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**Committee on Oversight and Government Reform,
Subcommittee on Information Policy, Census, and National Archives**

United States House of Representatives

Statement of

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May 7, 2007

I thank the Committee for this opportunity to present my observations concerning the state of voting technology and New York's efforts to implement the Help America Vote Act.

There are four overriding precepts that should govern the administration of elections in a democracy. Election administration should be uniform, accurate, transparent and verifiable. It is worthwhile to spend a moment on each of these concepts.

Uniformity — All voters and candidates should be treated alike. While the principle sounds simple, it can often be difficult to accomplish. All voters should have reasonable access to exercise their right to vote. All candidates should be confident in the knowledge that they have won or lost an election that was conducted openly and honestly

Accuracy — There is little argument that election results should be as accurate as possible in reflecting the voters' intent in selecting candidates. In order to attain accurate results, it is essential that voting systems be secure from tampering. It is just as essential that the voting system is reliable so that we can all be confident that the result reported does reflect how voters actually intended to cast their ballots. We should remember that there are many more incompetent programmers than talented hackers. Poor ballot design and programming errors can have significant impacts that can raise legitimate concerns whether the certified election results actually reflect the decisions of the voters. Although most of the debate over security issues has been framed to target suspicion on outside hackers and backdoors, it is in fact insiders who have the keys to the front door and complete access to the electronic ballot box. Hackers are less dangerous than insiders with only a few minutes access to the voting equipment. These vulnerabilities to

the integrity of many voting systems widely used throughout the country were illustrated in several studies that have been released in the last two years.ⁱ

Transparency and Verifiability — Every step in the process of election administration should be observable by voters, candidates and public-minded citizens and organizations. We should ban the word “trust” from the vocabulary of election administration. The concern over so called “black box voting” is that neither the public nor the voter can be certain that a voter’s ballot is actually going to be recorded and counted as the voter intended. We must guard against delegating to a very small group of computer and statistical experts who have access the responsibility for verifying the integrity of elections.

Twenty years ago there was an outcry by democracy advocates against the old Mexican system where the paper ballots were taken to election offices and counted in secret by the election officials appointed by the ruling party. While Mexico changed its process so that everyone could observe the ballot count, in this country we have gone in the opposite direction where the vote count has often been entrusted to computers and those who have programmed them. Instead we must make the process of counting votes transparent and provide for public verification of those results. When election monitors are denied access to the programming and source code that actually counts the votes, it is impossible to verify that the vote was cast in the manner intended by the voter. That is why it is absolutely essential that any electronic voting system have a paper trail that can be verified by the voter. Of course, that paper trail is meaningless unless it is actually audited to confirm that the machine count matches the paper verified by the voter.

I have read the very eloquent statement that Congressman Clay delivered to this subcommittee on July 20, 2004.ⁱⁱ It shows that members of Congress do understand these fundamental precepts and the problems that we must address to assure uniform, accurate, transparent and verifiable elections. I also appreciate the substantial effort that Congresswoman Maloney has invested in improving the integrity of our election process.

It is with these precepts in mind that I support the principles of HR 811, the Voter Confidence and Increased Accessibility Act of 2007, with the caveat that Congress must be realistic about the timetable for implementation of any new law.

New York State Should Be Proud of Its Leadership by *Responsibly* Implementing the Help America Vote Act.

Good intentions alone do not make wise legislation. The timing for the implementation of new voting systems in the Help America Vote Act was fundamentally flawed by putting the cart before the horse. Congress provided funding for the replacement of punch cards and lever voting machines before setting the standards for new voting systems. There were substantial delays in forming and funding the new Election Assistance Commission. Many states blindly rushed to comply with the hurried timetable established by HAVA—with disastrous consequences in many states. More than 35 states have experienced substantial problems at the polls that have

disenfranchised and inconvenienced far more voters than the problems of punch cards and lever machines that Congress sought to remedy.

The US Election Assistance Commission, established under HAVA, was not formed until a year after the statute was enacted. This delay contributed to the EAC's failure to meet a January 1, 2004 deadline for issuing new voting systems standards. The EAC did not adopt these standards until December 2005. At that time, the EAC grandfathered all previously certified voting systems until January 1, 2008. Although that date is only seven months away, the EAC has not certified a single voting system to those standards. Indeed, only one vendor, Dominion Voting, a Canadian company, has even applied for certification under the 2005 Voluntary Voting System Guidelines.

New York is committed to complying with HAVA. But we are also committed to doing it once and to get it right the first time, without impairing anyone's right to vote by a flawed implementation plan.

The New York Legislature adopted the Election Modernization and Reform Act of 2005, (Chapter 181 of the Laws of New York for 2005) cognizant of the raging debate over the accuracy, transparency and verifiability of electronic voting systems. The New York law allows our county boards of elections to choose to purchase precinct-based optical scanners or direct recording electronic voting systems, but only after those voting systems have been tested and certified to standards that assure the accuracy and verifiability of those voting systems.

The New York law addressed many of the key issues that Congress is now considering in HR 811, the Voter Confidence and Increased Accessibility Act of 2007.

- New York requires that every voting system produce a voter verifiable paper audit trail (NY Election Law § 7-202(1)(j))
- New York requires that there be an audit of the paper trail of at least 3% of the voting machines in each county, and authorizes the escalation of the audit to a greater number of machines where errors or the closeness of the results warrant. (NY Election Law § 9-211)
- New York prohibits any device or functionality potentially capable of externally transmitting or receiving data via the Internet or radio waves or other wireless means. (NY Election Law § 7-202(1)(t));
- New York requires that the manufacturer and/or vendor of each voting machine, system or equipment place into escrow a complete copy of all programming, source coding and software. (NY Election Law § 7-208).

The regulations adopted by the New York State Board of Elections to implement the New York Election Modernization and Reform Act also contain a number of positive features that have formed a model for other states:ⁱⁱⁱ

- New York was the first state to require compliance with the 2005 Voluntary Voting System Guidelines adopted by the US Election Assistance Commission;

- New York requires that each voting system vendor and its key personnel disclose all political contributions;
- New York provides for public access to observe usability testing of the voting systems in the certification process and provides public access to all test plans and test results, except where disclosure would compromise the security features of the voting system;
- New York requires that vendors disclose all litigation and any problems experienced by the voting system in other jurisdictions, so we can learn from those problems and not repeat them here.
- New York requires that vendors disclose any pecuniary interest in the laboratories that test their products.

Both the Legislature and the New York State Board of Elections were aware that this was an ambitious undertaking in adopting these progressive reforms to assure accurate, transparent and verifiable elections, but, like Congress, we certainly underestimated the difficulty of the challenge.

We initially inquired whether the vendors would be able to comply with the new legal and regulatory requirements and we were assured that they could comply. Because the Election Assistance Commission had not certified any testing authority, New York retained CIBER, the testing authority for more than 70% of the voting equipment now used throughout the United States. Nevertheless, when we commenced the testing process, it became rapidly apparent that none of the vendors was able to make a complete submission of all of the documentation; testing also revealed that none of the systems complied with all of the applicable standards.

The National Certification Process Has Been Scandalously Flawed

New York also stumbled upon another remarkable finding. Not only were the voting systems unable to comply with the 2005 Voting System Guidelines, but voting systems that had been previously certified by the National Association of State Election Directors as complying with its 2002 Voting System Standards, also in fact, failed to comply with all of those standards.

On December 14, 2006, ES&S requested that New York that the ES&S Unity 3.0.1.1 optical scanner be excused from compliance with the standard contained in Volume I, section 5.2.3(b) of the 2005 Voluntary Voting System Guidelines. ES&S's argument was that the standard was unchanged from the 2002 Voting System Standards, and that the National Association of State Election Directors had already certified the voting system.^{iv} When I investigated further, I learned that NASED never indicated that it had waived compliance with this requirement; indeed, NASED officials said that they never were aware of the non-conformance because there was no note of the issue in the report prepared by CIBER, the independent testing authority.

The academic reports that I mentioned earlier^v have identified many deficiencies that make electronic voting systems vulnerable to hostile programming that

can change the voting results, yet those systems received certification. Further investigation has demonstrated that the relevant provisions of the Voting System Standards were never considered in the testing and certification process!^{vi} Professor Wagner's testimony today enumerates the gross inadequacies of the certification process. I subscribe to all of his comments. The current federal certification process, even after recent changes adopted by the US Election Assistance Commission, lacks transparency and is driven by inherent conflicts of interest. No state, indeed no voter can rely on this flawed process. That is why states like New York and California have been forced to try to create their own certification process.

New York State also confronted another problem in December of 2006. Most New York officials learned that the Election Assistance Commission had not approved CIBER's interim application for accreditation as an independent testing authority. They learned this by reading the New York Times, not by any notification from the Election Assistance Commission. Remarkably, when New York inquired about the reasons for the delay in accreditation, neither CIBER nor the Election Assistance Commission would provide the information. Public disclosure of the inadequacies in CIBER's testing process only occurred after New York threatened to subpoena the information.

While Professor Wagner has addressed many important issues relating to certification, I want to add two others.

While many complain about the profits of voting machine vendors, I do not subscribe to those complaints. In fact, the cost of proper certification testing can be substantial, particularly when it is borne by just one state, even a state as large as New York. We have already spent more than \$3 million on the testing process, which is only partially completed. This is a very substantial sum for a vendor to pay without any commitment that its voting system would be purchased. Indeed, at least one vendor, Open Voting Solutions based in Brookhaven, New York has told us that this cost is an insuperable barrier for a small company that believes that it has innovative solutions that it cannot finance without a purchase commitment. In an effort to address this cost, the New York Legislature recently appropriated \$5 million for the costs of preparing test plans that will not be charged to the vendors. In the end the public must pay for certification testing. It is better to do this directly by a legislative appropriation than to charge the vendor, who must ultimately include that cost when it seeks to sell voting equipment to the boards of elections.

My other observation is that New York chose to engage the services of independent technical expertise to provide independent validation of the performance of its testing authority. Those of us at the New York State Board of Elections humbly recognized that we did not have the technical resources to interpret the adequacy of the test plans proposed by CIBER. New York retained NYSTEC, the New York State Technical Enterprise Corporation, based in Rome, New York, to provide that independent technical expertise. Many in the verified voting community argued that we were making a mistake because NYSTEC did not have any experience in dealing with election applications. They could not have been more wrong. Because NYSTEC was not blinded

by the flawed prior practices in testing voting equipment, it was able to apply its substantial expertise from other applications to analyze the adequacy of the proposed security testing. It offered many constructive criticisms that have led to substantial improvements in New York's testing plans.

The US Election Assistance Commission is beginning to follow this model by greater reliance on NIST, but it has a long way to go before the states and the electorate can have any confidence in the certification process.

Conclusion

There are two key lessons from New York's experience.

First, there is no voting system on the market today that has been tested and certified as being in compliance with the current federal standards.

Second, no reasonable election administrator can rely on the adequacy of certification to even the old, deficient 2002 standards.

In view of these two important issues, it is incumbent that Congress turn its attention to the process of testing and certifying voting machines. The Voter Confidence and Increased Accessibility Act of 2007 sets a worthy set of objectives and standards, but it is essential that Congress be realistic about the timetable for implementing these standards. It makes no sense to require that states spend money now to replace their voting systems before it is clear that those voting systems do, in fact, comply with the standards. There is no reason to spend substantial funds on inferior equipment that can create more problems than the reforms are intended to resolve. It is also essential that local election officials be given adequate time to avoid repetition of the substantial problems generated by hasty and poorly implemented plans to switch to new voting equipment.

ⁱ A. Kiayias, L. Michel, A. Russell and A.A. Shvartsman, *Security Assessment of the Diebold Optical Scan Voting Terminal*, (U. Conn. Voting Technology Research Center) October 30, 2006; Harri Hursti, *Critical Security Issues with Diebold Optical Scan Design*, (Black Box Voting Project) July 4, 2005

<http://www.blackboxvoting.org/BBVreport.pdf>

Harri Hursti, *Diebold TSx Evaluation* (Black Box Voting Project) May 11, 2006

<http://blackboxvoting.org/BBVtsxstudy.pdf>

Susan Pynchon, *The Harri Hursti Hack and its Importance to our Nation* (Florida Fair Elections Codification) January 21, 2006 <http://www.votetrustusa.org>

Ariel J. Feldman, J. Alex Halderman, and Edward W. Felten, *Security Analysis of the Diebold AccuVote-TS Voting Machine* (Princeton Univ. Center for Information Technology Policy) September 13, 2006 <http://itpolicy.princeton.edu/voting/>

RABA Technologies LLC, *Trusted Agent Report Diebold AccuVote-TS Voting System*, January 20, 2004 http://www.raba.com/press/TA_Report_AccuVote.pdf

ii <http://lacyclay.house.gov/pr040722b.htm>

iii The New York Voting Systems Standards are found at 7 NYCRR 6209,
http://www.elections.state.ny.us/NYSBOE/hava/voting_systems_standards-4-20.pdf

iv NASED Certification #N-2-02-22-22-004 and NASED Certification #N-1-02-22-22-003.

v See note 1, *supra*.

vi Testimony of Michael Shamos before the House Committee on Science, June 2004
http://www.votetrustusa.org/index.php?option=com_content&task=view&id=1930&Itemid=26