

Direct Recording Electronic Voting Machines: Ease of Use vs. Ease of Computer-based Fraud

by Teresa Hommel

Congress passed the Help America Vote Act of 2002 (HAVA) just before the 2002 elections. HAVA allocated \$3.9 billion for states to revise their election administration, and encouraged replacement of old lever-type and punched-card voting equipment with new machines such as optical scanners or Direct Recording Electronic (DRE) voting machines.

DREs typically resemble big laptop computers with touch-screen capability, like ATMs. Although optical scanners require the use of paper ballots that can be preserved and hand counted, election officials across the country say that voters, especially the elderly and disabled, prefer DREs because of their relative accessibility and ease of use.

A Security Problem

Most DREs on the market today do not provide a "voter-verifiable audit (or paper) trail."¹ This is a printout of each voter's ballot marked with his or her choices that can be checked for accuracy before being cast, and, after being cast, serves as the permanent record of the ballot for recount purposes. The problem is that without a voter-verifiable paper trail, independent recounts are prevented and the correct functioning of the machines cannot be independently ascertained.

The major manufacturers of DREs tout as security features their machines' ability to print post-election audit trails as well as complete marked ballots from computer memory. Barring total incompetence of the programmers, however, any post-election printouts should corroborate the machine's final tallies whether correct or corrupt. Independent corroboration of final tallies requires the counting of ballots that were confirmable by the voters who cast them and unalterable after confirmation. Any information in a computer can be altered.

Douglas A. Kellner, a Commissioner of the NYC Board of Elections, says, "My big concern is that using electronic voting machines to count ballots is akin to taking all the paper ballots and handing them over to a couple of computer tech people to count them in a secret room, and then tell us how it came out. That is not an acceptable way of conducting elections in a democracy."² The Resolution on Electronic Voting, proposed by Dr. David Dill of Stanford University and endorsed by over a thousand computer technologists, says that because of their insecurity, electronic voting machines "should not be purchased or used unless they provide a voter-verifiable audit trail; when such machines are already in use, they should be replaced or modified to provide a voter-verifiable audit trail."³

Inadequate Standards

HAVA failed to specify meaningful security standards for HAVA-funded voting machines. If Congress had waited until after last year's elections, which saw widespread (but minimally publicized) irregularities with new electronic voting equipment, HAVA might have included more security requirements.

HAVA mandates new standards to be developed, but they will be voluntary. Moreover, the first draft may not be ready until 2006--after most of the new machines will have been purchased (HAVA-funded voting machines must be in place for the November, 2004, election unless a state applies for an extension, and then the new machines must be in place in 2006).

Most DREs in current use are produced by three companies: Sequoia Voting Systems, ES&S (Election Systems & Software), and Diebold. These machines were certified according to older standards that are clearly inadequate--the Diebold software revealed as faulty in a study released on July 23, 2003, by computer scientists at Johns Hopkins University had been certified.⁴ The worst security errors found by the Johns Hopkins scientists had been called to Diebold's attention five years ago by Dr. Douglas W. Jones of the University of Iowa and a member of Iowa's board of examiners for voting systems. Says Dr. Jones, "[T]his story ... represents a black eye for the entire system of Voting System Standards promulgated by the Federal Election Commission and the National Association of State Election Directors. Not only did the ... Diebold touch screen system pass all of the tests imposed by this standards process, but it passed them many times, and the source code auditors even gave it exceptionally high marks. Given this, should we trust the security of any of the other direct recording electronic voting systems on the market?"⁵ Dr. Jones has called for de-certification of the Diebold equipment.

Accessibility for the Disabled

In New York City, an estimated 20% of voters have some disability that limits or prevents them from casting a private and independent vote with older equipment. Manhattan Borough President C. Virginia Fields and The Center for Independence of the Disabled in New York, Inc. published a report, "Voting Technology for People with Disabilities," in March, 2003.⁶ The report makes clear the many types of accessibility features needed.

With newer voting machines, audio devices are used to enable voters who are blind or have limited vision to perceive the original ballot. Similar audio mechanisms using a separate scanner, laser pen, or other data-to-voice device should also enable such voters to verify their ballot printout privately and independently.

The Process in New York

In New York, Governor Pataki appointed Republican Peter Kosinski to head a task force on HAVA implementation. Although Kosinski convened a task force, it met only five times and did virtually no substantive work.

Some observers of the process believe that a machine has already been picked for the state. The assertion stems from close ties between Sequoia Voting Systems and Albany. Jeff Buley, an election law attorney who has served as counsel to leading Republicans and Governor Pataki, is also a registered lobbyist for Sequoia.

Lee Daghljan, Director of Public Information of the State Board of Elections, said on Sept. 3, 2003, "There is no clear cut answer yet" to the question of what procedure will be used to purchase New York's new voting machines with HAVA funds, or who will decide what machines to get.

New York State requires "full face" ballots, a restriction in acquiring new machines. Only three DREs offer a full face ballot, and they do not provide a voter-verifiable paper trail at this time. At least one manufacturer could produce such equipment, however, if it was required.

Conclusion

Computer scientists and others concerned with this issue are working now against the short deadlines imposed by HAVA to protect the integrity of elections in New York and nationally. They are demanding that DRE voting machines provide a voter-verifiable physical record of each ballot cast as well as accessibility of both the original ballot and the verification printout. Across the country, some manufacturers are gearing up to produce DREs that meet these requirements, but secure and accessible voting machines will probably not be ready for the 2004 elections.

It is my opinion that we should take a position supporting those requirements. We should urge Governor Pataki to request his appointee Peter Kosinski to push for voting machines that have these capabilities; urge our state senate to pass legislation to require them (A8847 has already passed the Assembly); urge State Senator Morahan (R-38th Dist.), Chair of the Senate Committee on Elections to introduce and support a companion bill for A8847 in the NY State Senate; urge New York's Congressional Representatives to co-sponsor H.R. 2239, the Voter Confidence and Increased Accessibility Act of 2003, a bill introduced by Rush Holt (D-NJ) which would require voting machines to provide a voter-verifiable permanent record of each ballot cast as well as accessibility; urge Senators Clinton and Schumer to introduce a companion bill for H.R. 2239; and pass information about this issue to other groups in the legal community.

1. The concept and term were created by Dr. Rebecca Mercuri, internationally recognized expert on electronic voting, currently affiliated with Harvard's Kennedy School of Government. <http://www.notablessoftware.com/evote.html>

2. Hudson Star-Register, Saturday, May 3, 2003, page A-1, "Mixed Reviews Greet Brave New World of Voting"

3. <http://www.verifiedvoting.org/resolution.asp>

4. <http://www.avirubin.com/vote.pdf>. The software had appeared on the Internet from an insecure ftp site maintained by Diebold.

5. <http://www.cs.uiowa.edu/~jones/voting/dieboldftp.html>

6. <http://cvfieldsmbp.org/Voting%20Technology%20for%20People%20With%20Disabilities.pdf>

7. <http://assembly.state.ny.us/leg/?bn=A08847&sh=t>

8. <http://holt.house.gov/issues2.cfm?id=5996>