



ElectionGuard lets voters confirm that their ballot was counted and provides an independent verification that the election results are correct.

Learn more about how ElectionGuard works and how it will be used in the College Park, Maryland City Elections during Early Voting and Election Day in-person voting.

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About ElectionGuard

ElectionGuard is a new election technology that lets every voter confirm that their ballot was counted and provides independent verification that the election results are correct, without revealing how anyone voted.

How does ElectionGuard Work?

ElectionGuard runs alongside the existing voting system. Voters mark their ballots as they always have, hand-marking a paper ballot.

Then, as they cast their vote, ElectionGuard encrypts their ballots and gives the voter a confirmation code that they can use to see for themselves that their ballot is included in the final count. All of the encrypted ballots are used to create a snapshot of the in-person votes for the election. This snapshot can be used to check the results of the election without revealing how anyone voted.

How does ElectionGuard help verify the results of an election?

ElectionGuard provides transparency and confidence in the election process by involving community members, voters, and others in the voting validation process. Each person or organization that takes part does so independently, strengthening the verification that ElectionGuard provides.

- **Election Guardians** – trusted, independent members of the community - help set up the election for ElectionGuard use. They create the locks, keep the keys secure, and unlock the election tallies.
- **Voters** can confirm that their vote was counted, by checking the Confirmation Code they receive when they cast their ballot.
- **Voters** can also choose to run a test called a BallotCheck—to create a challenge ballot that can be reviewed to test the accuracy of the system (but which is not counted).
- **Independent organizations** create Election Verifiers - software tools that confirm the ElectionGuard record of the ballots to validate that the votes have not been altered.

When **a few** voters run a BallotCheck and **many more** use their confirmation code to see that their ballot was counted, **everyone** is part of making elections more transparent.

Can ElectionGuard reveal how someone voted?

No. Your ballot is secret. The confirmation code does not include any voter identification. The ElectionGuard software can confirm that ballots were included in the count and the election results are correct but does not reveal how anyone voted. Only the official tally can count the individual choices to produce the election results.

- BallotCheck challenge ballots can be unlocked so the accuracy of the encryption can be checked, but are not included in the count.
- Independent Election Verifier tools do not decrypt the ballots but perform the mathematical checks described in the ElectionGuard specification.

About ElectionGuard in the College Park City Election

The City of College Park, Maryland is using ElectionGuard during the City Election as part of their commitment to innovative approaches that add confidence to the election process.

Why is the City of College Park using ElectionGuard?

For small communities like College Park, participating in this trial of ElectionGuard allows the City to demonstrate that it embraces innovative approaches and new technology being developed to increase voter confidence in election outcomes. Products such as this must be tested in real elections and College Park is proud to be part of this process.

ElectionGuard systems, support, and research to collect feedback from voters and residents is provided at no charge to the City and the City will use the data collected from the research to inform our own elections.

How does ElectionGuard fit into the voting process?

ElectionGuard runs alongside the normal election processes for in-person voting on the two Early Voting days and Election Day.

- Voters will mark their ballots as usual.
- They will use a scanner in the polling place to cast their ballots.
- The scanner will display to the voter a summary of their vote, and then allow them to cast the ballot, make changes before casting, or opt to run a BallotCheck.

Who will use Election Guard?

ElectionGuard will be used by voters on all three days of in-person voting:

- Wednesday, Oct 25 from 8am to 7pm at Davis Hall (9217 51st Avenue)
- Thursday, Nov 2 from 8am to 7pm at City Hall (7401 Baltimore Avenue)
- Sunday, Nov 5 from 10am to 6pm at the College Park Community Center (5051 Pierce Ave)

Who will be the Election Guardians?

Five Election Guardians will be chosen from the College Park community to create the locks and keys to set up ElectionGuard.

How will the votes be counted?

The Board of Election Supervisors will count all of the ballots and announce the official results as usual, including both ballots cast in-person with ElectionGuard and mail or provisional ballots.

The ElectionGuard data will be compared to the official results as part of this trial of the technology.

What will make the use of ElectionGuard in this elections a success?

Every trial is a chance to:

Test the technology in a real election environment, demonstrating that

- All the parts of ElectionGuard can work together in a live election
- An independently created ElectionVerifier can validate the results of the tally
- ElectionGuard does not interfere with existing election procedures

Learn about the impact on voters, especially whether they:

- Understand the value and benefits of ElectionGuard
- Took the opportunity to confirm that their ballot counted
- Help ensure that the technology is working correctly, with a goal of 1% of voters running a BallotCheck
- Increase their confidence in the accuracy and security of elections.

About the ElectionGuard technology

ElectionGuard is an open-source software tool that is integrated into the voting system. It is a way of checking election results are accurate, and that votes have not been altered, suppressed, or tampered with in any way. It adds another form of transparency to the election process.

What does “independent verification” mean?

The ElectionGuard checks are done by individual voters, using tools created by separate companies, from an open specification. In other words, anyone can create or use tools to verify the election results independently of both the voting system and the software developed by ElectionGuard.

The key to independent verification is that ElectionGuard uses encryption technology that allows the data – ballots in this case - to be analyzed mathematically without unlocking the encryption and revealing individual votes.

How does ElectionGuard integrate into the voting system?

The ElectionGuard software is installed on Hart InterCivic’s voting system Verity® Scan ballot scanner. As each ballot is scanned, ElectionGuard wraps a second copy of the votes in special encryption.

Voters can cast the ballot and get a confirmation code, ask for a replacement ballot to make a correction, or decide to run a BallotCheck.

Verity Scan is the scanner and tabulator used for in-person voting, whether the voter uses hand-marked paper ballots or printed ballots generated by an electronic ballot marking device.

After the election, the encrypted data is uploaded to an independent website where it is used to create a tally that is an independent verification of the election results. The data is also used for the other ElectionGuard-enabled tools like BallotCheck and ElectionVerifier.

Hart will use what is learned in the election trial to determine next steps and whether future Verity releases could include ElectionGuard.

About ElectionGuard independent verification

ElectionGuard includes several kinds of independent verification. Voter confirmation, BallotCheck, ElectionVerifiers, and the use of Election Guardians.

Individual voters are an important part of making elections more transparent.

How does a voter confirmation work?

Every voter receives a Confirmation Code as they cast their ballot at the scanner. The code is printed on a piece of paper and embedded in a QR code.

After the election, they go to the ElectionGuard website and scan or enter the code. If they find a matching code, they can see for themselves that their ballot is included in the final count.

The confirmation does not reveal how they voted, only that their ballot was counted.

If they have a problem or cannot locate their Confirmation Code they should contact the City Clerk's office immediately. The ElectionGuard team will investigate.

How does a BallotCheck work?

A BallotCheck is a way for voters to independently test that ElectionGuard is working correctly. They create a challenge ballot that they can review to test the accuracy of the system – but which is not counted.

The BallotCheck starts at the polling place. Ask an election supervisor to show you how.

- € After marking their ballot, the voter puts it into the scanner. The scanner prints a confirmation code. The voter takes the confirmation code from the scanner.
- € At the prompt on the scanner screen, instead of casting the ballot, they tell a poll worker that they want to run a BallotCheck.
- € The ballot is set aside so it cannot be counted. These ballots are not connected to the voter.
- € The poll workers give the voter a new ballot that they can mark and cast to be counted.

After the election, the voter goes to the ElectionGuard website and uses the confirmation code to check that the ballot has been counted and the system recorded their vote accurately.

EnhancedVoting built the website that hosts ballot confirmations and BallotCheck.

How does an ElectionVerifier work?

Independent ElectionVerifiers are software tools that confirm the results reported by ElectionGuard.

After an election is completed, a verifier checks that the published results match the tally of all encrypted ballots. Verification is an objective process—a verifier's job is to perform the mathematical checks described in the ElectionGuard specification.

Verifiers can be built by anyone using the publicly available source specifications. They complement the BallotCheck that tests the accuracy of the encryption.

- € Verification does not require access to the content of individual ballots. The encryption tools used in ElectionGuard (“homomorphic encryption”) allow the encrypted ballots to be combined to create encrypted tallies without decrypting them.
- € The decryption of encrypted tallies is checked by the verifier. Only the correct tally can be reported as the result of this decryption, or a verifier would notice.
- € Verifiers check that the encrypted ballots comply with the ElectionGuard specification requirements and that the tally was correctly counted.

Verification can be performed by anyone, even those completely independent of the ElectionGuard team. Independent verification makes it possible to trust that ElectionGuard is working correctly and accurately reporting on the election.

MITRE built the first ElectionVerifier. Learn more about the [MITRE ElectionGuard Verifier](#)

Who are the Election Guardians and what do they do?

Election Guardians are trusted, independent members of the community who help set up ElectionGuard. They have a special role in creating the cryptographic locks that secure the election:

- Before the election, Guardians create a special lock and key. The lock is loaded on the ballot scanners to encrypt all of the ballots for the election.
- During the election, Guardians each keep their part of the key secure. Having a small group of Guardians means that no one person can unlock the election on their own.
- When it’s time to count the ballots, Guardians return to unlock the election, read the tally and create the ElectionGuard record.

It is a simple, but critical role. It’s important that no single person can unlock the election alone. With several people acting as Guardians, they add independent security to the ElectionGuard lock and key process.

Who are the partners in ElectionGuard?

The most important partner is the City of College Park. Their commitment to running elections and willingness to try an innovative technology make this pilot possible. They are election heroes.

The ElectionGuard pilot team brings together technology and election expertise and provides technical support for the use of ElectionGuard in this election.

- **Hart InterCivic** is a respected national provider of election solutions and has integrated ElectionGuard software into their Verity® scanner for this election. Hart is the first major voting system manufacturer in the United States to provide independent verifiability. This pilot is part of their continued commitment to voting technology innovation that results in higher levels of voter confidence in the election process.
- ElectionGuard is a project of the **Election Technology Initiative**. Housed at the Council of State Government, ETI focuses on evolving and maintaining open-source technologies of value to the election community.
- **Microsoft Research** sponsored the initial creation of the open-source software tools for ElectionGuard and continues to provide expertise and technical contributions.
- The **MITRE** National Election Security Lab conducts cybersecurity assessments and testing to assist with securing election infrastructure. MITRE is building a publicly available, independent verifier for ElectionGuard.
- **Enhanced Voting** creates voting solutions that are secure, easy-to-use, and accessible to all. They built the public website where voters can check their confirmation codes and host the ElectionGuard data package for the pilot.
- **Center for Civic Design** brings their design, research, and communication skills to collecting feedback from voters during the pilot election.