

Evaluating Voting Machines for Allegheny County

PRESENTED BY VOTEALLEGHENY

Schedule of Voting Machine Demonstrations

Date	Times	Location
Tuesday, June 4	9 AM to 3 PM 5 to 8 PM	CCAC North Campus Gymnasium 8701 Perry Highway, Pittsburgh 15237
Wednesday, June 5	9 AM to 3 PM 5 to 8 PM	CCAC South Campus Gymnasium 1750 Clairton Road, West Mifflin 15122
Thursday, June 6	9 AM to 3 PM 5 to 8 PM	CCAC Boyce Campus Atrium 595 Beatty Road, Monroeville 15146
Saturday, June 8	9 AM to 3 PM	Kane Community Living Center Glen Hazel – Auditorium 955 Rivermont Drive, Pittsburgh 15207
Tuesday, June 11	9 AM to 3 PM 5 to 8 PM	CCAC Allegheny Campus Foerster Student Services Center Auditorium 808 Ridge Avenue, Pittsburgh 15212
Wednesday, June 12	9 AM to 3 PM 5 to 8 PM	Kane Community Living Center Glen Hazel – Auditorium 955 Rivermont Drive, Pittsburgh 15207
Thursday, June 13	9 AM to 3 PM 5 to 8 PM	CCAC West Hills Center Rooms S-1306, S-1307, S-1308 and S-1311 1000 McKee Road, Oakdale 15071

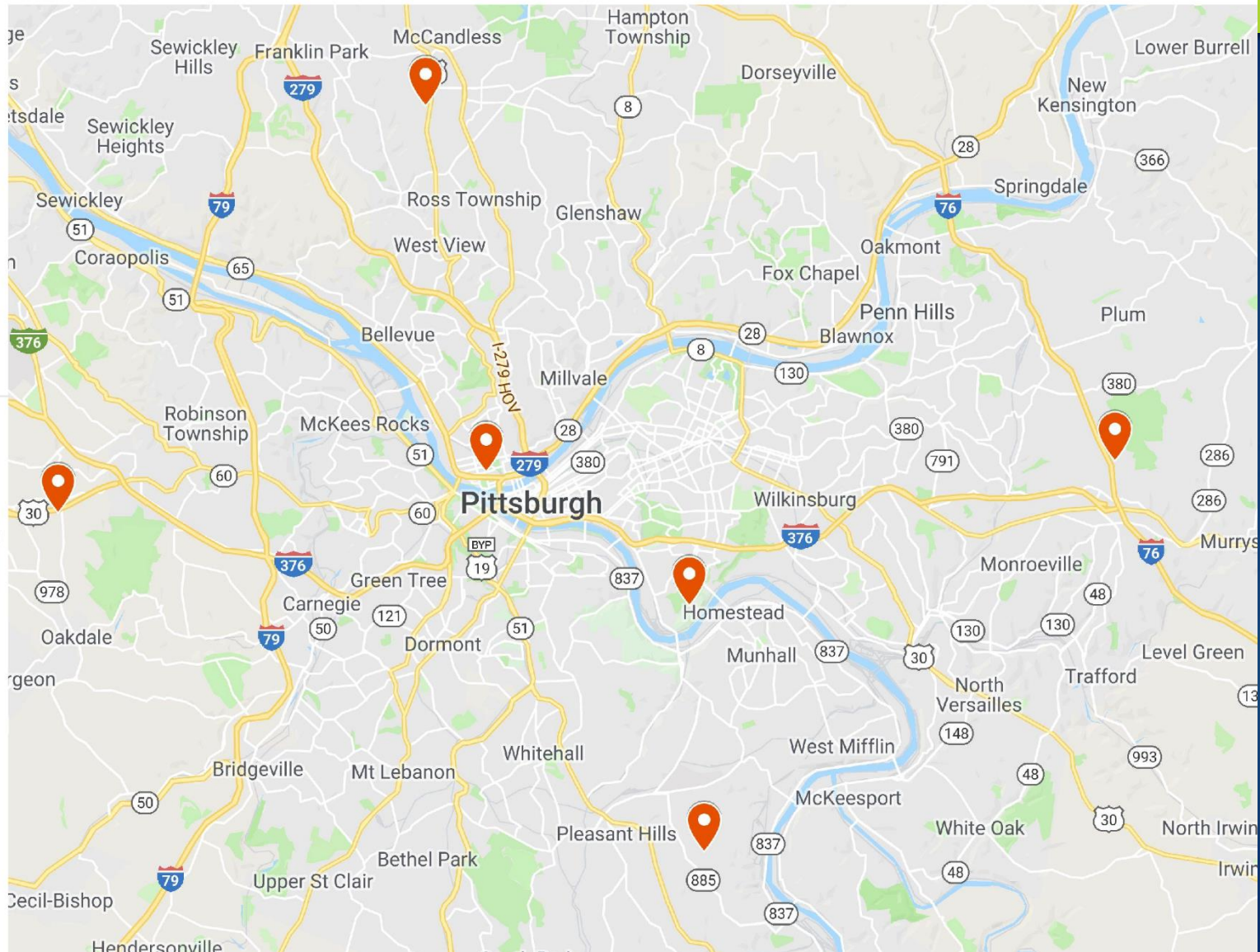
Allegheny County voting machine demonstrations 2019

Voting Machine Demos

- CCAC North Campus
- CCAC South Campus
- CCAC Boyce Campus
- Kane Community Living Centers
- CCAC Allegheny Campus
- CCAC West Hills Center

Locations of demonstrations for voting machines that Allegheny County might choose to use starting in 2020

<http://bit.ly/2Mr1B3h>



Stakeholders

Stakeholders

- ▶ Elections Division personnel
- ▶ Pollworkers
- ▶ Individual voters
- ▶ The electorate as a whole
- ▶ Taxpayers
- ▶ Candidates
- ▶ Public Officials

Stakeholder: Elections Division personnel

- ▶ Program ballots
- ▶ Test voting machines
- ▶ Set up voting machines
- ▶ Deliver voting machines
- ▶ Retrieve results
- ▶ Auditing

Stakeholder: Pollworkers

- ▶ Physically set up machines
- ▶ “Open” machines for voting
- ▶ Initiate ballot for each voter
- ▶ Instruct and (possibly) assist voters with machine
- ▶ “Close” machines at day’s end
- ▶ Pack up machine
- ▶ Return results to County

Stakeholder: Individual Voters

- ▶ Easy to understand and to use
- ▶ Accommodate many disabilities

Stakeholder: The Electorate as a Whole

- ▶ Provide security and trustworthiness
- ▶ Provide inherently voter-verified ballots
 - ▶ If ballots not inherently voter-verified, provide voter-*verifiable* ballots
- ▶ Provide features that enable strong audits (trustworthiness)

Stakeholder: Taxpayers

- ▶ Provide a voting system at a reasonable cost
- ▶ Provide funding

Stakeholder: Candidates

- ▶ Belief that the voting system is fair

Stakeholder: Public Officials

- ▶ Credit for choosing reliable, secure, auditable machines
- ▶ Credit for being fiscally responsible

Types of Voting Machines

Direct Recording Electronic

- ▶ What two-thirds of PA (including Allegheny Cty) uses today
- ▶ Accepts choices from voter on a touchscreen
- ▶ Stores choices directly into electronic memory
 - ▶ Electronic memory is not directly visible to voters
 - ▶ Cannot be truly voter-verified
- ▶ An attached paper audit trail printer helps, but is far from ideal
 - ▶ PA courts have prohibited their use in the past
- ▶ Produces unambiguous ballots

Hand-Marked Paper Ballots w/Precinct Optical Scan

- ▶ The gold standard for voter-verified ballots and audits
- ▶ Many voters voting simultaneously and cheaply
- ▶ Inherently voter-verified
- ▶ Some voters will produce ambiguous ballots
- ▶ Many voters with disabilities cannot hand-mark a ballot
- ▶ Many voters with disabilities prefer voting independently to receiving assistance
- ▶ Voting can proceed without electricity

Ballot Marking Device for voters with disabilities

- ▶ Accepts choices from voters on a touch-screen
- ▶ Does NOT store choices directly into electronic memory
- ▶ Prints a paper ballot
 - ▶ Better ones produce a ballot that looks like a hand-marked ballot
- ▶ The ballot is then taken to the same scanner that is used by voters who are hand-marking their ballots

Ballot Marking Device for ALL voters

- ▶ Provides the same method for voters with and without disabilities
- ▶ Increases costs, which probably reduces the number of machines, which lengthens lines, which disenfranchises some voters
- ▶ Few voters can vote simultaneously, which lengthens lines, ...
- ▶ Ballots are NOT *inherently* voter-verified
- ▶ Produces unambiguous ballots
- ▶ Long power outage causes serious trouble

Hand-marked Paper Ballots w/central-site scanner

- ▶ Greatly reduces costs
- ▶ Reduces the number of pollworkers necessary (except for election code)
- ▶ Exacerbates the ballot chain-of-custody security risk
 - ▶ Ballot boxes may not get delivered to central site
 - ▶ Some potential for bad actors getting access to ballots before tabulation
- ▶ Some voters prefer to have their ballots tabulated immediately
- ▶ Can make some types of audits easier and more reliable

Hybrid (All-in-One) Voting Machines

- ▶ Act as both a Ballot-Marking Device (BMD) and a Scanner
- ▶ After the BMD portion emits a paper ballot, the voter puts the ballot back in. The machine recognizes it as a voted ballot and scans it.
- ▶ There is the possibility that a compromised machine will see that you didn't vote in some races and add votes to your ballot in those races

Features of Voting Machines

Barcodes produced by Ballot-Marking Devices

- ▶ The barcode may not match the human-readable text if the BMD software is buggy or if it's successfully attacked
- ▶ If the scanner is reading the barcodes instead of the human-readable text, this isn't truly a voter-verified ballot
- ▶ A best practice for ballots with barcodes would be to audit a sample of ballots to ensure barcodes match text (there is no such requirement, though)
- ▶ Audits absolutely must read the text, not the barcodes (there is no such requirement in the election code, although the Secretary of the Commonwealth has supposedly issued such a directive)

Summary Ballots

- ▶ Some Ballot-Marking Devices produce a summary ballot instead of a full ballot
- ▶ A summary ballot shows only the candidates for which you have voted
- ▶ Some voters will find this simpler
- ▶ Voters who are voting *against* a candidate will not see that name on their printed ballot

Voting Systems Certified in Pennsylvania

ES&S

EVS 6.0.2.1

- ▶ PA DoS examined version 6.0.0.0?
- ▶ Electionware – election mgmt system
- ▶ ExpressVote XL – hybrid
- ▶ ExpressVote Hardware 2.1 – hybrid or BMD
- ▶ DS200 precinct scanner
- ▶ DS450 central scanner
- ▶ DS850 high-speed central scanner
- ▶ Examined by SLI Global Solutions and the Center for Civic Design

Dominion Democracy Suite 5.5

- ▶ Democracy Suite Election Management System
- ▶ ImageCast X (ICX) ballot-marking device with HP COTS printer
- ▶ ImageCast Precinct Scanner (ICP)
- ▶ ImageCast Central Station (ICC) uses high-speed COTS scanner from Canon
- ▶ Examined by SLI Global Solutions and the Center for Civic Design

ClearBallot

ClearVote 1.5

- ▶ Version 1.4.5 had trouble with cross-party nominated candidates
- ▶ ClearDesign 1.5.1 election mgmt system (ballot layout, proofing, voting machine file generation)
- ▶ ClearAccess 1.5.1 ballot marking device
- ▶ ClearCast 1.5.1 precinct scanner
- ▶ ClearCount 1.7.1 central scanner – high-speed scanning, results aggregation, reporting, export, and audit
- ▶ Examined by SLI Global Solutions

Hart Intercivic

Verity Voting 2.3.3 software

- ▶ Verity Data 2.3.1 data mgmt software
- ▶ Verity Build 2.3.1 election definition software
- ▶ Verity Central 2.3.1 central scanning software
- ▶ Verity Count 2.3.1 tabulation & reporting software
- ▶ Verity User Management 2.3.1 software
- ▶ Verity Election Management 2.3.1 software

Hart Intercivic

Verity Voting 2.3.3 hardware

- ▶ Verity Scan 2.3.1 scanner
- ▶ Verity Touch Writer Duo 2.3.3 ballot marking device using COTS printer and Audio Tactile Interface
- ▶ Verity Controller 2.3.2 mgmt dvc for use w/Verity TouchWriter Duo
- ▶ Verity Print 2.3.1 on-demand ballot printer
- ▶ Verity AutoBallot – optional barcode scanner kit for Verity Controller and Verity Print
- ▶ Examined by SLI Global Solutions