for a few seconds after the jam has occurred and that may clear it without the need to restart.

1.1.F.5 Voting system components shall be transportable, without damage to internal circuitry.

All Verity Voting system components are easily transportable and include durable, protective containers.

Verity Scan and Verity Touch Writer include compact and durable integrated storage cases for secure, easy transportation and storage. In addition to the convenient carrying/storage case that is an integrated part of the Scan design, corrugated plastic cases are available for transportation and storage.

The rugged Verity Ballot Box folds to just 6 inches thin for easy transportation and storage. A sturdy canvas bag is also available for transporting and storing the Ballot Box.

The lightweight Voting Booth includes a heavy canvas bag for protection during transport and storage.



1.1.F.6 Voting system components shall provide a method for immediately detecting a malfunction.

Verity Voting devices display plain language warnings for system-level alerts and/or malfunctions. Verity Voting devices do not lose or corrupt any recorded data in the event of a sudden power failure. If applicable, Verity Voting devices display the action to take in response to an error condition. If the error caught by the device cannot be resolved by user interaction, a message displays to contact the Hart Customer Support Center or return the hardware for repair as applicable.

1.1.F.7 Voting system components shall prevent the loss of data during the generation of reports.

The Verity Voting system includes features to ensure that data is protected **at all times**, including during generation of reports.

For reports generated by Verity Scan, there is protection against hardware failures and attempts to corrupt the device application. The voting device components run continuous background monitoring to ensure the integrity of the executable firmware. Firmware is stored internal to the device in non-volatile memory along with a verification table that provides a cyclic redundancy check (CRC) code for each of several code sections. When code execution begins, an operating system task performs a CRC calculation of each code section. The system is halted with a failure message if the calculated CRC does not match the expected value from the verification table. This verification operation is performed continuously while the system is active and provides protection against hardware failures and attempts to corrupt the device application.

For the entire Verity system, including the Verity Count tabulation and reporting application, Verity's best practices for data security also include:

- Only verified components can be executed.
- Intrusion detection – physical and application security.
- Flexible, strong role management.
- Data is signed to verify source.
- Two-factor authentication.
- NIST-compliant encryption.
- Redundancy, randomization of cast vote records.

Verity employs a “defense-in-depth” strategy, whereby security architecture and code is reused by all applications (including the Verity Count tabulation and reporting application) whether on the desktop or on voting devices. In this manner, Verity security covers physical, electronic, software and policies for Verity customers, across the system.

Throughout the system, the code implements controls for:

- Authorization
- Authentication
- Auditing
- Non-repudiation
- Validation
- Tamper resistance/evidence

Verity implements an AAA security model separate from the host operating system and the jurisdiction's infrastructure. This includes role-based access control (RBAC). Verity Build, Central, and Count are physically separated from the intranet and extranet in order to reduce network-based risks.

All Verity data, including logs, cast vote records, and election definitions, are digitally signed using FIPS 140-2 SHA-2 NIST approved methods to ensure non-repudiation. These methods include implementing a local network that is not connected to other office or public networks, role-based access control (RBAC) user accounts, and two-factor authorization for critical actions. Finally, all Verity Voting software applications are installed on PC workstations in a “kiosk mode” setup that does not allow users direct access to the operating system.



The following methods restrict access to data and programs on the voting system so that they are only accessible to authorized personnel.

- Authentication is internal to Verity.
 - User accounts and passwords are managed by Verity.
 - Account management is not part of an application.
- Authorization is role-based:

Each user has a role.

 - Each independent operation is authorized by the system based on role.
 - RBAC.
 - NIST-approved security pattern.
 - All user and system actions are logged and auditable.

1.1.F.8 The tabulator backup battery shall be continually charged while the unit is plugged in.

While the Verity Scan operates on AC power (i.e., while the unit is plugged in), any installed charged batteries will not have any measurable depletion of power. Verity Scan includes an internal, rechargeable 10.8V, 6.7A-hr Lithium-Ion (Li-Ion) battery as a backup to 120VAC main power. The battery is capable of providing backup power for a minimum of two hours. While one battery is in use, an extra battery can be recharging at a nearby electrical outlet, ensuring a reliable source of continuous power for the unit. In case of battery failure, poll workers can simply replace the battery – not the entire device.

Batteries for the Verity devices are charged through the use of an external charger, not within the device. This was a conscious design decision, as “trickle charging” Lithium-Ion batteries while inside the device degrades the battery and reduces its capacity and lifetime.

Verity provides two types of external battery chargers for Verity devices: a one-bay charger and a six-bay charger.

The **one-bay charger** is commonly used in the polling place as a spare battery, if desired (e.g., one battery in the device, with a spare on the external charger). In this use case, having an external charger and an extra battery is a “small-footprint” method to ensure continuous device availability in the polling place.



The **six-bay charger** is most often used in the warehouse to charge batteries after elections and during pre-election setup.



The Contractor's recommended procedure is to remove the battery from each tablet after the election. This allows warehouse personnel to charge any depleted batteries to the recommended 40 percent charge and to easily check each battery every few months to see if it needs some additional charge, maximizing battery longevity and performance.

It takes four hours to charge a Verity Scan battery that has no charge. Batteries for the Verity devices (Scan and Touch Writer) are universal and are interchangeable. The batteries also include a battery condition indicator that is visible to election inspectors

When an election is approaching, the six-bay chargers allow warehouse personnel to easily charge all the batteries to 100 percent before they are installed in the tablets. Verity's design, through the use of the six-bay chargers, uses a small warehouse footprint to charge the batteries.

- 1.1.F.9** The Contractor shall indicate the amount of backup battery life (i.e., number of hours) in the event of a power outage. Proposals shall indicate if there is a difference in battery usage for a tabulator in use vs. a tabulator at rest.

Verity Scan includes an internal, rechargeable battery capable of providing backup power for a minimum of two hours. The device includes a battery indicator icon that provides election judges or officials the status of the current battery state. The battery supports 500+ charging cycles.

While the unit is plugged in, the battery does not discharge power.

- 1.1.F.10** The backup system shall remain in operation during power surges or other abnormal electrical occurrences.

As part of the VVSG testing required for all polling place devices, Verity Touch Writer and Verity Scan devices underwent stringent testing to ensure protection from power surges or other abnormal activities, including:

- **During power surges.** IEC 61000-4-4 Electrical Fast Transients (Burst) and IEC 61000-4-5 AC Surge (Lightning Surge) and IEC 61000-4-11 Electrical Power Disturbance (which includes power interruptions, brown-outs and over voltages)



- **Abnormal Electrical Occurrences.** AC dropouts and interruptions à IEC 61000-4-11 Electrical Power Disturbances.

IEC 61000-4-4 (2004-07) Ed. 2.0	Electrical Fast Transients (Burst)	a. ± 2 kV on external power lines (both AC & DC) b. ± 1 kV on all INPUT/OUTPUT lines (signal, data and control lines) longer than 3 meters c. Repetition Rate for all transient pulses will be 100 kHz	shall be able to withstand, without disruption of normal operation or loss of data
IEC 61000-4-5 (1995-02)	(Lightning) AC Surge	a. ± 2 kV AC line to line b. ± 2 kV AC line to earth c. ± 0.5 kV DC line to line >10m d. ± 0.5 kV DC line to earth >10m e. ± 1 kV I/O sig/control >30m	shall be able to withstand, without disruption of normal operation or loss of data
IEC 61000-4-11 (1994-06)	Electrical Power Disturbance	a. Voltage dip of 30% of nominal @10 ms b. Voltage dip of 60% of nominal @100 ms & 1 sec c. Voltage dip of >95% interrupt @5 sec d. Surges of +/-15% line variations of nominal line voltage e. Electric power increases of 7.5% and reductions of 12.5% of nominal specified power for a period of up to four hours at each level	shall be able to withstand, without disruption of normal operation or loss of data

1.1.F.11 The backup system shall engage immediately with no loss of data in the event of disruption of electrical connection or failure of battery backup. In the event of the failure of a unit, the system shall retain a record of all vote totals accumulated prior to failure.

Verity Scan complies with these requirements.

1.1.F.12 The Contractor's system shall have the capability of generating exportable backup files for offsite storage.

The Verity Voting system supports archiving of the selected election, creating a backup of data from the database without causing a change of election state. The archive takes a full snapshot of data associated to the election ID from the database into a zipped file. This zipped archive includes all data in specific formats with content "as is" at the time of archiving. The archived data is system-based, and only capable of being restored to that specific system. (A "system" is all Verity components installed on a workstation.)

1.1.F.13 The Contractor's system shall automatically adjust for changes due to Daylight Savings Time (DST).

No. Contractor's customers appreciate the ability to change date/time settings at any time; without the limitation of depending on automatic changes. With Verity, setting the date/time is part of the election checklist.



CATEGORY G. SECURITY

- 1.1.G.1 The Contractor's system shall permit the diagnostic testing of all of the major system components. Proposals shall document all types of automatic diagnostic tests that are available to be run before the opening of the polls and while polls are open.

Verity Scan and Verity Touch Writer perform diagnostics at every boot and reports these diagnostics on the Power-On Self-Test Report that prints automatically at every boot.

The voting device components run continuous background monitoring to ensure the integrity of the executable firmware. Firmware is stored inside the device in non-volatile memory along with a verification table that provides a cyclic redundancy check (CRC) code for each of several code sections. When code execution begins, an operating system task performs a CRC calculation of each code section. The system is halted with a failure message if the calculated CRC does not match the expected value from the verification table. This verification operation is performed continuously while the system is active and provides protection against hardware failures and attempts to corrupt the device application.

Both the commercial scanners and the PCs run self-tests upon startup and report results in the event of an error. In addition to these startup tests, Central allows the user to run a test scan at any point in the process to validate that the scanner is functioning properly.

- 1.1.G.2 The Contractor's system shall ensure that each voter's ballot is secret and the voter cannot be identified by image, code or other methods.

Please see Contractor's response to requirement **1.1.A.24 above**.



Attachment 1.2 Voting System ELECTION MANAGEMENT SYSTEM (EMS) SOFTWARE Technical Requirements

CATEGORY A. ELECTION MANAGEMENT SYSTEM (EMS) GENERAL REQUIREMENTS

For each listed requirement, the Contractor shall provide a detailed description demonstrating how the EMS fulfills each requirement. The Contractor's EMS shall:

- 1.2.A.1** Be designed to operate in a Windows environment (at a minimum Window 7) and have the ability to adapt to upgrades in operating systems.

Verity operates in a Windows 7 environment and was designed for adaptability. For an election solution to remain viable over its years of use, it must be able to adapt to accommodate changes. When we designed Verity, adaptability was one of its core values, and from the outset we consciously sought to architect a platform that will be extended in the future.

- 1.2.A.2** Be designed with several levels of security to detect/resist hacking and unauthorized access and use. Security patches must be released as deemed necessary by the manufacturer, with prompt written notification to the State.

From the outset, security has been a core design goal for Verity. Throughout the design, development and testing process for this system, the Contractor has been able to leverage the newest, most up-to-date technologies and best practices for security.

Contractor will release security patches as deemed necessary, and will promptly provide written notification to the State.

Verity's best practices for security include:

- Secure BIOS ("verified boot software").
- Only verified components can be installed.
- Only verified components can be executed.
- Intrusion detection – physical and application security.
- Flexible, strong role management.
- Data is signed to verify source.
- Two-factor authentication.
- NIST-compliant encryption.
- Redundancy, randomization of cast vote records.

Security Patches

Contractor will release security patches as deemed necessary, and will promptly provide written notification to the State.

Intrusion detection – physical and application security

Verity employs a "defense-in-depth" strategy, whereby security architecture and code is reused by all applications, whether on the desktop or on voting devices. In this manner, Verity security covers physical, electronic, software and policies for Verity customers, across the system.

Throughout the system, the code implements controls called for in the requirements for:

- Authorization
- Authentication
- Audit



- Non-repudiation
- Validation
- Tamper resistance/evidence

Verity implements an AAA security model separate from the host operating system and the State's infrastructure. This includes role based access control (RBAC). Verity Build, Central, and Count are physically separated from the intranet and extranet in order to reduce network-based risks.

All Verity data, including logs, cast vote records, and election definitions, are digitally signed using FIPS 140-2 SHA-2 NIST approved methods to ensure non-repudiation. These methods include implementing a local network that is not connected to other office or public networks; RBAC user accounts, and a 2-factor authorization for critical actions. Finally, all Verity Voting software applications are installed on PC workstations in a "kiosk mode" setup that does not allow users direct access to the operating system.

The integrity of critical operating system files is protected by:

- Implementation of the Enhanced Write Filter features of Windows 7 embedded to prevent changes
- A system validation tool feature that allows users to verify the hashes on critical files of the operating system
- A secure BIOS on polling place devices that ensures the system will only boot into the authentic Verity environment.

Access to data and programs on the voting system components is restricted so that they are only accessible to authorized personnel, as follows:

- Authentication is internal to Verity.
 - User accounts and passwords are managed by Verity.
 - Account management is not part of an application.
- Authorization is role-based.
 - Each user has a role.
 - Each independent operation is authorized by the system based on role.
 - Role Based Access Control (RBAC)
 - NIST-approved security pattern
- Verity Key, a secure electronic "token," serves two functions
 - The physical token, which is similar in appearance to a USB device, provides secure transport of secret information such as keys for digital scanners.
 - Two-factor authentication at critical points in the election workflow – Verity Key represents "something you have" (the physical security device) and it requires "something you know" (a passcode).
 - Each Key is associated with a single election.
 - All user and system actions are logged and auditable.



Secure Device Configuration

To securely access the Verity Scan or Verity Touch Writer touchscreen interface to configure the device for an election, the user must have access to the passwords that have been designated for the election and to the appropriate Verity Key.

The 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 (similar to a USB token) and must know the passcode associated with the physical security device. This electronic device is required for access to secure functions.

Once the device is configured for the election, the poll workers must know the password configured for the election in order to perform administrative functions such as opening and the polls.



closing

Secure Vote Scanning, Recording, and Tabulation

Verity Scan scans two-sided ballots and multiple-page ballots while recording the event as one ballot cast. To preserve the security and multi-sheet feeding protection capabilities of the system, ballots that have content on only one side include security barcodes on the blank side of the sheet. In addition to the public counter that indicates the number of ballots cast for the election on the Scan device, Scan provides a sheet counter that indicates the number of sheets that have been scanned on the device for that election.

Verity Central ensures that only those ballots styles specific to the current election are recorded and tabulated.

Verity Central rejects ballots that are not printed for the election that is currently defined and open on the system. The election identifier is embedded into the security barcodes on the ballots. Verity Central checks this election identifier on each ballot that is scanned and rejects any ballots that do not contain the correct election identifier.

Secure Access

Multiple security mechanisms prevent the modification of software or internal configurations at all times, and all Verity Voting software applications are installed in a secure “kiosk” mode that disallows user access to the operating system of the workstation on which the application is installed.

Verity user roles adhere to the principle of least privilege.

Verity requires that all users have unique login credentials including but not limited to a unique username and unique password. Verity password complexity and login rules are configurable by the election official administering the system.

Secure Ballot Layout and Election Configuration Data

Ballot layout and election configuration data is secure from unauthorized modification or copying of such data. Verity implements an AAA security model separate from the host operating system and the local entity's infrastructure. This includes role-based access control (RBAC). Verity Build, Central, and Count are physically separated from the intranet and extranet in order to reduce network-based risks.

All the data, including logs, cast vote records, and election definitions, are digitally signed using FIPS 140-2 SHA-2 NIST approved methods to ensure non-repudiation. These methods include:

- Implementing a local network that is not connected to other office or public networks.
- RBAC user accounts and a 2-factor authorization for key actions.
- Kiosk setup that does not allow users direct access to the operating system.

The integrity of critical operating system files is protected by:

- Implementation of the Enhanced Write Filter features of Windows 7 embedded to prevent changes.
- A system validation tool features that allows users to verify the hashes on critical files of the operating system.
- A secure BIOS on polling place devices that ensures the system will only boot into the authentic Verity software environment.

Secure Data Transmission

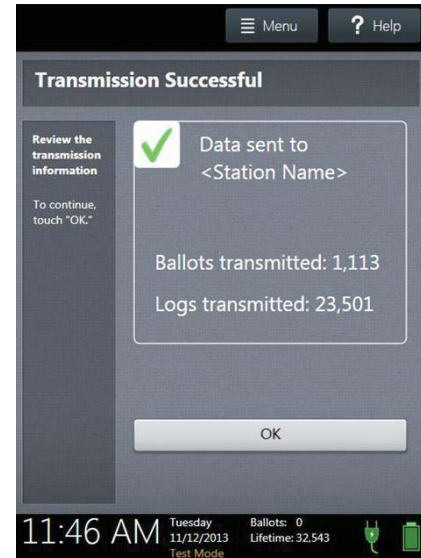


Cast Vote Records are digitally signed to allow for validation of the data and are written to vDrives in Verity Scan devices, or in the Verity Central system for AVCBs. The vDrives are then transported to the election center for use in Verity Count. Once the CVRs are written to the vDrive, they cannot be written again.

If the vDrive to which the CVRs were written is lost, Verity Scan or Verity Central can create a Recovery vDrive that can be read into the Count application.

Our solution for Michigan also includes Verity Scan with the Relay option, which will utilize secure broadband technology to enable transmission of cast vote records directly from the Scan device at the polling place to the election office. From the Relay receiving host at the election office that receives the CVR data, the data is written to a vDrive, which is then used to physically transport the data to the Count tabulation and reporting software. This method creates a secure "air gap" for transmission of CVR data.

Verity Scan with Relay includes the security features employed by all Verity Voting system components described in this section, including use of FIPS-compliant encryption and digital signatures for authentication. Access to specific software components related to data transmission is controlled by user-configurable role-based authentication, and access to the compartment in the Verity Scan device that houses the modem is protected by a keyed lock.



More information about Verity Scan with Relay is included in Contractor's response to requirement **1.1.A.1**, in **Attachment 1.1 Hardware**.

Secure Destruction of Data

Contractor utilizes several data destruction firms when disposing of electronic-based media or paper-based media in which data security is a concern.



Training for Security

Hart's training courses for system operators and election officials includes security topics. Physical, device configuration and data transfer security topics are covered in the following courses:

- Service and Maintenance
- Polling Place Operations
- Management and Best Practices.
- Train-the-Trainer course for training trainers who will, in turn, train poll workers.
- Verity Central course for High Speed Scanner operators and resolution board members.

Security Patches

Contractor will release security patches as deemed necessary, and will promptly provide written notification to the State.

- 1.2.A.3** Include an operational support plan for the EMS software for security patches, bug fixes and regular Maintenance Releases. The Contractor shall provide information with respect to the Bidder's projected response times to:

- Synchronize and implement a regular Maintenance Release, after the Maintenance Release is posted.

Maintenance releases and software updates are provided per the Software License Agreement. After a software update is available, the customer and Hart will determine the best timeframe (to avoid unnecessary impacts on upcoming elections) and distribution plan for the software update. (See **Schedule A, Statement of Work, Section 1.6 Service and Maintenance**; and **Schedule B Software License Agreement**.)

- Provide bug fixes in a timely manner. Contractor should provide an expected response timeline for different bug severity levels (e.g. Critical bug fix within 1 week, non-critical – next patch period etc.).

Bug fixes will be provided in a timely manner per the Statement of Work and Software License Agreement. If true critical bug fixes are necessary, corrections will be available for the next election cycle, depending on certification timelines and impacts.

- Provide security patches within no more than 72 hours of release.

Contractor will meet this requirement. Security patches are rarely necessary since Verity employs white listing software that restricts the programs that can be executed.

Contractor's general release strategy is built on the foundation of baseline systems that go through EAC certification. Accordingly, the complexity of making additional modifications to certified systems means that follow-on releases generally aim to consolidate substantial numbers of value-added features and enhancements (in addition to bug fixes), rather than following a more incremental plan of frequent "patches" – particularly because the installation of "patches" and bug fixes can be disruptive to jurisdictions and users of voting systems. Upgrades do incorporate bug fixes based on Contractor's continued quality assurance and on customer feedback. Customer support is enhanced and cost and complexity is reduced when most users, nationwide, can be on the same software code base. Contractor offers a variety of options for upgrading Verity Voting software. During the upgrade process, it is not required that Contractor personnel be onsite to install software. The computers that the software runs on have easily removable, sled-nested hard drives. These hard drives can be removed from the computers and sent to Contractor for software upgrade, at which time Contractor would perform the upgrade and return the hard drives back to the customer. Alternatively, Contractor personnel or the customer can perform the upgrade on site.

Voting unit firmware is upgradeable by replacing a removable CFAST memory device, on which the firmware resides. Contractor personnel would perform this service on site.

- 1.2.A.4** Implementation of security upgrades/patches will be available for the life of the contract, with specific plans for each upgrade/patch determined by mutual agreement by the Contractor and State.

Contractor will comply with this requirement. Please see **Schedule A, Statement of Work, Section 1.6 Service and Maintenance**; and **Schedule B Software License Agreement**.

- 1.2.A.5** Allow system administrators to establish different levels of user permissions.



Verity employs Role Based Access Control (RBAC). Access to voting system data, programs, and components is restricted so that they are only accessible to authorized personnel. Authentication is internal to Verity. User accounts and passwords are managed by Verity and are set by Verity system administrators. Authorization to access voting system components and to perform specific operations is role-based; each user has a role based on the level of access they need.

1.2.A.6 Permit routine users access to the application without requiring administrative privileges on the PC operating system.

Authorization to access voting system components and to perform specific operations is role-based, and account management is governed separately from typical software application functions. Each user has a role based on the level of access they need, enabling users to access components they need – and **only** those components.

1.2.A.7. Require all users to have a unique login credentials (username and password).

Each user is required to have a unique username and password.

1.2.A.8 Secure the ballot layout and election configuration data to prevent unauthorized modification or the copying of such data.

Ballot layout and election configuration data is secure from unauthorized modification or copying of such data. Verity implements an AAA security model separate from the host operating system and the State's infrastructure. This includes role-based access control (RBAC). To reduce network-based risks, Verity Build, Central, and Count are physically separated from the intranet and extranet. The Verity Data workstations can be additionally configured to be part of the State's access control infrastructure.

All the data, including logs, cast vote records, and election definitions, are digitally signed using FIPS 140-2 SHA-2 NIST approved methods to ensure non-repudiation.

These methods include:

- Implementing a local network that is not connected to other office or public networks
- RBAC user accounts and a 2-factor authorization for key actions
- Kiosk setup that does not allow users direct access to the operating system
- The integrity of critical operating system files is protected by:
 - Implementation of the Enhanced Write Filter features of Windows 7 embedded to prevent changes
 - A system validation tool features that allows users to verify the hashes on critical files of the operating system
 - A secure BIOS on polling place devices that ensures the system will only boot into the authentic Verity software environment.

1.2.A.9 Allow manual data entry for election setup and ballot layout.

Jurisdiction- and election-specific data can be manually entered in Verity Data, and election settings can be manually entered in Verity Build.

1.2.A.10 Securely encrypt election configuration data to be exported to the tabulator and accessible voting system component(s) per the 2005 VVSG recommendations.

Ballot layout and election configuration data is secure from unauthorized modification. Verity employs digital signatures to protect election data, cast vote records, and audit logs from modification; digital signatures provide both tamper evidence and non-repudiation. The VVSG 2005 requires encryption only for transmission across telecommunication networks or wireless communication, and the Relay option for electronic transmission from Verity Scan complies with these standards.



1.2.A.11 Contractor shall identify all software components utilized by the EMS system, including customized vendor software, as well as others (e.g., Adobe) included and utilized by the overall EMS package.

Hart components of the VVSG 2005-compliant Verity Voting system are as follows:

- **Verity Data** – ballot design software
- **Verity Build** – election definition software
- **Verity Central** – high-speed scanning software, for Absent Voter Counting Boards
- **Verity Count** – tabulation and reporting software

Third-party software

Verity is provided as a turnkey computing system with all required third-party software preinstalled by Contractor. All third-party components used are integrated into the Verity software and cannot be accessed outside of Verity. Local entities are not required to add or maintain any software components.

HART SOFTWARE COMPONENTS – DETAILS

Verity Data – election data management software

Verity Data is software tool used to prepare election data and produce XML files in a format that is suitable for import into Verity Build election definition software, described below. Verity Data can also accept import files that have been converted, or “translated” from Michigan’s QVF format, through the use of an automated data integration tool.

Verity Data accepts jurisdiction- and election-related data through a highly usable interface, enabling users to design ballot layouts and display previews of how ballot styles will look in the Verity Voting system. Ballot layout formats support best practices authored by EAC/AIGA Design for Democracy styles, as well as recommendations from the Brennan Center for Justice. To ensure system security, Verity Data is always installed on a workstation separate from certified voting workstations, thereby preserving an “air gap” at all times.



Verity Build – election definition software

Verity Build is the Verity Voting software application that enables to define (or “lock down”) ballot styles, and generate and deploy election definitions. Verity Build employs a unique design that was specifically built to accommodate the integration needs of large jurisdictions or statewide implementations. Instead of forcing to manually input data through a user interface, Build provides choices: the software application can accept properly-formatted XML imports that include data from a variety of other software sources, including statewide management tools, or Hart-designed such as Verity Data, described above.



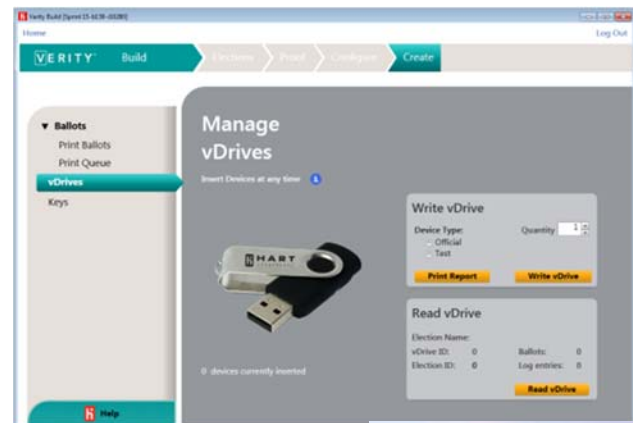
users

data

users

data
tools

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 called vDrives, which can then be deployed for a variety of different voting types, including polling place voting with Verity Scan and Verity Touch Writer, or central scanning (for AVCBs) with Verity Central. After generating election definitions, Verity Build can also print ballots or output them electronically for third-party printers. Verity Build is scalable, to accommodate multiple networked ballot printing client workstations, if desired.



Verity Central – high-speed scanning

Verity Central is the software application that provides high-speed scanning of AVCB ballots with a commercial Canon scanner.

Every aspect of Verity Central is designed for efficiency, fast throughput, and a high degree of transparency in working with scanned ballot images. Verity Central is also scalable, to accommodate multiple networked scanning client workstations, if desired.



Verity Central's onscreen digital adjudication features are especially powerful and noteworthy. Instead of forcing users to outstack and hand-count ballots with questionable voter marks, with Verity Central, ballots with questionable marks can be adjudicated through an onscreen adjudication process. This process color-codes contests with marks that require attention (e.g., overvotes, undervotes, invalid marks, blank ballots, etc.) and allows authorized users to determine the disposition of unresolved marks without needing to handle the original marked



ballot or re-make and re-scan outstacked ballots. In this way, Verity Central greatly boosts efficiency and accelerates reporting of results.

Verity Central also supports robust auditability, with filterable ballot image searches and access to original and annotated ballot images. When all ballots have been scanned and resolved, Central writes Cast Vote Records to vDrive portable flash media. Votes can then be tabulated in Verity Count tabulation and reporting software.

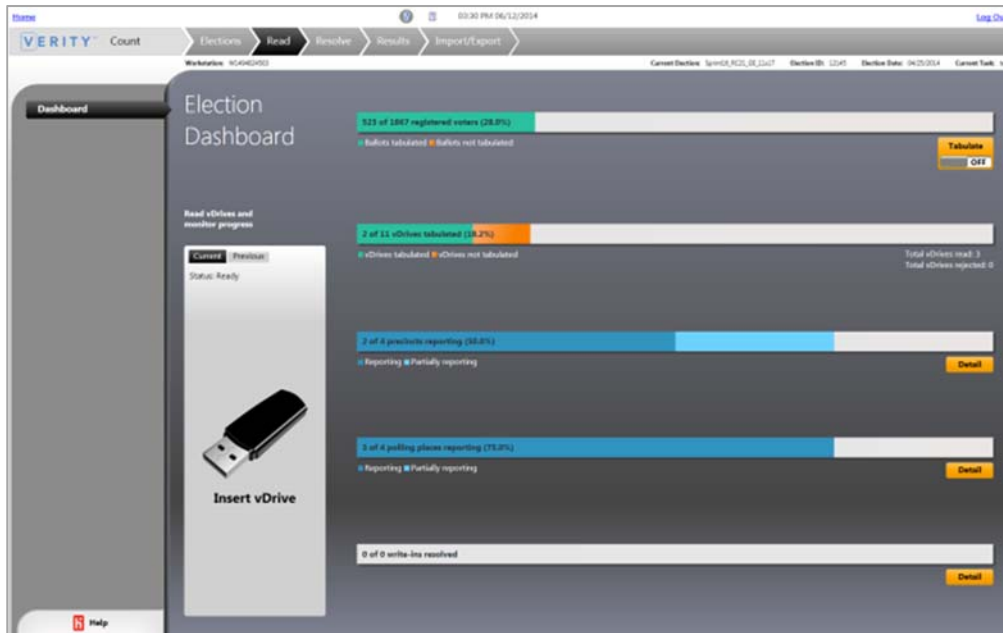
It is important and helpful to note that Verity Central does not tabulate votes – it simply scans and records Cast

Vote Records. This allows jurisdictions to begin scanning before the close of polls on Election Day, thereby greatly accelerating results reporting.



Verity Count – accumulation (tabulation and reporting) software

Verity Count is the Verity software application that tabulates and reports Cast Vote Records stored on flash memory modules (vDrives). Verity Count also provides reporting capabilities for a wide variety of system information gathered from other voting system components. vDrives inserted into the Verity tabulation workstation can contain polling place votes from Scan devices, or AVCB votes from Verity Central. Although Verity Touch Writer ballot marking devices do not store votes, their vDrives can also be read into Count to access device audit log information.



Once the vDrives have been read and tabulated, Count can produce a variety of standard and customized reports. Verity Count can be used in conjunction with, and as a supplement to, polling place reporting of precinct results, and as an additional consolidation and auditing tool (because Verity Count receives audit records from all voting devices).

Verity Count also includes intuitive, easy-to-use dashboards to monitor progress on Election Night, or to perform post-election audits, in a highly filterable way.

Third-party software components

Verity is provided as a turnkey computing system with all required third-party software preinstalled by Contractor. All third-party components used are integrated into the Verity software and cannot be accessed outside of Verity. Local entities are not required to add or maintain any software components.

1.2.A.12 Be capable of creating and defining ballot styles and contest rules in accordance with Michigan Election Law, Promulgated Rules and Ballot Production Standards.

Contractor has performed a close review of Michigan Election Law, Promulgated Rules, and the Ballot Production Standards. Based on Contractor's understanding of these requirements, Contractor is confident that Verity Voting system can meet the State's needs in ballot design, different election types (closed primaries, open primaries, general elections), pre-election testing, rotation, and recount capabilities, among others. Contractor will also work closely with the State to make any additional optimizations or modifications to current procedures based on the capabilities of the Verity system, particularly if greater efficiencies can be realized, compared to the rules devised for the State's current voting system.



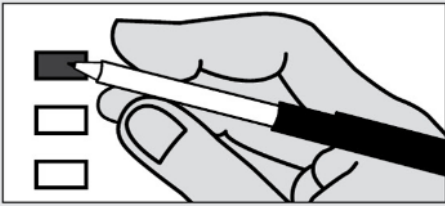
Verity Data enables users to define ballot styles that meet the specified requirements. During the pre-voting ballot programming and formatting phase, Verity Data and Verity Build support ballot templates that permit a wide array of user-definable customizations, including variable numbers of columns, nuanced controls over the placement of ballot elements, different styles of rich text formatting, and support for images and background shading. This wide array of customizations allows more user control and greater ballot design efficiencies that can obviate the need for longer ballots or multiple ballot pages (both of which can also contribute to higher costs).

Preview Ballot
08/18/2015 14:37:25

Demonstration Election
July 4, 2015
Sample County, USA

Use a blue or black ink pen to completely fill in the box to the left of your preferred choice for each contest.

To vote for a write-in, fill in the box next to the dashed line and print the name on the line.



Precinct 101

Page 1 of 1

Councilmember, City of Sampleton

Vote for not more than two (2)

<input type="checkbox"/>	Dexter Green
<input type="checkbox"/>	Kristy Diaz
<input type="checkbox"/>	Timothy Ferguson
<input type="checkbox"/>	Rufus Myers
<input type="checkbox"/>	Warren Ross
<input type="checkbox"/>	Wendell Bishop
<input type="checkbox"/>	Mona Garrett

President

- 1.2.A.13** Be capable of translating the ballot layout and election configuration to multiple languages (in Michigan, Spanish and Bengali are required). Proposals shall indicate current non-English languages that are supported by the proposed system and describe the process for adding other languages not currently supported.

Verity Voting currently supports English and Spanish. Although Verity does not currently support Bengali, Verity was designed with the capability to support multiple languages, including English, non-English languages using a Western European font, and ideographic languages. The system's capability to support new languages in the future, including Bengali, is based upon architectural features associated with template design, character sets, audio, and features that accommodate updates to data. These features are described below more fully.

Templates

Using EAC/AIGA Design for Democracy templates as a starting point, Verity's paper ballot formats and electronic formats offer similar templates designed to be consistent in all languages, whether the language is currently supported, or whether it is a language to be added in the future.

Characters

Because Verity uses Unicode for ballot information, the system architecture allows a wide range of characters to be represented, including ideographic languages such as Bengali.

Audio

Ballot audio is recorded by the user and therefore is not restricted to any specific language or set of languages.

Data update capabilities

Adding new languages to Verity requires no hardware changes. Minor software changes would be required to add new languages, and is possible due to the following capabilities:

- The operating system accommodates the addition of new fonts.
- The database accommodates the addition of new languages to the database table.



- The character set validation accommodates the addition of new character ranges.
- The database accommodates the addition of new predefined voting system text and audio content (accommodating text files and audio content would be added).

Alternative languages are available on Verity Touch, the Accessible Voting device. Regardless of whether a voter has a disability, the first screen every voter views (or hears, if using the audio interface) is the language selection screen (if more than one language is required). The language selection screen remains available throughout the voting process. All displayed content is also available through the audio interface.

In addition, printed ballots are available in all supported alternate languages and can be printed separately or in a bilingual format.

All alternative language translations and audio recordings are done in the Verity Data software application. Jurisdictions that opt to purchase the full EMS solution will be able to translate texts and record audio directly in the user interface of the Verity Data software application. Jurisdictions that rely on Hart's Ballot Production Services will have those translations and audio recordings done by Contractor. In the latter instance, Hart will always provide translation and audio proofs for signoff.

The process for managing alternative languages and audio files is integrated into the overall workflow of the Verity EMS; it is not a separate process that requires parallel paths or rework. Verity Data and Verity Build manage all data for the entire election and for all components in one holistic, efficient workflow.

1.2.A.14 Export election data elements and election configuration data to removable memory devices and either a LAN or wireless network; data elements must include but not be limited to:

- a. the sequence of candidates for each contest;
- b. the ballot issue;
- c. the contest title;
- d. the contest number;
- e. the office name and district, if applicable;
- f. the number of votes for a candidate or ballot issue;
- g. the number of votes against a ballot issue or other contest where applicable;
- h. the number of votes for candidates and/or issues by legislative, congressional or election district where applicable;
- i. the number of ballots tabulated by party for open and closed primary elections;
- j. the type of canvass (e.g. precinct, absentee or provisional); and
- k. the type of election (e.g. Presidential Primary, Presidential General, Gubernatorial Primary, Gubernatorial General).

The Verity Voting system securely exports all the specified required data to removable memory devices (vDrives). Using vDrives for transferring election configuration data to Verity Scan and, after polls close, CVR data to Verity Central and Verity Count, creates an "air-gap," a non-networked transfer method that provides more secure exchange of election data.

1.2.A.15 Shall be capable of utilizing the State Uniform Data Format (refer to **Exhibit 3 to Schedule A, Michigan QVF Export File Format**)

Verity will be capable of complying with this requirement in a seamless manner, through the use of a file format converter that translates QVF data into formats compatible for import into Verity Data. Data is imported into Verity Data for **both** ballot production **and** for reporting, in one seamless action. This "single channel" approach can increase efficiency and reduce the need for double-work data entry (i.e., through separate and/or parallel paths for ballot definition and reporting). If further customization is required beyond the data structure of the ballot, (that is, if the structure of data for reporting purposes needs to differ from the structure of the ballot) those edits can be accomplished in Verity Count by means of aliases and other customization features that are native to Verity Count.

1.2.A.16 Be capable of storing, maintaining and reloading configurations and data from previous elections.



Data from a previous election can be copied and used as a template which can be modified for the new election.

1.2.A.17 Accumulate election data for each election by precinct, precinct combinations, district, jurisdiction, and statewide.

The proposed solution envisions that local entities (unless specific to contract) will accumulate data for purposes of ENR reporting requirements. The accumulation and tabulation of data at the local entity level will be performed by Verity Count. Verity Count, in turn, can export all results data, and through the use of a data conversion utility, appropriate data desired for statewide reporting can be formatted and uploaded according to the State's needs.

1.2.A.18 Tabulate results for individual groups and integrate the results from selected or all groups into cumulative results.

Verity Count reports allow the user to specify reports by individual reporting groups (i.e., AVCBs, Election Day) or to report all groups together for cumulative results. In addition, Verity Count includes a wide array of user-definable features that allow data to be grouped according to customized needs.

Samples of Verity Count reports are included in Contractor's response to requirement **1.2.E.1**, below.

1.2.A.19 Store tabulated results from each absentee and precinct group as separate totals within a precinct.

Verity can store tabulated results from each absentee and precinct group as separate totals within a precinct.

1.2.A.20 Save election data configurations with election results data on removable storage media for archiving purposes.

Verity complies with this requirement.

1.2.A.21 Export data elements from the election configuration and ballot layout records in the following formats: Extensible Markup Language (.xml) (e.g. Oasis EML and IEEE 1622), Comma Separated Value (.csv), and Microsoft Excel Format (.xls).

The Verity Data election data management application can export pre-voting data in .XML or CSV format. Microsoft Excel can directly import CSV files from Verity Data.

The Verity Build election definition application can export election definition data in XML format.

With respect to Oasis EML and IEEE 1622, based on Contractor's research, the IEEE 1622 committee has not published a format for election configuration and ballot layout records. Oasis EML is general format and needs to be extended for the specific needs of U.S. elections; that is part of the work that IEEE 1622 is doing, but that process has not been completed.

1.2.A.22 Permit the re-upload (updating of previous uploads) of election data results from a tabulator device to the EMS.

The Verity Voting solution for Michigan will include Verity Scan with the Relay option, to allow electronic transmission of cast vote records from Scan devices located in precincts or in AVCBs, via secure broadband technology. If the Verity Relay host station receives transmissions of results from a device (precinct) for which results have already been received, the prior results will be overwritten by the later transmission.

1.2.A.23 Be capable of replicating all election configuration and results data to a redundant system in the event of a hardware or software failure

Verity PCs include RAID disks, which are an automated fail-over for the hard drives. In the event of other hardware failures, the removable hard drives can be manually moved to backup PCs.

In addition, as long as Cast Vote Records are written to vDrives regularly, the vDrives can also serve as redundant storage for the votes.

1.2.A.24 Be capable of exporting election results data in multiple widely used data formats including .mdb, .xls, .pdf, .xml, .html, .csv, .doc, ascii and .txt.



Verity Count produces reports in PDF, CSV and XLSX formats. Additionally, Verity Count produces results reports (cumulative, canvassing, precinct and selected others) in HTML. Given the State of Michigan's ENR reporting needs, which are managed through separate software infrastructure, Contractor will work closely with the State to deliver a tailored solution.

- 1.2.A.25** Accept transmitted uploads of election results data from the tabulator when deployed for elections at precincts, absent voter counting boards (AVCBs) and elections offices using a Local Area Network (LAN), phone or cellular transmission protocols

The Verity Voting solution for Michigan will include Verity Scan with the Relay option, to allow electronic transmission of cast vote records from Scan devices located in precincts or in AVCBs, via secure broadband technology. Detailed information, including photographs and a diagram of the electronic transmission workflow, is included in Contractor's response to requirement **1.1.A.1, Schedule A, Attachment 1.1 Voting System Hardware Technical Requirements**.

- 1.2.A.26** Accept direct uploads of election results data from the removable memory devices of the tabulator (which may be required when deployed for elections at precincts, AVCBs, and election offices).

Verity complies with this requirement.

- 1.2.A.27** Only accept uploaded results from removable memory devices specific to the current election.

When a vDrive is read, the application verifies that the Election identifier on the media device matches the Election identifier of the currently open election. If this verification fails, the application notifies the user of the failure and asks the user to remove the device. No Cast Vote Records will be uploaded from the device.

- 1.2.A.28** **OPTIONAL REQUIREMENT:** Provide for an automated test deck creation including use of precinct ballots and development of the chart of predetermined results.

Verity Build, Verity's software application for election definition and ballot printing, offers a method to automate ballot printing, including the production of pre-marked test decks for logic and accuracy testing. As an alternative to manually selecting desired precinct styles and quantities from the graphic user interface, Verity Build allows users to automate the printing process by importing a print queue file, which specifies ballots to be printed in batches. The print queue file can accommodate user-specified marking patterns for each contest on the ballots included in the print job.

The print queue file is created in CSV format, using an external spreadsheet program such as Microsoft Excel. Verity documentation includes the specification of the print queue file format, which includes information such as Precinct Name, Split Name, Party (for closed primaries), Ballot Language, Quantity, Ballot Type (Test or Official), and Choice Name.

To produce a pre-marked test deck, users can indicate for each Choice Name in the print queue import file whether the target area for that Choice Name should be marked (1) or not marked (0).

In summary, by simply producing a CSV file that meets the published format described above, Verity users can upload this information directly into Verity Build, and Verity Build can output the print job (either in hard copy, or to a print-ready PDF file), with the desired choices marked in the pattern specified. In this way, Verity saves users hours – or even days – of tedious labor that might typically be spent hand-marking printed ballots for purposes of logic and accuracy testing.



CATEGORY B. EMS PROGRAMMING

- 1.2.B.1** Elections shall be county-programmable from initial election definition to printer-ready ballots and ready-to-use tabulator media/memory devices without vendor intervention.

The Verity Voting system is designed to enable elections staff to conduct every aspect of the elections process independently.

For those counties that choose to program their own elections, the Contractor system includes Verity Data election data management software and Verity Build election definition software. These counties will also receive training in how to use these tools to program their elections.

The Contractor allows customers to choose the level of independence that best serves their needs. Contractor's training, implementation, and customer support services are all designed to provide elections staff with the confidence and knowledge they need to conduct elections from start to finish on their own, if they choose.

- 1.2.B.2** Counties shall be permitted to use third-party programmers (contract employees) at the county's discretion and under county's direction; or utilize other third-party programmers from a list of qualified programmers supplied by the vendor.

The Contractor agrees to this requirement.

- 1.2.B.3** Recognizing the decentralized nature of Michigan elections, the EMS shall allow State, county and local officials to generate and maintain a database containing the definitions and descriptions of political subdivisions, offices, candidates, and ballot proposals within the jurisdiction for the production of ballots and ballot tabulation programming and election result accumulation and reporting.

The Contractor agrees to this requirement.

- 1.2.B.4** EMS shall provide for the accumulation and reporting of votes cast in all elections including multiple precincts, jurisdictions, counties and districts (allow for results to accumulate and report registered voters and results by split).

Among the many reports available from Verity Count is the Cumulative Report, which can include all the information specified in this requirement.

- 1.2.B.5** EMS shall provide a mechanism to verify the correctness of tabulator programming. The mechanism shall also ensure that the ballot corresponds to the appropriate tabulator program and meets all requirements as prescribed by Electronic Voting Systems - Promulgated Rules and Michigan Election Law.

Verity provides multiple levels of verification for correctness of ballot and tabulator programming through reports, logic and accuracy test functionality, and device settings. All jurisdiction and contest options can be proofed and verified using standard reports from the software and the devices. Verity supports "test mode" functionality, which allows for testing of the election logic and vote capture while ensuring that test results and official results can never be mixed. Additionally, the voting devices are programmed to accept only the associated ballot styles for a particular precinct or polling place.

In addition to Verity's general support of these capabilities, the Contractor has also performed a close review of Michigan Election Law, Promulgated Rules, and the Ballot Production Standards. Based on Contractor's understanding of these requirements, Contractor is confident that the Verity Voting system can meet the State's needs in ballot design, different election types (closed primaries, open primaries, general elections), pre-election testing, rotation, and recount capabilities, among others. The Contractor will also work closely with the State to make any additional optimizations or modifications to current procedures based on the capabilities of the Verity system, particularly if greater efficiencies can be realized, compared to the rules devised for the State's current voting system.

- 1.2.B.6** Contractor shall describe the method for programming in the case of split precincts. It is preferable to provide data on the number of registered voters and ballots cast by split.

In Verity's data management and election definition software applications, precinct splits are entered as separate precincts on individual line items. (For example, if Precinct 101 is split into A and B splits, 101-A and 101-B are entered as separate precincts.) Then the appropriate contests are assigned to each split, respectively. Paper and electronic formats of the ballot include the precinct label and the split identifier, so voters are always given access



only to the contests that are appropriate for their ballot style. Device settings which are configured before the election allow election administrators to specify whether totals are consolidated, "rolled up" into the parent precinct, or reported down to the separate precinct split level.

- 1.2.B.7** EMS shall accommodate multiple languages (see requirement 1.2.A.11); system shall allow local election officials the ability to download information from software used to translate information to the appropriate language, or the system should perform translations automatically. Michigan presently uses English, Spanish and Bengali.

Translation information can be imported or copied/pasted into Verity from external applications. Verity does not currently support Bengali. See Contractor's response to requirement **1.2.A.13**.

- 1.2.B.8** OPTIONAL REQUIREMENT: The State prefers a system that is capable of reading a military/overseas voter (MOVE) ballot into a designated precinct without requiring the duplication of the returned ballot for each precinct in the election. Bidders shall provide detailed information related to the system's capability for meeting this requirement for ballots returned via US mail (current process) or electronically (not currently authorized by law); including any ballot format and other requirements related to an outgoing ballots that is transmitted to a MOVE voter electronically.

While the current version of Verity does not have this capability, Contractor has demonstrated experience with MOVE ballots and are open to incorporating this feature in a future version of Verity.

- 1.2.B.9** EMS shall be capable of supporting an open primary, closed primary, general election, special/nonpartisan election, statewide special election and any combinations thereof. System shall provide templates (including graphics) for ballot layout to support the above combinations.

Verity supports the election types specified above. Verity Data and Build include pre-defined ballot templates that support all the combinations listed in this requirement, and which permit a wide array of user-definable customizations, including variable numbers of columns, nuanced controls over the placement of ballot elements, different styles of rich text formatting, and support for images and background shading.

Verity currently supports a user's ability to copy new elections from previous "templates," and the system also supports customized templates for various ballot formats. Hart will commit to providing State of Michigan users with standardized templates at no additional charge, based on mutually-agreed upon requirements.

- 1.2.B.10** Contractors shall provide onsite/offsite/online training at the discretion of state or county on use of software/programming. Vendor shall provide user-friendly software documentation including step-by-step programming/usage guides including graphical depiction of all major steps in programming process.

In the Verity Data Operator training course, elections staff who will work with the Hart Ballot Production Specialist learn how to import data and lay out ballots according to State and local entity guidelines and for the best voter experience.

In the Verity Build Operator training course, elections staff learn how to generate ballot databases and print files for offsite printer(s). Elections staff also learn how to create polling place device media.

On the following pages is a sample section from the *Verity Administrator's Guide*, used during the Verity Build Operator training course.



88

proof ballots

3

proof ballots

the proof ballots tab

Build

Select Election

Proof Ballots

Configure Settings

Create

In the **Proof Ballots** tab, you will check election data for errors, proof ballot content and layout, print reports of ballot data for review, and proof audio recordings. The following menus are available in the Proof tab:

- **Data Validation:** view and print any problems with ballot data.
- **Ballot Preview:** preview each ballot style for content and layout.
- **Reports:** create reports used to proof the ballot data for errors.
- **Proof Audio:** listen to and proof audio recordings.



data validation

The **Data Validation** menu alerts you of any problems found with the ballot data. If errors are found, the election must be corrected and then re-imported into Build. Select an item from the list to view any validation issues.

A) Click the **+** symbol next to the item to view individual issues; the number of issues is indicated in the rightmost column. Note the following indicators:

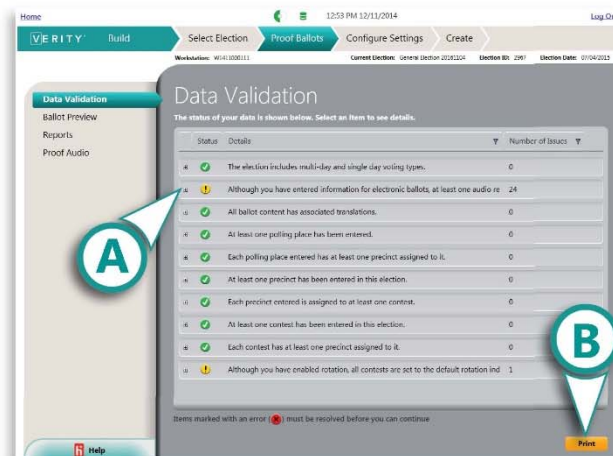


= Warnings. These items should be dealt with before proceeding, but are not required.



= Errors. These items must be resolved before you can continue.

B) Click **Print** to save or print a report of all issues.





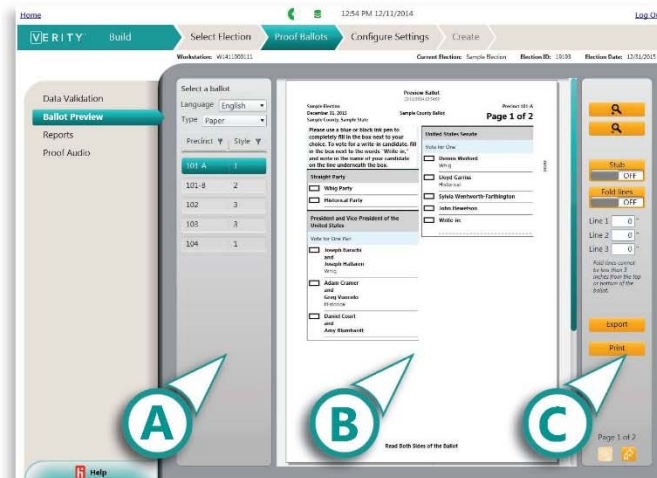
90

proof ballots

ballot preview

In the **Ballot Preview** menu, you will proof each ballot style for content and layout. The ballot preview window contains three sections:

- (A) The **Select a ballot** panel
- (B) The ballot preview image
- (C) The ballot preview toolbar



! IMPORTANT: You should proof all ballot styles for content and layout. A ballot style consists of a ballot format containing a specific subset of contests. You should also proof ballots by language & ballot type (paper/electronic).



ballot preview, *continued*

Selecting a ballot

1 In the **Select a ballot** panel, select the language that you want to proof (if applicable).

2 Select the ballot type to proof (paper or electronic).

Note: You should proof each ballot style by language and by ballot type.

3 Select the precinct or ballot style to proof. You should proof at least one ballot of each ballot style, in all languages and ballot types.

4 Click the filter icon ▼ in a column header to filter by category.

Select a ballot

Language English

Type Paper

Precinct ▼ Style ▼

101-A	1
101-B	2
102	3
103	3
104	1



ballot preview, *continued*

The ballot preview window

The ballot preview window displays the current page of the ballot whose language, ballot type, and ballot style you have selected.

- The green sliders on the right and bottom allow you to adjust the view when zoomed in.

Preview Ballot
12/31/2015 12:34:02

Sample Election
December 31, 2015
Sample County, Sample State

Sample County Ballot
Precinct 101-A
Page 1 of 2

Please use a blue or black ink pen to completely fill in the box next to your choice. To vote for a write-in candidate, fill in the box next to the words "Write in," and write in the name of your candidate on the line underneath the box.

Straight Party

☐ Whig Party

☐ Historical Party

President and Vice-President of the United States

Vote for One Pair

☐ Joseph Barachi and Joseph Hallaren
Whig

☐ Adam Cramer and Greg Vuocolo
Historical

☐ Daniel Court and Amy Blumhursli

United States Senate

Vote for One

☐ Dennis Weiford
Whig

☐ Lloyd Garrison
Historical

☐ Sylvia Wentworth-Farthington

☐ John Hewetson

☐ Write-in: _____

Read Both Sides of the Ballot



ballot preview, *continued*

The ballot preview toolbar

A) Use the **Magnifying Glass** buttons to examine the ballot in greater detail.

B) Stub slider allows you to see the ballot stub.

C) Fold Lines slider allows you to see where fold lines appear on the ballot. Best practices for fold line placement can be found on page 94. Change fold line positioning by entering values in the boxes below.

D) Click **Export** to export the page preview image to file (PDF).

E) Click **Print** to print the page image.

F) Use the **Page** buttons to view each page of the ballot; be sure to proof all pages.

The toolbar contains the following elements:

- A)** Two magnifying glass icons for zooming in and out.
- B)** A "Stub" slider set to "OFF".
- C)** A "Fold lines" slider set to "ON".
- Input fields for fold line positions:
 - Line 1: 5.5 "
 - Line 2: 7.5 "
 - Line 3: 0 "
- Text note: "Fold lines cannot be less than 3 inches from the top or bottom of the ballot."
- D)** An "Export" button.
- E)** A "Print" button.
- Page indicator: "Page 1 of 2"
- F)** Two page navigation buttons (back and forward).



best practices: fold lines

Consider the placement of fold lines when laying out your ballot.

- Don't fold ballots through option boxes and barcodes as dirt may accumulate in the fold.
- Use the minimum number of folds required to fit the ballot into its envelope.
- Be familiar with all of your ballot styles. Some may require a different type of fold than others.
- Avoid excessive folding and creasing.
- Avoid folding against the grain of the paper.
- Avoid any folds occurring just above or below a ballot stub perforation.



- 1.2.B.11** The Contractor shall demonstrate how data can flow from the State Qualified Voter File (QVF) into EMS and the formats in which data can be imported/exported. Refer to **Schedule A. Statement of Work**, Section 1.5 for additional information.

Yes. The Contractor has demonstrated a proof of concept to illustrate how Verity is capable of complying with this requirement in a seamless manner, through the use of a file format converter that translates QVF data into formats compatible for import into Verity Data. Data is imported into Verity Data for **both** ballot production **and** for reporting, in one seamless action. This “single channel” approach can increase efficiency and reduce the need for double-work data entry (i.e., through separate and/or parallel paths for ballot definition and reporting). If further customization is required beyond the data structure of the ballot, (that is, if the structure of data for reporting purposes needs to differ from the structure of the ballot) those edits can be accomplished in Verity Count by means of aliases and other customization features that are native to Verity Count.

For additional details concerning the Contractor's experience with data integration, please see the response to requirement **1.2.A.15**.

CATEGORY C. BALLOT PROGRAMMING AND LAYOUT REQUIREMENTS

- 1.2.C.1** Produce ballots that meet the requirements of Michigan Election Law, Chapter 168 and Michigan Ballot Production Standards.

Verity complies with this requirement. The Contractor has also performed a close review of Michigan Election Law, Promulgated Rules, and the *Ballot Production Standards*. Based on Contractor's understanding of these requirements, the Contractor is confident that Verity Voting system can meet the State's needs in ballot design. The Contractor will also work closely with the State to make any additional optimizations or modifications to current ballot production procedures based on the capabilities of the Verity system, particularly if greater efficiencies can be realized, compared to the rules devised for the State's current voting system.

- 1.2.C.2** Allow changes to font size and style. The Contractor shall indicate font packages utilized by the system.

The Verity Data application allows users to make changes to font sizes and other ballot attributes prior to final proof and acceptance of the election in Verity Build. In addition, the published XML specification for the Verity Build application can accommodate changes to font sizes and style.

Verity Voting uses the Segoe UI font package.

- 1.2.C.3** Allow for creation of two-sided and multi-page ballots.

Verity complies with this requirement.

- 1.2.C.4** Generate sample (proof) ballots for each precinct (or ballot style) that will not be accepted or counted by the tabulator.



Sample ballots are printed with a watermark and with a special designation in the barcode that disallow them from being accepted on Verity Scan or Verity Central.

Preview Ballot

08/18/2015 14:37:25

Demonstration Election
July 4, 2015
Sample County, USA

Use a blue or black ink pen to completely fill in the box to the left of your preferred choice for each contest.

To vote for a write-in, fill in the box next to the dashed line and print the name on the line.

President

Precinct 101

Page 1 of 1

Councilmember, City of Sampleton

Vote for not more than two (2)

☐ **Dexter Green**
☐ **Kristy Diaz**
☐ **Timothy Ferguson**
☐ **Rufus Myers**
☐ **Warren Ross**
☐ **Wendell Bishop**
☐ **Mona Garrett**

- 1.2.C.5** Be capable of generating all ballot artwork and all specimen ballot artwork (ex. Political party vignettes, drawing columns, target areas, borders, fonts). The system must be capable of accepting political party image vignettes in standard formats (jpeg, pdf, gif).

Verity Build supports ballot templates that permit a wide array of user-definable customizations, including political party vignettes and other types of artwork.

- 1.2.C.6** Allow race header shading in multiple shades of gray.

Verity complies with this requirement.

- 1.2.C.7** Provide electronic versions of the ballots that are identical to the official ballots in all respects.

Electronic versions of paper ballot styles and electronic ballot styles can be exported from the system.

- 1.2.C.8** Ballot size shall be flexible to allow multiple ballot sizes by precinct/jurisdiction within a single election if desired.

This capability is on the Verity product roadmap, estimated for completion in 2018.

- 1.2.C.9** Provide for the export of any ballot to a .pdf file.

Verity complies with this requirement.

- 1.2.C.10** Provide a test mode which supports testing to validate the correctness of elections programming for each voting device and ballot.

Verity complies with this requirement.



- 1.2.C.11** OPTIONAL REQUIREMENT: Allow for different ballot headers on ballots within the same election (Special Election, General Election, Election).

Verity complies with this requirement.

- 1.2.C.12** Generate a consolidated sample ballot containing all races, issues and questions.

Due to the large number of races that could be included in an election definition, a true "bed sheet" style ballot layout for all races is unwieldy; however, Verity Voting can produce an "All Contests" report that includes all the information requested, and more.

Alternatively, users could assign all contests in the election definition to a fictional "consolidated sample ballot" precinct for purposes of generating the desired output.

- 1.2.C.13** Include a ballot style indicator.

Verity's ballot styles are identified according to specific precinct labels. The precinct number is printed in the header of the ballot and is encoded in the barcode of the ballot.

- 1.2.C.14** Be capable of designating the number of write-in lines for each contest.

Verity complies with this requirement.

- 1.2.C.15** Be capable of adding text to the ballot to instruct the voter to view both sides when it spans more than one face, or other instructions as required.

Verity complies with this requirement. Furthermore, Verity has the capability to allow users to specify whether particular instructions or ballot text are to be included on paper ballots only, or on accessible electronic ballots for the ballot marking device, or both.

- 1.2.C.16** Provide the ability to create a single county database that contains precincts, office, polling places, etc. that can be imported into each new election.

Verity complies with this requirement.

- 1.2.C.17** Provide the ability to copy, edit and delete previously-defined elections or provide customized templates for each election type.

Verity complies with this requirement.

- 1.2.C.18** Permit text to be added below a candidate's name for various designations and party affiliation.

Yes. Verity complies with this requirement.

- 1.2.C.19** Provide for ballot rotation of candidate names as required under the provisions of Michigan Election Law and the Electronic Voting Systems - Promulgated Rules. Contractor shall disclose any limitations on the number of candidate or office rotations.

Verity complies with this requirement.

- 1.2.C.20** Provide for rotation only when the number of candidates for an office is greater than the number to be elected.

Verity complies with this requirement. To support the requirement stated above, Verity Data offers users the ability to specify which contests provide for rotation, and which do not.

- 1.2.C.21** Permit the creation of an "uncommitted" candidate that does not rotate like the other candidates in the office for use in a closed Presidential Primary. Contractor shall provide details of the process used to create the "uncommitted" candidate that does not rotate.



Verity Voting will support the disabling of rotation for the “Uncommitted” candidate in Presidential Primary Elections with a system modification. Contractor has committed to providing this functionality to support the 2020 Presidential Primary Elections.

In the current Verity system, the Verity Data application (which manages jurisdiction-andelection-specific data) already includes checkboxes and fields in the user interface to allow users to enable or disable rotation of candidate names for each election, and to allow users to specify rotation indices.

The planned functionality to meet Michigan’s future needs will simply add additional “flags” or checkboxes in the user interface, alongside specific choice names (either candidate names or “uncommitted”) to allow users to specify “Do not rotate” for selected choices.

A jurisdiction that would need this functionality earlier than the release of this modification would be able to accomplish this task using an alternative process for creating the election:

- A contest would be entered for each applicable rotation, with candidate order set manually.
- The correctly rotating contest would be assigned to each applicable precinct.
- Printed ballots would then reflect the correct rotation, with the “Uncommitted” option always in the last position.

The Contractor does not anticipate that a jurisdiction will be required to utilize this alternative process.

For additional information, refer to **Schedule A, Statement of Work, Section 1.6**, Service and Maintenance.

- 1.2.C.22** Provide for identification of candidate names, party affiliation and vignettes and ballot questions and their associated language and instructions. Preference will be given to systems that provide the greatest flexibility in inputting ballot question language into EMS; including importing, copying and pasting, spell check and the use of symbols including bullets.

Verity Data provides for the identification of candidate names, party affiliation and vignettes and ballot questions and their associated language and instructions. Verity Data also offers a variety of other features to maximize flexibility in how ballot data is entered and presented. This wide array of customizations allows more user control and greater ballot design efficiencies that can obviate the need for longer ballots or multiple ballot pages (both of which can also contribute to higher costs).

Contest Title	Type	Party Name	Notes
US President	Office	Republican Party	
US President	Office	Democratic Party	
US President	Office	Independent Party	
US House Seat	Office	Republican Party	
US House Seat	Office	Democratic Party	
US House Seat	Office	Independent Party	
Travis Park School Board	Office	Nonpartisan Party	
Kendall County officers	Office	Nonpartisan Party	
Question 1	Proposition	Nonpartisan Party	



- 1.2.C.23** Corrections to programming/ballot layout (such as adding or removing a candidate or precinct) shall be made in such a way as to permit new ballot proofs to be generated quickly and accurately. PDF's shall be generated by precinct or ballot style (at the request of the user) and shall be in database order front followed by back.

Verity Data supports this requirement. Verity Data's user-friendly interface enables elections staff to easily make changes as necessary, view a proof, and create PDFs immediately. Ballots are in the database front first, followed by back.

CATEGORY D. ELECTION NIGHT REPORTING (ENR) CAPABILITIES

- 1.2.D.1** The Contractor's EMS shall have ENR functionality that allows for electronic transmission of unofficial results on Election Night, which can be summarized and displayed electronically online at the State, county and jurisdiction level. The Contractor shall describe, in detail, the transmission, reporting, security and electronic display capabilities of their available ENR system.

Menus available in Verity Count's user-friendly interface provide numerous options for generating reports, viewing precinct and polling place status and results, exporting cast vote records, and more:

- **Options:** Set reporting options for Count. Settings made in the Reporting Options menu affect all tasks for the current election.

- **Reports:** Generate reports from the list of available options or create a custom report, and create reporting runs.
- **Precincts:** View reporting precincts and manually change precinct reporting status.
- **Polling Places:** View reporting polling places, set the number of vDrives expected per polling place, and manually change polling place reporting status.
- **Registered Voters:** Set the number of registered voters for reporting voter turnout.
- **Vote Recording:** Perform manual vote recording.
- **Auditing Dashboard:** Filter ballot data to review and export cast vote records.

Reporting options

Count includes numerous reporting options, such as (but not limited to):



- Report results at the precinct or precinct split level
- Label reports as Unofficial (canvassing not yet complete) or Official (canvassing complete)
- Select report header options
- Select how to calculate reporting numbers
- Select how to sort contest results
- Select how to report and label unassigned write-in votes
- Select whether to report Election Day, Early Voting, or Absentee results separately or combined
- Select precinct group options

Viewing and saving reports

Elections staff can view reports in Verity Count or export reports in PDF format.

Customized reports

Verity Count allows users to easily create customized reports based on user-selected filtered data (e.g., only certain precincts, contests, etc.), from the user interface.

Available filters include:

- District filter
- Precinct/split filter
- Party filter
- Contest filter
- Ballot options filter
- vDrive ID filter
- Batch ID filter
- Voting Device Type filter
- Voting Device ID filter



- Polling Place filter
- Voting Type filter

Reporting runs

An easy-to-use Wizard enables staff to create reporting runs. A *reporting run* is a collection of reports that can be run as a batch, to quickly generate reports.

Results

Numerous options are available for viewing election results, including:

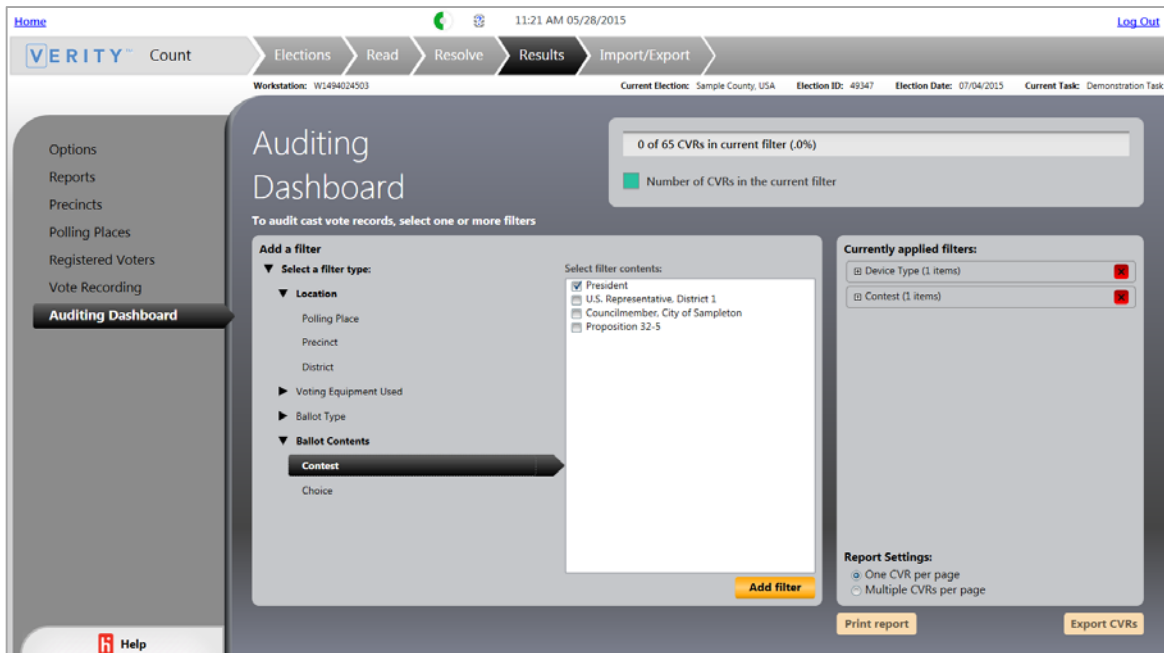
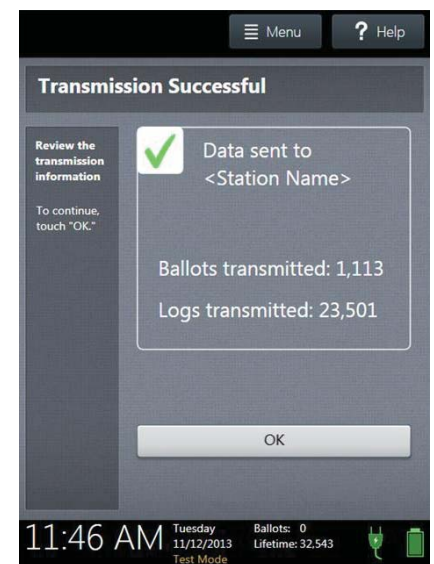
- View and print a list of **precincts** and their reporting status
- View and print a list of **polling places** and their reporting status
- Update the number of registered voters (for reporting voter turnout)
- Manually record votes

Electronic Transmission of Results

The Verity Voting solution for Michigan will include Verity Scan with optional Relay capability, which will enable electronic transmission of cast vote records directly from the Scan device at the polling place to the election office via secure broadband technology.

From the receiving host PC at the central election office, the data is written to a vDrive, which is then used to physically transport the data to the Count tabulation and reporting software. This method creates a secure “air gap” for transmission of CVR data. (Detailed information, including photographs and a diagram of the electronic transmission workflow, is included in Contractor’s response to requirement 1.1.A.1 in **Attachment 1.1, Hardware**)

Verity Count tabulation and reporting software includes an easy-to-use Auditing Dashboard that is a native feature of the software application.





The auditing dashboard enables users to select the subset of cast vote record data to be included in the audit, by simply selecting from a robust set of user-defined filters. Available filters include:

- District filter
- Precinct/split filter
- Party filter
- Contest filter
- Ballot options filter
- Flash Memory Device (vDrive) ID filter
- Batch ID filter
- Voting Device Type filter
- Voting Device ID filter
- Polling Place filter
- Voting Type filter
- Workstation ID filter

Once the desired set of cast vote record data has been selected with filters, the CVR data can be exported as raw data in XML format, which can be reviewed and tabulated using common third-party tools, or the data can be printed as human-readable cast vote record reports (one per page, in PDF format), so they can be hand-counted.

Because the list of auditable filters for cast vote record data is robust, Verity's auditing capabilities can support a wide variety of state and local procedural rules that govern any type of audit, regardless of what specific subset of ballots is to be audited, how many rounds of auditing may be required, whether a fixed percentage, "risk limiting," or other method is used, and other factors.

- 1.2.D.2** The ENR system shall support the following transmission mediums for reporting unofficial returns on Election Night directly from precinct tabulators to the EMS system: cellular modem, analog/dial-up modem, database import and manual reading of tabulator memory devices. Proposals shall specify and describe any other transmission methods available and/or under development.

For Michigan, Verity Scan will include Relay, which will utilize secure broadband technology to enable electronic transmission of cast vote records directly from the Scan device at the polling place to the election office. From the PC at the election office that receives the CVR data, the data is written to a vDrive, which is then used to physically transport the data to the Count tabulation and reporting software. This method creates a secure "air gap" for transmission of CVR data. (Detailed information, including photographs and a diagram of the electronic transmission workflow, is included in Contractor's response to requirement **1.1.A.1** in **Attachment 1.1, Hardware**)

In addition to electronic transmission of results, Verity Voting supports manual reading of Verity Scan tabulator vDrives, by inserting the vDrives into a Verity Count tabulation and reporting workstation.

Verity Voting does not support transfer of results via dial-up modem or via database import.

- 1.2.D.3** The ENR system shall support accumulation and transmission of unofficial results by modem (cellular or dial up) from different election groups simultaneously into the same precinct and accumulated automatically (i.e., cellular or dial-up transmitted absentee results as well as cellular or dial-up transmitted election day results). Memory devices shall be programmable to reach proper destination (i.e., Election Day precinct, AV precinct results).

Verity complies with this requirement.

- 1.2.D.4** Regarding modem transmission of unofficial results, the ENR system shall provide an ability for the user to customize the level of security (custom passwords, custom private networks, etc.). Proposals shall describe in detail all security features of their transmission system and processes that are available, including use of encryption.

The user can set a username and password for modem transmission connections. If HSPDA wireless networks are used (more commonly known as 3G or 4G, such as ATT or T-Mobile), APN (Access Point Name) is fully supported through private network establishment with the carrier.



The following table shows more details about Relay's intrinsic security features:

FIPS 140-2	WSG	Verity Implementation
Crypto-Module Implementation	7.7.3 Protecting Transmitted Data	Configure Windows 7 for FIPS policies Only FIPS algorithms used by system Key Management <ul style="list-style-type: none"> AES-256 encryption SHA-256 key
Data Encryption Digital Signatures	7.6.1 Data Transmission >=112-bit key size	TLS/SSL transport layer AES-256 encryption SHA-256 key
Secure Hash	Data Integrity	SHA-256 will be used for digital signatures
	2-Factor Authorization	1. Verity Key required for each station 2. Sending Station Authorization 3. Receiving Station Authorization 4. Receiving Station Authorization of Sending Station data
		Self-signed Certificate Authority RSA-2048 bit certificates Generate Receiving Station Certificates Generate Sending Station Certificates Signed with SHA-256 digital signature

- 1.2D.5** The ENR system shall provide for centralized programming that allows the county to customize and incorporate specific instructions for transmitting results (IP Address, Phone #, etc.).

Verity Relay provides the ability to configure up to three destination hosts for transmission data per transmission device (Verity Scan with Relay). This allows the transmission devices to have "round robin" failover capabilities if a receiving station is not available. In addition to configuring the destination host IP address (or URL), Relay allows the configuration of an optional APN, username, and password for stricter transmission security, if used. This information is compiled into an XML-based "host file" which is digitally protected to ensure data integrity and nonrepudiation when read by the transmission devices.

- 1.2.D.6** ENR Data transmission includes Race Summary report data (total votes for each candidate) and Race Detail report data (results by precinct) report data.

Verity complies with this requirement.

- 1.2.D.7** OPTIONAL REQUIREMENT: The ENR system should have the ability to present a precinct as completely or partially reported based on when election groups (Precinct, Absentee, etc.) are received in EMS.

Verity complies with this requirement.

- 1.2.D.8** OPTIONAL REQUIREMENT: The ENR system should allow users to view data by pre-defined groups (precinct, absentee, combined precinct/absentee, etc.).

Verity Count includes options for reporting by pre-defined groups such as Precinct, Election Day, or Absentee results, separately or combined.



1.2.D.9 OPTIONAL REQUIREMENT: The ENR system should allow the public to determine the total number of precincts, the number of precincts completely reported and the number of precincts partially reported.

Verity Count enables staff to choose for reports to include the total number of precincts, the number of precincts completely reported, and the number of precincts partially reported.

1.2.D.10 OPTIONAL REQUIREMENT: The ENR system should generate presentable, county and state configurable web

results displays listing proportion of precincts (not election groups) reported for each contest and display precinct-level results.

Verity Count produces cumulative and precinct-level results in PDF, CSV, XLSX, and HTML formats.

1.2.D.11 The ENR system shall supply an export utility that extracts current/up-to-date election results from the native data repository in a format that is easily provided to the State, county and/or local jurisdiction (e.g., ASCII), allowing the State, county and/or local jurisdiction to display election results via a third party software vendor.

Verity Count complies with this requirement. After vDrives have been read and tabulated in Verity Count, Verity Count is capable of exporting a comprehensive "all results" data file in .CSV format, which can be managed using commonly available third party tools.

1.2.D.12 The ENR system shall provide for a report of precincts reporting and not reporting on election night. The ENR system shall provide for the report to be printed or exported in a CSV or other format prescribed by the State.

Verity includes a Precincts Reporting Report that includes this information and can be printed or exported in PDF, CSV and XLSX formats. Additionally, Verity Count's dashboard dynamically displays precincts reporting and not reporting.

General Election 11/4/2014 Sample County, MICHIGAN				0 reporting	528 remaining	0 written	0% full
City of Southfield PC...	Bloomfield Townshi...	Waterford Township...	Millford Township P...	Brandon Township P...	City of Novi PCT 000...	City of Royal Oak PC...	City of Fenton PCT 0...
Bloomfield Townshi...	City of Troy PCT 000...	Bloomfield Townshi...	City of Pontiac PCT...	City of Birmingham...	Bloomfield Townshi...	Holly Township PCT...	City of Berkley PCT...
City of Southfield PC...	City of Troy PCT 000...	Independence Town...	West Bloomfield To...	City of Troy PCT 000...	City of Rochester PC...	City of Southfield PC...	City of Royal Oak PC...
Millford Township P...	Waterford Township...	Independence Town...	Waterford Township...	White Lake Townshi...	City of Oak Park PCT...	City of Huntington...	Southfield Townshi...
City of Birmingham...	City of Rochester Hil...	Bloomfield Townshi...	City of Farmington...	City of Rochester PC...	City of Walled Lake...	City of Royal Oak PC...	City of Troy PCT 000...
City of Madison Hei...	Springfield Townshi...	City of Troy PCT 000...	Highland Townshi...	Addison Township P...	Waterford Townshi...	City of Troy PCT 000...	City of Southfield PC...
Lyon Township PCT...	City of Village Of Cla...	City of Farmington...	City of Madison Hei...	Bloomfield Townshi...	Waterford Townshi...	City of Farmington...	City of Pontiac PCT...
City of Royal Oak PC...	City of Birmingham...	City of Farmington...	City of Rochester Hil...	City of South Lyon P...	Lyon Township PCT...	City of Southfield PC...	Waterford Townshi...
West Bloomfield To...	City of Southfield PC...	City of Rochester Hil...	City of Lathrup Villa...	City of Southfield PC...	City of Orchard Lake...	City of Auburn Hills...	City of Southfield PC...
City of Farmington...	City of Farmington...	City of Farmington...	City of Royal Oak PC...	City of Troy PCT 000...	City of Farmington...	City of Novi PCT 000...	City of Pontiac PCT...
City of Rochester Hil...	Waterford Township...	City of Southfield PC...	City of Troy PCT 000...	City of Hazel Park P...	City of Farmington...	Waterford Townshi...	West Bloomfield To...
West Bloomfield To...	City of Troy PCT 000...	City of Pontiac PCT...	City of Northville PC...	City of Troy PCT 000...	Millford Township P...	Southfield Townshi...	White Lake Townshi...
Waterford Townshi...	City of Southfield PC...	City of Farmington P...	Waterford Townshi...	City of Troy PCT 000...	City of Clawson PCT...	City of Farmington...	City of Rochester Hil...
Commerce Townshi...	City of Southfield PC...	Waterford Townshi...	City of Novi PCT 000...	City of Rochester Hil...	City of Oak Park PCT...	City of Rochester Hil...	City of Northville PC...
Bloomfield Townshi...	City of Royal Oak PC...	City of Birmingham...	City of Madison Hei...	City of Huntington...	City of Rochester Hil...	Independence Town...	City of Oak Park PCT...
City of Oak Park PCT...	Oxford Township PC...	City of Royal Oak PC...	City of Troy PCT 000...	West Bloomfield To...	City of Clawson PCT...	City of Pontiac PCT...	City of Rochester Hil...
Orion Township PCT...	Oakland Charter To...	Rose Township PCT...	City of Pontiac PCT...	City of Bloomfield H...	City of Rochester Hil...	City of Southfield PC...	City of Huntington...
City of Rochester PC...	City of Keego Harbo...	City of Rochester Hil...	City of Pontiac PCT...	Bloomfield Townshi...	City of Troy PCT 000...	Commerce Townshi...	City of Farmington P...
Bloomfield Townshi...	Addison Township P...	Oakland Charter To...	City of Royal Oak PC...	City of Novi PCT 000...	City of Rochester Hil...	City of Pontiac PCT...	Independence Town...
Waterford Townshi...	Holly Township PCT...	City of Farmington...	City of Royal Oak PC...	West Bloomfield To...	Independence Town...	Independence Town...	City of Southfield PC...
Independence Town...	City of Pontiac PCT...	City of Farmington...	City of Royal Oak PC...	White Lake Townshi...	Bloomfield Townshi...	City of Rochester Hil...	City of Pontiac PCT...
City of Farmington...	West Bloomfield To...	City of Birmingham...	City of Farmington...	City of Farmington...	City of Rochester Hil...	West Bloomfield To...	City of Madison Hei...
Orion Township PCT...	Southfield Townshi...	Highland Townshi...	City of Farmington...	City of Pleasant Ridg...	Brandson Township P...	City of Troy PCT 000...	City of Ferndale PCT...
City of Troy PCT 000...	White Lake Townshi...	City of Farmington...	City of Lathrup Villa...	Southfield Townshi...	City of Clawson PCT...	City of Troy PCT 000...	City of Rochester Hil...
City of Farmington...	Bloomfield Townshi...	Bloomfield Townshi...	City of Novi PCT 000...	Oxford Township PC...	White Lake Townshi...	Oakland Charter To...	Commerce Townshi...
						City of Wixom PCT 0...	City of Troy PCT 000...
						City of Rochester Hil...	City of Fenton PCT 0...



Receiving Dashboard							
General Election 11/4/2014 Sample County, MICHIGAN				60 reporting	468 remaining	0 written	insert vDrive
City of Southfield PCT 00002	City of Southfield PCT 00010	Rose Township PCT 00001	City of Novi PCT 00011	Lyon Township PCT 00006	City of Pontiac PCT 07019	Orion Township PCT 00007	Lyon Town
Bloomfield Township PCT 00004	City of Southfield PCT 00042	City of Rochester Hills PCT 02021	Brandon Township PCT 00004	City of Orchard Lake Village PCT...	City of Southfield PCT 00034	City of Oak Park PCT 00007	Highland T
City of Southfield PCT 00051	Waterford Township PCT 00010	Oakland Charter Township PCT...	City of Birmingham PCT 00061	City of Farmington Hills PCT 000...	Commerce Township PCT 00004	Waterford Township PCT 00019	City of Farr
Midland Township PCT 00004	City of Troy PCT 00022	City of Farmington Hills PCT 000...	City of Troy PCT 00021	City of Farmington Hills PCT 000...	City of Pontiac PCT 05014	Oxford Township PCT 00001	White Lake
City of Birmingham PCT 00007	West Bloomfield Township PCT...	City of Royal Oak PCT 00016	White Lake Township PCT 00002	Midland Township PCT 00007	Independence Township PCT 00...	City of Troy PCT 00012	City of Ben
City of Madison Heights PCT 00...	City of Southfield PCT 00032	City of Birmingham PCT 00004	City of Rochester PCT 00005	City of Clawson PCT 00003	City of Rochester Hills PCT 01029	City of South Lyon PCT 00004	City of Farr
Lyon Township PCT 00001	City of Royal Oak PCT 00008	Highland Township PCT 00003	Addison Township PCT 00003	City of Oak Park PCT 00003	West Bloomfield Township PCT...	Commerce Township PCT 00012	Royal Oak
City of Royal Oak PCT 00001	Oxford Township PCT 00006	City of Farmington Hills PCT 000...	Bloomfield Township PCT 00027	City of Rochester Hills PCT 03012	City of Troy PCT 00023	Waterford Township PCT 00008	City of Roy
West Bloomfield Township PCT...	Oakland Charter Township PCT...	Bloomfield Township PCT 00029	City of South Lyon PCT 00002	City of Clawson PCT 00005	Oakland Charter Township PCT...	City of Madison Heights PCT 00...	City of Farr
City of Farmington Hills PCT 000...	City of Keego Harbor PCT 00001	Midland Township PCT 00001	City of Southfield PCT 00007	City of Rochester Hills PCT 03013	City of Weston PCT 00003	Bloomfield Township PCT 00010	City of Farr
City of Rochester Hills PCT 02032	Addison Township PCT 00002	City of Pontiac PCT 04012	City of Troy PCT 00004	City of Troy PCT 00018	City of Fenton PCT 00003	Midland Township PCT 00003	Independen
West Bloomfield Township PCT...	Holly Township PCT 00003	West Bloomfield Township PCT...	City of Westland PCT 00002	City of Rochester Hills PCT 03007	City of Berkley PCT 00005	Addison Township PCT 00001	City of Ferr
Commerce Township PCT 00008	City of Pontiac PCT 06016	Waterford Township PCT 00029	City of Troy PCT 00002	Independence Township PCT 00...	City of Royal Oak PCT 00014	City of Weston PCT 00001	Orion Town
Waterford Township PCT 00003	West Bloomfield Township PCT...	City of Farmington Hills PCT 000...	City of Troy PCT 00015	Bloomfield Township PCT 00016	Southfield Township PCT 00003	Springfield Township PCT 00001	Southfield
Bloomfield Township PCT 00014	White Lake Township PCT 00004	Highland Township PCT 00007	City of Rochester Hills PCT 03001	Brandon Township PCT 00006	City of Troy PCT 00017	City of Royal Oak PCT 00021	City of Roc
City of Oak Park PCT 00009	West Lake Township PCT 00006	City of Madison Heights PCT 00...	City of Huntington Woods PCT...	City of Clawson PCT 00002	City of Southfield PCT 00023	Independence Township PCT 00...	Springfield
Orion Township PCT 00014	Bloomfield Township PCT 00019	City of Rochester Hills PCT 02009	West Bloomfield Township PCT...	City of Rochester PCT 00001	City of Pontiac PCT 06018	Groveland Township PCT 00001	City of Berk
City of Rochester PCT 00002	Waterford Township PCT 00015	City of Lathrup Village PCT 00002	City of Bloomfield Hills PCT 00002	White Lake Township PCT 00010	Waterford Township PCT 00023	Bloomfield Township PCT 00022	City of Roc
Bloomfield Township PCT 00026	Bloomfield Township PCT 00011	City of Royal Oak PCT 00018	Bloomfield Township PCT 00012	City of Royal Oak PCT 00024	City of Southfield PCT 00024	City of Huntington Woods PCT...	Novi Town
Waterford Township PCT 00026	Independence Township PCT 00...	City of Troy PCT 00005	City of Novi PCT 00006	Holly Township PCT 00001	City of Pontiac PCT 03007	City of Pontiac PCT 02005	City of Sou
Independence Township PCT 00...	Bloomfield Township PCT 00024	Waterford Township PCT 00028	West Bloomfield Township PCT...	City of Southfield PCT 00037	West Bloomfield Township PCT...	Bloomfield Township PCT 00002	City of Cla
City of Farmington Hills PCT 000...	City of Troy PCT 00009	City of Novi PCT 00021	City of Troy PCT 00008	City of Huntington Woods PCT...	White Lake Township PCT 00012	Independence Township PCT 00...	West Bloo
Orion Township PCT 00008	City of Farmington Hills PCT 000...	City of Madison Heights PCT 00...	City of Rochester Hills PCT 03017	City of Royal Oak PCT 00007	City of Rochester Hills PCT 03002	City of Ferndale PCT 00002	Lyon Town
City of Troy PCT 00010	City of Farmington Hills PCT 000...	City of Pontiac PCT 04011	Southfield Township PCT 00001	City of Troy PCT 00007	City of Northville PCT 00002	City of Rochester Hills PCT 04005	Midland Tn
City of Farmington Hills PCT 000...	City of Rochester Hills PCT 03031	City of Pontiac PCT 06017	Oakland Township PCT 00003	City of Farmington Hills PCT 000...	City of Oak Park PCT 00015	City of Troy PCT 00013	City of Sou
Bloomfield Township PCT 00006	City of Farmington Hills PCT 000...	City of Novi PCT 00005	City of Novi PCT 00005	City of Southfield PCT 00027	City of Rochester Hills PCT 03013	Bloomfield Township PCT 00031	Oakland Cl
City of Troy PCT 00025	City of Southfield PCT 00019	City of Royal Oak PCT 00005	Bloomfield Township PCT 00003	City of Auburn Hills PCT 00008	City of Huntington Woods PCT...	City of Fenton PCT 00004	Waterford
City of Troy PCT 00028	City of Pontiac PCT 01002	Bloomfield Township PCT 00008	City of Rochester PCT 00004	City of Novi PCT 00014	City of Farmington PCT 01004	Southfield Township PCT 00009	City of Farr
Waterford Township PCT 00020	City of Farmington Hills PCT 000...	White Lake Township PCT 00001	City of Oak Park PCT 00014	Waterford Township PCT 00022	Independence Township PCT 00...	City of Farmington Hills PCT 000...	City of Roy
City of Rochester Hills PCT 02019	Waterford Township PCT 00021	City of Farmington Hills PCT 000...	City of Westland PCT 00002	Southfield Township PCT 00005	City of Southfield PCT 00025	City of Troy PCT 00026	City of Roy
Springfield Township PCT 00007	City of Birmingham PCT 00009	West Bloomfield Township PCT...	Waterford Township PCT 00013	City of Farmington Hills PCT 000...	City of Pontiac PCT 03006	City of Farmington Hills PCT 000...	Holly Town
City of Village Of Clarkston PCT...	City of Royal Oak PCT 00009	City of Lathrup Village PCT 00003	Waterford Township PCT 00016	Independence Township PCT 00...	Commerce Township PCT 00015	Holly Township PCT 00002	City of Roy

1.2.D.13 The ENR reporting system shall provide for the replacement of an already-submitted precinct by the re-submission of that same precinct in the event of errors in transmission or new data. The system should prompt the local administrator to either overwrite data already submitted, or provide an option to ignore new data.

The Verity Voting solution for Michigan will include Verity Scan with the Relay option, to allow electronic transmission of cast vote records from Scan devices located in precincts or in AVCBs, via secure broadband technology. If the Verity Relay host station receives transmissions of results from a device (precinct) for which results have already been received, the prior results will be overwritten by the later transmission.

1.2.D.14 The ENR system shall provide for the ability to import the State-provided file of candidate information and statewide ballot proposal information in its entirety. The import must be seamless with a minimal need for manual manipulation after the fact.

Verity complies with this requirement in a seamless manner. Data is imported into Verity Data for both ballot production *and* for reporting. One dataset instead of two mitigates reconciliation issues. If further customization is required beyond the original data structure of the ballot (that is, if the structure of data for reporting needs must differ from the structure of the ballot), those edits can be accomplished in Verity Count by means of aliases.

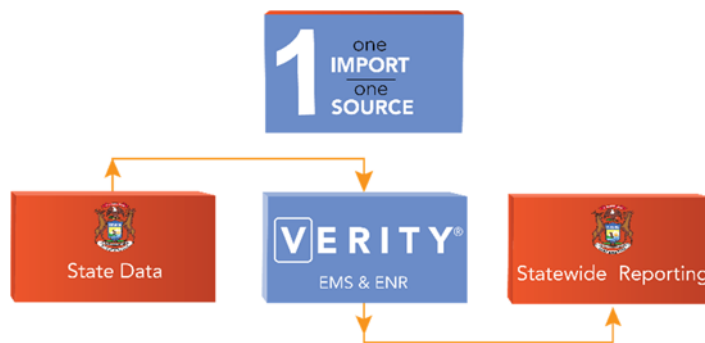


The alias feature in Verity Count's Reporting Options tab enables the user to change the name that displays on reports for various elements (precincts, districts, parties, voting types, contests, or choices).

Original Name	Alias
Dewey Maldonado	Dewey H. Maldonado
Cameron Dunn	
Kate Parks	
Martha Ray	
George Douglas	

- 1.2.D.15** The ENR system shall be capable of passing Michigan ENR Codes into the Vendor EMS and returning the codes in the results file. Codes include precinct, office and candidate codes.

Verity can comply with this requirement in a seamless manner. With one step at the front end, data is imported into Verity Data for both ballot production *and* for Election Night reporting – data is imported once to address both datasets. This “single channel” approach can increase efficiency and reduce the need for double-work data entry (i.e., through separate and/or parallel paths for ballot definition and reporting), and it mitigates having to reconcile two data sets.



- 1.2.D.16** The ENR system shall provide for the ability to import Ballot Definition Data using the Michigan QVF Export File Structure or IEEE Standard for Ballot Definition when implemented by the State. See Attachment 1.5 for additional details.

Please see Contractor's response to requirement **1.2.A.15**.

- 1.2.D.17** The ENR system shall provide for the import of a replacement file which incorporates any and all changes in the State-provided file. The import of the file cannot affect any of the local candidate information or local ballot proposal information already entered into the system.



Verity can integrate data from Verity Count into the State's format. If additional customization is required to Verity's integration functions to accommodate changes to the State's data, Contractor will work with the State to address that issue.

- 1.2.D.18** The ENR system shall provide for the manual update of the State-provided file information after it has been imported. The manual update process shall be easy to use with minimal steps.

Verity Count enables manual updates for precincts, parties, voting types, contests, and choices (candidates and propositions) by means of aliases.

- 1.2.D.19** The ENR system shall provide for the ability to produce Election Result Data in the Michigan Standard Results File Format or IEEE (1622.2) Election Results Reporting Data Interchange Format. See **Exhibit 3 to Schedule A Michigan QVF Export File Format**, for additional details.

The Contractor has demonstrated a proof of concept to illustrate how Verity is capable of complying with this requirement in a seamless manner, through the use of a file format converter that translates results data from Verity Count's "all results" CSV export into a format compatible for import into the statewide ENR system.

- 1.2.D.20** The ENR system shall provide for the export of the precinct-by-precinct vote totals of the candidate and proposals as required by the State-provided file format. The export must be seamless with a minimal need for manual manipulation after the fact.

Totals can be exported from Verity Count; then Verity's integration tools can integrate that data into the State's format. If additional customization is required to Verity's integration functions to accommodate changes to the State's data, The Contractor will work with the State to address that issue.

Please also see Contractor's response to requirement **1.2.D.19**, above.

- 1.2.D.21** The ENR system shall provide for the export of the county-wide totals of the candidates and proposals as required by the State-provided file format. The export must be seamless with a minimal need for manual manipulation after the fact.

Please see Contractor's our response to requirement **1.2.D.19**.



- 1.2.D.22** The ENR system shall provide for the export of precinct by precinct totals, jurisdiction totals and county-wide totals on election night or as the county is able. The EMS shall not limit the number of times a file can be exported.

Verity complies with this requirement.

- 1.2.D.23** The ENR system shall support reporting results in a variety of different election report-style formats, including Summary contest and Precinct Level.

Please see Contractor's responses in **Category E – Reports**, below.

CATEGORY E. REPORTS

- 1.2.E.1** The Contractor's EMS shall include a reporting feature that allows for the creation and customization of election night totals (unofficial results); county and State canvass reports (certified official totals); as well as ad hoc reporting. Specific requirements are outlined below. The Contractor shall include a detailed description of all available EMS reporting features, including samples of all available election night (unofficial totals) and canvass (official totals) reports. Contractor shall also respond to each individual requirement in this section to provide details and samples of EMS reports available that meet each individual requirement.

Verity meets all the specified requirements.

Verity Count is the Verity software application that tabulates and reports cast vote records stored on flash memory devices from Verity Scan and Verity Central. Once the vDrives have been read and tabulated, Count can produce a variety of standard and customized reports and exports for dissemination to the public and to statewide outlets.

Verity Count's abundance of user-defined options and easy-to use interface allow jurisdictions to create customized reports without requiring professional data processing assistance or the use of an external tool or report writer.

Verity Count produces reports in PDF, CSV and XLSX formats. Additionally, Verity Count produces results reports (cumulative, canvassing, precinct and selected others) in HTML. Reports can be organized according to individual reporting groups (such as Absentee Voting, Election Day) or to report all groups together for cumulative results.

Verity Count also includes intuitive, easy to use dashboards to monitor progress on Election Night, or to perform post-election audits, in a highly filterable way.



Standard reports

The Verity system includes the following standard reports:

- Verity Count reports
- Canvass Report

Canvass Results Report

Election Night Reporting

Run Time 3:26 PM

Run Date 8/24/2015

Sample County, MICHIGAN

General Election

11/4/2014

Page 3 of 59

Unofficial results

Registered Voters
278 of 469 = 59.28 %

Precincts Reporting
15 of 20 = 75.00 %

GOVERNOR AND LIEUTENANT GOVERNOR - Vote for not more than 1

Precinct	Rick Snyder Brian Nelson GALLEY , REP	Mark Schauer Lisa Brown , DEM	Mary Buzuma Scotty Boman , LIB	Mark McFarlin Richard Mendoza , UST	Paul Homeniuk Candace R. Caveny , GRN	Cast Votes	Overvotes	Undervotes	Precinct Ballots Cast	Absentee Ballots Cast	Total Ballots Cast	Registered Voters	Turnout Percentage
Township of Hart, Precinct 1 - 1	0	0	16	0	16	32	0	0	24	8	32	44	72.73 %
Township of Hart, Precinct 1 - 2	16	0	0	0	0	16	0	0	12	4	16	22	72.73 %
Township of Hart, Precinct 1 - 3	0	0	0	0	13	13	0	0	10	3	13	23	56.52 %
Township of Hart, Precinct 2 - 1	0	0	13	0	0	13	0	0	10	3	13	24	54.17 %
Township of Hart, Precinct 2 - 2	13	0	0	0	0	13	0	0	10	3	13	25	52.00 %
Township of Hart, Precinct 3 - 1	13	0	0	0	0	13	0	0	10	3	13	21	61.90 %
Township of Hart, Precinct 3 - 2	0	0	0	0	0	0	0	0	0	0	0	20	0.00 %
Sample Township, Precinct 1	0	13	0	0	0	13	0	0	10	3	13	20	65.00 %
Sample Township, Precinct 2	0	0	13	0	0	13	0	0	10	3	13	24	54.17 %
Sample Township, Precinct 3	0	13	0	0	0	13	0	0	10	3	13	25	52.00 %
Sample Township, Precinct 4	0	0	0	13	0	13	0	0	10	3	13	20	65.00 %
Sample Township, Precinct 5	13	0	0	0	0	13	0	0	10	3	13	21	61.90 %
Sample Township, Precinct 6	0	13	0	0	0	13	0	0	10	3	13	22	59.09 %
Sample Township, Precinct 7 - 1	0	0	13	0	0	13	0	0	10	3	13	23	56.52 %
Sample Township, Precinct 7 - 2	13	0	0	0	0	13	0	0	10	3	13	24	54.17 %
Sample Township, Precinct 8	0	13	0	0	0	13	0	0	10	3	13	25	52.00 %
Sample Township, Precinct 9	0	13	0	0	0	13	0	0	10	3	13	20	65.00 %



- Cumulative Report

Cumulative Results Report

Election Night Reporting

Run Time 3:05 PM

Run Date 8/24/2015

Sample County, MICHIGAN

General Election

11/4/2014

Page 1 of 9

Unofficial results

Registered Voters

278 of 446 = 62.33 %

Precincts Reporting

15 of 20 = 75.00 %

STRAIGHT PARTY TICKET - Vote for not more than 1

Choice	Party	Precinct	Absentee	Total
Republican Party	REP	20 9.43 %	6 9.09 %	26 9.35 %
Democratic Party	DEM	20 9.43 %	6 9.09 %	26 9.35 %
Libertarian Party	LIB	12 5.66 %	4 6.06 %	16 5.76 %
U.S. Taxpayers Party	UST	10 4.72 %	3 4.55 %	13 4.68 %
Green Party	GRN	12 5.66 %	4 6.06 %	16 5.76 %
Natural Law Party	NLP	0 0.00 %	0 0.00 %	0 0.00 %
Cast Votes:		74 34.91 %	23 34.85 %	97 34.89 %
Undervotes:		138 65.09 %	43 65.15 %	181 65.11 %
Overvotes:		0 0.00 %	0 0.00 %	0 0.00 %

GOVERNOR AND LIEUTENANT GOVERNOR - Vote for not more than 1

Choice	Party	Precinct	Absentee	Total
Rick Snyder	REP	64 30.19 %	20 30.30 %	84 30.22 %
Brian Nelson Calley				
Mark Schauer	DEM	62 29.25 %	19 28.79 %	81 29.14 %
Lisa Brown				
Mary Buzuma	LIB	42 19.81 %	13 19.70 %	55 19.78 %
Scotty Boman				
Mark McFarlin	UST	22 10.38 %	7 10.61 %	29 10.43 %
Richard Mendoza				
Paul Homeniuk	GRN	22 10.38 %	7 10.61 %	29 10.43 %
Candace R. Caveny				
Cast Votes:		212 100.00 %	66 100.00 %	278 100.00 %
Undervotes:		0 0.00 %	0 0.00 %	0 0.00 %
Overvotes:		0 0.00 %	0 0.00 %	0 0.00 %

SECRETARY OF STATE - Vote for not more than 1

Choice	Party	Precinct	Absentee	Total
Ruth Johnson	REP	52 24.53 %	16 24.24 %	68 24.46 %
Godfrey Dillard	DEM	64 30.19 %	20 30.30 %	84 30.22 %
James Lewis	LIB	42 19.81 %	13 19.70 %	55 19.78 %
Robert Gale	UST	32 15.09 %	10 15.15 %	42 15.11 %
Jason Robert Gatties	NLP	10 4.72 %	3 4.55 %	13 4.68 %
Cast Votes:		200 94.34 %	62 93.94 %	262 94.24 %
Undervotes:		12 5.66 %	4 6.06 %	16 5.76 %
Overvotes:		0 0.00 %	0 0.00 %	0 0.00 %



- Precinct Report

Precinct Results Report

Election Night Reporting

Run Time 3:09 PM

Run Date 8/24/2015

Sample County, MICHIGAN

General Election

11/4/2014

Page 1 of 160

Unofficial results

Registered Voters
278 of 446 = 62.33 %

Precincts Reporting
15 of 20 = 75.00 %

Township of Hart, Precinct 1 - 1

STRAIGHT PARTY TICKET - Vote for not more than 1

Choice	Party	Precinct		Absentee		Total	
Republican Party	REP	0	0.00 %	0	0.00 %	0	0.00 %
Democratic Party	DEM	0	0.00 %	0	0.00 %	0	0.00 %
Libertarian Party	LIB	12	50.00 %	4	50.00 %	16	50.00 %
U.S. Taxpayers Party	UST	0	0.00 %	0	0.00 %	0	0.00 %
Green Party	GRN	12	50.00 %	4	50.00 %	16	50.00 %
Natural Law Party	NLP	0	0.00 %	0	0.00 %	0	0.00 %
Cast Votes:		24	100.00 %	8	100.00 %	32	100.00 %
Undervotes:		0	0.00 %	0	0.00 %	0	0.00 %
Overvotes:		0	0.00 %	0	0.00 %	0	0.00 %

GOVERNOR AND LIEUTENANT GOVERNOR - Vote for not more than 1

Choice	Party	Precinct		Absentee		Total	
Rick Snyder	REP	0	0.00 %	0	0.00 %	0	0.00 %
Brian Nelson Calley							
Mark Schauer	DEM	0	0.00 %	0	0.00 %	0	0.00 %
Lisa Brown							
Mary Buzuma	LIB	12	50.00 %	4	50.00 %	16	50.00 %
Scotty Boman							
Mark McFarlin	UST	0	0.00 %	0	0.00 %	0	0.00 %
Richard Mendoza							
Paul Homeniuk	GRN	12	50.00 %	4	50.00 %	16	50.00 %
Candace R. Caveny							
Cast Votes:		24	100.00 %	8	100.00 %	32	100.00 %
Undervotes:		0	0.00 %	0	0.00 %	0	0.00 %
Overvotes:		0	0.00 %	0	0.00 %	0	0.00 %

SECRETARY OF STATE - Vote for not more than 1

Choice	Party	Precinct		Absentee		Total	
Ruth Johnson	REP	0	0.00 %	0	0.00 %	0	0.00 %
Godfrey Dillard	DEM	0	0.00 %	0	0.00 %	0	0.00 %
James Lewis	LIB	12	50.00 %	4	50.00 %	16	50.00 %
Robert Gale	UST	0	0.00 %	0	0.00 %	0	0.00 %
Jason Robert Gatties	NLP	0	0.00 %	0	0.00 %	0	0.00 %
Cast Votes:		12	50.00 %	4	50.00 %	16	50.00 %
Undervotes:		12	50.00 %	4	50.00 %	16	50.00 %
Overvotes:		0	0.00 %	0	0.00 %	0	0.00 %



- Write-In Status Report

Write-in Status	Sample County, MICHIGAN	Unofficial results
Election Night Reporting	General Election	Registered Voters 278 of 446 = 62.33 %
Run Time 3:10 PM	11/4/2014	Precincts Reporting 15 of 20 = 75.00 %
Run Date 8/24/2015	Page 1 of 9	

GOVERNOR AND LIEUTENANT GOVERNOR - Vote for not more than 1

Write-in name	Votes assigned
Rick Snyder	0
Brian Nelson Calley	
Mark Schauer	0
Lisa Brown	
Mary Buzuma	0
Scotty Boman	
Mark McFarlin	0
Richard Mendoza	
Paul Homeniuk	0
Candace R. Caveny	
No write-in candidates have been created	
Number of unresolved Write-ins:	0
Number of rejected Write-ins:	0

SECRETARY OF STATE - Vote for not more than 1

Write-in name	Votes assigned
Ruth Johnson	0
Godfrey Dillard	0
James Lewis	0
Robert Gale	0
Jason Robert Gatties	0
No write-in candidates have been created	
Number of unresolved Write-ins:	0
Number of rejected Write-ins:	0

ATTORNEY GENERAL - Vote for not more than 1

Write-in name	Votes assigned
Bill Schuette	0
Mark Totten	0
Justin M. Altman	0
Gerald T. Van Sickle	0
John Anthony La Pietra	0



• Precincts Reporting Report

Precincts Reporting

Election Night Reporting

Run Time1:42 PM

Run Date8/31/2015

Sample County, MICHIGAN

General Election

11/4/2014

Page 1 of 1

Unofficial results

Registered Voters

278 of 469 = 59.28 %

Precincts Reporting

15 of 20 = 75.00 %

Precinct Split Name	Reporting Status	Registered Voters	Total Ballots	Turnout %
Township of Hart, Precinct 1 - 1	Reporting	44	32	72.73 %
Township of Hart, Precinct 1 - 2	Reporting	22	16	72.73 %
Township of Hart, Precinct 1 - 3	Reporting	23	13	56.52 %
Township of Hart, Precinct 2 - 1	Reporting	24	13	54.17 %
Township of Hart, Precinct 2 - 2	Partially Reporting	25	13	52.00 %
Township of Hart, Precinct 3 - 1	Reporting	21	13	61.90 %
Township of Hart, Precinct 3 - 2	Reporting	20	0	0.00 %
Sample Township, Precinct 1	Partially Reporting	20	13	65.00 %
Sample Township, Precinct 2	Reporting	24	13	54.17 %
Sample Township, Precinct 3	Partially Reporting	25	13	52.00 %
Sample Township, Precinct 4	Reporting	20	13	65.00 %
Sample Township, Precinct 5	Reporting	21	13	61.90 %
Sample Township, Precinct 6	Reporting	22	13	59.09 %
Sample Township, Precinct 7 - 1	Reporting	23	13	56.52 %
Sample Township, Precinct 7 - 2	Reporting	24	13	54.17 %
Sample Township, Precinct 8	Reporting	25	13	52.00 %
SampleTownship, Precinct 9	Reporting	20	13	65.00 %
Sample Township, Precinct 10	Reporting	21	16	76.19 %
Sample Township, Precinct 11 - 1	Partially Reporting	22	16	72.73 %
Sample Township, Precinct 11 - 2	Partially Reporting	23	16	69.57 %
Precinct Splits Reporting:		15		
Precinct Splits Not Reporting:		0		
Total number of ballots:		278		



- Audit Log Report

Audit Log Report				Sample County, MICHIGAN		Unofficial results
Election Night Reporting				General Election		Registered Voters 278 of 446 = 62.33 %
Run Time 3:12 PM				11/4/2014		Precincts Reporting 15 of 20 = 75.00 %
Run Date 8/24/2015				Page 1 of 14		
Component: VerityCount 0.18.19.18962				ElectionId: 11879		
Row	Log Date & Time	Device ID	User	Tags	Event	Event Data
1	2015-08-24 14:54:26	W1494024503	user	ElectionManag ement, Info	Election Open	The election 'Sample County, MICHIGAN' (11879) was opened.
2	2015-08-24 14:54:29	W1494024503	user	UI, Info	Menu Item Selected	Menu Item Name: New
3	2015-08-24 14:54:59	W1494024503	user	ElectionManag ement, Info	Task created	Name- 'OFFICIAL RESULTS', Type- Official, Report Label- 'Election Night Reporting - UNOFFICIAL', Tabulation- 8/24/2015 2:54:29 PM, Reporting Types:
4	2015-08-24 14:55:01	W1494024503	user	ElectionManag ement, Info	Task opened	Task: 'OFFICIAL RESULTS'
5	2015-08-24 14:55:01	W1494024503	user	UI, Info	View loaded	View name: Read chevron
6	2015-08-24 14:55:01	W1494024503	user	UI, Info	View loaded	View name: Dashboard task
7	2015-08-24 14:55:02	W1494024503	user	UI, Info	View loaded	View name: Election Dashboard
8	2015-08-24 14:55:02	W1494024503	user	ElectionOperat ions, VoteManagem ent, Info	Started reading vDrives	
9	2015-08-24 14:55:12	W1494024503	user	Authorization, Hardware, Info	Verity Key requested	
10	2015-08-24 14:55:12	W1494024503	user	ElectionSecurit y, Info	Verity Key read	Key for this election
11	2015-08-24 14:55:13	W1494024503	user	DataExchange, Info	vDrive read	vDrive read with values: Polling Place- "", Ballot count = 278, Log entries = 0, Time read- 8/24/2015 2:55:13 PM, State- Read, Election ID- 11879, vDrive ID- 2, State reason- "", Media type- Official
12	2015-08-24 14:55:14	W1494024503	user	DataExchange, Info	vDrive saved	vDrive saved with values: Polling Place- "", Ballot count = 278, Log entries count = 0, Time read- 8/24/2015 2:55:13 PM, State- Read, Election ID- 11879, vDrive ID- 2, State reason- "", Media type- Official, Path- "
13	2015-08-24 14:55:28	W1494024503	user	UI, Info	View loaded	View name: 'You have not printed a zero report. To tabulate without printing a zero report, click "OK."' message box
14	2015-08-24 14:55:30	W1494024503	user	UI, Info	Button pressed	Button name: OK
15	2015-08-24 14:55:30	W1494024503	user	ElectionOperat ions, VoteManagem ent, Info	Tabulation on	
16	2015-08-24 14:55:40	W1494024503	user	ElectionOperat ions, VoteManagem ent, Info	Tabulation off	
17	2015-08-24 14:55:42	W1494024503	user	UI, Info	View loaded	View name: Results chevron
18	2015-08-24 14:55:42	W1494024503	user	ElectionOperat ions, VoteManagem ent, Info	Stopped reading vDrives	
19	2015-08-24 14:55:42	W1494024503	user	UI, Info	View loaded	View name: Options task



- Flash Memory Device (vDrive) Status Report

vDrive Status Report		Sample County, MICHIGAN		Unofficial results	
Election Night Reporting		General Election		Registered Voters 278 of 446 = 62.33 %	
Run Time	3:11 PM	11/4/2014		Precincts Reporting 15 of 20 = 75.00 %	
Run Date	8/24/2015	Page 1 of 1			

vDrive ID	Status	Rejection Reason	Date Read	Total ballots	Voting Type	Device Type	Device Serial
W1494024503							
2	Read and Tabulated		08/24/2015 14:55:13	278	Absentee, Precinct	Central	W1494024503
No location reported							
1	Not Read			0			
Total number of vDrives written in Build:				2			
Total number of vDrives read in Count:				1			
Percentage of vDrives read:				50.00 %			
Total number of ballots read:				278			

- Device Log Report Voting Device Reports
- Polling Places Report
- Alias Report
- Manual Vote Recording Report
- Residual Votes Report

Verity Count also allows users to easily create customized reports based on user-selected filtered data (such as only certain precincts or contests).

Add filters

Add a filter
Polling Place
Precinct
District
Voting Equipment Used
Ballot Type
Voting Type
Ballot Contents
Contest
Choice

Select filter contents:

☐ President
☒ U.S. Representative, District 1
☐ Councilmember, City of Sampleton
☐ Proposition 32-5

Currently applied filters:

☒ Polling Place (1 items)
☒ Voting Type (1 items)
☒ Contest (1 items)

Back
Add Filter
Finish



Filters include:

- District filter
- Precinct/split filter
- Contest filter
- Ballot options filter
- Flash Memory Device (vDrive) ID filter
- Batch ID filter
- Voting Device Type filter
- Voting Device ID filter
- Polling Place filter
- Voting Type filter

Verity Build (election definition and deployment) reports

- Jurisdiction Configuration Report
- Polling Place List, Summary
- Polling Place List, with Details
- All Contests
- Contest Associations
- Ballot Style Associations
- Rotation Report
- Ballots Printed
- Flash Memory Devices (vDrives) Created

Verity Central (high-speed scanning and on-screen ballot adjudication) reports

- Configuration Report
- Batch Detail Report
- Precinct Detail Report
- Deleted Ballots Report
- Audit Log Report
- System Log Report

1.2.E.2 The EMS shall be capable of generating all reports on standard letter size paper (8.5 x 11 inches).

Verity Count produces reports in PDF, CSV and XLSX formats. Additionally, Verity Count produces results reports (cumulative, canvassing, precinct and selected others) in HTML. These reports can be formatted to fit standard letter size paper.

1.2.E.3 The EMS shall provide for unofficial and official reports and canvass documents in a standard format that can also be customized at the option of the county or State user; including the display of both absentee and election day vote totals, as well as grand totals in any given precinct. The system shall be capable of producing official and/or unofficial election result reports consisting of any combination of vote data, and presented in any available format; to be produced at any time during the tabulation of votes, or thereafter.



Verity complies with this requirement. Please see Contractor's response to requirement **1.2.D.1**.

- 1.2.E.4** The EMS shall provide the ability to custom design an election report to include, at a minimum, the following information in total or in part: name of election; political subdivisions; parties involved; date of election; type of report; total number of registered voters in each political subdivision; total number of registered voters in each voting precinct, including a sub-listing when the precinct is split; and votes by multi-member districts (i.e., vote for two), legislative district or congressional district.

Verity complies with this requirement. Please see Contractor's response to requirement **1.2.D.1**.

- 1.2.E.5** The EMS shall be capable of sorting by fields or permitting the user to customize layout.

Verity Count's customized reporting feature allows users to customize report header information, inclusion of exclusion of specific data contained in standard reports, and other methods to customize layout compared to the standard reports.

- 1.2.E.6** The EMS shall provide flexibility in printable reports showing results containing candidates and/or questions in alphanumeric format/ ballot order, etc. next to the vote totals. Proposals shall include details on the available options for customizable reporting and customizable printing (e.g., font availability and sizes, page layout, etc.).

Verity Count includes numerous reporting options for printable reports, as detailed in Contractor's response to requirement **1.2.D.1**.

Users can select whether to report results "by winners," or in the choice order that originally appeared on the ballot. In addition, the customized reporting engine allows users to create customized report headers with non-standard titles and to include user-defined data sets selected from a wide range of filters.

- 1.2.E.7** The EMS shall provide for the official report of countywide vote totals for State offices and proposals in a form prescribed by the State. The report shall provide for the vote totals to be reported in numeric and written form (linked to the official canvass report).

Verity Count can provide for the official report of countywide vote totals for State offices and proposals in a form prescribed by the State and linked to the official canvass. The report can provide vote totals in numeric characters, but not in alphabetic characters. Totals can be exported from Verity Count and then Verity's integration tools can integrate that data into the State's format. If additional customization is required to Verity's integration functions to accommodate changes to the State's data, Contractor will work with the State to address that issue.

For complete details on Verity Voting System data exchange, please see Contractor's response to requirement **1.2.A.15**

- 1.2.E.8** The EMS shall generate pre- and post-election reporting with the following data: 1) contests and candidates in election, 2) precinct attributes such as Voter Registration totals, modem numbers, etc., 3) candidate rotations by contest and precinct with Voter Registration totals, 4) Voter Registration totals, 5) precincts reported, 6) linked precincts and districts, 7) contest by precinct, 8) ballot styles by precinct and by district, 9) headers by precinct, 10) export codes, 11) statement of votes cast detailing all contests and precincts, 12) election "milestones" by precinct such as programming, memory device, reporting results, 13) proofing report for proofing candidates and contests.

Verity can generate reports that comply with all the specified requirements.

- 1.2.E.9** The EMS shall be capable of generating election results reports in standard electronic formats for distribution (.docx, .pdf, .html, .csv, .txt, ascii, xml).

The Verity system can generate reports and/or data exports in standard electronic formats including PDF, XML and CSV for distribution.

- 1.2.E.10** The EMS shall be capable of producing reports on election night, without disrupting the results accumulation process.

Verity complies with this requirement.



- 1.2.E.11** The EMS shall be capable of producing reports that include user customizable report headers and/or footers (election type, date of election, county name, jurisdiction name, date/time of report, results status).

Verity Count enables elections staff to customize headers and footers of reports as specified in this requirement.

- 1.2.E.12** The EMS shall be capable of producing a report that includes the jurisdiction, precinct number and the type of election results (Total, Precinct, Absentee, Provisional, etc.).

Verity Count reports can include the information specified in this requirement.

- 1.2.E.13** The EMS shall be capable of producing reports that include the following data elements in the body of the report:

- a. the name of each contest on the ballot (e.g., Governor, Delegate, President);
- b. the names of each candidate in each contest or race;
- c. the party affiliation of each candidate in each contest or race;
- d. the number of choices for each contest or question (e.g., vote for 1);
- e. the vote totals for each candidate in each contest or race, by precinct, AVCB and combined total;
- f. the total votes for each contest;
- g. the winning selection for each contest, indicated by bolding or some other mark;
- h. the title and number of each question on the ballot (e.g., "County Question A, State Question 1");
- i. the possible selections for each question or contest, (e.g., "For", "Against", "Yes", "No" or a blank);
- j. the total number of precincts for the election;
- k. the percent of reporting precincts versus the total number of precincts;
- l. the total number of registered voters;
- m. the total number of registered voters that voted in the election;
- n. the total percent of voter turnout;
- o. the number of overvotes in each contest or race;
- p. the number of undervotes in each contest or race;
- q. the total number of votes for all write-in candidates;
- r. overall "Election Results Reports" - reports of election results filtered by congressional district, legislative district, custom districts (e.g. council district, commission, school board, county/jurisdiction, wards), precinct including precinct splits, candidate political party affiliation, and by the number of partisan and non-partisan ballots cast;
- s. a list, capable of being produced at any point in the process, showing which precinct or absentee/memory devices have been uploaded to the EMS, and which have not been uploaded to the EMS;
- t. the capability for the reporting of ballots cast in split precincts;
- u. **OPTIONAL REQUIREMENT:** the EMS shall be capable of adding the names of certified write-in candidates to the EMS and reports.

Verity complies with all these requirements. Please see Contractor's response to requirement **1.2.D.1**.

- 1.2.E.14** The EMS shall prevent the printing of summary reports before the sequence of events required for closing of the polls are completed.

Verity complies with this requirement. Verity Count can be configured to disallow the ability to tabulate and report results prior to the date and time specified for the closing of polls.

- 1.2.E.15** **OPTIONAL REQUIREMENT:** (For use if an 'Early Voting' option is implemented in the future) - The EMS shall be capable of producing reports including the number of ballots cast or read into each precinct without closing the polls or revealing any preliminary results data.

Verity Scan can generate a Ballot Count report that indicates the number of ballots cast and scanned by the Scan unit, without closing the polls or revealing any preliminary results data.



CATEGORY F. AUDIT CAPABILITIES

- 1.2.F.1** The EMS shall provide an audit log stored on the memory device that records all pre-Election, Election Day and post-election actions performed; the audit log must be kept / stored and available for printing.

Throughout all phases of operation, all Verity System components maintain complete audit logs. Every Verity application logs all user authorization/authentication, data entry, user interaction, and system events, and error messages. Application logs can be printed or exported from each application.

On the Verity Scan and Verity Touch Writer voting devices, audit logs and cast vote records are redundantly stored to the vDrive and to a partition on the compact flash card.

The audit log for each device includes a record of each event occurring on the device, including:

- Date and time of the event
- Option selected by the voter where applicable
- Action performed on the unit
- Tabulation input events
- Device serial number.

When the vDrive is read into the Verity Count tabulation and reporting application, the audit logs are transferred to the datastore for that election.

Verity Central's audit log includes the user ID and a record of all resolution decisions, providing a complete record of the adjudication process.

Verity Count includes intuitive, easy-to-use dashboards to perform post-election audits, in a highly filterable way.

- 1.2.F.2** The EMS shall include an available report that documents information regarding the tabulator, firmware and software versions in use.

A report containing the required information is available from Verity Scan.

- 1.2.F.3** The EMS shall provide an error message log that documents error messages; the error message log must be kept/stored and available for printing.

Verity audit logs comply with this requirement. Please see Contractor's response to requirement **1.2.F.1**.



CATEGORY G. SYSTEM/SOFTWARE OWNERSHIP

1.2.G.1 This Contract includes a standard Software License Agreement, Schedule B.

Refer to **Schedule B – Software License Agreement**.



Attachment 1.3 Voting System ABSENT VOTER (AV) PROCESSING Technical Requirements

CATEGORY A. AV PROCESSING (GENERAL)

- 1.3.A.1** All requirements listed in Attachment 1.1 (HARDWARE requirements) also apply to hardware used with absent voter (AV) ballots and AV voting, including jurisdictions in which separate Absent Voter Counting Boards (AVCBs) are used to process AV ballots on Election Day. The following requirements in this section are requirements related to AV processing, in addition to all requirements listed in **Attachment 1.1, HARDWARE Technical Requirements**.

Verity complies with this requirement.

- 1.3.A.2** AV ballots shall be the same ballot type and size as that used in the Election Day precinct.

With the Verity Voting system, the same ballot type and size is used for both AV and Election Day.

- 1.3.A.3** The Contractor shall provide information indicating the ballot processing speed for each of the following types of ballots:

- a. Flat ballots
- b. Half-folded ballots
- c. Tri-folded ballots
- d. Z-folded ballots
- e. Letter folded ballots of various supported lengths

Verity Central uses enterprise-grade, commercial Canon scanners with throughput speeds of 100 pages per minute and 130 pages per minute, respectively, for a letter-size ballot. These scanners can also handle ballots that have been half-folded, tri-folded, z-folded, creased and/or wrinkled. Ballot folds do not affect processing speed.

CATEGORY B. HIGH-SPEED AVCB TABULATOR

- 1.3.B.1** **OPTIONAL REQUIREMENT:** The Contractor shall describe available options for a high-speed tabulator used to process AV ballots in an AVCB. If a high-speed AVCB option is available, the Contractor shall describe in detail, the specifications, components, features and functionality of the high-speed AVCB tabulator system. The Contractor shall also provide details on the process for electronically transmitting unofficial election night totals from the high-speed AVCB tabulator.

Verity Central provides high-speed scanning of absentee ballots and can be located at central ballot processing locations anywhere in the State. The Verity AVCB solution is completely integrated with the rest of the Verity Voting system, and it includes a commercial high-speed scanner, one or more PC workstations, and Verity Central software. Verity Central provides the processed cast vote records to the Verity Count component of the system for tabulation and reporting.

Verity Central does not count votes – it scans and records cast vote records, preparing them for rapid tabulation in Verity Count tabulation software. This approach allows jurisdictions to begin scanning before the close of polls on Election Day, thereby greatly accelerating the reporting of results. Verity Central also provides onscreen adjudication of ballots. Processed ballot information from Central is written to vDrives and transported to Verity Count. vDrives from multiple Verity Central clusters can all be read into Verity Count to consolidate results.

Verity Central's commercial scanner design provides not only easy maintenance and a robust supply chain, but Verity Central is also scalable, to accommodate multiple networked scanning client workstations. Verity Central workstations can be networked in clusters of up to four, and through the use of multiple clusters, Verity can be scaled upward to meet State and local entity needs now and in the future.

Based on barcodes printed on scanned ballots, Verity Central identifies and electronically manages multiple precinct styles, regardless of the order in which ballots are batched. Furthermore, Verity Central can scan ballots inserted in any orientation: face up, face down, header first, or footer first. Because AV ballots do not need to be pre-sorted before inserting them into the scanner, labor time is greatly reduced, and efficiency is markedly enhanced.



Verity Central's onscreen digital adjudication features are noteworthy. Instead of forcing users to outstack and hand-count ballots with questionable voter marks, with Verity Central, ballots with questionable marks can be adjudicated through an onscreen adjudication process. This process color-codes contests with marks that require attention (e.g., overvotes, undervotes, invalid marks, blank ballots, etc.) and allows authorized users to determine the disposition of unresolved marks without needing to handle the original marked ballot or re-make and re-scan outstacked ballots. In this way, Verity Central greatly boosts efficiency and accelerates reporting of results.

Verity Central also supports robust auditability, with highly filterable ballot image searches and access to original and annotated ballot images. When all ballots have been scanned and resolved, Central writes Cast Vote Records to vDrive portable flash media and can then be tabulated in Verity Count tabulation and reporting software.

To accommodate the varying ballot volumes different-sized jurisdictions manage, the Contractor has included three options for AVCB processing. For small jurisdictions, Contractor offers the option of using the precinct tabulator for AVCB use. The Verity Scan precinct tabulator with the Relay option provides electronic transmission of unofficial election night totals.

Recognizing that Michigan's local jurisdictions operate AVCBs in locations often away from the Clerk's central office, Contractor has outlined options for producing results in an AVCB, in lieu of constructing a full network. Verity supports a jurisdiction's ability to swap out removable hard disk drives on a single PC computer, thereby facilitating the use of two different software components on a single PC workstation. One hard drive can be installed with Verity Central (for AVCB high-speed scanning), and a second hard drive for Verity Count (for tabulation and reporting). In this way, one PC can support scanning, tabulating, and reporting functions.

- 1.3.B.2** The State prefers an AVCB high-speed tabulator option that utilizes Commercial Off The Shelf (COTS) equipment. If a high-speed AVCB tabulator is provided under this Contract, the Contractor shall indicate whether COTS options are available and shall provide detail related to the COTS components in the response to this section, and in **Schedule C, Pricing**, including make/model of COTS equipment.

Verity complies with this requirement. Three models of commercial high-speed scanners are available with Verity. We have noted further details, including make and model, in **Schedule C, Pricing**.



- 1.3.B.3** The Contractor shall indicate whether the high-speed AVCB tabulator system requires or utilizes special software or components that differ, or are in addition to, the requirements for the Contractor's Election Day tabulator system (as outlined in the response to the **HARDWARE requirements, Attachment 1.1**). Any additional components and/or costs must also be identified in **Schedule C, Pricing**.

The optional Verity Central high-speed AVCB consists of Verity Central software, a workstation and an enterprise-grade commercial scanner. The components and associated costs are provided in **Schedule C, Pricing**.

- 1.3.B.4** The Contractor must provide detailed information on the maximum number of ballot styles that can be processed by a single high-speed AVCB tabulator. Contractor provides multiple high-speed equipment options that allow for different-sized jurisdictions with differing volumes of AV ballots, and therefore differing ballot processing speeds.

With Verity Central, any ballot style included in a given election definition can be processed by a single AVCB tabulator. As a digital system, Verity Central provides maximum flexibility to accommodate multiple styles and precincts, without the need to "predefine" the high speed tabulator, and it removes the burden of pre-sorting ballots into specific batches before scanning. If a ballot style is included in the election definition created in Verity Build, Verity Central can process it, without limitation.

To accommodate the needs of different-sized jurisdictions, Contractor has included a variety of options with varying throughputs in **Schedule C, Pricing**.

As a security measure, Verity Central also exclusively recognizes ballots associated with a specific election ID, and it ensures that only those ballots styles specific to the current election are recorded and tabulated. Central rejects ballots that are not printed for the election that is currently defined and open on the system. The election identifier is embedded into the security barcodes on the ballots. Verity Central checks this election identifier on each ballot that is scanned and rejects any ballots that do not contain the correct election identifier.

- 1.3.B.5** The Contractor must document the speed at which ballots are processed (ballots per minute) and must provide comparative detail of the processing speed of the proposed high-speed AVCB tabulator vs. the processing speed of the Contractor's Election Day tabulator system; including a suggested replacement rate between precinct tabulators and high-speed tabulators (e.g., one high speed tabulator in lieu of X precinct tabulators).

Contractor has provided options for two different commercial scanners to use with Verity Central. The Canon DRG 1130 scanner processes ballots at a rate of 130 pages per minute, and the Canon DRG 1100 scanner processes ballots at a rate of 100 pages per minute. The Verity Scan scanner typically used for precinct voting scans ballots at the rate of approximately 10 pages per minute.

- 1.3.B.6** The Contractor shall provide details related to any available special ballot sorting options available with the high-speed AVCB tabulator system (e.g., ballot processing by precinct, outstacking/separation of write-ins, ambiguous marks and blank ballots that may require specialized handling by election inspectors).

Verity Central has powerful capabilities that greatly accelerate the processing of ballots, even in situations where traditional systems have no other option but to "reject" ballots that contain overvotes, write-ins, or other conditions that prevent the ballot from being read.

With Verity, it is only under circumstances where a ballot literally cannot be imaged for exceptional reasons (due to a defaced bar code, for example) that Verity Central is unable to read the ballot. In such exceptional circumstances, Verity Central continues scanning a batch without interruption, and the Scan Batch report identifies specific ballots in the batch that could not be read, with a plain language message to the operator. In addition, the reasons for the rejection, as well as the scan sequence number, are identified in an easy-to-read "Batch Scan" report.

Verity operates with an efficiency that sets it apart from older, non-digital approaches. Instead of forcing users to outstack and hand-count ballots with questionable voter marks, as is the case with older systems, with Verity Central, ballots with questionable marks can be adjudicated through the innovative Verity Central onscreen adjudication process. This process color-codes contests with marks that require attention (e.g., overvotes, undervotes, invalid marks, blank ballots, etc.) and allows authorized users to determine the disposition of unresolved marks without needing to handle the original marked ballot or re-make and re-scan outstacked ballots. In this way, Verity Central greatly boosts efficiency and accelerates reporting.



Verity Central also supports robust auditability, with highly filterable ballot image searches and access to original and annotated ballot images. When all ballots have been scanned and resolved, Central writes cast vote records to vDrive portable flash media and can then be tabulated in Verity Count tabulation and reporting software.

The screenshot displays the Verity Central web application interface. The top navigation bar includes 'Home', 'Select Election', 'Scan', 'Review', 'Write Ballots', and 'Reports'. The 'Review' tab is active. The main content area is titled 'Ballot Review' and shows a 'Batch 2' with 'Scan order 7'. It displays a ballot image for 'President and Vice-President of the United States' with handwritten marks. The interface includes a 'View Legend' button and a 'Previous' button. The bottom status bar shows 'Last Refreshed: 11:39:35 AM' and a legend for 'Needs adjudication', 'Checked out', 'Contains locked contests', and 'Written to vDrive'.



Attachment 1.4 Voting System ACCESSIBLE VOTING SYSTEM COMPONENT Technical Requirements

CATEGORY A. ACCESSIBLE VOTING SYSTEM REQUIREMENTS (GENERAL)

1.4.A.1 All requirements listed in **Attachment 1.1 (HARDWARE requirements)** also apply to hardware used with proposed accessible voting system components for use by individuals with disabilities. The following requirements in this section are additional system requirements related to the Contractor's ACCESSIBLE VOTING COMPONENT.

The Verity Voting system complies with this requirement. Verity Touch Writer, the accessible ballot marking device solution, is a fully integrated part of the overall Verity Voting system.

1.4.A.2 The Contractor shall provide a complete description of the Contractor's accessible voting system, including all components, make/model, detailed functionality and specific abilities of the system to allow disabled voters to vote independently, privately, and in the same manner as other voters in a way meets all other requirements listed in this Contract.

The Verity Voting system uses no "segregated" or "special" components for accessible voting – all components are designed to be accessible to all voters. Accessibility is built in to the design of the Verity Touch Writer ballot marking device, the Voting Booth, and the Verity Scan ballot scanner.

The height, position, and orientation of all labels, displays, controls, keys, audio jacks, and any other part of the accessible voting station do not interfere with wheelchair controls and arm rests, whether the wheelchair approaches frontally or laterally.

Equality of access is at the core of the Verity design.

Verity Touch Writer is an accessible paper ballot marking device that provides superior usability and accessibility. Most importantly, Verity Touch Writer provides **true equality of access**, with the same

paper ballot for all voters; there are no segregated ballots.

Touch Writer is equipped with the Verity Access controller, which includes tactile buttons and audio ballot capability, as well as compatibility with other adaptive devices, such as jelly switches or sip-and-puff devices.

The Touch Writer interface supports a rich and user-friendly audio ballot experience for voters who are blind or visually impaired.





Verity Touch Writer's interface allows users to configure settings for audio volume, audio speech rate, visible magnification, contrast settings, language preference and audio or video ballot modes.



Touch Writer creates a ballot that looks and feels just like hand-marked ballots cast by voters who do not utilize the Touch Writer accessible BMD device. Accordingly, all ballots are the same across the entire Verity system; there are no segregated ballots that look or feel different for certain types of voters.

The Touch Writer ballots and the marks on the ballot are laser-printed and will not fade, smear, or degrade over a 22-month period. Recommended specifications for Verity ballot stock are 28/70 lb. paper, which is widely available in the commercial-off-the-shelf marketplace and which feels like durable, document-quality paper in standard sizes.

Because Touch Writer prints a fully marked ballot from blank stock after the voter marks and reviews selections on the electronic interface, it should be emphasized that Touch Writer's innovative hybrid of on-demand printing with an electronic interface means that no preprinted ballots are necessary, there are no ballots to load into the machine, and Touch Writer prints only the ballots needed. Finally, a single Touch Writer device can electronically manage and print multiple ballot styles, which makes the device especially suitable for Early Voting locations, if the State of Michigan adopts that method of voting in the future.

Accessible Voting Booth for Touch Writer. The voting booth designed for Verity Touch Writer is lightweight and easy to set up. The booth includes minimal parts for quick setup and it can be locked into place in one motion. The Verity Voting booth includes durable fabric privacy screens and complies with VVSG/ADA requirements for accessibility and controls within reach. Because Verity Touch Writer is a standalone device with its own purpose-built booth, jurisdictions may locate the accessible voting station in the most optimal part of each individual polling place to allow for best physical access and a peaceful, quiet voting experience.

Verity Scan uses a combination of large-font, plain-language instructions, large graphic images, and unique audible sounds to indicate ballots that require voter attention.





Patented indicator landing lights inform the user when the system ready for a ballot to be inserted. Lights blink green for "Ready to Accept Ballot" and red for "Do Not Insert Ballot."



Hart has made a conscious design choice to provide separate scanning and ballot marking devices on a shared, universal platform, rather than on a combined, all-in-one device. Hart believes that most all-in-one devices make compromises for physical access and general accessibility. In addition, all-in-one scanning devices that also include accessibility features can create bottlenecks in the polling place, as standard scanning and fully accessible voting sessions cannot both take place simultaneously. The resulting bottlenecks can delay voting, resulting in longer lines at the polling place.

- 1.4.A.3** The Contractor must provide a full listing of supplies utilized by the proposed accessible voting component, including paper, ink cartridges, batteries, etc. The Contractor shall indicate whether such supplies are available via commercial off-the-shelf (COTS) sources; prices for supplies must be included and listed in the Schedule C, **Pricing**.

Supplies are listed, with prices, in **Schedule C, Pricing**.

- 1.4.A.4** The accessible voting system shall be capable of utilizing the maximum size ballot in use with the base voting system.

Verity Touch Writer is capable of printing the largest ballot that can be processed by the base voting system for in-person voting; more specifically, the Verity Scan device, with which the Touch Writer is typically paired, can accommodate an 8.5" x 17" ballot as its maximum, and Verity Touch Writer is capable of printing that size.

Note: The Verity Voting system can produce an 11" x 17" ballot, but it is typically used only for by-mail voting and is processed by Verity Central; the in-person voting solution, made up of Verity Scan and Verity Touch Writer, and does not accommodate that exceptional size of ballot.

- 1.4.A.5** The accessible voting system component shall be easily portable and be transportable without damage to internal circuitry. The Contractor shall provide height and weight specifications of all accessible components, as well as any features related to portability and ease of transport.

Verity Voting devices are designed for secure, easy transportation and storage. More specifically, the voting devices were purposely designed to be as compact in size as possible (with a small footprint). Their compact size not only creates greater efficiencies and cost savings in storage and transportation by reducing the need for warehouse and trucking space, but also allows more flexible deployment by poll workers, because Verity Voting devices were specifically designed to comfortably fit within the confines of typical private vehicles.



In addition to the convenient carrying/storage case that is an integrated part of the Scan design, corrugated plastic cases are available for transportation and storage.

The lightweight Voting Booth includes a heavy canvas bag for protection during transport and storage.

Height and weight specifications are as follows:

Verity Touch Writer (with battery)

Height: 7.7 inches

Weight: 28.5 pounds

Verity Scan (with battery)

Height: 7.7 inches

Weight: 29.1 pounds

Accessible Voting Booth (with bag)

Height: 36 inches

Weight 17.1 pounds



- 1.4.A.6** The accessible voting system shall allow the option of programming multiple precincts or single precincts on each device. The Contractor shall indicate the maximum number of precincts/split precincts on a single unit.

All election configuration information is created in Verity Build, including multiple ballot styles for single or multiple precincts and split precincts, and is written to a flash media vDrive. That election information is then transferred from the vDrive to Verity Touch Writer and Verity Scan. The accessible voting system can accommodate a maximum of 2000 ballot styles on a single device; the limiting factor is Verity Build, not the software or hardware on the Touch Writer itself.

- 1.4.A.7** The Contractor shall document the size, weight, volume and any other pertinent size and dimension information related to the proposed accessible voting system and any/all related components.

Please see Contractor's response to requirement **1.4.A.5**.

- 1.4.A.8** The Contractor's accessible voting system shall accommodate visually impaired voters by presenting the ballot to a voter in an audio format. The Contractor shall describe the procedures for constructing an audio version of the ballot, whether it is through text to speech synthesis, voice recording, or any other technology utilized by the proposed voting system.

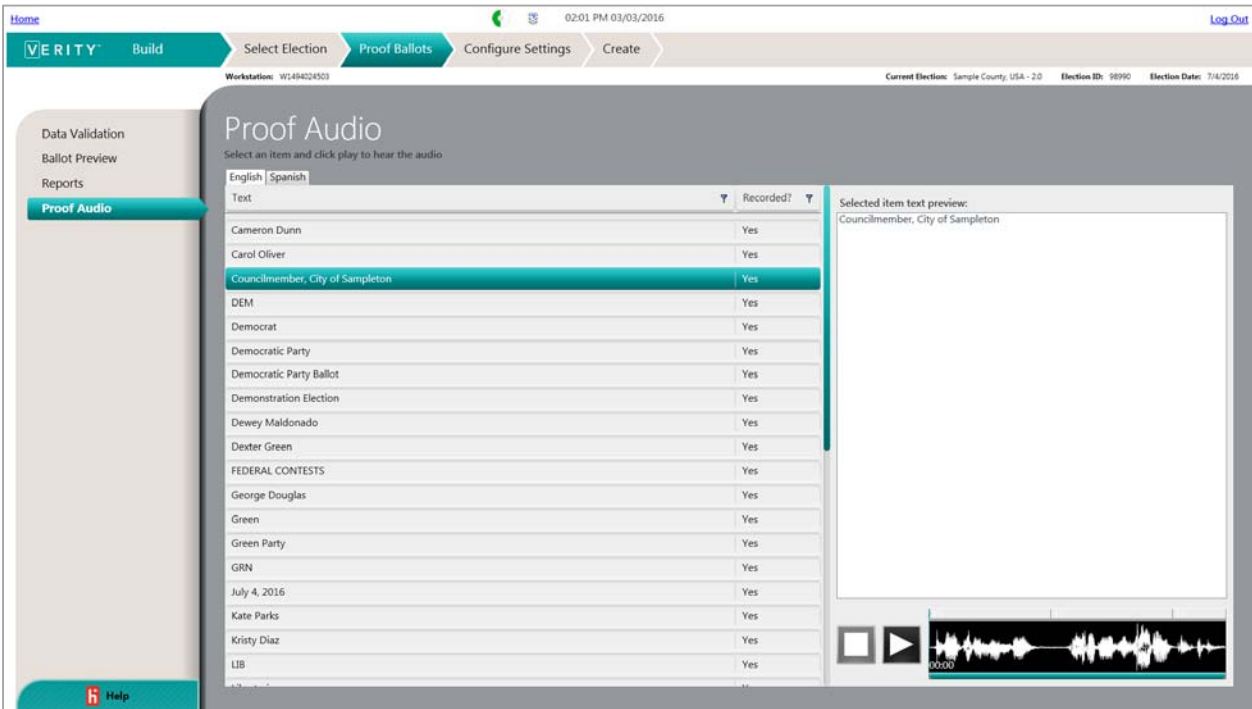
Touch Writer provides audio ballot capability to enable voters who cannot see to vote independently and privately, in a manner compliant with the requirements of the Americans with Disabilities act. All displayed content is also available through the audio interface.

In keeping with an overall design and implementation philosophy that seeks to maximize user and jurisdiction independence, the accessible voting system uses audio files that can be easily recorded in Verity Data, by election staff or third-party voice talent. Verity Data offers an easy-to-use software interface so that during the ballot programming process, each discrete text string that appears on the ballot can have a dedicated audio string associated with it. The Contractor believes that allowing users to create their own audio files with human recorded voice, instead of text-to-speech synthesis, results in a richer, more authentic audio ballot experience for voters, since jurisdictions can record text with the correct pronunciation and any other localized stylistic variables.



If users desire to use third-party text-to-speech tools to create their own audio recordings in automated fashion, Verity Data can accept the import of those files, or any other files that meet our published specifications.

The election data set created in Verity Build and written to Touch Writer from vDrives includes audio and image files. Verity Build includes a ballot layout viewer capable of producing printed outputs for purposes of proofreading all ballot styles, as well as the capability to proof recorded audio strings.



Touch Writer provides multiple methods for the voter to review his/her selections for contests and choices, including audio and multiple languages.

- 1.4.A.9** The Contractor's accessible voting system shall accommodate visually impaired voters by magnifying the ballot. Proposals shall detail the available functions for magnification of the ballot, including the various options and process for increasing/decreasing the size of the ballot display.

Yes. Verity Touch Writer complies with this requirement. Touch Writer allows voters to select a suitable font size, according to the federal VVSG 1.0 requirements for accessibility. Available font size settings are:

- Standard size setting – Font sizes vary from 21-32 points.
- Large size setting – All text is 40-point font.



- Small size setting: Font sizes vary from 18-22 points.



1.4.A.10 The Contractor's accessible voting system shall allow for high-contrast visual display.

Yes. Verity Touch Writer allows voters to adjust display contrast settings and to mask the display entirely for non-sighted voter use. Two high-contrast modes are available: black text on white background and white text on black background.



1.4.A.11 The Contractor's accessible component must support the same alternative (non-English) languages as the proposed base voting system (at a minimum, Spanish and Bengali).



Please see Contractor's response to requirement **1.2.A.13** in **Attachment 1.2, EMS Software Technical Requirements**.

- 1.4.A.12** The Contractor's accessible voting system shall accommodate voters unable to physically indicate a voting choice by using a pointer, sip/puff device, A/B switch, braille, audio, etc.

Touch Writer is equipped with the Verity Access controller, which includes tactile buttons and audio ballot capability, as well as compatibility with other adaptive devices, such as jelly switches or sip-and-puff devices. In addition, the Verity Access controller includes dishing on every button, to support voters who use mouthpieces (if they have a dexterity impairment or paralysis, for example). Verity Access buttons are also raised, with beveled edges to facilitate tactile use, and all buttons also include raised Braille markings.

- 1.4.A.13** The accessible voting system shall provide audio and visual instruction on the use of the system.

Verity Touch Writer complies with this requirement.

- 1.4.A.14** The accessible voting system shall present the ballot to the voter in a clear and unambiguous manner.

Verity Touch Writer and Verity Scan use a modern, intuitive, plain-language interface based on EAC/AIGA Design for Democracy styles.



Sample Verity Touch Writer screens

Sample Verity Scan screens

Audio AA Screen ? Help

Enter your access code

Enter your access code

To start your ballot, enter your access code by touching the numbers. When you have entered all numbers of your code, touch "Accept."

If you do not have an access code, contact a poll worker.

1 2 3
4 5 6
7 8 9
0

X

Accept

Audio AA Screen ? Help

Contest List

Review contests

This list displays all contests that will appear on your ballot.

If any of this information is incorrect, please contact a poll worker for assistance.

Straight Party
President and Vice-President of the United States
United States Senate
US Representative, 6th Congressional District
State Assembly, 54th District
Proposed Constitutional Amendment D

← Back Begin Voting

You cannot make any changes after you print your ballot.

Do you want to print your ballot?

Yes, print my ballot

No, go back

? Help

Insert Ballot

Insert Ballot

11:29 AM Friday 12/12/2014 Ballots: 0 Sheets: 0 Lifetime: 22

Please wait

Processing...

11:29 AM Friday 12/12/2014 Ballots: 0 Sheets: 0 Lifetime: 22

Your vote has been recorded.
Thank you for voting.

11:30 AM Friday 12/12/2014 Ballots: 1 Sheets: 1 Lifetime: 23



1.4.A.15 The accessible voting system shall provide a method for recording write-in votes.

The voter selects the write-in option, uses the touchscreen keypad or the Select button and Move wheel on the Access device to type the name of their desired write-in candidate, and then selects Accept. The write-in option appears selected with a green box and check mark to the left of the choice, showing the write-in candidate name. This functionality is also fully integrated with the system's audio ballot prompts, to allow voters who are blind or visually impaired to follow the same process.

1.4.A.16 The accessible voting system shall prohibit crossover votes on a partisan primary ballot.

Verity Touch Writer provides a filterable ballot interface when configured with an Open Primary election, to prohibit crossover votes in a partisan primary.

1.4.A.17 The accessible voting system shall prohibit over votes before a final vote is cast.

Verity Touch Writer does not permit voters to enter more selections than the valid number of choices available in any given contest – it is impossible to over vote on a Verity Touch Writer.

1.4.A.18 The accessible voting system shall allow option to skip races and/or sections (partisan/nonpartisan) of the ballot.



The Touch Writer interface includes a **Next** option that enables the voter to skip ahead in the ballot. In addition, every screen includes a **Review Your Choices** button, which the voter can tap to go directly to the review screen where they can review their choices and then print the ballot.

The screenshot shows a mobile application interface for voting. At the top, there is a navigation bar with icons for 'Audio', 'AA Screen', and '? Help'. Below this is a header section titled 'President and Vice-President of the United States'. The main content area is divided into two columns. The left column contains instructions: 'Vote for One Pair', 'You have 0 choices left.', 'To vote, touch your choice. A checkmark will appear to confirm your choice.', and 'To change your choice, touch another choice.'. The right column displays three candidate pairs, each with a checkbox and a green border: 'Joseph Barachi and Joseph Hallaren Whig' (checked), 'Adam Cramer and Greg Vuocolo Historical' (unchecked), and 'Daniel Court and Amy Blumhardt' (unchecked). At the bottom, there is a dark navigation bar with buttons for 'Review your choices', 'Back', '2 of 6', and 'Next'.

1.4.A.19 The accessible voting system shall allow option to "skip to the end" to cast a vote at any point.

The Touch Writer interface includes a "Review your choices" option that enables the voter to skip to the end of the voting session and print the ballot after reviewing all choices.

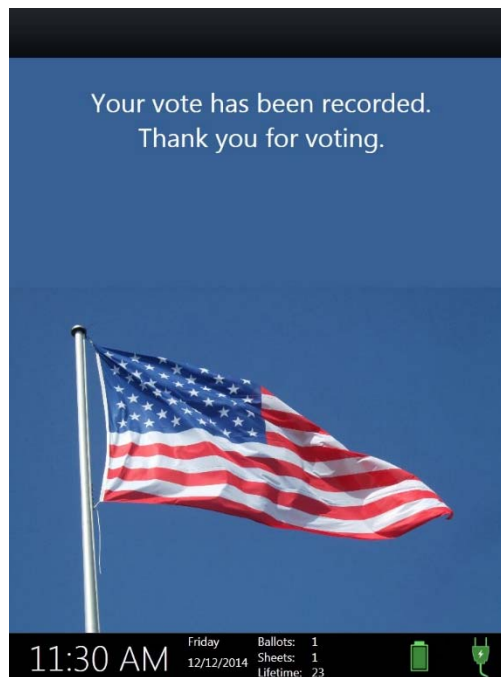
1.4.A.20 The accessible voting system shall issue a warning of undernotes during the **final review of votes screen only** (not on a contest-by-contest basis); and shall allow a voter to choose to cast the ballot if undernoted races are included.

Verity Touch Writer complies with this requirement.

1.4.A.21 Once the ballot is cast, the accessible voting system shall confirm to the voter that the action has occurred and that the voter's process of voting is complete.



Verity Touch Writer complies with this requirement by presenting clear and unambiguous visual and/or audio messages to the voter, indicating that the voting session is complete.



- 1.4.A.22** Votes cast using the accessible voting system shall be accumulated with all other votes and reported as a single total within each precinct.

Verity complies with this requirement. All voters use the same Touch Writer ballot marking device and all ballots are scanned and recorded by Verity Scan, accumulated with all other votes, and reported as a single total within the precinct.

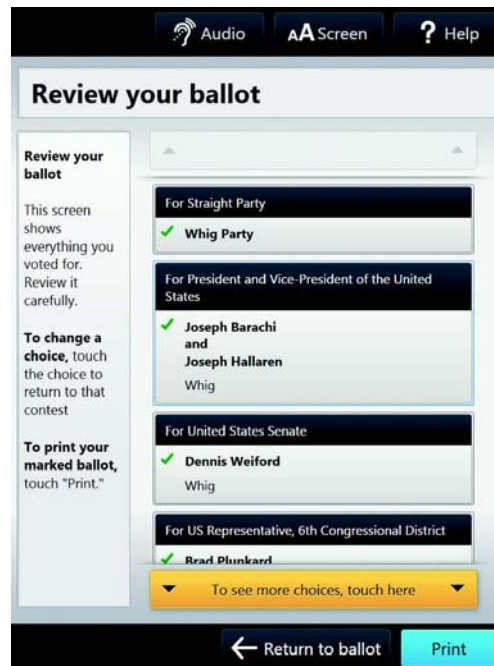
- 1.4.A.23** The accessible voting system shall ensure that each voter's ballot is secret and the voter cannot be identified by image, code or other methods.

Verity Touch Writer complies with this requirement. Each ballot produced is anonymous and cannot be identified by image, code or other methods. As noted earlier, it was a core tenet of the voting system design that paper ballots produced by the accessible ballot marking device should be equal to, and indistinguishable from, ballots printed for hand-marking.

- 1.4.A.24** The accessible voting system shall provide a method by which a voter can verify his/her choices prior to the ballot being marked or vote cast, either by print or audio and visual display.



Verity Touch Writer complies with this requirement.



CATEGORY B. ACCESSIBLE SYSTEM – USE OF TOUCH-SCREEN INTERFACE

1.4.B.1 The Contractor's accessible voting system shall utilize a touch-screen interface for voters to use in voting a ballot.

Verity Touch Writer complies with this requirement.

Maximum number of candidates that can fit on one screen in the Verity Touch Writer application

Depending on how candidate names are formatted, Verity Touch Writer can display about eight candidate names at one time on a single screen, without requiring the use of additional "scroll bars" (see the orange bars in the images above). As noted elsewhere in this response, Verity has been tested with more than 165 candidates in a single contest, and those candidates would be displayed approximately eight at a time, with additional scrolling to see the entire list of names.

1.4.B.2 The Contractor shall indicate how the accessible voting system integrates with the precinct tabulator, including whether it is physically tethered to the precinct tabulator; if tethered, it should have a minimum of a 15' connection to the OS tabulator.

After a voter uses the Verity Touch Writer ballot marking device, he/she retrieves the printed ballot from the COTS laser printer next to the Touch Writer and takes it to the nearby Verity Scan device to cast the ballot. The Verity Scan device is not tethered to the Touch Writer device



CATEGORY C. ACCESSIBLE SYSTEM – USE OF PAPER BALLOT (POSSIBLE SCENARIOS)

1.4.C.1 The Contractor shall indicate whether the accessible voting system utilizes a paper ballot and shall indicate whether the accessible voting system follows any or all of the four scenarios listed in this section (scenarios a-d listed below). For each applicable scenario, the Contractor shall provide details on how the ballot is marked and tabulated by the accessible voting system, including a detailed description of the system functionality, steps in the ballot marking and voting process, and all other pertinent points related to the voting and processing of ballots under each applicable scenario.

Specific Contractor responses for each scenario appear below.

1.4.C.1.a Scenario a: accessible voting system utilizes the same paper ballot as the precinct ballot.

All voters use the same paper ballot.

a.i. (scenario a.) - The Contractor shall indicate whether the voter must physically insert the marked ballot into the tabulator, or if there is an automated function that does not require the voter to physically handle the ballot.

After a voter uses the Verity Touch Writer ballot marking device, he/she retrieves the printed ballot from the laser printer next to the Touch Writer and takes it to the nearby Verity Scan device to cast the ballot. Verity Scan includes tactile features to facilitate ballot insertion, even for non-sighted voters, an accessible ballot box orientation that complies with ADA requirements for parallel wheelchair approach, and unique audible sounds to notify voters of second-chance voting messages.

a.ii. (scenario a.): the accessible system shall allow for omni-directional feed of the ballot.

Verity Scan allows ballots to be fed in in any portrait orientation, face down or face up; and header-first or footer-first.

a.iii. (scenario a): The Contractor shall indicate whether manual adjustment is required to accommodate multiple ballot lengths.

Verity Scan requires no manual adjustment to accommodate multiple ballot lengths.

1.4.C.1.b Scenario b: accessible voting system prints an entire (marked) optical scan ballot to be tabulated.

Verity Touch Writer and attached commercial off-the-shelf printer comply with this requirement.

b.i. (scenario b.) OPTIONAL: The Contractor shall indicate whether the accessible voting system includes a self-contained printer (requiring no additional system equipment).

No. For reduced cost and easy maintenance, Touch Writer is paired with a COTS printer. After the voter uses the electronic interface to mark and review selections, the device prints a marked, full ballot from blank stock.



The printer prints duplex ballots automatically, in two passes. There is no need for elections staff to manually turn the paper over or otherwise handle the paper in any way during the printing process. To print on 8-1/2 x 17-inch paper, election staff simply places that size paper in the printer's extended/expandable paper tray.

b.ii. (scenario b.): For accessible voting systems that print a full marked paper ballot – the Contractor shall provide data, system checks and other features that clearly validate and demonstrate that printed votes are an exact (100%) match to original voter input.

The Verity Touch Writer offers voters an easy to use review screen that allows voters to review all selections and voter input prior to printing the marked ballot. Once the marked ballot is printed, because the ballot is identical to all other ballots produced for the Verity Voting system, voters who printed their ballots on the accessible device can take advantage of all of the second-chance voting features that exist on the Verity Scan. This allows voters to ensure that the printed ballot accurately reflects their intent, prior to casting the ballot.

1.4.C.1.c Scenario c: accessible voting system creates a modified summary ballot (e.g., listing only votes cast and a differently sized and laid-out ballot than the precinct ballot).

No. N/A. The proposed Verity Touch Writer accessible voting solution creates a full printed ballot that is equal and identical to ballots that are preprinted for hand-marking at the precinct.

c.i. (scenario c.) the tabulator shall have the ability to scan and tabulate votes from the modified ballot and combine vote totals into the overall vote totals in the precinct.

No. N/A. The proposed Verity Touch Writer accessible voting solution creates a full printed ballot that is equal and identical to ballots that are pre-printed for hand-marking at the precinct. All ballots are scanned and recorded by Verity Scan, accumulated with all other votes, and reported as a single total within the precinct.

CATEGORY D. RELIABILITY REQUIREMENTS

1.4.D.1 The accessible voting system shall permit diagnostic testing of all major components, including self-diagnostics (automatically generated) and error reports. The Contractor shall provide details of diagnostic testing available and related reports.

Verity Touch Writer performs diagnostics at every boot and reports these diagnostics in the **Power-On Self-Test Report** that prints automatically at every boot.

Audit logs for each Verity Voting system component include results of data integrity checks and diagnostic tests, as well as:

All security, authentication, and authorization attempts, such as access by users, Verity Key usage, and network connectivity and data transfer

All user account creation, information and password updates, and deletion events.

All data changes to user accounts, election definition, CVR records, media usage, and reporting

All components start-up, shutdown, and interruptions in running

All election actions taken on Verity components, including loading elections, value of counters, the assigned polling place, and user interactions with devices and ballots

1.4.D.2 Audit log requirements for the accessible voting system are the same as those listed for base system EMS; for additional components specific to accessible voting component, audit capabilities shall include identification of program and version being run; identification of the election file being used; record of all options entered by the operator (election official); number of voters by precinct and ballot style who have used the system.

Verity Touch Writer and Verity Scan comply with this requirement.

1.4.D.3 For accessible voting systems utilizing a touch screen interface, the Contractor shall provide details specifying methods used to calibrate and maintain calibration at acceptable levels.

See **Schedule A, Section 1.6B Preventative Maintenance** for Checklist.



- 1.4.D.4 The accessible voting system and all related components shall be capable of withstanding transport conditions that may include extremely bumpy roads, exposure to extreme heat, cold, humidity and dust without incurring damage during transportation or becoming inoperable as a result of such transport.

In addition to the durable, convenient carrying/storage case that is an integrated part of the Verity Touch Writer and Verity Scan design, corrugated plastic cases are also available for transportation and storage, as well as durable canvas bags for the voting booth and ballot box.

Furthermore, the Contractor will provide the State with documentation and best practices to assist with the transportation, storage, and deployment of Touch Writer and Verity Scan voting devices.

- 1.4.D.5 The accessible voting system and all related components shall be capable of withstanding frequent loading and unloading, stacking and unstacking, assembling, disassembling, reassembling, and other routing handling in the course of normal storage and operation.

All Verity Voting devices are designed for secure, easy transportation and storage. More specifically, the voting devices were purposely designed to be as compact in size as possible (with a small footprint) and significantly smaller than other solutions currently available in the marketplace. Their compact size creates greater efficiencies and cost savings in storage and transportation by reducing the need for warehouse and trucking space. It also allows more flexible deployment by poll workers, because Verity Voting devices were specifically designed to comfortably fit within the confines of typical private vehicles.

In addition, all Verity devices have been tested and comply with a series of environmental stress standards defined by the US Military. The full list is included in Contractor's response to requirement **1.1.A.26** in **Attachment 1.1 Hardware Technical Requirements**.

- 1.4.D.6 **OPTIONAL REQUIREMENT:** The Contractor shall document and explain any available special features of the accessible voting system that demonstrates water resistance features.

Verity Scan is designed to withstand real-world conditions. As with many electronic devices, however, Verity Scan is not water resistant and should be protected from water and humidity.

- 1.4.D.7 **OPTIONAL REQUIREMENT:** The Contractor shall document and explain any available storage-friendly options for the accessible voting system components.

All Verity Voting system components are easily transportable and include durable, protective containers for transport and storage.

Verity Scan and Verity Touch Writer include a compact and durable integrated storage case for secure, easy transportation and storage. In addition to the convenient carrying/storage case that is an integrated part of the Scan design, corrugated plastic cases are available for transportation and storage.

The rugged Verity Ballot Box folds to just 6 inches thin for easy transportation and storage. A sturdy canvas bag is also available for transporting and storing the Ballot Box.

The lightweight Voting Booth includes a heavy canvas bag for protection during transport and storage.

- 1.4.D.8 If applicable – the Contractor shall indicate whether the accessible voting system components utilize a backup battery; if so, the backup battery must meet the same requirements as those listed for the tabulator backup battery included in **Attachment 1.1 HARDWARE Requirements**.

Please see Contractor's response to requirement **1.1.F.8** in **Attachment 1.1 Hardware Requirements**.

- 1.4.D.9 If a table or other type of base is utilized, the Contractor must describe the design, shape and use of the table/base, as well as durability features of the table/base.

The accessible Voting Booth for Touch Writer is lightweight and easy to set up. The booth includes minimal parts for quick setup and it can be locked into place in one easy motion. The Verity Voting booth includes durable fabric privacy screens and complies with VVSG requirements for accessibility and controls within reach. Because Verity Touch Writer is a standalone device with its own purpose-built booth, jurisdictions have the freedom to locate the accessible voting station in the most optimal part of each individual polling place to allow for best physical access and a peaceful, quiet voting experience.



Alternatively, Verity Touch Writer can be deployed separately from the accessible booth, and can be placed on a surface that is the most convenient height and in the most convenient location for voters and poll workers.

- 1.4.D.10** If a privacy screen is utilized, the Contractor must describe the design, shape and use of the privacy screen, as well as durability features of the privacy screen.

The privacy screens included in the Verity Touch Writer accessible booth are U-shaped and made of lightweight, durable ripstop nylon. They include durable wire frames to support the screens in an upright position while they are installed, and they are easily inserted or removed from purpose-built connection points in the booth platform. When not installed, the privacy screens can be laid flat and easily stored inside the canvas carrying bag for the accessible booth.





Exhibit 3 to Schedule A
Michigan QVF Export File Format
See separate document (83 pgs.)