

Promote the Use of ElectionGuard in American Voting Systems

To: Ginny Badanes, Director of Microsoft's Defending Democracy Program | From: Caroline Avery, Ali Ostad, and Andrew Weatherman | Date: November 5, 2020

Expand ElectionGuard

Americans are concerned about the integrity of their elections; fifty-five percent aren't confident that voting systems are secure and safe from hacking.¹ Aging and insecure voting infrastructure in the United States places our electoral system at great risk for malign interference. To protect elections from malfeasance and error, Microsoft should address these security concerns by expanding the use of its software program ElectionGuard.

Insecure Elections Nationwide

Election security is a pressing challenge to American democracy. Research shows that threats facing American elections are sweeping both in scope and in impact. Outdated and insecure infrastructure leaves voting systems vulnerable to technological problems and sophisticated interference from nefarious actors.⁶ Election officials are aware of the problem, but states lack the funds to adequately invest in new infrastructure and cybersecurity measures.⁷ Securing elections requires a joint effort between federal and state governments as well as private actors, namely Microsoft.

All fifty states lack the necessary infrastructure to conduct secure elections.⁸ Common cybersecurity issues with states' electoral practices include relying on old technology, using paperless direct-recording electronic (DRE) machines, failing to conduct adequate post-election audits, and providing election officials with insufficient cybersecurity training.⁹ These practices make voting systems more susceptible to cyberattacks and technology failures. Electoral cybersecurity must be viewed as a long-term commitment with technologies that can easily change every electoral cycle.

Microsoft has begun to address the shortcomings of existing technological infrastructure. Its Defending Democracy Program addresses gaps in election infrastructure with the following projects:

- Microsoft 365 for Campaigns protects against hacking through its high-end security capabilities.¹⁰
- ElectionGuard addresses the need for verifiable and auditable voting. Microsoft's current partnerships with election technology suppliers create the opportunity to make voting more accessible, secure and efficient.¹¹
- AccountGuard provides information about cyberattacks through email systems and personal accounts of users who opt in.¹²

Problems with Current Electoral Practices

45 states use voting equipment that is no longer manufactured.²

8 states use paperless voting systems.³

33 states do not conduct post-election audits that are satisfactory from a security standpoint.⁴

10 states do not provide cybersecurity training to election officials.⁵

What Can Microsoft Do?

To address the complex problems threatening U.S. elections, Microsoft should help states cultivate an electoral culture that prioritizes security. Tech companies should lend their expertise to election officials and help address technological issues related to cybersecurity and infrastructure. Microsoft's Defending Democracy Program should consider practices that will help it secure election infrastructure evenly across states.

Develop Marketing Strategies to Expand the Reach of ElectionGuard

Secure digital infrastructure is critical to the integrity of elections. States must increase ballot tracking mechanisms, use single vote verification technology, protect constituent data, practice post-election audits, and mandate updates of voter registration databases to deter cyber attacks. ElectionGuard addresses the need for voter verification and risk-limiting audits by enabling voters and third-party organizations to verify election results.¹³ The software's ability to track ballots and conduct end-to-end verification makes it attractive and technologically unique. Microsoft currently invites interested vendors to seek out ElectionGuard, but the company could pursue a more proactive approach to ensure all jurisdictions have access to the software.

Create a Grant Program to Help States Fund Election Security

The federal government helps states modernize election infrastructure through grants via the Help America Vote Act (HAVA).¹⁴ HAVA does not provide states with enough funding, and states will require additional financial support to address their election security challenges.¹⁵ Upgrading and maintaining voting machines alone will collectively cost states \$270 million per year.¹⁶ South Carolina, for example, requires \$40 million to update old or broken machines.¹⁷ Microsoft could create a grant program that fills in the gaps left by federal funds and help states modernize and maintain their digital and physical infrastructure.

Lobby for Stronger Oversight over the Election Technology Industry

While companies often dislike federal regulations, oversight in this context will improve election security. By lobbying for federal oversight, Microsoft can advocate for policies that require the use of verification and security software programs like ElectionGuard. Such policies would help Microsoft achieve its goal to protect electoral processes. Private vendors lock states into long-term contracts and aren't incentivized to improve their products.¹⁸ Without governmental regulations, these companies aren't required to adequately address security concerns, leaving thousands of jurisdictions vulnerable to insecure elections.¹⁹ Necessary oversights include explicit security requirements for physical and digital infrastructure, independent verification of adherence to rules, and mandatory reporting of security breaches.²⁰

Recommendation

Microsoft should focus on expanding the use of ElectionGuard nationwide. The software program secures voting systems by making elections verifiable and auditable, which protects the accuracy of results and offers the benefits of traditional risk-limiting audits.²¹ ElectionGuard will bolster the security of American voting systems, which makes it imperative that Microsoft increase access to it. To make ElectionGuard more accessible, Microsoft should work with election vendors to incorporate it into their voting systems.



*(People waiting to vote in 2020 Georgia Primary)*²²

Microsoft should find this goal achievable because it already partners with election vendors that represent more than half the country's voting systems.²³ The only major firm with which Microsoft doesn't partner is Dominion Voting Systems. Dominion has expressed interest in learning about ElectionGuard, which should encourage Microsoft to pursue a partnership with them.²⁴ Because Microsoft already collaborates with the industry's other major vendors, this partnership will help make ElectionGuard accessible to at least 80% of American voting systems.²⁵ Since ElectionGuard proved successful in its 2020 pilot test, Microsoft should not find it difficult to convince current and potential partners to use the software.

Despite the security benefits ElectionGuard provides, some vendors may hesitate to fully integrate it with their voting systems because the software is new and designed for systems that use paper ballots.

How to Encourage the Use of ElectionGuard

- Microsoft should conduct more pilots with different firms. The 2020 pilot shows promise, but vendors may want to see proof that it works. These small pilots will familiarize vendors with the software and allow them to scale up when ready.
- Microsoft should consider grants to states to eliminate paperless voting. Since ElectionGuard is designed for systems that use paper ballots, vendors serving the eight states with paperless machines cannot fully integrate it into their voting systems.

Leading Voices on Election Security

Lawrence Norden, *Director of the Election Reform Program at the Brennan Center for Justice*

- He leads the Brennan Center's work in electoral reform, which includes ensuring U.S. election infrastructure is secure and accessible to every voter. He is also a member of the Election Assistance Commission's Board of Advisors.
- He can be contacted at the Brennan Center via Rebecca Autrey (rebecca.autrey@nyu.com).

Ronald L. Rivest, *Cryptographer and Institute Professor at MIT*

- He designed ThreeBallot, which is a voter-verifiable method that allows elections to be openly audited and still secure. He has previously advised the U.S. Election Assistance Commission. He also invented the RSA algorithm, which safeguards online commerce.
- He can be contacted at rivest@mit.edu or via his assistant, Debbie Lehto Goodwin (rivest-assistant@csail.mit.edu).

Matt Blaze, *Professor of Computer Science and Law at Georgetown*

- He researches the intersection of cryptology with public policy and has authored or contributed to scholarship related to election integrity and technology. He has also testified before Congress on the issue of election security and interference.
- He can be contacted at mab497@georgetown.edu.

Endnotes

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