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Concerning SB 598 ("Relating to auditable voting systems")

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Chairman Hughes, members of the committee, it's an honor to speak to you today about our nation's voting systems, the potential threats they face in modern elections, and the steps we might take to mitigate these threats.

My name is Dan Wallach. I've been a professor of computer science at Rice University, in Houston, Texas, for 23 years. I last spoke to many of you in 2018, when I was asked to testify before the Texas Senate's Select Committee on Election Security. I'm happy to return here today.

I've worked with a variety of organizations in the voting space, but today I'm only speaking on my own behalf. However, I have worked with the nonprofit, nonpartisan organization Verified Voting to ensure they endorse this testimony.

My main message for you here, today, is that our election systems face credible cyber-threats from highly skilled actors, including foriegn nation-states, and the language in SB 598 takes important steps to address these threats.

In particular, we want to ensure that any risk of malware in voting machines or tabulation systems is adequately mitigated by cross-checks against paper ballots. Risk-limiting audits (RLAs), as discussed in SB 598, are robust tabulation audits designed to efficiently confirm that election outcomes match what a full hand count of those ballots would reveal.

RLAs have been widely endorsed by security specialists and election officials. In fact, risk-limiting audits have been recommended by the American Statistical Association, U.S. Department of Homeland Security, the U.S. Senate Select Intelligence Committee, the U.S. Election Assistance Commission, and many other experts as one element of a strong and resilient election infrastructure. They have been tested or implemented in at least eleven states so far, including three states that conducted official risk-limiting audits of the 2020 presidential election.

Appropriately, this bill sets broad requirements for the study and piloting of RLAs in Texas. Risk-limiting audits turn out best when state and local election officials work together with people who are deeply familiar with this kind of audit. While even considering risk-limiting audits is a step in the right direction, **here are some recommendations** to improve how risk-limiting audits can successfully be implemented in Texas:

- Given that risk-limiting audits randomly sample and select the ballots to be audited, language about precincts is needlessly restrictive;

- Language requiring RLAs to commence 24 hours after all the ballots have been counted may create procedural challenges. Consider giving a bit more slack, or allowing the timeline to be set in rulemaking;

- True RLAs are binding upon the election results. A failed RLA would normally lead to a mandatory recount. No language to this effect is in the current bill;

- Post-election audits serve to increase public confidence in election outcomes, and therefore should be observable by the public, subject to the same rules as the public might observe other election functions like recounts;

- Hopefully the language in this bill would not preclude the Secretary of State of including risk-limiting audit experts in the rulemaking process.

In addition to risk-limiting audits being established, this bill would also require voting systems throughout the state to produce a paper record that can be read by the voter. (Similar language also exists in SB7 and SB1234.) Paper records are crucial in creating an auditable election, and will hasten our decommissioning of paperless electronic voting systems, echoing a nationwide trend away from these systems. Why do we need paper records in this, our high-tech world? Because they again mitigate against the risks of malware, in the voting system or elsewhere, that might unobtrusively show the voter one thing while recording and tabulating something completely different on the inside. Having voters see, verify, and have the opportunity to spoil their vote and redo it, if necessary, gives us a valuable strategy to mitigate against the worst risks of software tampering.

Thank you for considering this bill and this testimony. I look forward to future opportunities to work with Texas officials in implementing risk-limiting audits and auditable voting systems.

More about me: My research considers a variety of computer security topics and I've published over 100 papers in the field. Among other honors, I recently served from 2011-2015 on the Air Force Science Advisory Board, and I presently serve as the IEEE representative to the Election Assistance

Commission's Technical Guidelines Development Committee (EAC TGDC), which drafts the U.S. government's Voluntary Voting System Guidelines (VVSG), required by Texas and most other states.

I've maintained a research interest in electronic voting systems starting with their widespread adoption in the early 2000s. In particular, I led an NSF-funded research center, ACCURATE (A Center for Correct, Usable, Reliable, Auditable, and Transparent Elections) from 2005-2011. I also participated in the 2007 California "Top to Bottom Review" of its electronic voting systems, where we found unacceptable security vulnerabilities in every system we studied. Recently, I've been working with Microsoft on their ElectionGuard project, which aims to provide sophisticated cryptographic verification technologies that can be integrated with other vendors' voting systems. Additionally, I spent 2020 on sabbatical from Rice working with VotingWorks - a nonprofit vendor of voting systems and risk limiting audit software and services.

More about Verified Voting: Verified Voting is a nonpartisan nonprofit organization with a mission to strengthen democracy for all voters by promoting the responsible use of technology in elections. Since their founding in 2004 by computer scientists, they have acted on the belief that the integrity and strength of our democracy rely on citizens' trust that each vote is counted as cast. They are subject matter experts in risk-limiting audits.