

San Francisco Open Source Voting Pilot Proposal Using VotingWorks in November 8, 2022 Election

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Summary

The City and County of San Francisco would pilot a paper-ballot open-source voting system developed by VotingWorks in a limited number of polling locations (City Hall Voting Center and/or selected precincts) during the November 8, 2022 Consolidated General Election.

This document provides background on VotingWorks and information about the pilot, including the goal of the pilot, legal requirements the pilot needs to satisfy, and an implementation plan covering how the pilot will be conducted. The pilot would be in accordance with the California Elections Code and be conducted only after a plan is submitted to and approved by the California Secretary of State. The plan submitted to the Secretary of State would be created from this information in this document.

VotingWorks is a nonprofit organization based in San Francisco that has created the only open-source voting system used in United States elections today. The VotingWorks voting system uses paper ballots and includes ballot-marking devices for in-person voting as well as optical scanners for both in-person voting and central tallying.

VotingWorks is offering to implement and support the pilot program at no cost to San Francisco. This support includes conducting a risk-limiting audit to confirm the result of all ballots cast using the pilot system, which the California Elections Code requires for pilots. VotingWorks is also offering to extend this to a risk-limiting audit of all ballots cast in the election (so not just VotingWorks ballots), for any contest that San Francisco chooses. This would give San Francisco its first experience auditing a contest using VotingWorks' Arlo, which is the [only tool approved by the Secretary of State](#) for conducting risk-limiting audits in California.

Special attention has been paid to choosing an implementation plan that minimizes the resources required by the Department of Elections. In addition, the Department of Elections is free to decide a number of options that affect the scale, scope, and processes used in the pilot, if it has a preference. For convenience, these options have been collected into one section towards the beginning of this document as a list of questions to answer.

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1. Options to Decide

The Department of Elections can decide a number of implementation options if it has a preference. Each option affects the scale and scope of the pilot, and the processes used in the pilot. The options are listed as questions to answer below and are elaborated on in later sections. Some questions have a VotingWorks recommendation provided in the later section if the Department doesn't have a preference.

1. Should the pilot take place only in polling-place precincts, only in the City Hall Voting Center, or in both?
2. If the pilot should take place in precincts—
 - a. Should the VotingWorks system be deployed in participating precincts by itself or as a “mixed system”? A mixed-system deployment means deploying the VotingWorks system alongside the Dominion system in a precinct or City Hall Voting Center, as opposed to by itself, so that voters can individually choose whether to participate in the pilot.
 - b. How many and which precincts should the pilot take place in?
3. If the pilot should take place in the City Hall Voting Center—
 - a. How many VotingWorks ballot-marking devices should be deployed in the voting center?
 - b. How many central scanners should be deployed?
4. Should Vote-by-Mail and/or Remote Accessible Vote-by-Mail be included in scope?
5. Should a full risk-limiting audit be conducted for some contest?
6. If a mixed system deployment is used, should participation in the pilot be limited to certain languages to reduce ballot proofing and audio programming?
7. How should vote totals be transferred to the Dominion system? The options are:
 - a. exporting the cast-vote records into a data format supported by Dominion
 - b. remaking the VotingWorks ballots onto Dominion ballots and scanning them using Dominion equipment
 - c. manually entering the VotingWorks totals into the Dominion system, which is not feasible for RCV contest
8. Should VotingWorks or the Department of Elections conduct poll-worker training for poll workers staffing VotingWorks-equipped polling places?

2. Goal of Pilot Program

On March 12, 2019, the City and County of San Francisco adopted a resolution ([127-19](#)) to approve the contract to lease a voting system provided by Dominion Voting Systems, which is the system currently in use today. As part of this resolution, the Director of Elections and Board of Supervisors specified San Francisco's intent to complete an open source voting system by the time the Dominion Voting Systems contract ends on March 31, 2023:

WHEREAS, The City and County of San Francisco, through its Department of Technology and with the assistance of the Department of Elections, is currently moving

towards the development of an open source voting system, and aspires to complete the development of that system by the time this Agreement has concluded;

The primary goal of this pilot plan is to meet this resolution objective by:

1. Implementing a small-scale pilot of VotingWorks, the only open-source voting system used in United States elections today, to determine if an open-source voting system meets the requirements of San Francisco and to identify any potential issues.
2. Conducting the pilot in the November 8, 2022 elections in advance of the desired March 31, 2023 date of open-source voting implementation.

3. VotingWorks Background

VotingWorks is an open-source voting system developed by the nonpartisan nonprofit organization of the same name. VotingWorks is the only voting system in use in United States elections where all source code is publicly available for review. Fourteen jurisdictions in Mississippi have successfully implemented the system since 2019.

VotingWorks already has experience assisting with California elections through VotingWorks' development and implementation of Arlo, the open source tool selected by the California Secretary of State for counties to conduct risk-limiting audits. To date, VotingWorks has implemented risk-limiting audits in four California counties: El Dorado, Inyo, Shasta, and Orange. VotingWorks has also conducted risk-limiting audits in partnership with Secretary of State offices in the following states: Georgia (statewide), Michigan (statewide), Nevada, New Jersey, Pennsylvania (statewide), Rhode Island (statewide), Virginia (statewide), and Washington.

VotingWorks is the only 501(c)(3) voting system vendor and receives funding from three sources:

1. Sale and support of voting technology: VotingWorks provides hardware at-cost and charges an annual service fee to jurisdictions to support future product development.
2. Government contracts and grants: the Cybersecurity and Infrastructure Security Agency (CISA) of the U.S. Department of Homeland Security and the National Science Foundation funded VotingWorks in 2019 and 2020.
3. Donations from foundations and individuals: foundations and individuals have provided funding that has allowed the VotingWorks organization to grow ahead of the revenue we made from sales. Democracy Fund, Schmidt Futures, and New Venture Fund are foundations that have funded VotingWorks. Our largest individual VotingWorks donors include: Matt Cutts (led the U.S. Digital Service since 2017), John Lilly (Venture Capitalist, Greylock), Chris Sacca (Venture Capitalist, Lowercase Capital), Niels Provos (Chief Security Officer, Stripe), Ron Gula (Entrepreneur and Investor), Paul Graham (Founder, YCombinator), Mark Gorton (Tower Research). Some of our individual donors choose to remain anonymous.

In 2022, VotingWorks plans to submit their system for federal certification from the Election Assistance Commission and are developing the system to the most recent Voluntary Voting System Guidelines (VVSG) Version 2.0. VotingWorks plans to be the first vendor to receive certification to this modern standard that improves on the 16-year old voting system standard that other systems, including the one used in San Francisco today, are certified to. All other voting system vendors [have stated publicly](#) that they will not submit systems for VVSG 2.0 certification until after the 2024 election cycle.

4. Project Scope

4.1. Polling place model: voting center or precincts

As referenced in the Legal Requirements section, a pilot program can legally implement up to 50% of the total number of units deployed throughout San Francisco. VotingWorks recommends that this pilot program be much smaller than the legal maximum and suggests either:

- a) One voting center (e.g. the City Hall Voting Center)
- b) Up to five precincts

If implementing a voting center model, VotingWorks would support all ballot styles and early voting requirements. The number of ballot-marking devices to deploy would be up to the discretion of the Director of Elections.

VotingWorks would prefer to support one voting center so that all voters interested in the open source voting system would have access regardless of where they live. If the Director of Elections would prefer the precinct-based model, VotingWorks asks that the selected precincts be as representative of demographic diversity as possible.

4.2. Single-system vs. mixed-system model

For either polling place model (voting center or individual precincts), VotingWorks can support either a single-system model (all VotingWorks) or a mixed-system model (VotingWorks & Dominion) at the discretion of the Director of Elections. VotingWorks recommends that a mixed-system model only be implemented in a voting center or large precinct to ensure that there is enough space to accommodate both sets of equipment.

A mixed system would enhance voter choice at the polling place by giving voters two choices for both hand-marked paper ballots and accessible BMDs. Also, with a mixed system, participation in the pilot would be opt-in for voters rather than automatic.

With either a single system or mixed system, VotingWorks could help create printed materials to provide voters at the polling place with information about the pilot and what participation in the pilot means.

4.3. Early voting

If implementing a precinct-based model, VotingWorks recommends that early voting not be included in the pilot program scope. Participation in the pilot would be limited to voters voting in person at their precinct on Election Day.

4.4. Vote-by-Mail (VBM)

For the sake of simplicity, VotingWorks recommends that VBM not be included in the pilot scope.

If VBM is in scope, VotingWorks recommends that it is only implemented in a precinct-based pilot model where all voters for a given ballot style receive the same ballot. However, VotingWorks can support any alternatively requested vote by mail model.

A voting center model or VBM support would require San Francisco to utilize VotingWorks' central scanning system (VxBatch) in addition to the ImageCast Central System.

4.5. Remote Accessible Vote-By-Mail (RAVBM)

Similar to VBM, VotingWorks recommends that RAVBM to be out of scope for this pilot. If an open-source RAVBM solution is desired by the Director of Elections, VotingWorks can implement VotingWorks Remote Ballot Marking (RBM) which offers similar functionality as the Democracy Live OmniBallot solution currently in use. VotingWorks RBM uses the same interface as VotingWorks BMDs in the precinct, but offers voters a mechanism to mark ballots on their personal computer and print ballots at home.

5. Implementation Plan

5.1. Equipment

Detailed VotingWorks product documentation is publicly available for review at <https://docs.voting.works/>.

The proposed pilot system includes up to three VotingWorks components depending on the implementation model selected:

1. VxAdmin: VxAdmin is the main tool for local election officials. It serves as an election management system (EMS), results tabulator, ballot on-demand printer, and central scanner. The VxAdmin laptop (HP Elitebook 840 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.
2. VxBatch: a central scanning laptop (HP Elitebook 840 or equivalent) used for rapidly scanning ballots in batch at a central location. A Fujitsu 7160 or 7800 scanner is connected to VxBatch for high-speed batch scanning. VotingWorks recommends the

Fujitsu 7800 scanner(s) in a voting center or VBM implementation whose duty cycle supports up to 100,000 ballot sheets per day.

3. VxMark: VxMark is an accessible ballot-marking device (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.
4. VxScan: VxScan is a voter-facing precinct scanner that scans paper ballots and notifies voters of ballot issues for second-chance voting. The entire scanner is self-contained in a commercial-off-the-shelf (COTS) ballot box. VxScan utilizes a COTS tablet (Microsoft Surface Go 2) installed with VotingWorks VxScan open-source software for voter and election administrator interactions, and it is connected to a COTS kiosk scanner (Plustek VTM 300) that scans ballots. VotingWorks scanners generate a cast vote record of ballot selections that is persisted to a USB drive for results tabulation.

All VotingWorks systems are completely offline for security purposes and all data is transferred via USB drives. Every component in the VotingWorks system uses COTS hardware that is self-contained for transportability.

All components are accessed by election officials and poll workers using two-factor authentication (2FA). 2FA comprises—

1. Something the individual has, which in this case is a smartcard programmed by the election administrator, and
2. Something the individual knows, which is an associated PIN programmed by the election administrator.

VotingWorks is the only voting system that provides an election official facing time-based one-time-password (TOTP) known as the *system authentication code* to establish that no firmware or software has been tampered with on voting system components.

Pictured below are all of the components in a complete VotingWorks precinct. This includes a VxMark BMD, an HP printer, and a VxScan precinct scanner. The top picture shows the components outside of their carrying case, and the bottom picture shows the components inside their case.



5.2. Ballots

All votes cast using VotingWorks are on paper ballots for security and post-election auditing.

There are two types of VotingWorks paper ballots:

- Hand-marked paper ballot
- Machine-marked paper ballot (via ballot marking device)

VotingWorks ballots are designed in collaboration with the Center for Civic Design for voter usability with clear instruction text in the first column without any timing marks surrounding the ballot. An example ballot in the VotingWorks design style is shown below and a full-size ballot is attached.

ABSENTEE BALLOT

**Official Ballot
Lincoln Municipal
General Election**
State of Hamilton
Franklin County
June 6, 2021



Instructions
To vote, use a black pen to completely fill in the oval to the left of your choice.



To Vote for a Write-In
To vote for a person not on the ballot, completely fill in the oval to the left of the "write-in" line and print the person's name on the line.



To correct a mistake
To make a correction, please ask for a replacement ballot. Any marks other than filled ovals may cause your ballot not to be counted.

**City of Lincoln
Mayor**
Vote for 1

Sherlock Holmes
Democrat

Thomas Edison
Republican

write-in

**City of Lincoln
Controller**
Vote for 1

Winston Churchill
Democrat

Oprah Winfrey
Republican

Louis Armstrong
Green

write-in

**City of Lincoln
Attorney**
Vote for 1

John Snow
Republican

Mark Twain
Green

write-in

**City of Lincoln
Public Works Director**
Vote for 1

Benjamin Franklin
Democrat

Robert Downey Jr.
Republican

Bill Nye
Green

write-in

**City of Lincoln
Chief of Police**
Vote for 1

Natalie Portman
Democrat

Frank Sinatra
Republican

Andy Warhol
Green

Alfred Hitchcock
Green

write-in

**City of Lincoln
Parks and Recreation
Director**
Vote for 1

Charles Darwin
Democrat

Stephen Hawking
Republican

Johann Sebastian Bach
Democrat

Alexander Graham Bell
Republican

write-in

**City of Lincoln
Board of Alderman**
Vote for not more than 4

Helen Keller
Democrat

Steve Jobs
Republican

Nikola Tesla
Democrat

Vincent Van Gogh
Republican

Pablo Picasso
Republican

Wolfgang Amadeus Mozart
Liberty

write-in

write-in

write-in

write-in

**City of Lincoln
City Council**
Vote for not more than 4

Marie Curie
Democrat

Indiana Jones
Republican

Mona Lisa
Green

Jackie Chan
Green

Tim Allen
Liberty

Mark Antony
Democrat

Harriet Tubman
Republican

Dr. Martin Luther King Jr.
Democrat

Marilyn Monroe
Republican

write-in

write-in

write-in

write-in

Absentee Ballot Precinct **East Lincoln** Style **1** Page **1/2** Pages
Lincoln Municipal General Election Franklin County, State of Hamilton June 6, 2021



Absentee Ballot Precinct **East Lincoln** Style **1** Page **2/2** Pages
Lincoln Municipal General Election Franklin County, State of Hamilton June 6, 2021



VotingWorks can provide ballot PDFs of any San Francisco ballot style for the Department of Elections to print and mail to voters via a state certified ballot printer.

To create VotingWorks ballots, VotingWorks will support converting ballot definition files exported from Dominion Democracy Suite EMS to the VotingWorks election definition format. Election definitions will be imported to VxAdmin via USB drive and ballot styles will be automatically designed in the above format. Ballot styles can be proofed on screen or printed directly from VxAdmin using the attached printer. After proofing, the Department of Elections will be able to modify ballot content to correct any errors or adjust design according to preference.

VotingWorks will be responsible for an accurate conversion of ballot definition files to the VotingWorks format. VotingWorks can also provide ballot proofing services as desired at no cost to San Francisco.

5.3. Language Support

Per San Francisco requirements, hand-marked paper ballots and ballot marking device interfaces will be made available in English-Chinese, English-Spanish, and English-Filipino. VotingWorks requests the support of the Elections Department to provide and proof translated content for ballot accuracy and provide phonetic spellings of names for the accessible audio experience on ballot marking devices. If requested by the Director of Elections, VotingWorks can

also furnish facsimile reference ballots in the VotingWorks format for Burmese, Japanese, Korean, Thai, and Vietnamese languages.

VotingWorks customer jurisdictions to-date have not required dual language ballots, but VotingWorks commits to supporting a dual language hand-marked paper ballot and ballot marking device experience for a San Francisco pilot. If preferred, in a mixed-system model, non-English ballots and BMD interfaces could be limited to the Dominion voting system, which would reduce Department of Elections resources for paper ballot and BMD proofing.

5.4 Polling place and voter experience

Single-system model

In the single-system model, voters arriving in polling places participating in the pilot will be given information about the pilot they are participating in before they vote.

Mixed-system model

In the mixed-system model, voters in the polling places participating in the pilot will be given a choice between voting using the VotingWorks system and voting using the Dominion system. If in a precinct polling place, voters using VotingWorks will insert their paper ballot into a precinct scanner that provides second chance voting.

In voting centers, precinct scanners aren't used and voters instead put their marked ballot into a vote-by-mail envelope. In a voting center, voters choosing the VotingWorks system will be instructed to insert the envelope containing the ballot into a ballot box containing only VotingWorks ballots. In this way, VotingWorks ballots will be kept separate so they can later be scanned using a VotingWorks central scanner.

5.5. Ranked Choice Voting

VotingWorks commits to modifying the voting system and Arlo to support ranked choice ballots, tabulation, results reporting, and risk-limiting audits per San Francisco's ranked choice voting specifications. However, tabulation and results reporting won't be needed for the pilot as those functions will be performed by the Dominion system after transferring votes (see next section).

5.6. Transferring Votes to Dominion EMS

After ballots are scanned on VotingWorks equipment, there are multiple options (and combination of options) available for transferring votes to the Dominion Democracy Suite EMS:

1. VotingWorks exports cast vote records in a Dominion format so contests can be transferred, aggregated, and reported through the Dominion system.
2. VotingWorks imports cast vote records into VxAdmin which aggregates, and reports results for VotingWorks ballots. For non-RCV contests, these results can be manually entered into the Dominion system.

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

VotingWorks recommends pursuing option #1 where cast vote records are imported into the Dominion system for flexibility of contest support and for limiting any additional resourcing required by the Department of Elections.

5.7. Results Aggregation & Reporting

Results will be aggregated and reported only by Dominion's Democracy Suite EMS. Votes cast on VotingWorks ballots will be included in results reports once they are transferred to the Dominion EMS per the previous section. An exception to this is that VotingWorks will tabulate and report vote totals cast only on VotingWorks ballots for the purposes of the partial risk-limiting audit requirement (see below).

5.8. Risk-Limiting Audit

As defined in the legal requirements, California Elections Code 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. VotingWorks will implement and service a RLA using Arlo for either

California Elections Code further specifies that "each contest" conducted either entirely or partially on the pilot voting system needs to be audited. If the Department of Elections wants to conduct a countywide RLA, VotingWorks recommends that only one contest is selected for a countywide RLA. For all other contests, VotingWorks will conduct a partial RLA for all contests in the VotingWorks ballot universe.

In the case of a partial risk-limiting audit, the aforementioned vote transfer option #2 will be utilized to generate the results for VotingWorks-only ballots that are used to configure the risk-limiting audit and compared against.

5.9. Services, Training, and Support

Project Initiation & Kick-Off Meeting

The goal of this meeting is to lay the foundation for a strong working relationship between San Francisco election officials and VotingWorks. VotingWorks and the Department of Elections would first meet to review project governance structure, project roles and responsibilities. This meeting would define the communication plan, issue escalation plan, training plan, project implementation timeline, and a plan for customization documentation and training materials to San Francisco's specific context.

Requirements Gathering & Software Configuration

In close collaboration with the San Francisco team, VotingWorks will review San Francisco statutory requirements to ensure that the VotingWorks system fully complies with local and state law.

VotingWorks will also collaborate with the Department of Elections to end-to-end test the integration with Dominion so that election data can be seamlessly imported into VotingWorks to construct ballots, and VotingWorks results data can be seamlessly exported for results reporting. This end-to-end test will simulate real election conditions and use agreed upon election configurations. An election database is created, ballots are produced and cast on optical scanners, polls are closed, results are transmitted for tabulation, and then exported to properly imported into the Dominion EMS.

VotingWorks will also review San Francisco's existing voting system documentation and poll worker training guides so that the specific documentation and training programs VotingWorks creates feels minimally disruptive.

Hardware Delivery, Installation & Acceptance Testing

The entire VotingWorks system is built with COTS hardware, which provides state-of-the-art security and resiliency at the lowest cost. Some components of the VotingWorks system require VotingWorks software installation and assembly. Following the pilot agreement and a discussion with San Francisco to finalize order numbers, VotingWorks will assemble all hardware and install all software at a VotingWorks facility in San Francisco. San Francisco election officials are welcome to observe this process as desired. Components that do not require assembly will be shipped directly from distributors.

All equipment will be delivered to the department of elections with the correct software installed and there will be no need for additional software installation or hardware manipulation prior to the first use of the equipment.

VotingWorks will provide acceptance testing checklists and documentation, and will support the entire process of acceptance testing including the use of a secure area for inventory control and ensuring all necessary supplies are available.

Training

VotingWorks will work closely with the Department of Elections to ensure that the training program is customized to meet San Francisco's specific needs. VotingWorks will prepare and provide all needed training material, which includes training materials, quick reference guides, online instructional courses, and technical reference materials. Training and curriculum particular to the resources, staff, and needs of San Francisco will be developed as defined by the requirements in the Joint Project Team kick-off meeting.

VotingWorks will also provide training for all poll workers that are assigned to use VotingWorks equipment before their first election use of VotingWorks if desired by the Department of Elections. VotingWorks has found that existing customers appreciated short videos of each step poll workers will take with equipment including precinct setup, opening polls, voter operations, closing polls, and results reporting. These videos can be screened during training sessions and poll workers can access them at any point for a refresher from their personal mobile device.

Voter Education

VotingWorks can also provide training directly to voters through a public demonstration where voters can mark and cast mock election ballots. VotingWorks will also create public-facing documentation that explains what open-source voting is, how it is different, and how San Francisco is piloting VotingWorks.

Election Programming

In order to save time and cost, as well as empower local election officials to manage elections autonomously without vendor support, the VotingWorks system features self-service election definition construction and ballot layout. VotingWorks experience to-date has shown that enabling election officials to automatically lay out their ballots and removing vendor dependencies means that ballots are ready earlier and there is not the risk of an election official's vision for the ballot and how the vendor designs it. For the November 2022 pilot, as the equipment will be new for election officials, VotingWorks will provide ballot proofing and election programming services to San Francisco at no cost.

Logic and Accuracy Testing

VotingWorks will provide onsite support and documentation for San Francisco election officials to conduct logic and accuracy testing. VotingWorks has found that customers prefer to first conduct a mock election on the equipment to familiarize themselves before conducting a full logic and accuracy test. Both processes will be attended by a VotingWorks employee and can be attended by the public as desired by the Department of Elections.

Election Support

VotingWorks will provide a support person onsite in every polling place. Our on-site support team will have the necessary skills and resources to help San Francisco ensure that the equipment is functioning properly in each polling location.

Post-Election Debrief and Report

Following the certification of official results, VotingWorks will coordinate a post-election debrief meeting at a time convenient for election officials to discuss lessons learned from the pilot. Pilot program materials will be updated following this meeting for San Francisco to use in future elections if desired. VotingWorks will also create a report for San Francisco to review and publish publicly about the results of the pilot program if desired.

RLA Services

VotingWorks auditing experts will provide a full-service RLA pilot program which includes the following services:

- Timeline plan and project management
- Ballot manifest review
- Arlo configuration support
- Ongoing audit data analysis
- Post-audit reporting

During the random seed generation and hand-tally of the ballots, VotingWorks will also provide onsite support for users of Arlo and assist San Francisco with any questions about RLA procedure. VotingWorks can also offer ballot storage and chain of custody consulting services to San Francisco as desired, which other states implementing RLAs for the first-time have found particularly valuable.

6. San Francisco Required Activities

The following activities will be required from the Department of Elections:

- Pre-election
 - Reviewing VotingWorks custom documentation and training materials
 - Providing VotingWorks ballot definition file and optionally providing phonetic translations of alternate language ballots
 - Proofing ballot designs
 - Attending VotingWorks system training session(s)
 - Attending (or conducting if desired) poll worker training session(s) of VotingWorks
 - Conducting logic and accuracy testing of VotingWorks equipment
- After polls close
 - Importing VotingWorks cast-vote-records into results tabulator & aggregator
- Post-election auditing
 - Attending Arlo training session(s)
 - Conducting partial or complete RLA
- After pilot completion
 - Providing feedback on equipment, procedures, and overall pilot experience

7. Value of VotingWorks Equipment & Services

VotingWorks will provide all required equipment, implementation services, and support for the voting system pilot and risk-limiting audit at no cost to San Francisco. The costs below will be used to calculate the total amount of the grant/donation for approval purposes.

The total value of equipment provided will be based on the implementation plan decisions made by the Department of Elections which will determine the type and number of components required. VotingWorks sells equipment at-cost to partner jurisdictions and the per-unit purchase cost of components are:

- VxAdmin: \$2,000
- VxBatch (fi-7160): \$2,750
- VxBatch (fi-7800): \$10,000
- VxMark: \$1,550
- VxScan: \$2,500

The Department of Elections can return the equipment back to VotingWorks after the conclusion of the pilot.

The total value of services provided will also be based on the implementation plan decisions made by the Department of Elections, which will determine the support and custom development resources necessary. Support and training as outlined in the implementation plan is typically provided as part of an annual service fee up to \$0.75 per registered voter per year depending on jurisdiction size and services provided. VotingWorks' standard custom development rate is \$250/hour.

8. Legal Requirements

California Elections Code Section 19209 specifies that “the governing board, without formally adopting a voting system, may provide for the experimental use of the voting system in a pilot program held in one or more precincts at a single election” if a voting system all of meets the following requirements:

- a. Uses only software and firmware with disclosed source code, except for unmodified commercial off-the-shelf software and firmware.
- b. Meets the requirements of subdivision (b) of Section 19101 .
- c. Meets the requirements of the regulations adopted by the Secretary of State pursuant to subdivision (g).
- d. Implements risk-limiting audits.

Disclosed Source Code

VotingWorks uses only software and firmware with disclosed source, except for unmodified commercial off-the-shelf software and firmware. The system notably is built using entirely open-source software and commercial-off-the shelf hardware. All software is licensed under either GPL or AGPL, which are both copyleft licenses.

Requirements of Section 19101(b)

California Elections Code Section 19101(b) requires that a voting system meet all of the following requirements:

1. The machine or device and its software shall be suitable for the purpose for which it is intended.
2. The system shall preserve the secrecy of the ballot.
3. The system shall be safe from fraud or manipulation.

4. The system shall be accessible to voters with disabilities pursuant to Section 19242 and applicable federal laws.
5. The system shall be accessible to voters who require assistance in a language other than English if the language is one in which a ballot or ballot materials are required to be made available to voters pursuant to Section 14201 and applicable federal laws.

The VotingWorks system has met these requirements in previous successful election implementations in the State of Mississippi. In particular, the system meets all requirements of the Help America Vote Act and the implementation details of the pilot program specify how alternative language ballot materials will be provided.

Secretary of State Regulations

The California Secretary of State should soon publish and adopt regulations regarding the piloting of open-source voting systems. Board of Supervisors President Walton [recently made a rulemaking petition](#) to the California Secretary of State for open-source pilot regulations. VotingWorks can meet the requirements included in the draft regulations included in President Walton's rulemaking petition.

Risk-Limiting Audits

Section 19209(g) specifies that ballots cast on an open-source pilot voting system are subject to risk-limiting audits. The specific scope of risk limiting audit required is based on whether a contest is conducted entirely or partially on the pilot voting system:

- (1) For each contest conducted entirely on the pilot voting system, the jurisdiction conducting the pilot program shall conduct a risk-limiting audit with at least a 90-percent chance of requiring a full manual tally of the contest whenever a full manual tally would show an outcome that differs from the outcome reported by the pilot voting system.
- (2) For each contest conducted partially on the pilot voting system, the jurisdiction conducting the pilot program shall conduct a partial risk-limiting audit of the portion of the contest in which the voters cast their votes on the pilot voting system, with at least a 90-percent chance of requiring a full manual tally of all votes cast using the pilot voting system whenever the outcome is incorrect in part.

As part of the pilot implementation plan, VotingWorks will conduct a risk-limiting audit that meets the requirements of Section 19209 whose scope will be determined by the Director of Elections. VotingWorks commits to modifying Arlo, the open-source risk-limiting auditing tool selected by the California Secretary of State, to support ranked choice voting requirements in San Francisco.

Scope & Units Required

California Elections Code Section 19209(c) further clarifies that a system which meets these aforementioned requirements “need not be certified or conditionally approved prior to its experimental use in a pilot program if the number of voting system units deployed in the pilot program is limited to the number necessary to test and demonstrate the capabilities of the voting system in a limited number of precincts or locations, including a prudent number of reserve units to ensure that sufficient working units will be available to conduct the pilot program. In no event shall the number of voting system units exceed 50 percent of the estimated number of units that would be required for full deployment of the voting system at every polling place and early voting site in a statewide election throughout the jurisdiction.”

Per the implementation plan, VotingWorks recommends that the pilot be limited to a small number of polling places at the discretion of the Director of Elections. The specific number of ballot marking devices and optical scanners deployed is also at the discretion of the Director of Elections and will be in accordance with the requirements of Section 19209(c).

Timeline

Per Section 19209(d), a voting system pilot proposal must be submitted by the San Francisco Board of Supervisors to the California Secretary of State by February 8, 2022 for an implementation in the November 8, 2022 elections.

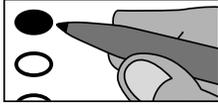
Official Ballot
Lincoln Municipal
General Election

State of Hamilton
Franklin County
June 6, 2021



Instructions

To vote, use a black pen to completely fill in the oval to the left of your choice.



To Vote for a Write-In

To vote for a person not on the ballot, completely fill in the oval to the left of the "write-in" line and print the person's name on the line.



To correct a mistake

To make a correction, please ask for a replacement ballot. Any marks other than filled ovals may cause your ballot not to be counted.

City of Lincoln

Mayor

Vote for 1

- Sherlock Holmes
Democrat
- Thomas Edison
Republican
- _____
write-in

City of Lincoln

Public Works Director

Vote for 1

- Benjamin Franklin
Democrat
- Robert Downey Jr.
Republican
- Bill Nye
Green
- _____
write-in

City of Lincoln

Controller

Vote for 1

- Winston Churchill
Democrat
- Oprah Winfrey
Republican
- Louis Armstrong
Green
- _____
write-in

City of Lincoln

Chief of Police

Vote for 1

- Natalie Portman
Democrat
- Frank Sinatra
Republican
- Andy Warhol
Green
- Alfred Hitchcock
Green
- _____
write-in

City of Lincoln

Attorney

Vote for 1

- John Snow
Republican
- Mark Twain
Green
- _____
write-in



City of Lincoln
**Parks and Recreation
Director**

Vote for 1

- Charles Darwin**
Democrat
- Stephen Hawking**
Republican
- Johann Sebastian Bach**
Democrat
- Alexander Graham Bell**
Republican
- _____
write-in

City of Lincoln
Board of Alderman

Vote for not more than 4

- Helen Keller**
Democrat
- Steve Jobs**
Republican
- Nikola Tesla**
Democrat
- Vincent Van Gogh**
Republican
- Pablo Picasso**
Republican
- Wolfgang Amadeus Mozart**
Liberty
- _____
write-in
- _____
write-in
- _____
write-in
- _____
write-in

City of Lincoln
City Council

Vote for not more than 4

- Marie Curie**
Democrat
- Indiana Jones**
Republican
- Mona Lisa**
Green
- Jackie Chan**
Green
- Tim Allen**
Liberty
- Mark Antony**
Democrat
- Harriet Tubman**
Republican
- Dr. Martin Luther King Jr.**
Democrat
- Marilyn Monroe**
Republican
- _____
write-in
- _____
write-in
- _____
write-in
- _____
write-in

Thank you for voting.

You have reached the end of the ballot. Please review your ballot selections.

