Senate Bill 0742

Election Law – Postelection Tabulation Audits – Risk–Limiting Audits
SUPPORT

Education, Health, and Environmental Affairs
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I am a Professor of Computer Science at The George Washington University. My research of the last fifteen years has been in the general area of computer security and privacy, with a special emphasis on the integrity of electronic voting systems. My qualifications and complete CV, as well as more details about my work, may be found on my website[1]. I have provided written and oral testimony to Committees of the Maryland Legislature on several Bills and have also provided oral and written testimony to the State Board of Elections[2].

I STRONGLY SUPPORT THIS BILL.

The literature in the field of election security is clear, unequivocal and non-partisan: computerized election systems present multiple opportunities for intentional alteration of election outcomes and are also vulnerable to error. This assessment applies to the optical scan voting systems used in Maryland and includes voting machines that are not on the internet. Experts recommend that, in addition to making every attempt to secure the voting systems used, an independent, public, risk-limiting audit[3] of the voter-verified paper ballots should be performed after every election to verify that the election outcome correctly represents the voter-verified evidence[4]. An election should be certified only after it passes the audit.

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[1] http://www.seas.gwu.edu/~poorvi/
[2] https://www2.seas.gwu.edu/~poorvi/MarylandAudits/
[3] The latest version of the Voluntary Voting System Guidelines adopted by the Election Assistance Commission requires voting systems to enable ballot comparison risk-limiting audits (the most efficient RLAs), see https://www.eac.gov/voting-equipment/voluntary-voting-system-guidelines; Post-election audits of the election outcome are recommended by the following: a report of the National Academies of Sciences, Engineering, and Medicine, see: "Securing the Vote: Protecting American Democracy", 2018, https://doi.org/10.17226/25120; the Presidential Commission on Election Administration, see: "The American Voting Experience: Report and Recommendations of the Presidential Commission on Election Administration", January 2014, pg. 66, https://law.stanford.edu/wp-content/uploads/sites/default/files/publication/466754/doc/slspublic/Amer%20Voting%20Exper-final%20draft%2001-04-14-1.pdf.
[4] P.B. Stark and D.A. Wagner, "Evidence Based Elections", IEEE Security and Privacy, special issue on electronic voting, 2012. www.stat.berkeley.edu/%7Estark/Preprints/evidenceVote12.pdf

This Bill has several valuable features: it requires, following each statewide election, a risk-limiting audit of at least one statewide contest and one local contest in each county, performed through the manual examination of randomly-chosen individual paper ballots or batches of paper ballots. It also requires that the audit be completed before certification, that an election outcome found to be incorrect by the audit should be corrected, and that the audit be transparent, both in process and in the prompt and detailed announcement of its results.

Friendly suggestions are as follow:

- **Meeting the risk limit**: It is with some embarrassment that I note that the text in Lines 22-27, Page 4, though exactly one of my suggestions from last year, is open to technical misinterpretation and could be considered incorrect in some models. As you have already defined the risk limit, the rather complicated sentence I previously proposed is not necessary. **Please do not leave the text as it is in the Bill.** A suggestion is as follows:

  Lines 22-27, page 4, should read:

  "MANUALLY EXAMINE RANDOMLY CHOSEN INDIVIDUAL VOTER–VERIFIABLE PAPER RECORDS OR BATCHES OF VOTER–VERIFIABLE PAPER RECORDS UNTIL THE **RISK LIMIT IS MET** ~~MAXIMUM CHANCE OF A FULL MANUAL COUNT FINDING A DIFFERENT OUTCOME THAN THE OUTCOME DETERMINED BY THE ELECTRONIC COUNT IS NO LARGER THAN THE RISK LIMIT, OR UNTIL THERE HAS BEEN A FULL MANUAL COUNT~~;

- **Correcting an error in the election outcome before certification:** If the audit ends up requiring a full hand count, and the hand count indicates a different outcome, the election outcome should be changed before certification. The text on Page 5, lines 1-4, mentions altering the official result but does not explicitly refer to the manual count. **The text should make clear that the official result will only be changed if a full manual count indicates that this is needed**.

- **All categories of ballots should be included for the audit:** The Bill should include text requiring that ballots are drawn from a collection that includes all in person, absentee, provisional and early votes, and that the original voted paper ballots should be examined for all voters (in particular, hand-transcribed absentee ballots should not replace voter-verified absentee ballots during the audit). The vote itself (not the bar code) should be read for ballots generated by the Express Vote machines.

- **Risk-Limiting Audits Workgroup**: House Bill 759 from 2021 required the formation of a Risk-Limiting Audits Workgroup to guide the state in its processes. This Bill (and House Bill 745, which is the companion bill) does not have such a requirement. The State is encouraged to seek expert guidance on the design of its audits. In addition, the State should also adopt, with guidance, the design and use of compliance audits that ensure the security of the evidence trail of the paper ballots (and, to the extent possible, the electronic images used in the electronic audit). I believe that Maryland already does have some compliance audits in place, so these could be enhanced if necessary.

I congratulate the committee on a strong bill that serves the interests of Maryland's voters.

Respectfully,

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Poorvi L. Vora is Professor of Computer Science at The George Washington University and serves on the Board of Directors of Verified Voting. Her research focus has been on end-to-end independently verifiable (E2E) voting systems, and, more recently, on statistical election audits. She was a member of the team that deployed E2E voting system Scantegrity II in the Takoma Park elections of 2009 and 2011. She has worked with the National Institute of Standards and Technology (NIST) on definitions of desired properties of E2E systems, and on information--theoretic models and measures of voting system security properties. She obtained her Ph.D. from North Carolina State University.