Prepared statement of Jeremy Epstein to the
Congressional Forum: "Lessons from Election Day 2012: Examining the Need for Election Reform"
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Thank you for inviting me here today. We all know that there were long lines on Election Day. What we don't know, surprisingly, is why. There are two main places where lines can occur in the voting process: at voter sign-in and at the actual voting process.

2012 brought many changes in voter sign-in compared to prior elections, including changes in voter ID laws, increased turnout, and the continuing transition to electronic poll books (known as EPBs). But there have been no studies examining how any of these factors change the time required to check a voter in. We need, but don't have scientific measurements of the time required for check-in with traditional paper pollbooks compared to EPBs, including examining confounding factors such as level of pollworker training, voter ID laws, and ethnic variations in names. The results of such measurements can help guide us towards improved training and/or reconfigured staffing in polling places.

Once at the voting booth, the time to vote is influenced by many factors. For example, in Virginia, there were two Constitutional amendments and in some places several bond issues – and many voters were unaware that these would be on the ballot or were unfamiliar with the choices, thus increasing the time voters took to make their decisions. The choice of technology has a major impact: on a relatively simple ballot like we had in Virginia, a DRE can realistically handle 150-200 voters per day. The maximum number of voters allowed per DRE varies greatly, including 200 in Maryland, 250 in DC, and 750 in Virginia, none of which are enough.

By contrast, when using paper ballots and ballot scanners, the scanner is the limiting factor, and at 15 seconds per ballot, can handle almost 3000 voters in a 12 hour day. If things get busy, open another box of pencils and keep the lines short.

The lesson learned is that if the lines are at the voting machine, DREs are far less efficient, requiring a $5000 machine for every 100 or 200 voters, while a single $5000 ballot scanner can handle several thousand voters. The problem is not lack of equipment, it's not using the right equipment.

This is consistent with anecdotal observations across the country. With the exception of Florida, where the paper ballot was several pages long, localities and states with ballot scanners had much shorter lines than those with DREs. As a microcosm, we saw that in Fairfax County Virginia – those precincts where pollworkers encouraged voters to use paper ballots saw much shorter lines than those where pollworkers did not encourage use of paper ballots.

But having paper ballots isn't enough. Ballot scanner voting machines will make mistakes. A scientifically valid post-election audit process is necessary by manually comparing a small set of the paper ballots to the machine calculated totals, to make sure that the election results are correct – just as we subject corporate finances to audits to detect errors, even if fraud is not suspected. In most states, post-election audits are not performed on a regular basis, and in one state – Virginia – audits are illegal in any case that would be of interest. National standards for auditing can help ensure that the election results are accurate. Unfortunately, for those jurisdictions using DREs, meaningful audits are impossible – we have to hope that the machine didn't make a mistake, which is unacceptable.

Finally, some will point to internet voting as a cure-all. There is no clear evidence indicating that internet voting increases turnout, but it substantially increases risk. We know that nation-states, criminals, and hacktivists have broken into military, government, and corporate web sites on a routine basis. There is no reason to believe that internet voting sites can be made more secure than banks , e-commerce, or government sites. The vast majority of computer scientists, including nearly all computer security experts, are of the opinion that internet voting cannot be done securely at this time, and probably not for another decade or more. Just as we rely on doctors for our expert medical advice and lawyers for our expert legal advice, we need to rely on computer security experts for advice on the security of internet voting.

To summarize, then:

1. Long lines at the polls are caused by long check-in lines and/or long lines at voting machines.
2. We need to measure time for check-in using different technologies, and potentially change processes based on those results.
3. Using ballot scanners is both cheaper and faster than DREs, and less likely to result in long lines.
4. Post-election auditing of ballot scanner results is not done on a routine basis in most states, but should be.
5. Internet voting is far from being ready for use, if we care about the accuracy of our elections.

Thank you.