

Innovation in elections

Implementing ElectionGuard in local elections

TGDC Annual Meeting - January 14, 2025

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Center for Civic Design



Center for Civic Design

We work with elections offices and advocates to improve the voter experience, make election administration easier, and invite participation in democracy.

- First TGDC expert for usability and accessibility (2004-2007)
- Research for NIST Voting project (2015-2024)
- Cofounder of CCD (2013)
- Design and research for ElectionGuard
 - Aspen (demonstration) - 2020
 - Franklin County, Idaho - 2022
 - College Park, MD - 2023



The more we tried to explain end-to-end verifiable cryptography and how it works in an election...

...the worse people's understanding got.

Don't make voter do anything beyond the familiar voting steps.

The E2E-V should just be “part of the system” and visible *only* when a voter takes an active step to participate.

What we learned about innovating in elections

- The secret to launching a successful innovation is to focus on the election not (just) the technology.
- Voters want to know how cast their ballot successfully.
- Familiar, minimal design builds voter confidence.
- Provide explanations progressively in bites, snacks, and meals.
- Everything else comes after that.

Research timeline

2019-2022 Usability tests

Usability tests of the Aspen reference demo with voters with disabilities

Worked on language in the Key Ceremony interface for Guardians

Developed many versions of explainers for the technical processes behind E2E-V

Tested terminology, icons, and short explanations



Election guardians make a lockbox and key to secure the election



Voters mark their choices, cast their ballot, and get a confirmation code to take home



2022 Idaho

Messaging research to develop ElectionGuard vocabulary

Supported poll worker and Guardian training

Pre-election mailer to voters in the precinct.

Voter interviews on Election Day

Post-election survey

2023 College Park, MD

Supported poll worker training

Pre-election mailer

Voter interviews on 2 days of early voting and Election Day

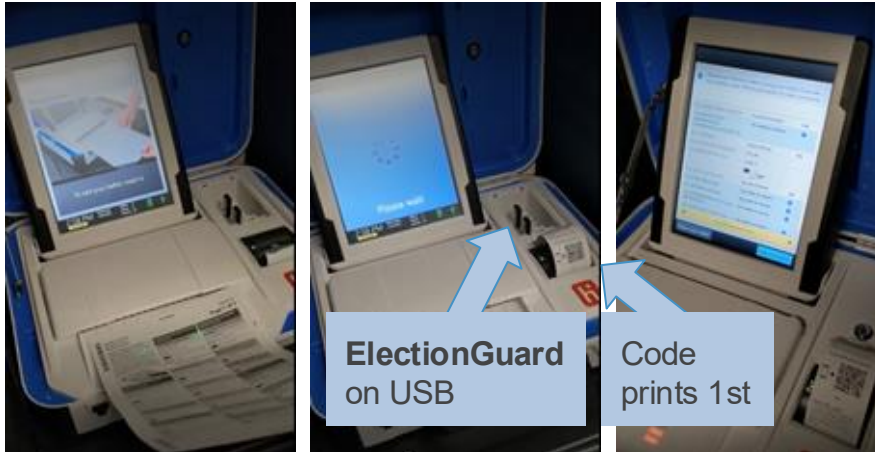
Post-election survey



ElectionGuard in 2022 and 2023

1 Ballots marked by hand or using the Hart InterCivic Touch Writer

2 Hart InterCivic Verity Scanner
Ballots reviewed and cast, and confirmation code printed



3 Benaloh Challenge
BallotCheck initiated at scanner by ejecting ballot, then completed at public website

4 Public website
for voters to check their confirmation code
Enhanced Voting

5 Independent Verifier
MITRE

Franklin County, Idaho 2022 General Election

Would the system work without disrupting voting?



Observations during voting

Exit interviews with 109 voters

(65 of 111 who used ElectionGuard + 44 who opted out)

- Mix of “old-school” and “willing to try it”
- Most saw the benefits of Election Guard
- Almost all said they would check their code

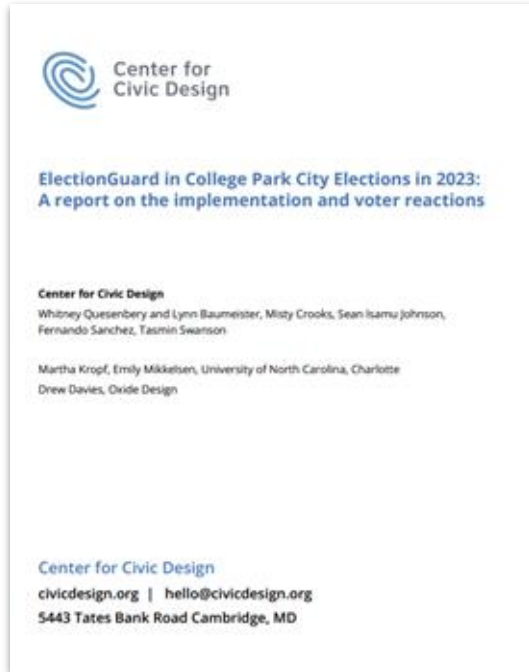
“You can test the process to validate the election. For non-cheating.”

“Other counties have problems and we don’t want that here.”

<https://www.electionguard.vote/images/EAC%20Report%20Final.pdf>

College Park, Maryland 2023 Municipal Election

Could ElectionGuard support work to increase engagement



Exit interviews with 307 voters
(Over 33% of early voters and 20% on Election Day)

Post-election survey with 230 people

- Generally positive reactions, but some skepticism about technology

“[Code] makes me feel like my vote counted.”

“It verifies twice: once at the screen and once with the code.”

“I believe in the machines and voting, so is this necessary?”

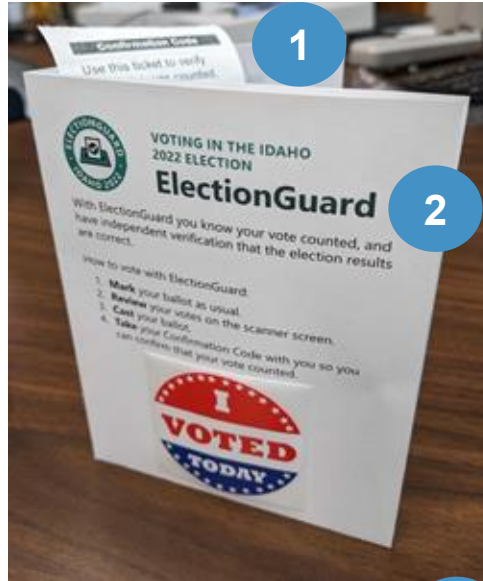
Voter materials and other handouts

Could we balance accuracy with simplicity?

A tiny handout, designed to support voters as they voted and to encourage use of the Confirmation Code

1. An actual pocket
2. 1-sentence explanation and how to vote
3. Instructions for using the Confirmation Code

Brief Q&A on the back
(not shown)



With ElectionGuard you know your vote counted, and have independent verification that the election results are correct.

How to vote with ElectionGuard:

1. Mark your ballot as usual.
2. Review your votes on the scanner screen.
3. Cast your ballot.
4. Take your Confirmation Code with you so you can confirm that your vote counted.



The Benaloh Challenge was a ...challenge

Could Voters decide to run a BallotCheck, and both initiative and complete it independently?

Not really.

This was the most difficult because it added risks that voters would cast an unintended ballot.

It may work better in a second election, as voters get used to it.

Laminated handout at the check-in table and near the scanner.

ELECTIONGUARD BALLOTCHECK

See for yourself with a BallotCheck

A BallotCheck is a way for any voter to independently test that the voting system is working correctly and recording votes accurately. You do this by creating a ballot that you can use to test the accuracy of the system – but which is not counted. This is called a challenge ballot.

If you would like to run a BallotCheck, talk to an Election Supervisor before you start.

At the polling place

Create a special test ballot — but do not cast it.

When you are done creating the challenge ballot, you get a new ballot to vote and cast.



After you mark your ballot, put it into the scanner. A Confirmation Code will print as the scanner reads the ballot.



Press the "Return your ballot" button at the bottom of the screen. The scanner will eject your ballot.



Take the ballot and confirmation code to the Chief Election Judge. They will mark the Confirmation Code and the ballot as part of a BallotCheck. They will write the code on the ballot.



Take the Confirmation Code home with you and keep it safe until after the election. After the election results are announced, you can complete the BallotCheck.

After the election results are announced

Complete the BallotCheck

1. Go to the website: www.egvote.us
2. Scan the QR Code on the ticket or enter the Confirmation Code to unlock the ballot
3. Check that your selections were recorded accurately

Ballots used in a BallotCheck are not counted. They are only used as a test of the ElectionGuard system.

If you find a problem, contact the College Park City Clerk immediately.



Election officials are the experts in running elections

Their active involvement is critical.

Encourage them to question and raise issues

The election is their responsibility, and they have the final decision and are the official voice for:

- Public information and voter education
- Polling place procedures
- Poll worker training (and “scripts”)
- Communicating with candidates and elected officials

(More early collaborations with other experts wouldn't hurt either.)



Building new mental models and terminology to frame them are critical to successful innovations

“One of the most important lessons learned is the value of close collaboration and clear communication between election officials and the election system providers (whether they be researchers or vendors).”

- Scantegrity II Municipal Election at Takoma Park (2010)
Carback, Chaum + 10 authors



What's next for E2E-V

Keep trying it out - under different election policies, with different voting systems, with different ballots.

Work with - and accept input from – election administrators.

Have support for ongoing and open collaboration across disciplines.

Focus on the voter experience and accessibility, with testing, feedback, and other research.

Shared learning and collaboration across groups and trials.

Thank you

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