VotingWorks San Francisco

Open-Source Pilot Use Procedures

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1. Introduction

The City and County of San Francisco intends to pilot VotingWorks, an open-source voting system, during the November 8, 2022 Consolidated General Election by giving voters in the City Hall Voting Center the option of using an accessible ballot marking device (VxMark).

VotingWorks source code and product documentation are available at the following links:

- Source Code on GitHub
- Complete System Product Documentation

1.1. System description and components

VotingWorks consists of two subsystems:

1. Central System, which includes all the equipment necessary at election central for on-demand ballot printing, election programming, central batch ballot scanning, and results tabulation.
2. Precinct System, which includes an accessible ballot marking device, a printer, and a voter-facing precinct scanner.

VotingWorks Central System includes two products:

1. VxAdmin: the main tool for local election officials, which programs elections, prints ballots, and aggregates results on election night.
2. VxCentralScan: a central scanner used for rapidly scanning ballots centrally.

VotingWorks Precinct System includes two products:

1. VxMark: an accessible ballot marking device and attached printer that produces a voter-verifiable paper ballot.
2. VxScan: a voter-facing precinct scanner that scans paper ballots and notifies voters of ballot issues for second-chance voting.

For the an open-source pilot, The City and County of San Francisco intends to utilize only three components:

1. VxAdmin: VxAdmin is the main tool for local election officials. It serves as an election management system (EMS), results aggregator, and ballot on-demand printer. The VxAdmin laptop (Lenovo Thinkpad L14 or equivalent) is installed with VotingWorks VxAdmin open-source software and can be optionally connected to a HP 404dn printer for printing ballots on-demand. VxAdmin can export PDFs of ballot styles for external printing by a certified printer.
    a. VxAdmin will be utilized for programming Ballot Marking Devices (BMDs) (VxMark) and reporting results for the purpose of the partial risk-limiting audit only.

2. VxMark: VxMark is an accessible BMD with an attached printer that produces a voter-verifiable paper ballot. Specifically, it is a Lenovo Flex (or equivalent) laptop with VotingWorks VxMark open-source software installed on it, and the printer is an HP 404n printer.
    a. VxMark will be utilized as the in-person marking method for voters at the City Hall Voting Center.
3. VxCentralScan: a central scanning laptop (Lenovo Thinkpad L14 or equivalent) used for rapidly scanning ballots in batch at a central location. A Fujitsu 7160 or 7800 scanner is connected to VxCentralScan for high-speed batch scanning depending on the volume of ballots.
    a. VxCentralScan will optionally be utilized for tabulating BMD (VxMark) printed ballots if a result report for the VotingWorks ballots is necessary for comparison to a hand tally to meet the manual recount requirement.

Voters at City Hall Voting Center will use VxMark to mark, print, and verify their ballot. Ballots will be cast into a ballot box at City Hall Voting Center like other ballots cast using the Dominion voting system in San Francisco. VotingWorks marked ballots will be copied to Dominion formatted ballots for central tabulation after close of polls.

VxAdmin and attached printer

VxMark and attached printer

VxCentralScan and attached scanner (with BMD ballot)

1.2. Terms and Definitions

VotingWorks system component terms and definitions are provided in Section 1.1.

VotingWorks uses smart cards to enable administrators and poll workers to access equipment functionality. There are two types of cards with specific terms:

1. *Admin Card*: these cards enable election administrators to access election administrator functionality.
2. *Poll Worker Card*: these cards enable poll workers to access poll worker functionality.

2. Ballot Definition

2.1. Overview

For the pilot, San Francisco will provide VotingWorks with the jurisdiction-specific information necessary to define and create ballots, including for ranked-choice voting contests. This information includes precinct, district, and ballot type relationships and content regarding candidates, contests, and ballot measures, and translations of content into Chinese, Filipino, and Spanish. VotingWorks will set up the election in its system, which includes the election database, central scanner, and ballot marking device.

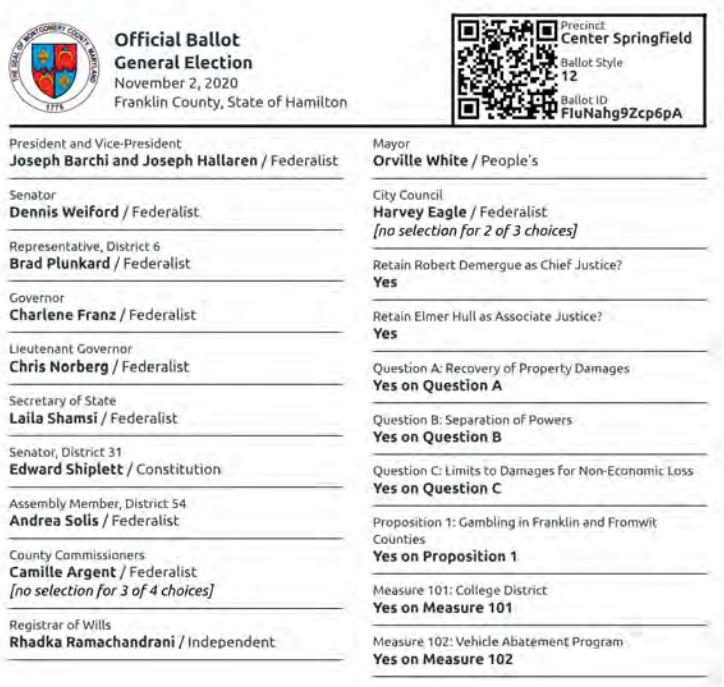
The process of configuring ballot marking devices (VxMark) is explained in Section 4.

2.2. Paper and printing specifications

Hand-marked paper ballots are not included in the scope of this pilot. The only printing that will take place is printed of machine-marked ballots using VxMark. The VxMark attached printer accepts any letter sized paper and VotingWorks will provide 28lb (recommended) letter sized paper with equipment.

2.3. Layout requirements and specifications

All ballot layout is automatically generated by the VotingWorks system and no specifications need to be met by the election administrator. An example VxMark ballot format is shown below:



Official Ballot
General Election
November 2, 2020
Franklin County, State of Hamilton

Precinct
Center Springfield
Ballot Style
12
Ballot ID
FluNahg9Zcp6pA

President and Vice-President
Joseph Barchi and Joseph Hallaren / Federalist

Senator
Dennis Weiford / Federalist

Representative, District 6
Brad Plunkard / Federalist

Governor
Charlene Franz / Federalist

Lieutenant Governor
Chris Norberg / Federalist

Secretary of State
Laila Shamsi / Federalist

Senator, District 31
Edward Shiplett / Constitution

Assembly Member, District 54
Andrea Solis / Federalist

County Commissioners
Camille Argent / Federalist
[no selection for 3 of 4 choices]

Registrar of Wills
Rhadka Ramachandrani / Independent

Mayor
Orville White / People's

City Council
Harvey Eagle / Federalist
[no selection for 2 of 3 choices]

Retain Robert Demergue as Chief Justice?
Yes

Retain Elmer Hull as Associate Justice?
Yes

Question A: Recovery of Property Damages
Yes on Question A

Question B: Separation of Powers
Yes on Question B

Question C: Limits to Damages for Non-Economic Loss
Yes on Question C

Proposition 1: Gambling in Franklin and Fromwit Counties
Yes on Proposition 1

Measure 101: College District
Yes on Measure 101

Measure 102: Vehicle Abatement Program
Yes on Measure 102

3. System Installation and Configuration

3.1. Hardware requirements and specifications

VotingWorks system currently requires use of specific hardware which VotingWorks personnel install VotingWorks software on. This hardware is:

1. VxAdmin: Lenovo Thinkpad L14 (or equivalent) laptop and HP404dn printer
2. VxCentralScan: Lenovo Thinkpad L14 (or equivalent) laptop and Fujitsu fi-7160 or fi-7800 scanner.
3. VxMark: Lenovo Flex 14 (or equivalent) laptop and attached HP404n printer.

Hardware specifications are also provided in the VotingWorks documentation here.

3.2. Hardware and network set-up and configuration

Hardware will be configured by VotingWorks personnel upon delivery to San Francisco.

All hardware is offline; no hardware is networked.

3.3. Software installation and configuration

All software will be installed and configured by VotingWorks personnel upon delivery to San Francisco.

3.4. Acceptance Testing

For the pilot, acceptance testing will be conducted as part of logic and accuracy testing. Please see section 4.5 for documentation defining the use procedures for logic and accuracy testing.

3.5. Software and firmware upgrades

No updates will be applied to the system during the course of the pilot. If updates were to be performed, VotingWorks would perform a system update on-site on behalf of the customer.

4. Election Set-up and Definition

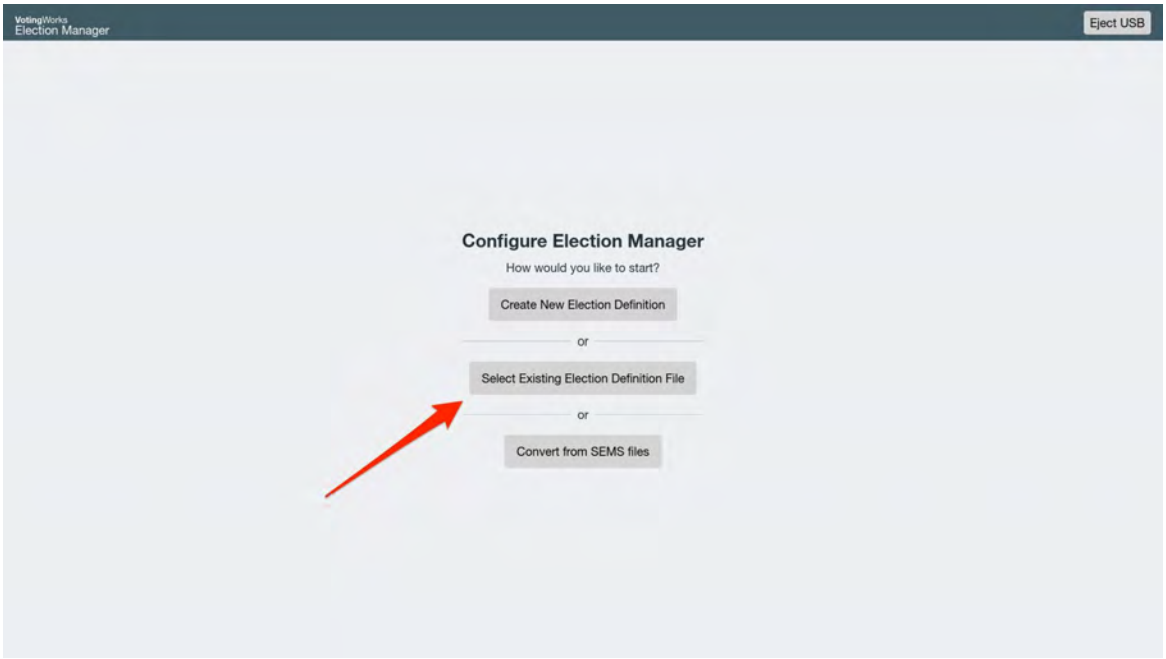
4.1. Programming and configuration of election management system/software, including audit records to be generated and retained

San Francisco will provide VotingWorks with the data required to produce an election definition in the VotingWorks format. The required ballot data necessary to create an election definition is as follows:

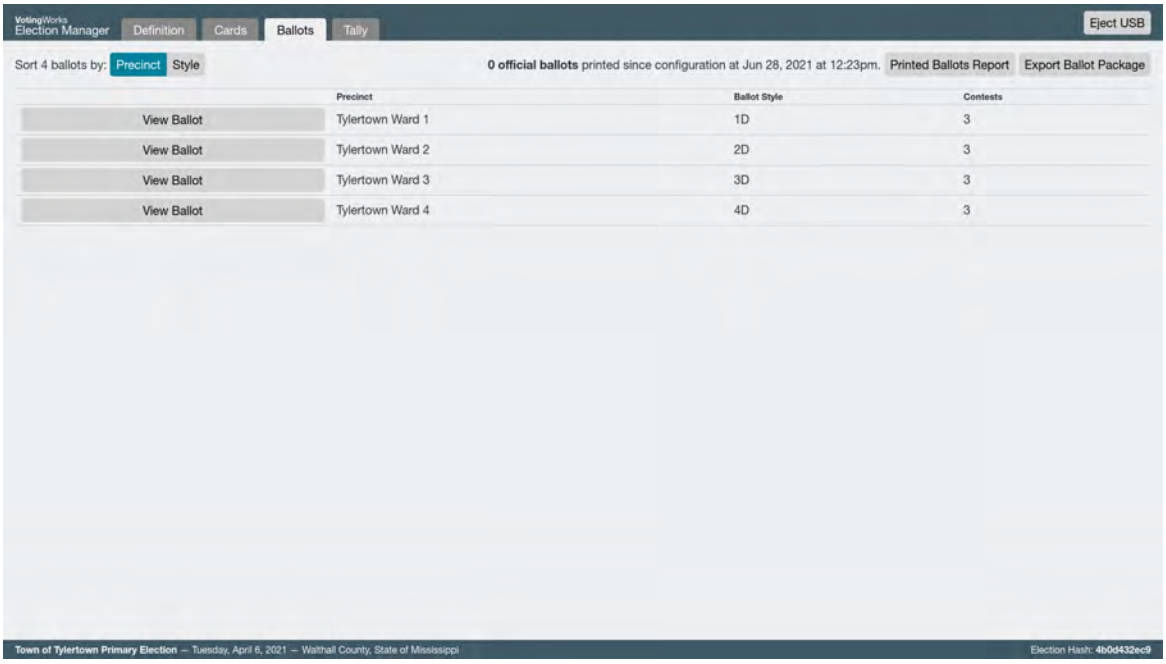
- Election metadata (title, jurisdiction, date, jurisdiction logo, etc.)
- District/precinct metadata (district names, precinct names, etc.)
- Party metadata (party names, ballot abbreviations, etc.)
- Candidate metadata (name, party affiliation, etc.)
- Contest metadata (contest name, contest type, ballot rotation rules, etc.)
- Contest and candidate mapping
- Contest and ballot style mapping
- Ballot style and precinct/district mapping
- Translated content for relevant metadata mapped to list of supported languages

VotingWorks personnel will configure VxAdmin with this file upon delivery to San Francisco.

If VxAdmin needs to be re-configured at any point in time, San Francisco can do so by importing the VotingWorks formatted election definition file from a USB drive and selecting *Select Existing Election Definition File* from the main Configure Election Manager screen.



After configuration, all ballot styles are automatically presented on screen for proofing.



VxAdmin automatically generates an audit log of election programming activities that an election administrator can export to USB for further analysis as necessary based on audit log retention requirements.

4.2. Programming and configuration of vote recording/tabulation devices, including audit records to be generated and retained

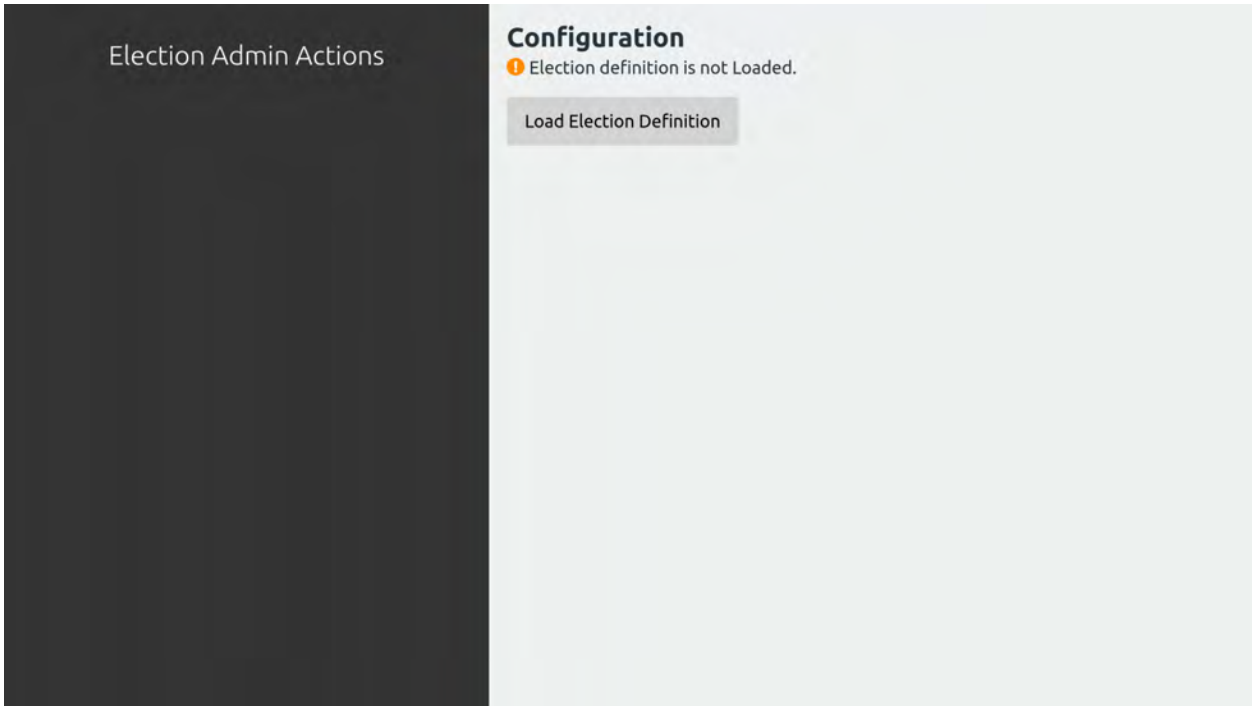
VxMark

VotingWorks will provide VxMark pre-configured with the election definition and will configure VxMark as part of the production process upon equipment delivery. The following steps can be performed if re-configuring is necessary.

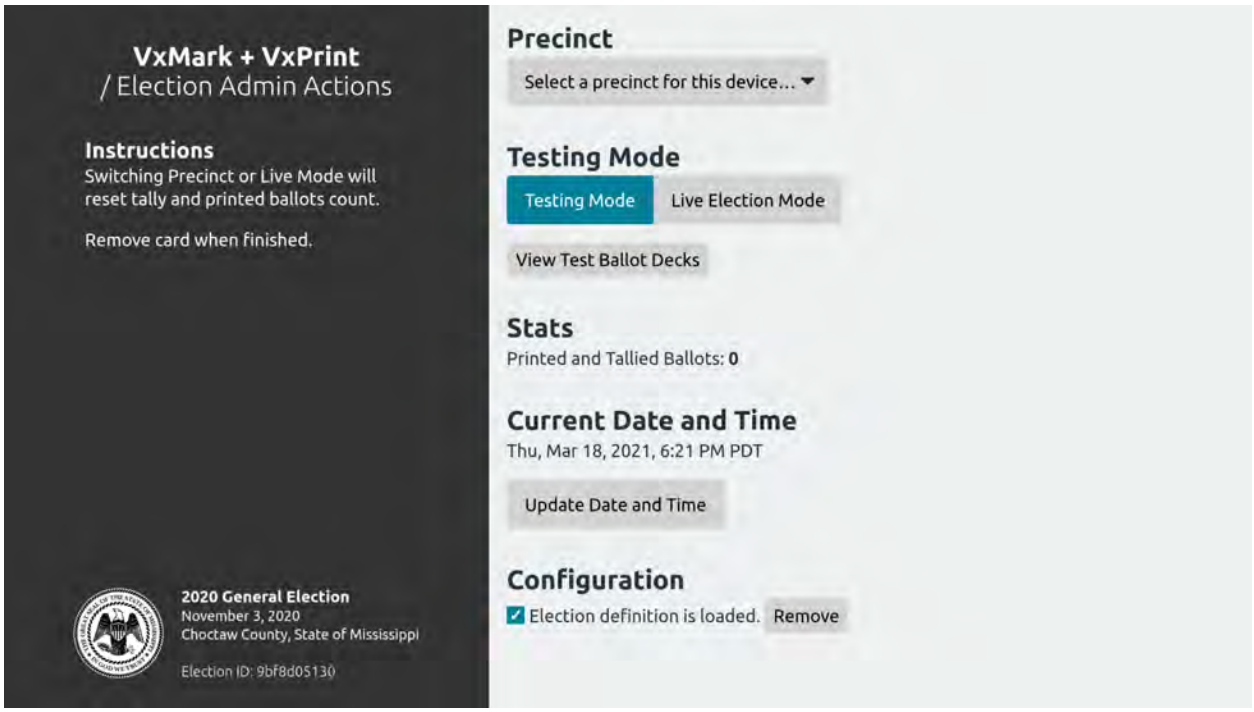
To configure VxMark, an Admin Card first needs to be programmed with the election definition. VotingWorks will provide Admin Card(s) to San Francisco pre-programmed and additional cards can be programmed through instructions available in VotingWorks documentation here.

First, turn on the VxMark. The following screen is shown:

Insert an Admin Card into the card reader and the following screen will appear:



Tap *Load Election Definition* and the following screen is shown:



The VxMark should be configured for All Precincts as this will be used for any ballot style in a Voting Center. Select Testing Mode for L&A or select Live Election Mode for election operation.

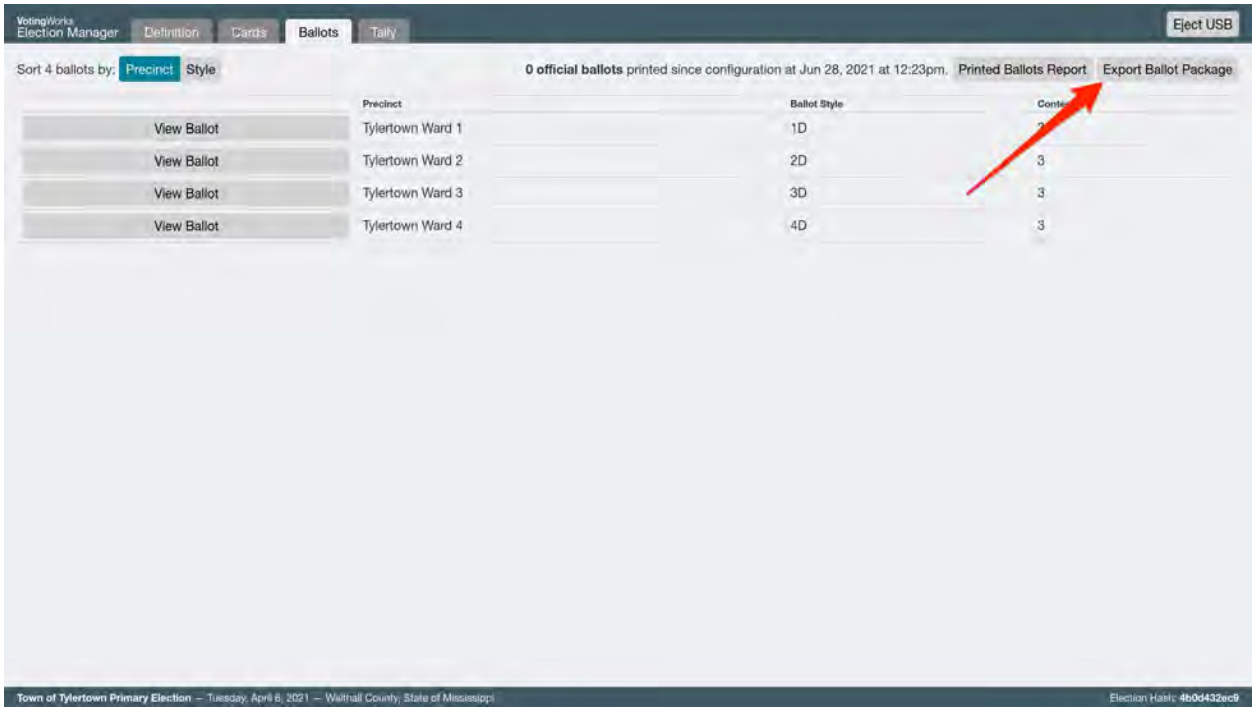
Remove the Admin Card and the machine will be configured ready for use.

VxMark automatically generates an audit log of election programming activities that an election administrator can export to USB for further analysis as necessary based on audit log retention requirements.

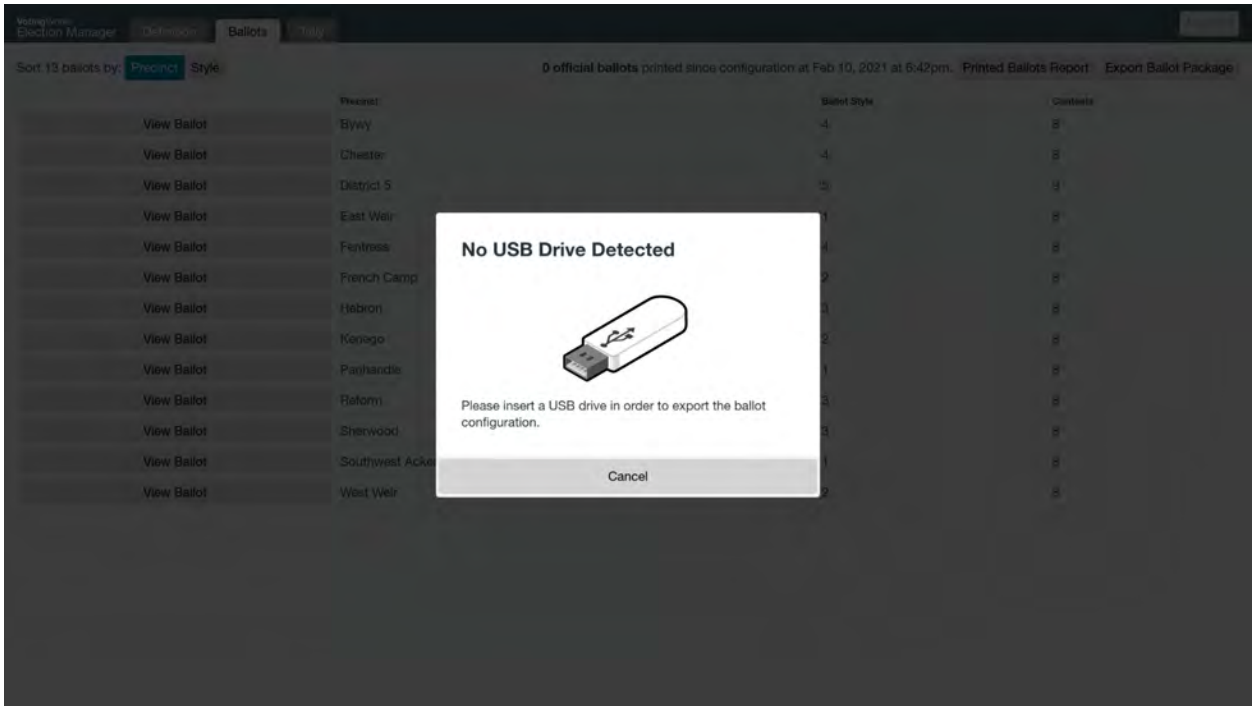
VxCentralScan

VotingWorks will provide VxCentralScan pre-configured with the election definition and will configure VxMark as part of the production process upon equipment delivery. The following steps can be performed if re-configuring is necessary.

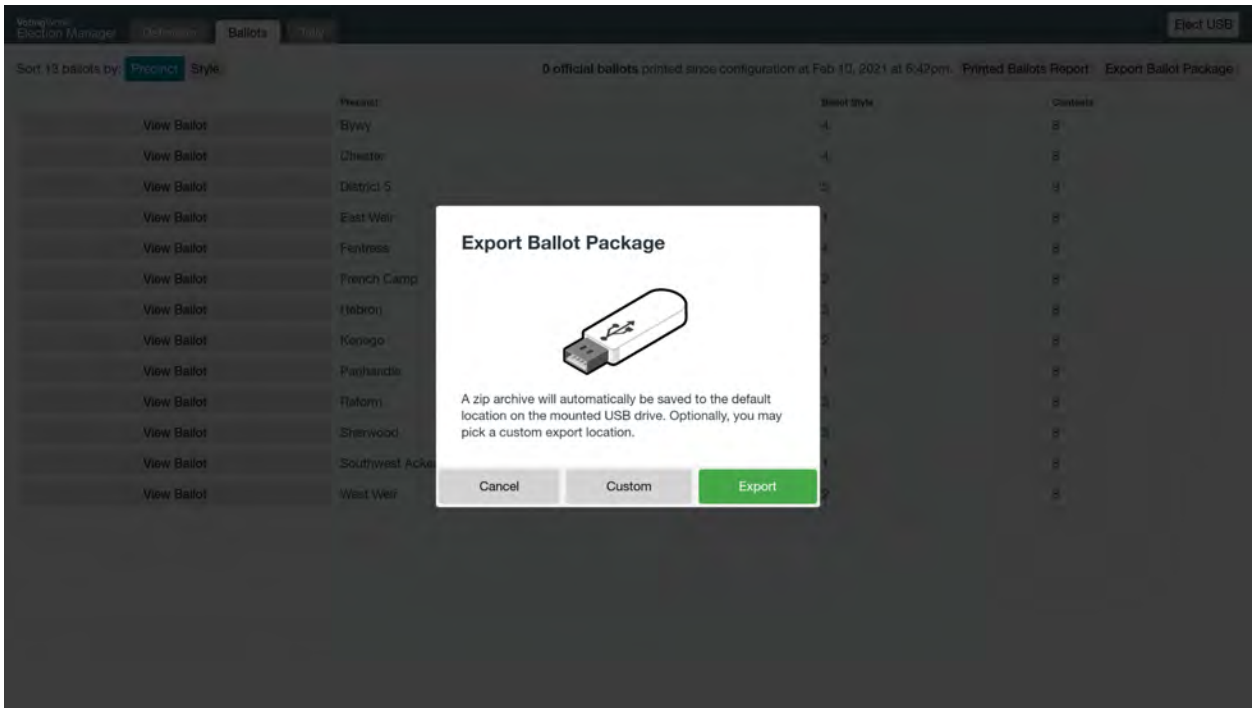
To configure VxCentralScan, you must first export the ballot package from VxAdmin to a USB drive. Navigate to the Ballots tab in VxAdmin and click Export Ballot Package:



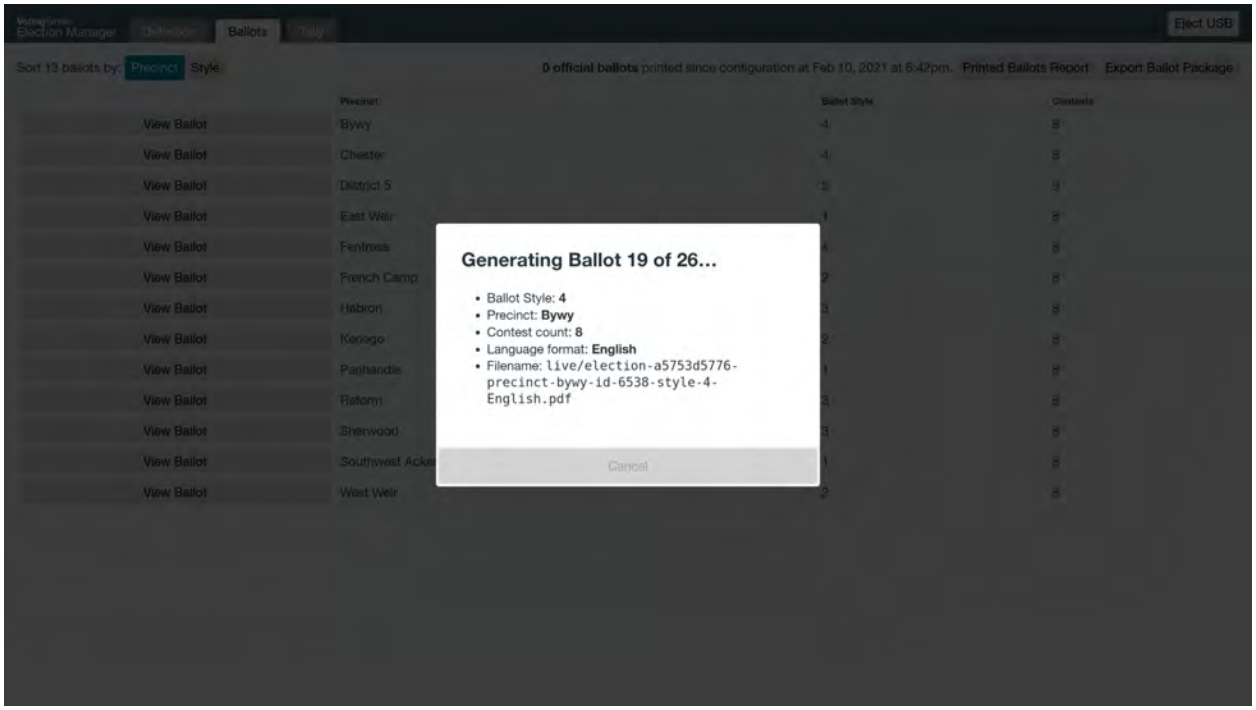
You will be prompted to insert a USB drive:



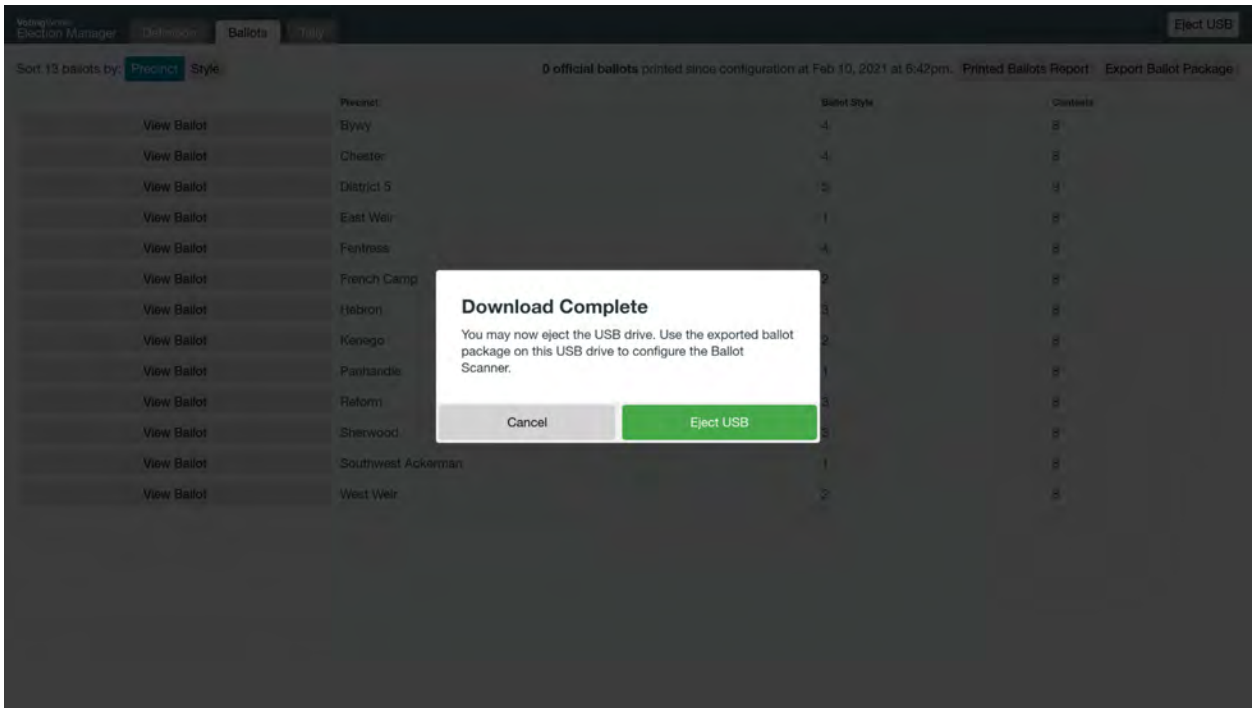
Once you insert a USB drive, the screen updates and prompts you to export the ballot package:



Just click Export and VxAdmin will generate the ballot package of all ballot styles, saving it automatically on the USB drive:



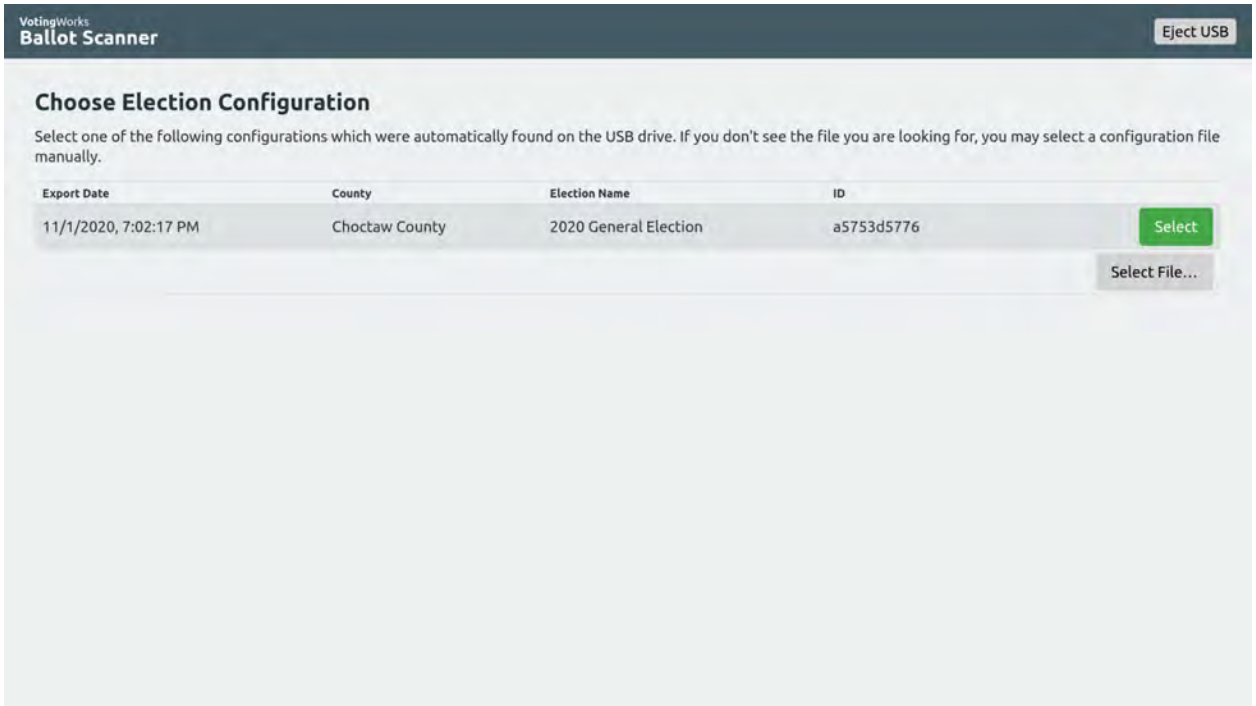
Once the file is saved, VxAdmin lets you know and prompts you to eject the USB drive:



Once you have the ballot package saved on a USB drive, you can transfer the file to VxCentralScan.

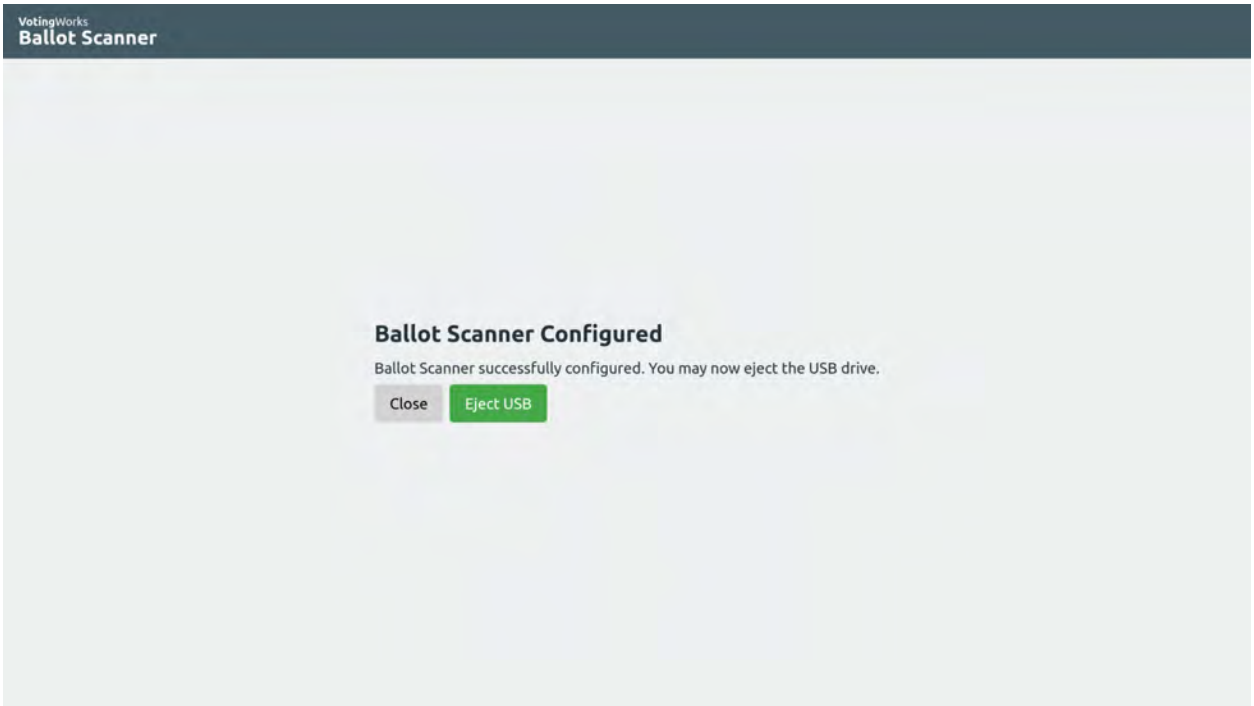
When turned on, the VxCentralScan laptop will boot to a Load Election Configuration screen, prompting you to insert a USB drive:

Insert the USB drive on which you just saved the ballot package from VxAdmin. After a few seconds, VxCentralScan displays all the ballot packages it finds on that USB drive:



Select the ballot package you want. As the package loads, the screen will read Uploading ballot package # of # and VxCentralScan will iterate through the total number of ballot styles in the ballot package:

When loading is complete, VxCentralScan prompts you to eject the USB drive:



Then, the main VxCentralScan screen is shown. The screen will state that No ballots have been scanned. Election summary information (name, date, county, etc.) will be shown at the bottom of the screen.

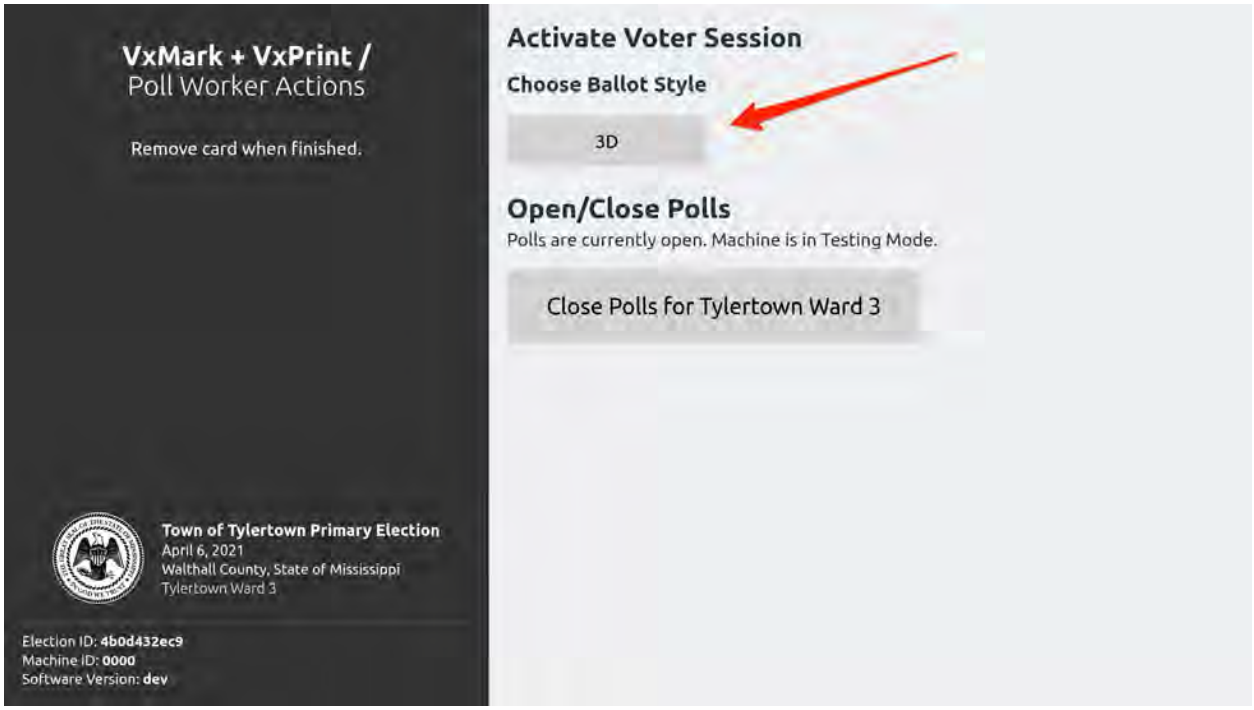
4.3. System diagnostic testing procedures, including audit records to be generated and retained

VotingWorks includes built-in system diagnostic testing to confirm hardware and software status such as testing the connection of physical peripherals and access to power. Components automatically produce an audit log of the diagnostic tests performed that can be exported to USB for further analysis.

4.4. System proofing

For this pilot, the only proofing required is the proofing of the ballot content on VxMark. To proof a VxMark ballot, follow the following process to activate and vote on a VxMark itself.

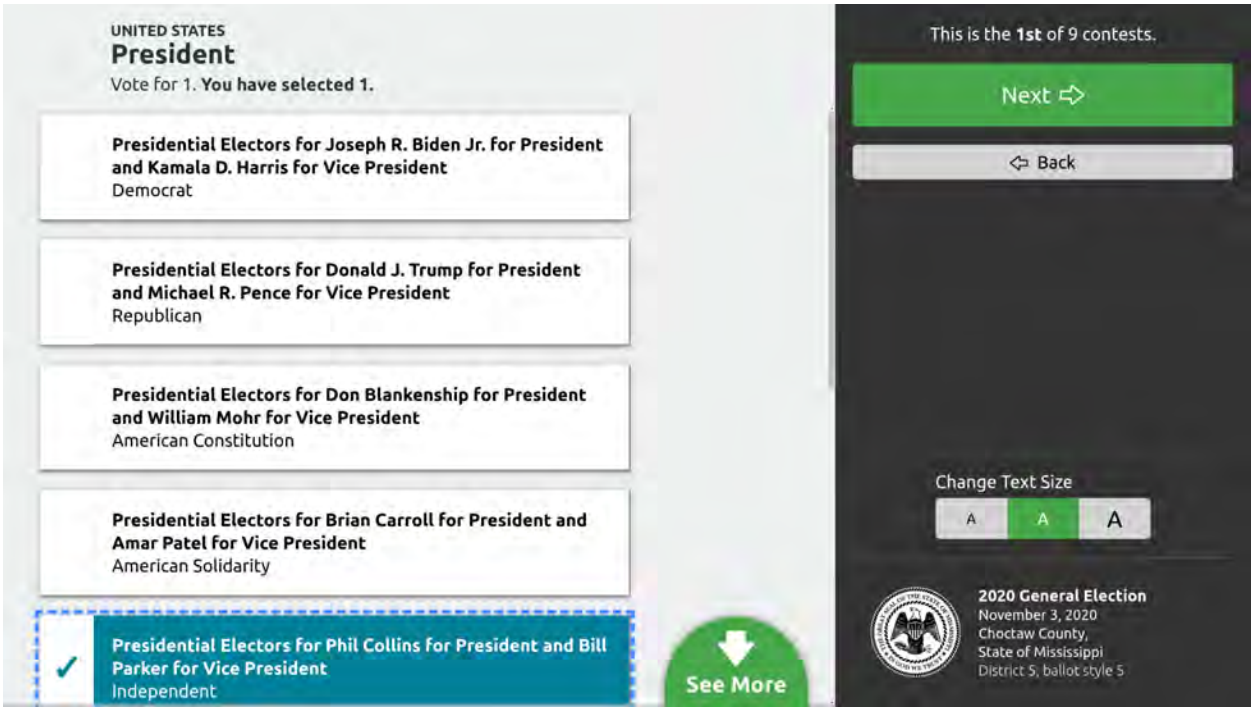
First, insert a Poll Worker card to activate the appropriate ballot. After inserting a Poll Worker card, the Poll Worker Actions screen will show all available ballot styles under Choose Ballot Style.



Tap the desired ballot style, and the screen changes to indicate that the VxMark has been activated with that ballot style:

Remove the Poll Worker card and you can begin “voting” to proof the ballot:

You may proof the ballot one contest at a time and proof the audio experience by listening to the audio ballot using the attached headphones.



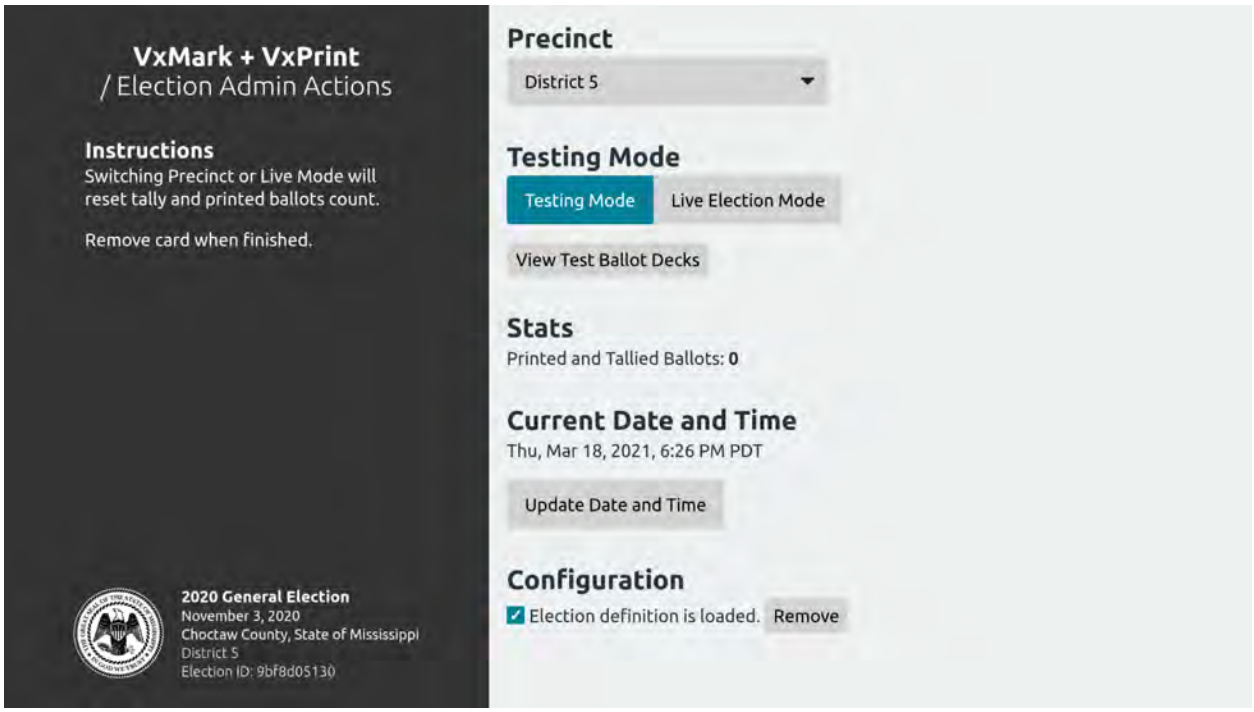
This process can be performed for each ballot style to confirm ballot definition accuracy.

4.5. Logic and accuracy testing of system and components

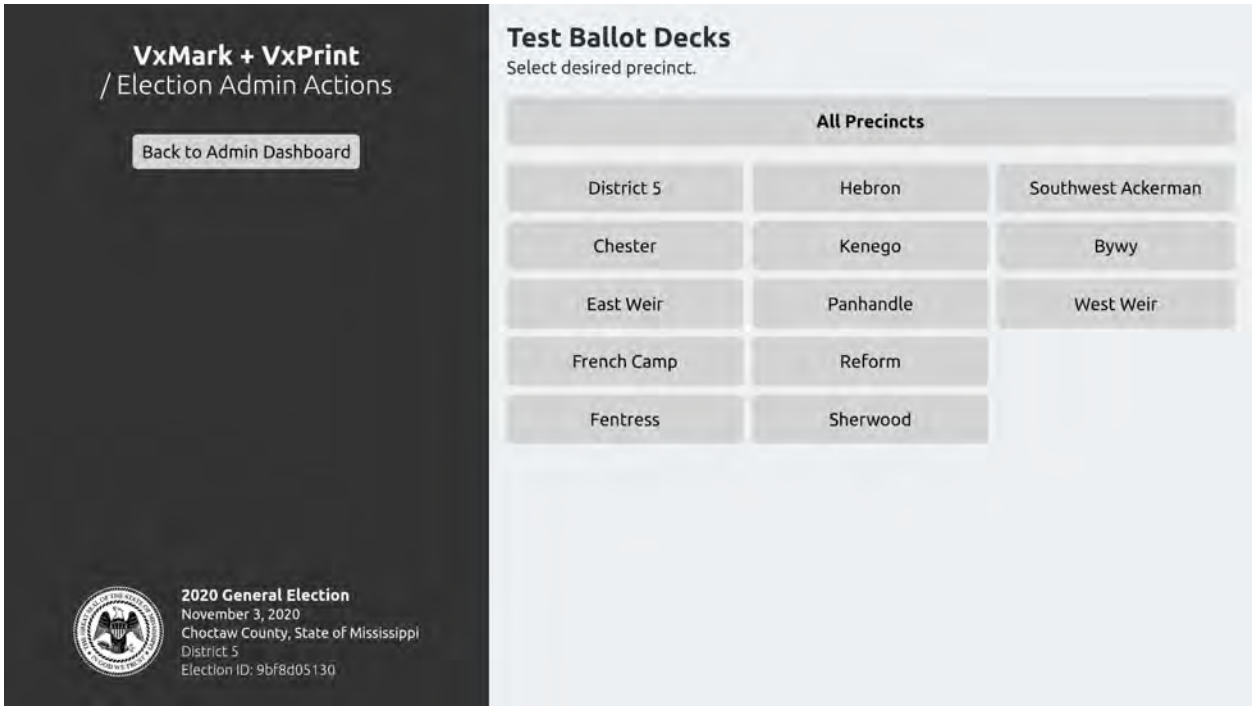
4.5.1. Pre-conditions for performance of tests, including test decks

Before performing logic and accuracy testing, the VxMark test deck must first be printed using a configured VxMark unit.

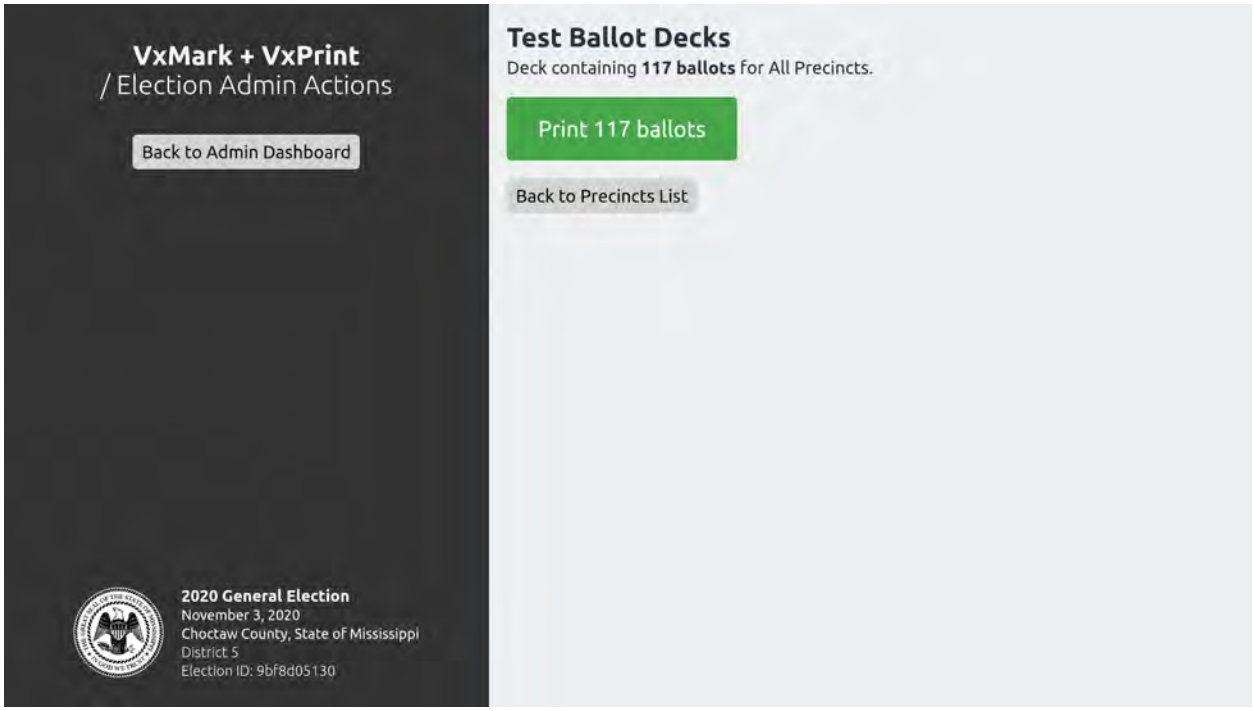
Turn on the VxMark and insert the Admin Card. The Admin screen will be presented.



Tap View Test Ballot Decks, which then shows you a list of Test Ballot Decks.



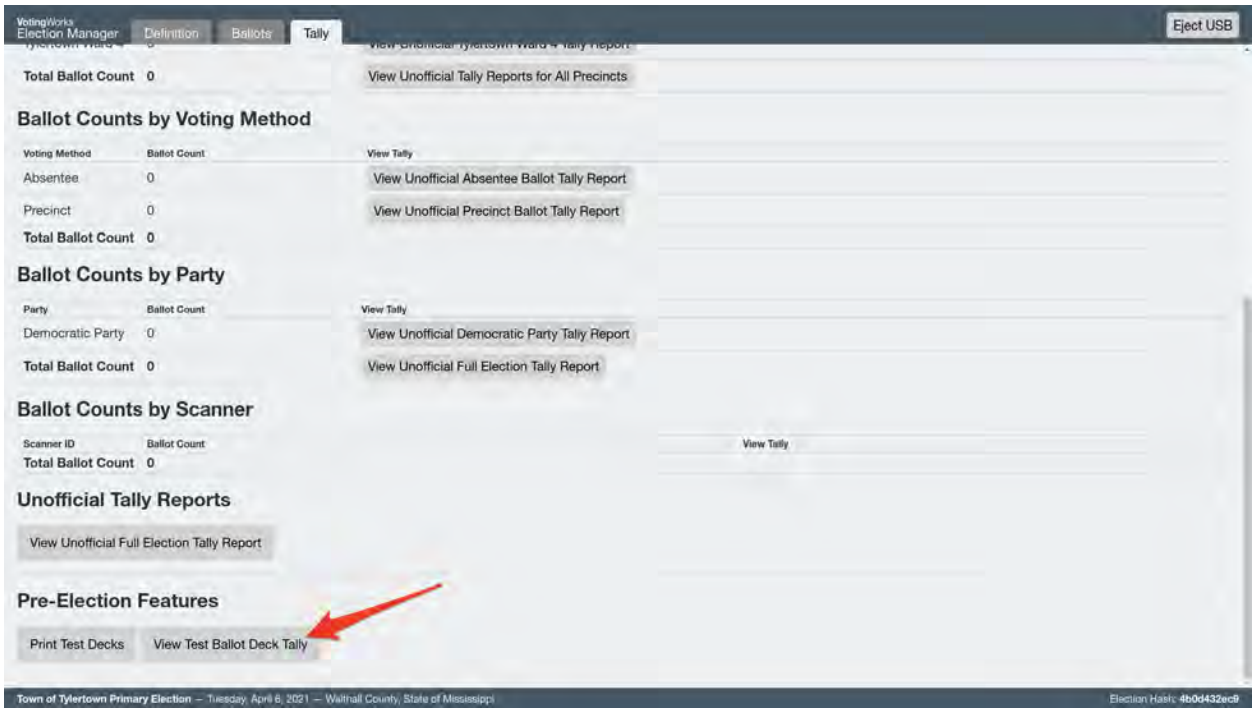
You can select All Precincts or choose a precinct, which then leads to the following screen.



The number of ballots depends on your number of precincts and ballot styles. Tap Print N ballots and the test deck will then print. Depending on your number of ballots, this may take a few minutes.

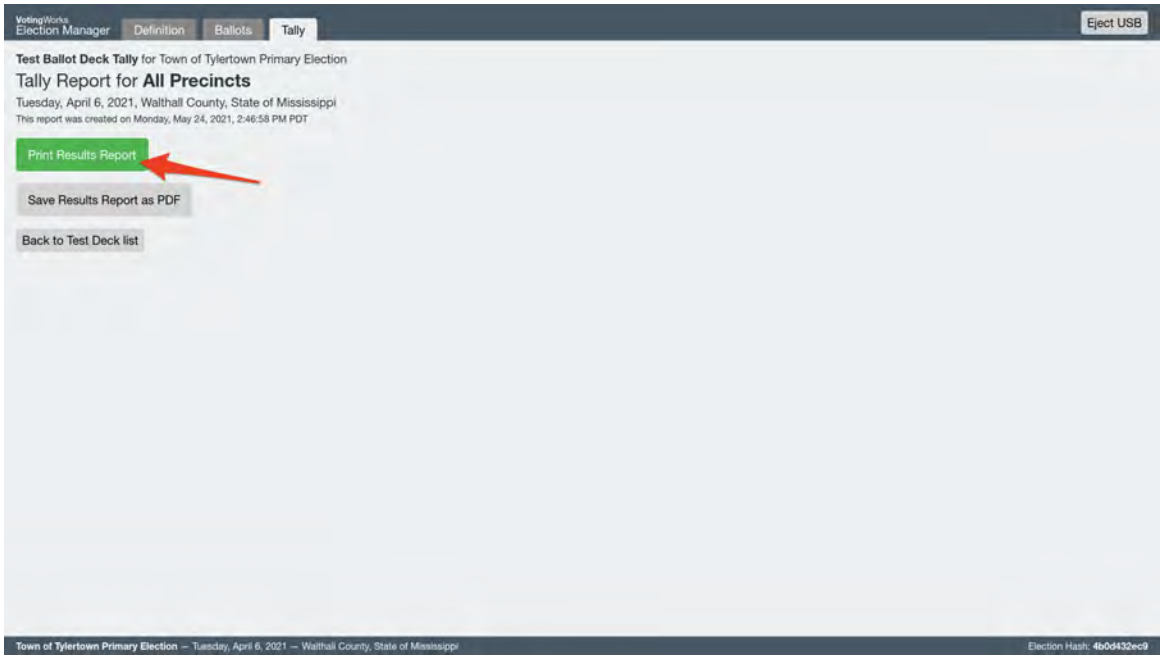
You now have a test deck of BMD ballots ready to scan.

Next, the Test Ballot Deck Tally needs to be printed from VxAdmin. The "Test Ballot Deck Tally" is the result we expect to see after scanning the test deck. To print the Test Ballot Deck Tally, first click the Tally tab and then click View Test Ballot Deck Tally:



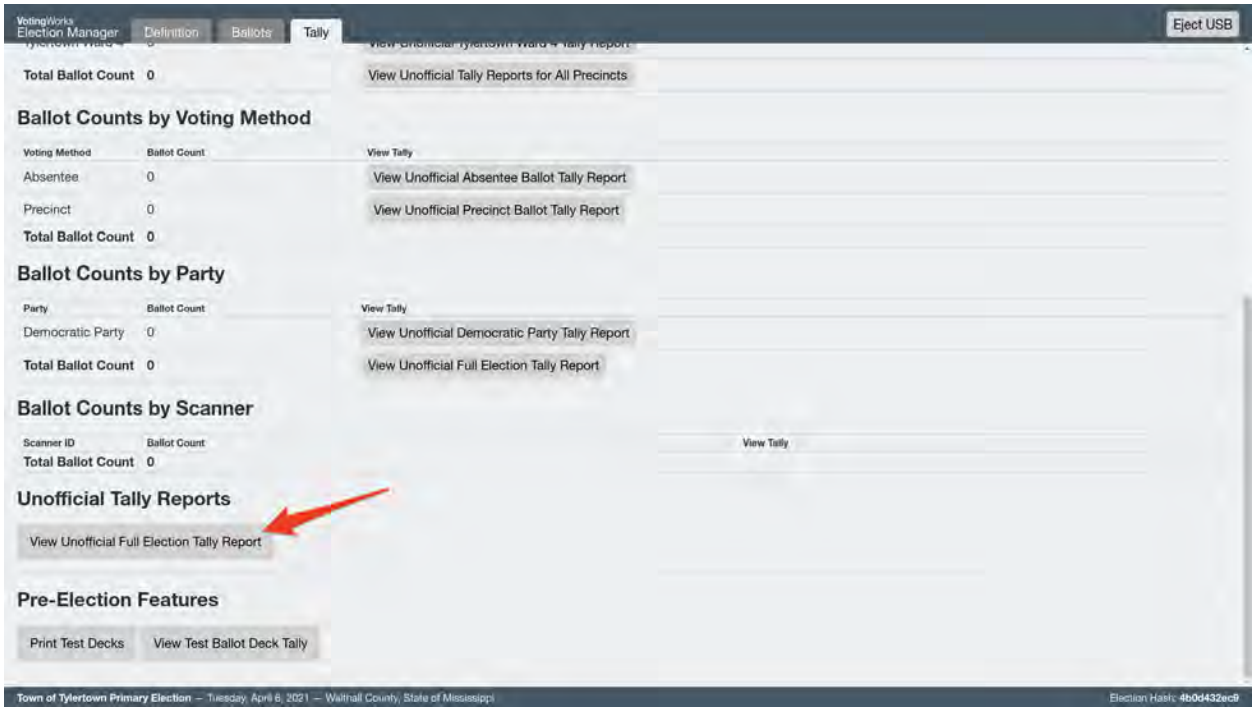
In the Test Ballot Deck Tally view, a list of precincts available for the election will appear. Click the name of the precinct you would like to print a test deck tally for or click All Precincts for the entire county:

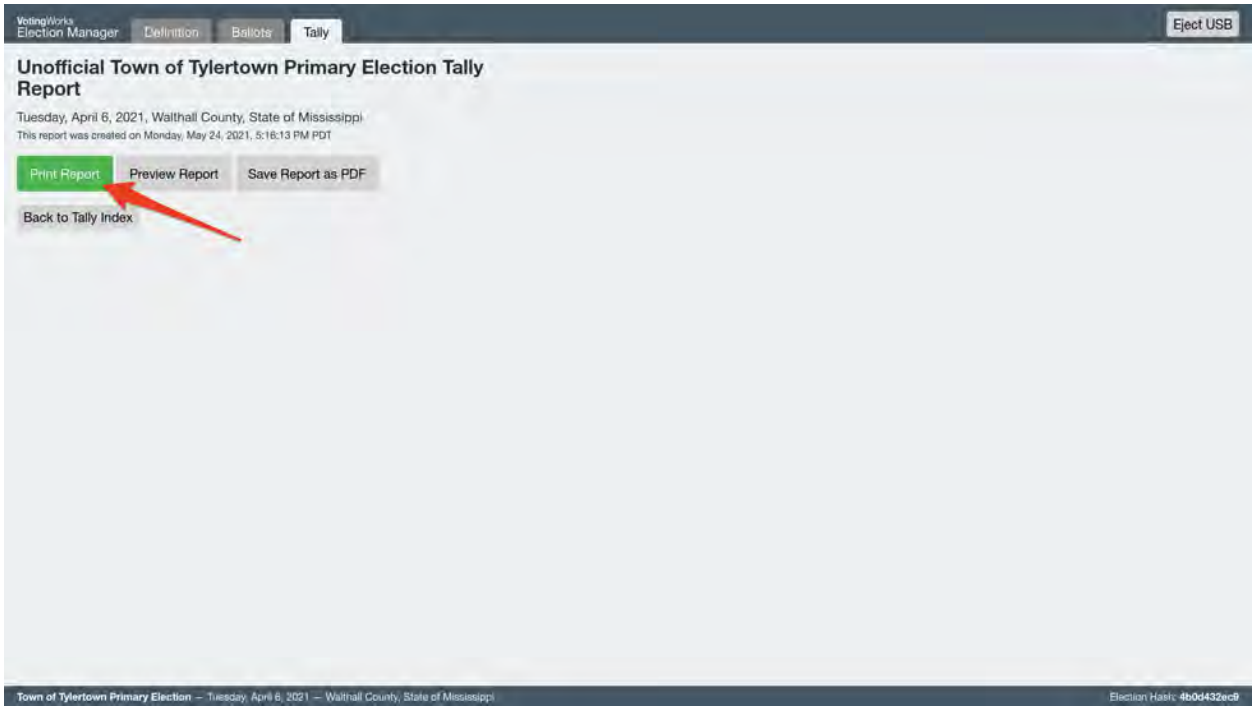
Confirm the election and precinct information and click Print Results Report:



When printed, you can set aside the results report until test deck tabulation.

Finally, the Zero Report should be printed from VxAdmin before performing any tabulation. To print a confirmed zero report, click View Unofficial Full Election Tally and then the green Print Report button in the subsequent screen:





4.5.2. Accuracy Test procedures

VxMark Testing Checklist

- ☐ Confirm Election, Election ID, Date, Time, and Precinct (Admin Card)
- ☐ Confirm Printer has plenty of paper
- ☐ Confirm VxMark is in "Testing Mode" (Admin Card)
- ☐ Confirm Zero Report is all Zeros
- ☐ Open Polls on VxMark (Poll Worker Card)
- ☐ Confirm that all expected ballot styles show up as options at top of screen
- ☐ Run the Ballot Style Sub-Checklist for *each* ballot style
- ☐ For one of the ballot styles selected at random, confirm that the entire ballot can be filled out and printed using only the audio track over headphones and the accessible controller
- ☐ Change

Ballot Style Sub-Checklist:

- ☐ Confirm all expected contests appear in the correct order
- ☐ Confirm all candidate names appear and are spelled correctly
- ☐ Confirm each candidate / choice can be selected and deselected
- ☐ Confirm the review screen lists all contests
- ☐ At the review screen, for each contest
    - ☐ tap Change, leave blank, tap Review, confirming the contest is left blank

- ☐ tap Change, choose a write-in (if appropriate), tap Review, confirm the write-in appears
- ☐ tap Change, attempt to select more than the max number of choices, confirm you cannot
- ☐ tap Change, make a selection, tap Review

☐ Tap I'm Ready to Print My Ballot, and confirm the ballot prints.
☐ Confirm the printed ballot includes the selections made on screen (write down the selections from your review screen on this checklist to make this easier)

VxCentralScan Testing Checklist

☐ Combine VxMark test decks from each precinct into one batch of ballots.
☐ Connect VxCentralScan to its scanner
☐ Turn on the VxCentralScan laptop and the scanner
☐ Confirm that VxCentralScan is configured for the appropriate election
☐ Click Toggle to Test Mode from the Advanced menu
☐ Scan the test deck
☐ Confirm the count of scanned ballots is twice the number of ballots
☐ Export the CVR file to a USB Drive
☐ Scan the blank ballot
☐ Confirm it shows up as blank
☐ Choose Original Ballot Removed.
☐ Scan the overvoted ballot
☐ Confirm it shows up as an overvote
☐ Choose Original Ballot Removed.
☐ Click Toggle to Live Election Mode in the Advanced menu

VxAdmin Testing Checklist

☐ Insert USB Drive with the CVR file
☐ Click Import CVR Files under the Tally tab
☐ Import the CVR file
☐ Eject USB Drive
☐ Print the Unofficial Full Election Tally
☐ Confirm that the tallies match the Test Ballot Deck Tally
☐ Clear CVR files

4.5.3. Logic Test procedures

Ballot logic testing will be performed by San Francisco as part of the Ballot Proofing process. See section 4.4 for proofing instructions.

4.5.4. Retention of test materials

The jurisdiction should retain all test decks, printed ballots, result reports, and expected test deck tallies as well as the CVR file for as long after the election as required by law.

4.5.5. Logic and Accuracy Board and certification of testing

Accuracy tests shall be performed prior to Logic and Accuracy Certification to the Secretary of State and prior to Election Day. In the event of hardware failure and the component has been repaired, replaced or adjusted the accuracy test should be re-run.

4.6. Ballot tally programs

Ballot tally programs will not be placed in escrow for this pilot as the VotingWorks system will not be tabulating and reporting results for the semi-official or official results (see sections 7 & 8).

4.7. Election Observer Panel

San Francisco will not modify its election observer panel procedures for this pilot and will implement the current procedures in use for their Dominion voting system.

4.8. Hardware maintenance and preparation for use

Hardware maintenance is unnecessary for the implementation of the one-time pilot as VotingWorks personnel will ensure hardware is prepared before first use.

5. Polling Place Procedures

5.1. Precinct supplies, delivery and inspection

San Francisco will deliver and inspect Voting Center supplies according to their procedures.

The only required supplies are the VxMark ballot marking device and attached printer as well as a ballot box.

5.2. Polling place set-up (including equipment setup)

VxMark can be set up in just a couple of minutes. Before you start, confirm that you have the black VxMark case, its associated printer, and enough table space to comfortably fit both.

Place Equipment on Table

You can place the printer to the left or right of the black case:

Set Up Printer

Connect the printer to power by connecting the plugging one end of the power cable into an outlet and the other end into the back of the printer. Turn the printer on by pressing the power button on the front in the top-right corner:

Unpack VxMark

Pop open the black case by lifting the latches on the side and front. Within the case you'll see the touchscreen and, around it, the different components of the VxMark:

1. Headphones in the travel pouch on top of the screen. Remove the pouch and set it aside for now.

2. Accessible Controller in the lower-left compartment. Remove it and set it beside the case to the left.
3. Power Adapter in the upper-left compartment. Remove the adapter and plug it into an outlet.
4. Printer USB Cable in the mid-right compartment. Connect this to the back of the printer.
5. Card Reader in the lower-right compartment. Leave this alone, it stays put.

Packed VxMark

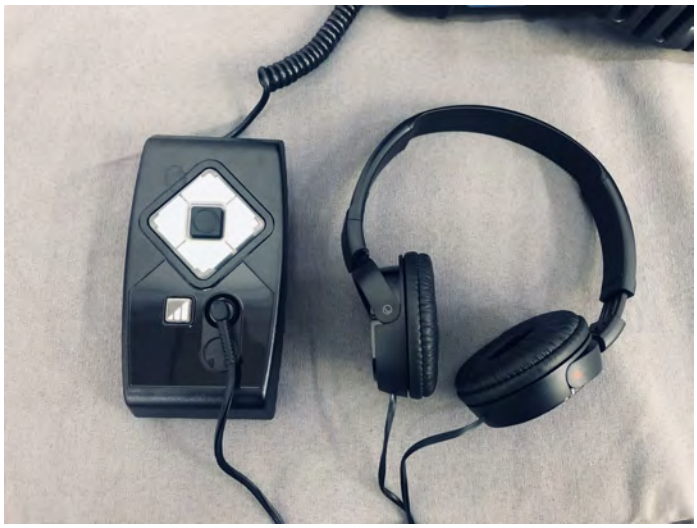
Connected VxMark

Set Up the Privacy Shield

Behind the top layer of foam there is a privacy shield. Remove the privacy shield, set it up around the touchscreen, and replace the top foam. You can route the cables through the back corners of the privacy shield:

Plug in the Headphones

Remove the headphones and plug them into the audio outlet on the accessible controller:



You can place the empty travel pouch behind the privacy shield.

Turning On VxMark

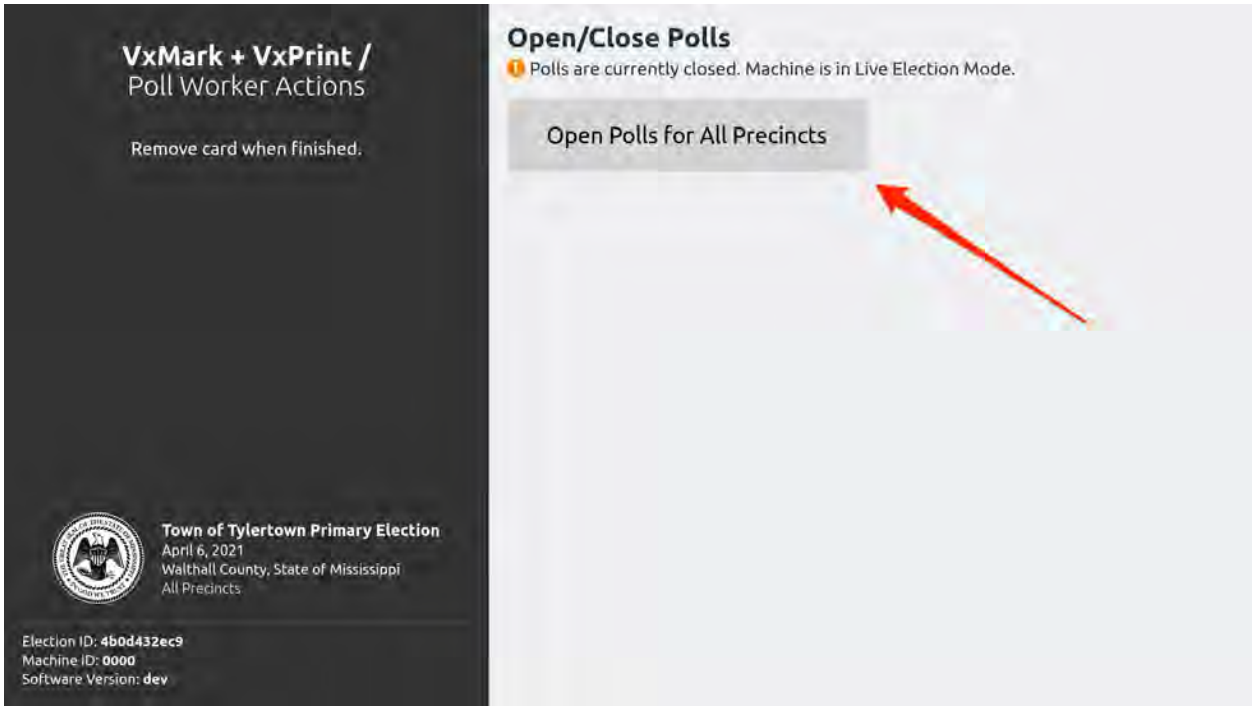
The power button is located in the middle-right compartment next to the printer cable. To find it, run your finger along the side of the screen. Press the power button firmly for 1 second and then release. You should see the card reader and accessible controller light up within 3-5 seconds.

Turned On VxMark

You are done setting up the VxMark and are ready, when necessary, to open the polls and print the polls opened report.

5.3. Opening the polls

To open the polls on VxMark, insert a Poll Worker Card and tap Open Polls for All Precincts.



Remove the card when finished and polls are open.

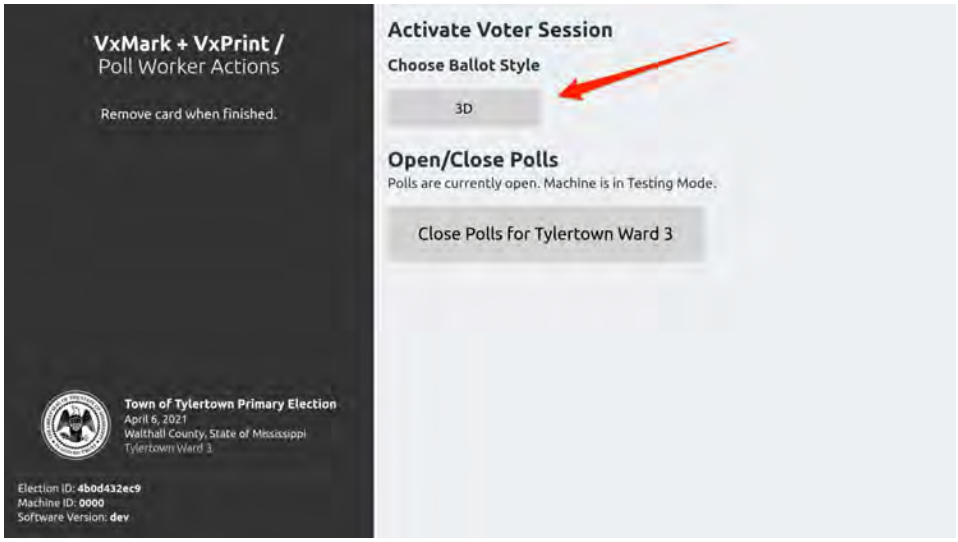
5.4. Polling place procedures

Activating a Ballot Style

If a voter chooses to use VxMark, insert a Poll Worker card to activate the appropriate ballot.

The screen will initially display the following:

Insert the Poll Worker card to open the Poll Worker screen, which will display all available ballot styles for this precinct under the **Choose Ballot Style** heading:



Tap the desired ballot style, and the screen changes to indicate that the VxMark has been activated with that ballot style:

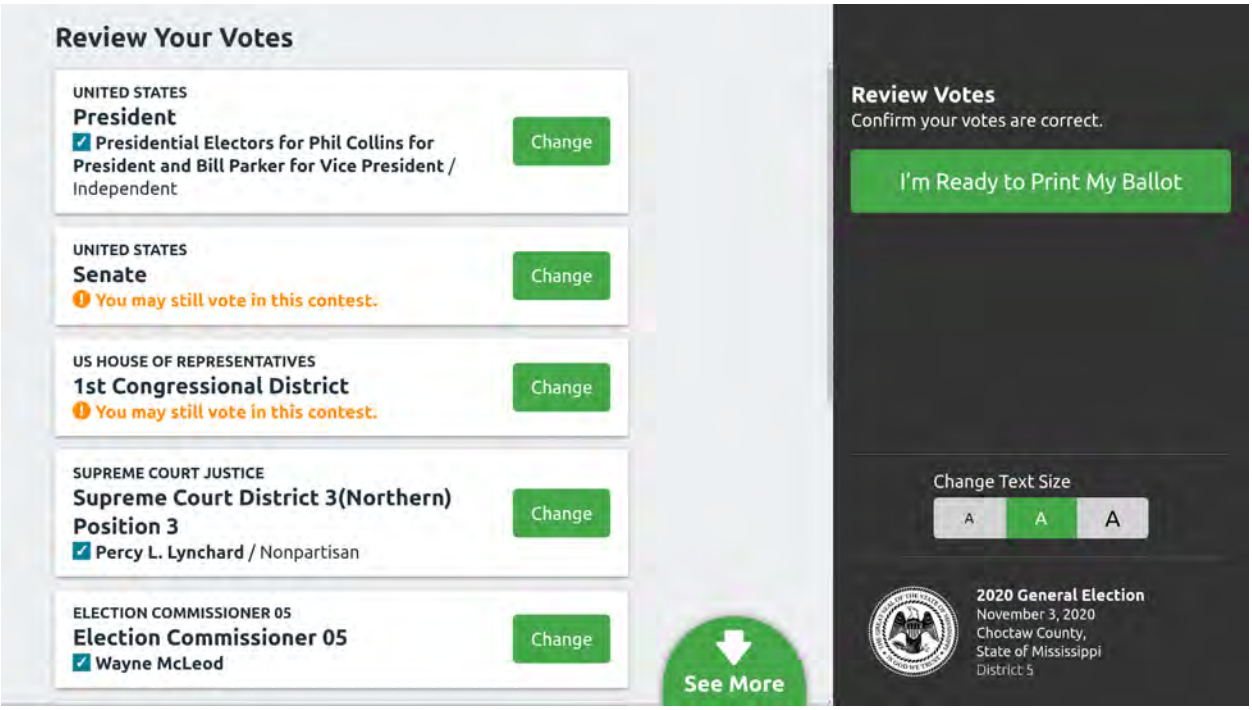
Remove the Poll Worker card and let the voter know they can begin voting by tapping the Start Voting button:

Voting Instructions

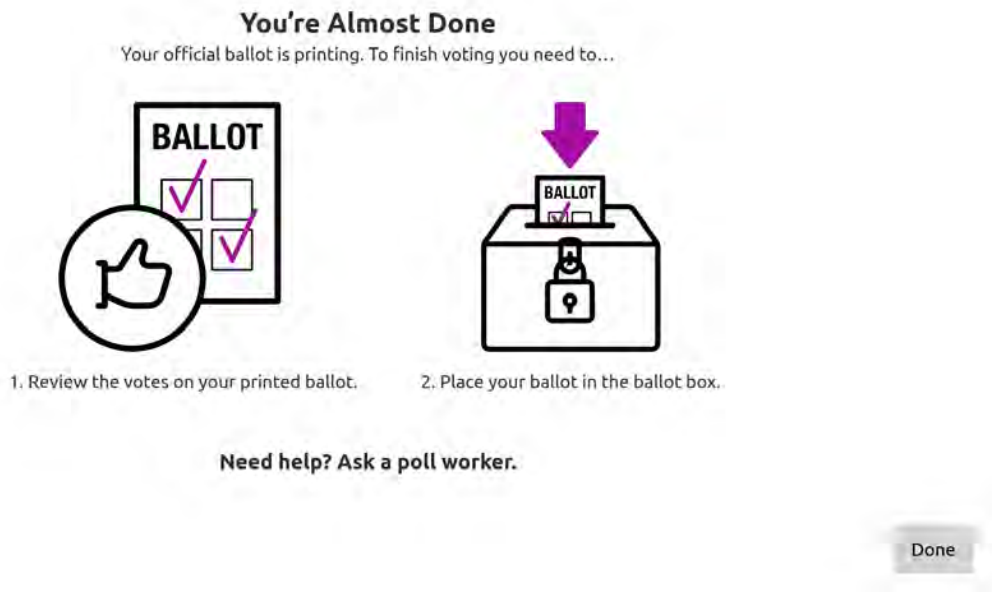
The voter will be presented with one contest at a time. They will make a selection by tapping on their choice:

The voter moves to the next contest by tapping the Next button. They can skip a contest by moving to the Next without making a selection. To return to a previous contest, they can tap the Back button.

After working through all contests, a **Review Your Votes** screen appears that allows the voter to change any of their selections:



When done reviewing, the voter taps I'm Ready to Print My Ballot . The ballot should then begin printing. Once it's done printing, the screen will display instructions for the voter to cast their ballot:



The voter may press the Done button if they wish, but it's not required. The screen will automatically refresh to the starting point after a few seconds.

The voter should take their printed ballot and review it one final time. They should then take it to the ballot box to cast the ballot.

5.5. Special needs voters

Poll workers should communicate to voters with special needs the availability of the attached accessibility controller and headphones that can be used during the marking experience.

Voters with language access needs can be assisted during the ballot activation process where alternative language ballots will be presented as distinct ballot styles.

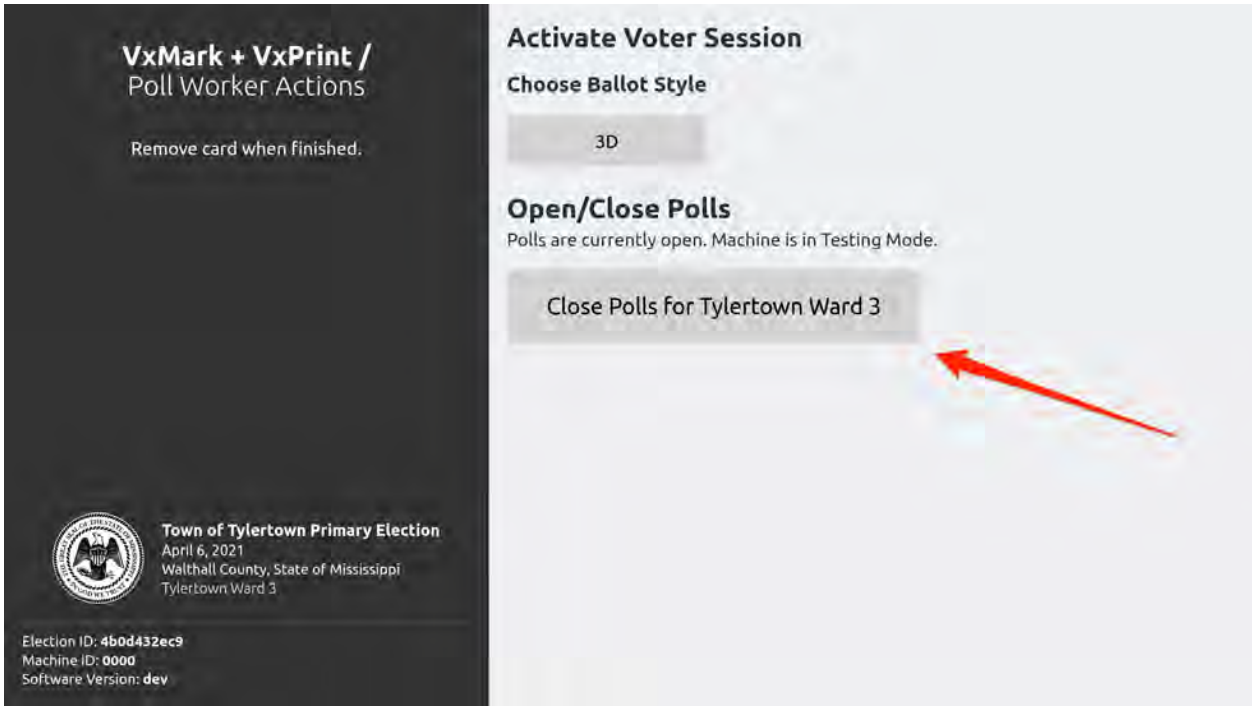
5.6. Provisional voters

Provisional voting will not take place on the VotingWorks system and provisional voters will use San Francisco's Dominion voting system for provisional voting.

5.7. Closing the polls and vote reporting

Close Polls on VxMark

To close polls on VxMark, insert a Poll Worker card and tap Close Polls for All Precincts.



Remove the Poll Worker card and polls will be closed.

Turn Off VxMark

The power button is located in the middle-right compartment next to the printer cable. To find it, run your finger along the side of the screen. Press the power button firmly for 1 second and then release. You should see the screen change as the machine starts to shut down.

Pack Up VxMark

Unplug the headphones from the accessible controller. Place the headphones into the travel pouch.

The privacy shield will be stored back behind the top foam layer. Set the top foam aside. Lift the privacy shield up, fold it, and place it in the top lid. You can then put the top foam back in place, covering the privacy shield.

Pack Cables:

1. Unplug the power block from the outlet and place in the top-left compartment, with prongs facing up.
2. Place the accessible controller in the bottom-left compartment, the buttons facing outward.
3. Unplug the printer cable from the printer and place inside case

Close VxMark

Make sure that:

1. Headphone Pouch is inside the case, on top of the screen
2. All cords are within case and not overflowing

Close and latch the case.

Pack Up Printer

- ☐ Unplug printer power cord from the outlet and the printer
- ☐ Place the printer in its case
- ☐ Place power cord inside the case
- ☐ Close the case

Copy Ballots to Dominion Format

After polls are closed, VotingWorks ballots will be copied onto Dominion formatted ballots for central tabulation. VotingWorks ballots will also be scanned on VxCentralScan for the purpose of generating results for a partial risk-limiting audit. The following steps define the process of scanning and generating results for use in the partial risk-limiting audit, not for semi-official or official results.

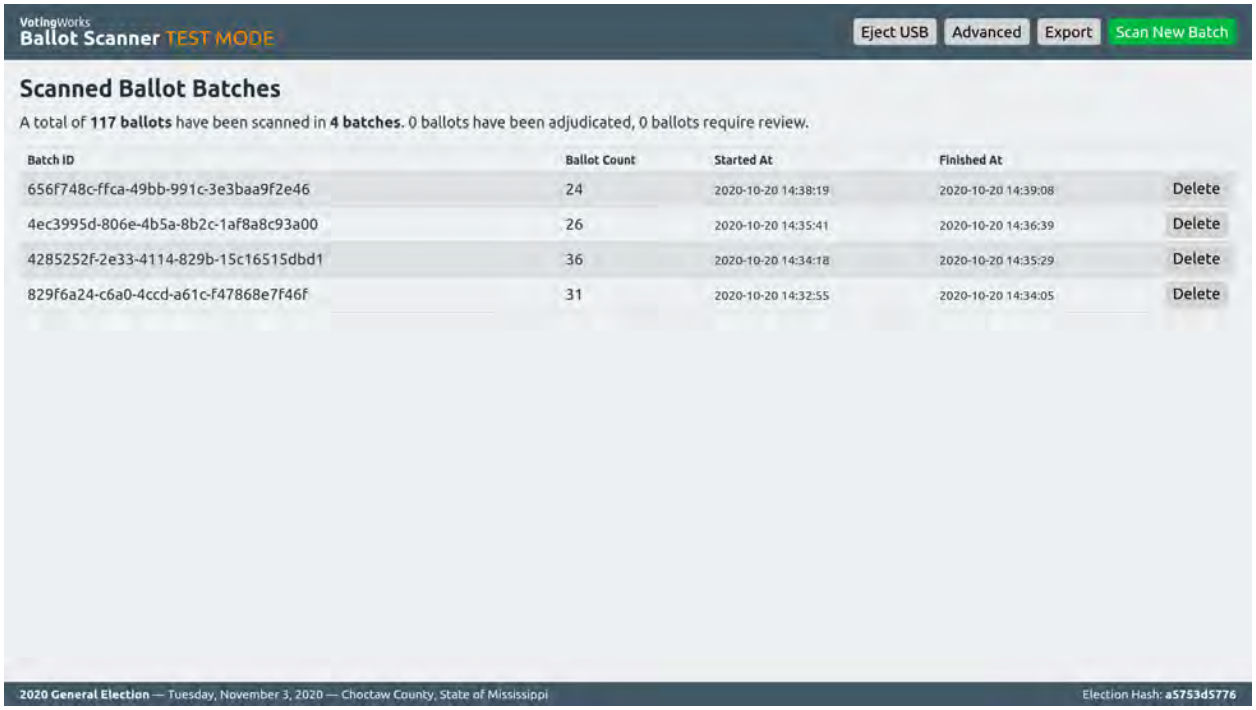
Scan VotingWorks Ballots on VxCentralScan (for risk-limiting audit)

Before scanning the first ballot batch, confirm that VxCentralScan displays No ballots have been scanned and that the scanner display shows no scans. If otherwise, you should select the Delete Ballot Data option under the Advanced menu.

To load a ballot batch, place a stack of ballots into the feeder tray of the scanner connected to VxCentralScan. The ballots need to be in a neat stack, unfolded and lying flat, but ballots can be in any orientation (e.g. upside down or backwards is fine).

Click Scan New Batch in the top right to start scanning. Ballots will feed through the scanner automatically and the number of ballots scanned within each batch will progress onscreen. The batch is finished scanning when a timestamp is presented under the Finished At header for that particular batch.

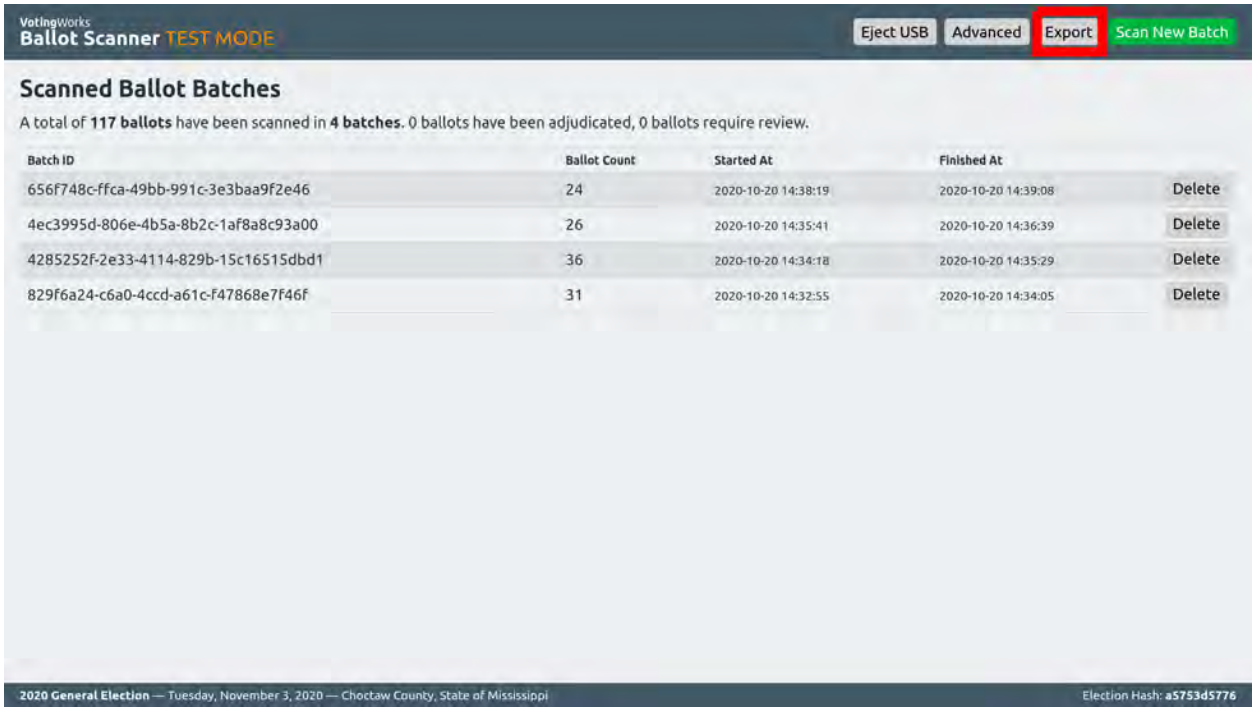
Once the batch finishes scanning, remove it from the output tray on the scanner and place the next stack of ballots in the feeder tray. Repeat the scanning process for as many batches are necessary to finish scanning all ballots.



Tally Results on VxAdmin (for risk-limiting audit)

When all ballot batches (including any duplicated ballots) have been scanned, you will need to export the CVRs from VxCentralScan to load into VxAdmin for results aggregation.

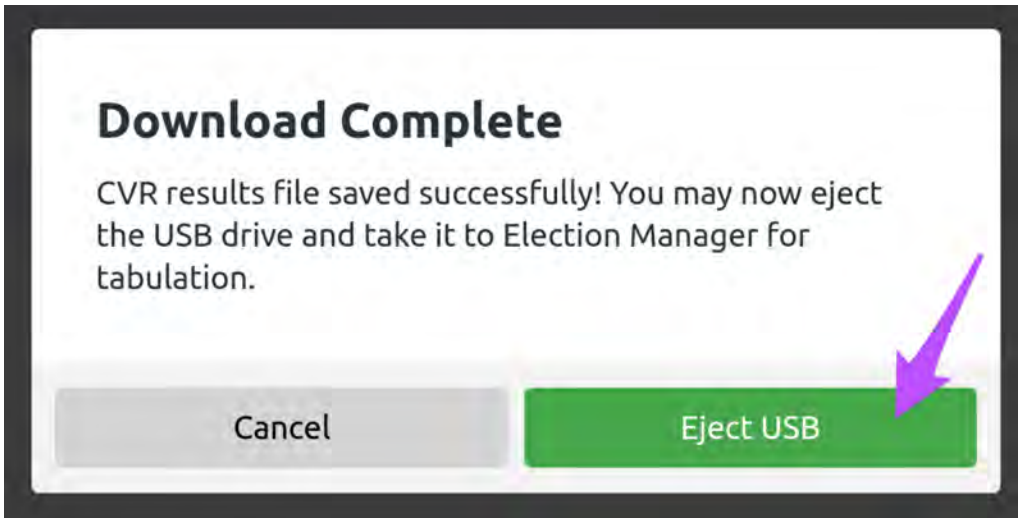
To export, click Export in the top right.



You'll be prompted to insert a USB stick. Once recognized, click "Export" again:

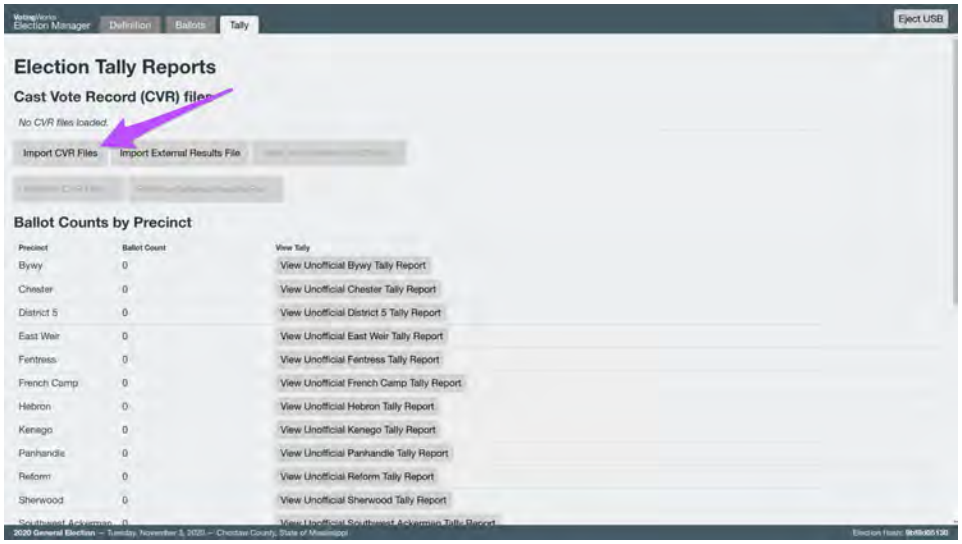
You don't need to worry about filenames. The export process takes care of that.

Once you've clicked "Export", you'll see a confirmation screen, where you can click "Eject USB":

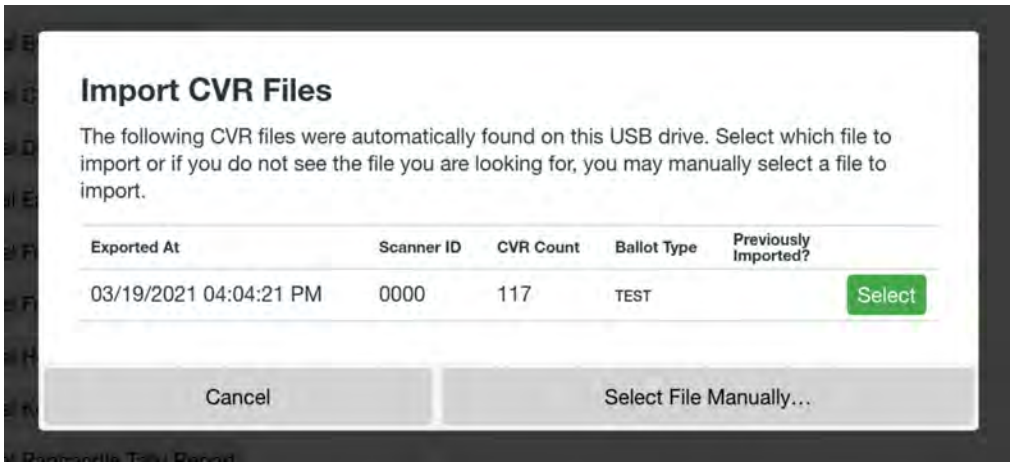


Then, you can physically remove the USB stick that now holds the CVR file.

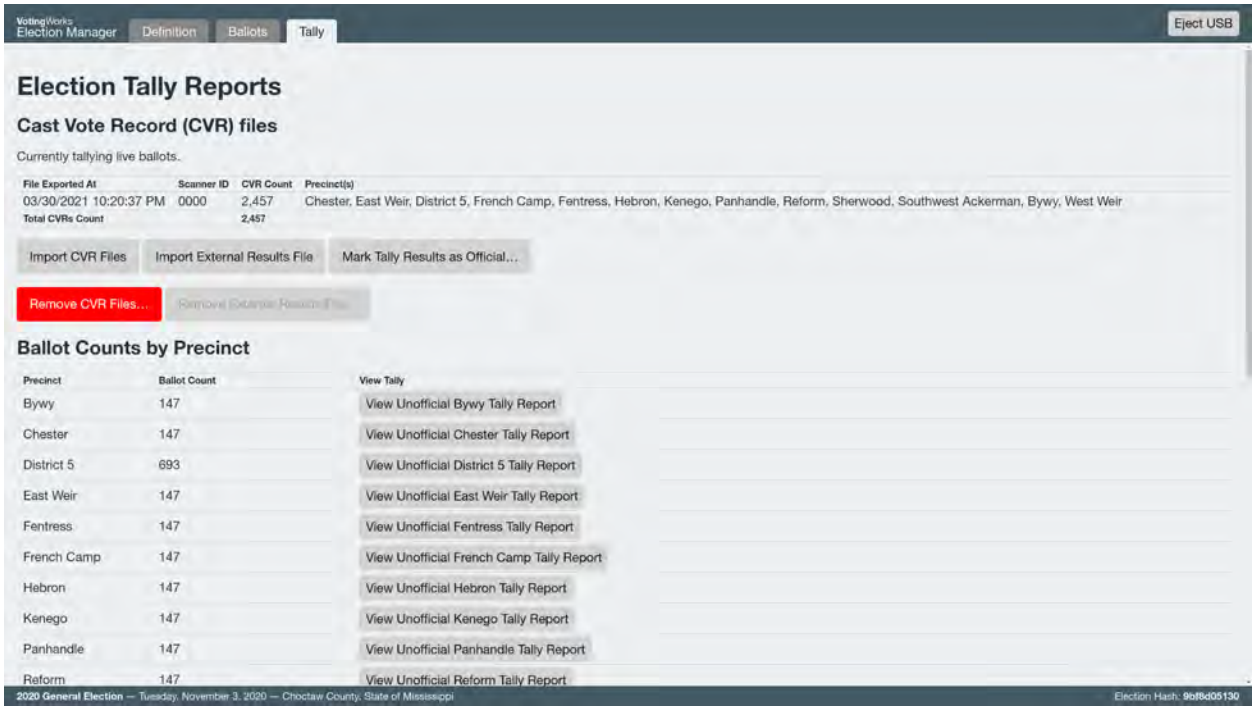
All tabulation functionality in VxAdmin is available within the Tally tab. Click Tally to access the tally tab and then click Import CVR Files:



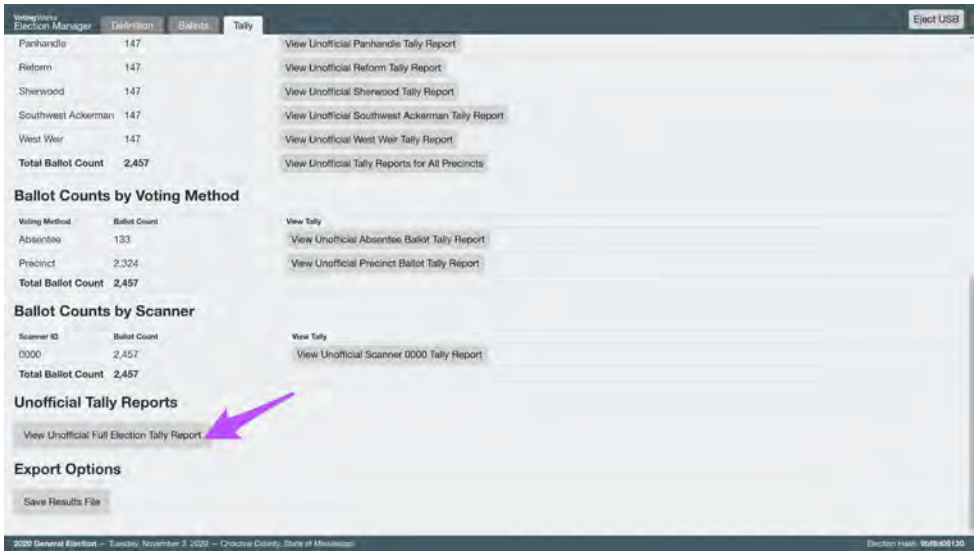
You'll be prompted to insert a USB stick if you haven't already. The dialog will show you all CVR files saved on the USB Drive. Select the right file (live election, correct number of ballots, correct time.)



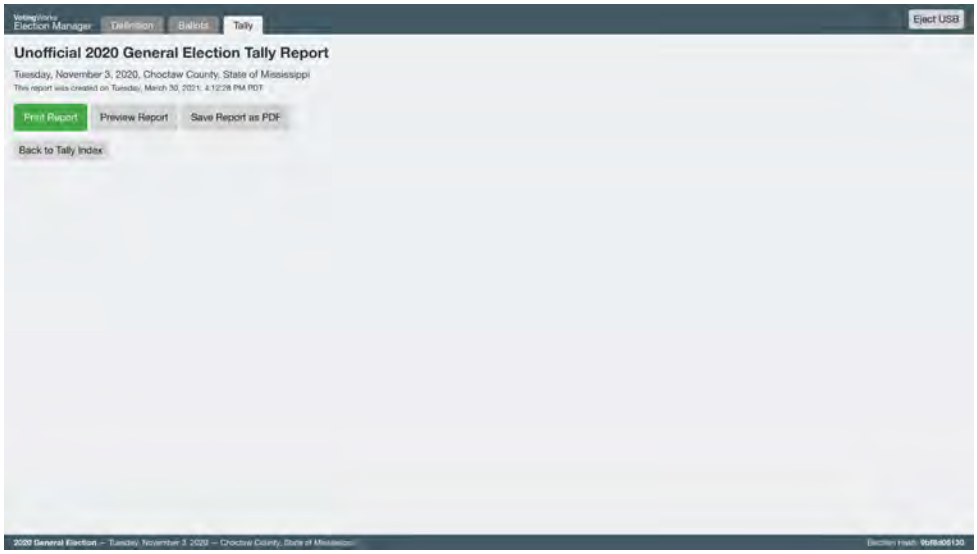
When imported, confirm that the presented file name, CVR count, and precinct(s) are as expected. You may also review the ballot count by precinct and view any unofficial tally reports as desired.



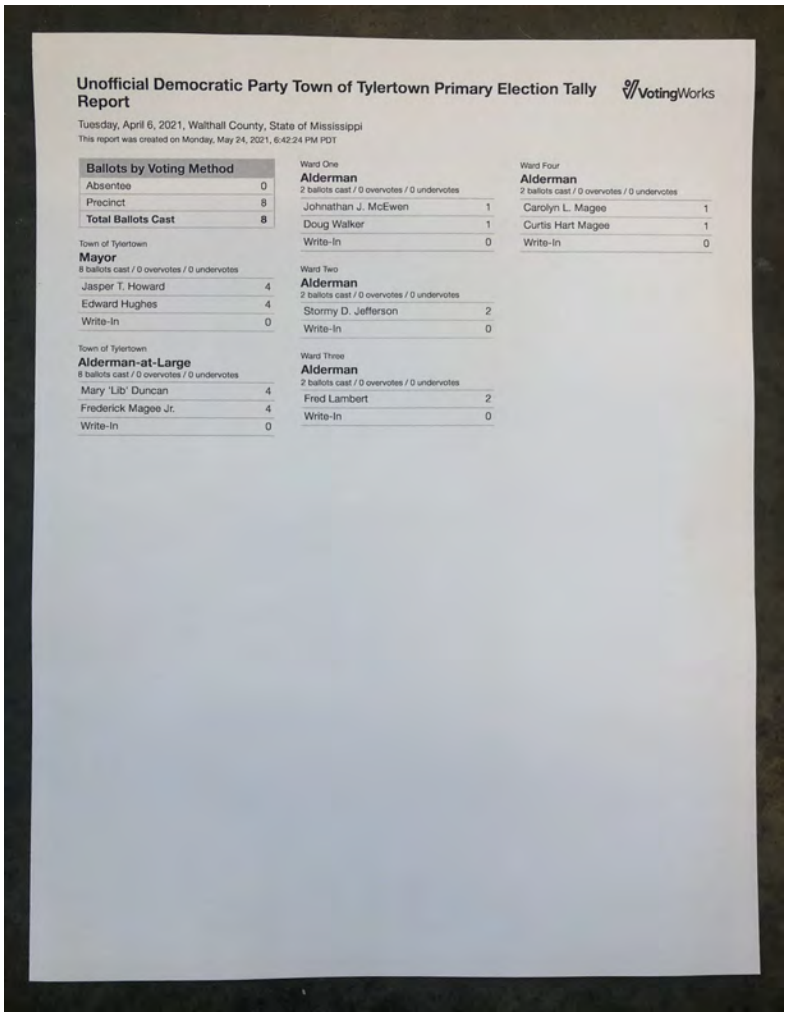
After importing your CVR file(s), scroll to the **Total Ballot Count** and click `View Unofficial Full Election Tally Report`.



Click `Print Report` to print results or `Save Report as PDF` to save the election tally to a USB drive.



The printed report should look like the image below with the election name and the VotingWorks logo:



Unofficial Democratic Party Town of Tylertown Primary Election Tally Report

VotingWorks

Tuesday, April 6, 2021, Walthall County, State of Mississippi
This report was created on Monday, May 24, 2021, 6:42:24 PM PDT

Ballots by Voting Method	
Absentee	0
Precinct	8
Total Ballots Cast	**8**

Town of Tylertown
Mayor
8 ballots cast / 0 overvotes / 0 undervotes

Jasper T. Howard	4
Edward Hughes	4
Write-In	0

Town of Tylertown
Alderman-at-Large
8 ballots cast / 0 overvotes / 0 undervotes

Mary 'Lib' Duncan	4
Frederick Magee Jr.	4
Write-In	0

Ward One
Alderman
2 ballots cast / 0 overvotes / 0 undervotes

Johnathan J. McEwen	1
Doug Walker	1
Write-In	0

Ward Two
Alderman
2 ballots cast / 0 overvotes / 0 undervotes

Stormy D. Jefferson	2
Write-In	0

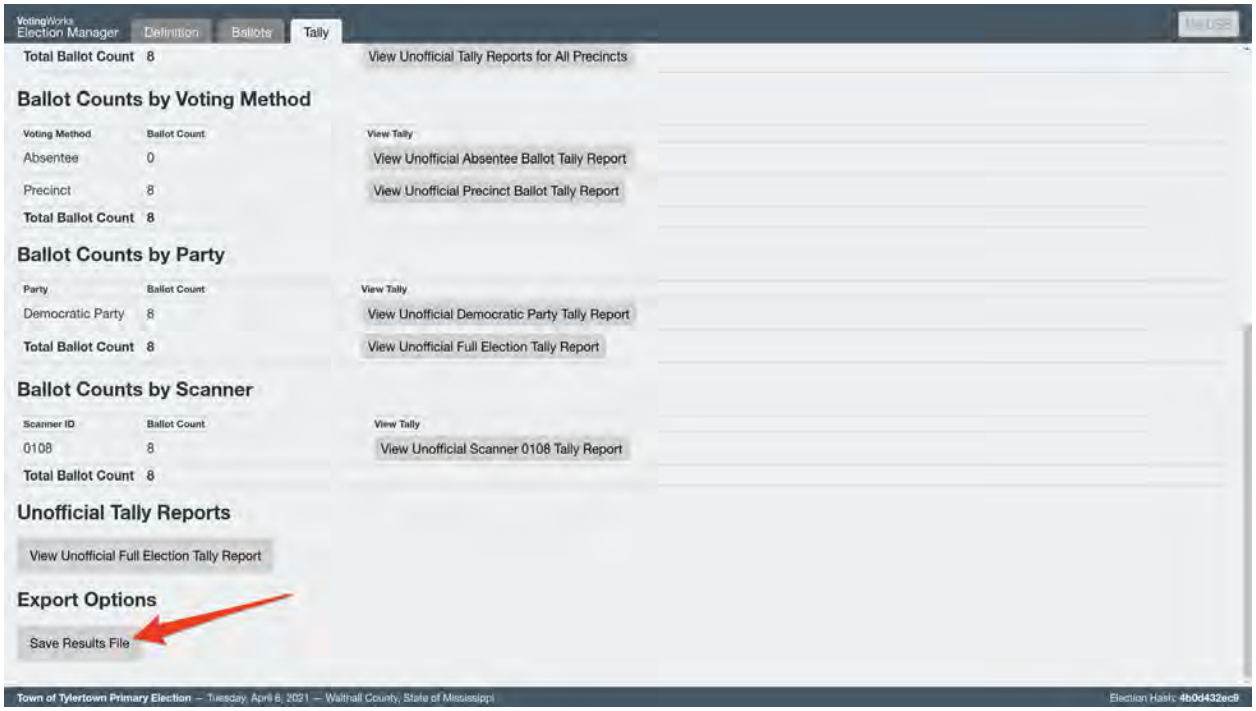
Ward Three
Alderman
2 ballots cast / 0 overvotes / 0 undervotes

Fred Lambert	2
Write-In	0

Ward Four
Alderman
2 ballots cast / 0 overvotes / 0 undervotes

Carolyn L. Magee	1
Curtis Hart Magee	1
Write-In	0

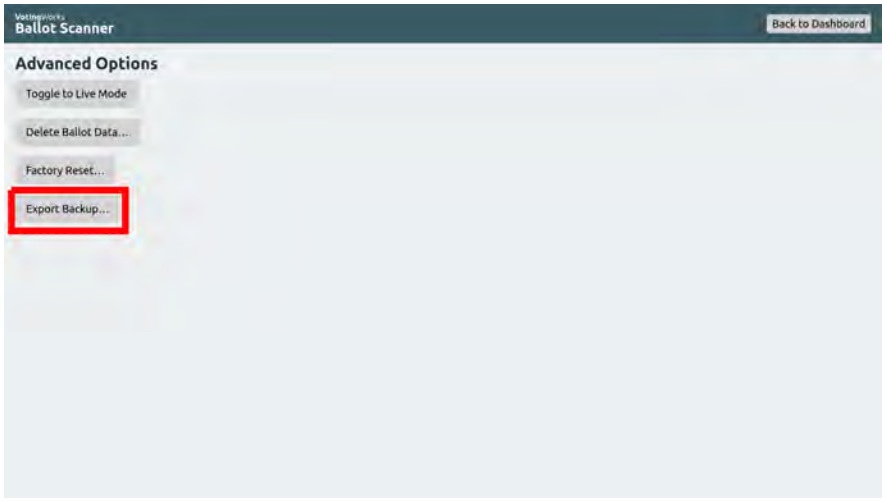
Results can also be exported as a CSV file to USB by clicking the Save Results File button on the Tally screen:



5.8. Securing audit logs and back-up records

All components enable administrators to save audit logs to USB drives for further analysis as desired.

Backup records of scanning data including ballot images can be generated on VxCentralScan. To export a backup, navigate to the Advanced view and then click Export Backup. You will then navigate to the USB drive in the file dialog and save the backup .zip file. The file may take up to a few minutes to save.



Once saved, click Eject USB and remove the USB drive from VxCentralScan.

5.9. Troubleshooting and problem resolution

6. Absentee/Mail Ballot Procedures (Central Tabulation)

For this pilot election, the system will only be used in person at a single voting location (City Hall Voting Center). There will be no absentee/mail ballots cast as part of the pilot.

7. Semi-Official Canvass Tabulation and Reporting

VotingWorks-tabulated results will not be included in the Official Canvass for this pilot.

VotingWorks ballots are copied onto Dominion-formatted ballots and scanned on Dominion equipment for semi-official results. The cast vote record or results reports can be compared to VotingWorks results reports for these ballots.

8. Official Canvass and Post-Election Procedures

VotingWorks-tabulated results will not be included in the Official Canvass for this pilot.

VotingWorks ballots are copied onto Dominion-formatted ballots and scanned on Dominion equipment for official results. The cast vote record or results reports can be compared to VotingWorks results reports for these ballots.

9. Manual Recount procedures

California Elections Code section 19209 requires that either a partial or full risk-limiting audit depending on whether all ballots for a given contest are cast on the pilot voting system. California Elections Code further specifies that “each contest” conducted either entirely or partially on the pilot voting system needs to be audited.

Ballots marked using a VotingWorks ballot marking device will be duplicated onto Dominion ballots before tabulation. If required, VotingWorks can conduct a partial risk-limiting audit on all VotingWorks marked ballots in the form of a full hand-tally and the full hand-tally results can optionally be compared to the results generated from VxCentralScan tabulation of VotingWorks ballots.

10. Security

10.1. Physical security of system and components

All components should be stored in their respective cases when not in use. These components should be kept in a room for which access is limited to only authorized personnel. For additional physical security, all component cases include two attachment points for any standard padlock and/or tamper-evident seal. VotingWorks recommends that components are stored with seals applied for ease of access monitoring.

10.2.Logical security of system and components

10.2.1. Essential and non-essential services and ports

VotingWorks system software is installed by VotingWorks personnel. All non-essential services and ports are disabled at the point of software installation. Users are unable to override the disabling of non-essential services and ports.

10.2.2. User-level security

VotingWorks systems have two roles: Admin and Poll Worker.

VotingWorks central system components are accessed using an Admin Card and associated 6-digit PIN. VotingWorks provides a pre-encoded Admin Card with the installed software and communicates the PIN to an election administrator through a secure channel. VotingWorks recommends that election administrators update the PIN for the provided Admin Card upon receipt of equipment using VxAdmin. Administrators can program additional Admin Cards using VxAdmin as desired.

VotingWorks precinct system components are accessed using a Poll Worker Card and associated 6-digit PIN. Election administrators program Poll Worker Cards using VxAdmin as desired.

10.2.3. Anti-virus protection

VotingWorks system software is installed by VotingWorks personnel and systems are configured to prevent any access to the internet.

For anti-virus protection, VotingWorks components present election officials a time-based one-time-password (TOTP) known as the *system authentication code* that election administrators can compare at any point in time to establish that no firmware or software has been modified on any components since the point of installation and configuration.

10.2.4. Procedures for verifying, checking, and installing essential updates and changes

No updates will be applied to the system during the course of the pilot.

If updates were to be performed, VotingWorks would perform a system update on behalf of the customer. After updating, the expected VxSuite version would be presented on components and election administrators could utilize the system authentication code to confirm its validity.

10.2.4.1. Audit records for the changes showing what, when, who, and why

No updates will be applied to the system during the course of the pilot.

If updates were to be performed, VotingWorks would provide a log of what software was updated, when it was updated, who performed the update, and why the update was performed.

10.2.4.2. Installation procedures for those updates which would normally be installed using an internet connection

No updates will be applied to the system during the course of the pilot.

If updates were to be performed, VotingWorks would perform the update on behalf of the jurisdiction by authorized VotingWorks personnel. These updates would be applied entirely offline with system images transferred via USB drives.

10.2.4.3. Acceptance testing after the installation.

No updates will be applied to the system during the course of the pilot.

If updates were to be performed, VotingWorks would recommend that acceptance testing be performed as described in section 3.4 Acceptance Testing.

10.3. Security procedures for central processing

When in use, access to VxCentralScan is provided via an Admin Card and associated 6-digit PIN and can only be accessed by authorized administrators. Only authorized administrators should have physical access to ballots and VxCentralScan when used for central scanning.

After scanning ballots, cast vote records from VxCentralScan are exported to a USB drive by an election administrator for import into VxAdmin.

When not in use, VxCentralScan should be stored in its respective case when not in use. This component should be kept in a room for which access is limited to only authorized personnel. For additional physical security, the VxCentralScan case includes two attachment points for any standard padlock and/or tamper-evident seal. VotingWorks recommends that VxCentralScan is stored with seals applied for ease of access monitoring.

10.4. Security procedures for polling places

VotingWorks precinct system components are accessed using a Poll Worker Card and associated 6-digit PIN for polling place functions such as opening or closing polls.

The only polling place equipment used for the pilot will be VxMark, which does not require any application of tamper-evident seals during the course of voting. Poll workers should document the seals removed or applied from VxMark at the point of polls opening and closing if using seals during storage.

10.5. Audit trails

All VotingWorks components enter events into an audit log per the event logging requirements specified in the Voluntary Voting System Guidelines 2.0. An authorized administrator using an Admin Card can save these audit logs to a USB drive for further analysis as desired.

11. Biennial Hardware Certification and Notification

Biennial hardware certification and notification will not apply to the one-time open-source voting system pilot.