



## Testimony of VotePA

September 25, 2008

Public Hearing on Preparedness for General Election

State Government Committee, Pennsylvania House of Representatives

Ladies and Gentlemen of the State Government Committee:

Forty days from now our nation will select the leaders that will govern us for the next four years. With the many problems we are facing today, this is an incredibly important election with great public interest. There are huge numbers of newly registered voters, and record turnout is expected on Election Day. This turnout may reach 80% in some areas.

As one of the largest swing states, Pennsylvania may well become a deciding factor this year. It is more important than ever that every eligible citizen who wants to vote gets to vote and to have his or her counted accurately. We absolutely have to “get it right” this time.

Public officials and citizen organizations all over Pennsylvania are working hard to help ensure a fair, smooth, and accurate election on November 4. But there are a number of issues that remain very concerning, especially with our voting systems.

### PROBLEM #1: POTENTIAL FOR LONG LINES AT POLLS

Six of the ten voting systems that Pennsylvania will use this November 4 are software-dependent Direct Record Electronic (DRE) voting machines. Approximately seven million Pennsylvanians will cast votes using these paperless systems.

Of great concern is that in counties using DREs, a record turnout may create long lines at the polls due to not enough machines. With each voter having to occupy a DRE machine for the entire time he or she is voting, this will happen in any polling place where the number of voters exceeds the capacity provided by the number of machines available.

Under the Pennsylvania Election Code 25 P.S. § 3031.5 (b), the Secretary of the Commonwealth’s certification report for each voting machine specifies “the capacity of the components of that system, the number of voters who may reasonably be accommodated by the voting devices and automatic tabulating equipment which comprise such system and the number of clerks and machine inspectors, if any, required based on the number of registered electors in any election district in which the voting system is to be used, such specifications being based upon the secretary’s examination of the system.”

These certified numbers are based on the vendors’ recommendations and the state examiner’s observations during a brief one-day examination conducted for each machine in Harrisburg.

Many of our counties have used these certification numbers as a basis for deciding how many voting machines to purchase or lease.

Unfortunately these certified numbers, ranging from three hundred to four hundred voters per day per machine, are unrealistically high for all six DRE machines used in Pennsylvania. Based on the three-minute time limit allowed voters under the Pennsylvania Election Code at 25 P.S. §3057, any single DRE voting machine – no matter what the brand – can only accommodate twenty voters per hour or 260 voters in a thirteen-hour voting day.

And that is assuming voters come through the line in perfect three-minute intervals from 7 AM to 8 PM. As we all know, in real life voters tend to come to the polls in spurts. There is a higher concentration of voters in the early morning and after working hours in the evening.

The three-minute rule dates from the time when mechanical lever voting machines were used in much of the state. But for a Direct Record Electronic voting system, especially one where the voter has to move from screen to screen, three minutes is an incredibly short time frame for any voter to cast a ballot.

In my own experience working as an elected Majority Inspector of Elections in Westmoreland County (where we now use ES&S iVotronic touchscreens), each voter takes an average of at least four and a half to five minutes, especially allowing for time between voters to reset the machine. A voter using the disability accessible machines with an audio ballot can take much longer; as much as an hour or more.

Let's look at this situation in real-life terms. My own Westmoreland County precinct, Ward 4 Precinct 2 in Penn Township, uses three ES&S iVotronic voting machines. We have registration that is nearing 1100 voters. With an 80 percent turnout this means we would see as many as 880 voters casting ballots in my polling place on Election Day this year.

According to the certification report provided by the Secretary of the Commonwealth, our ES&S iVotronics are rated at 300 voters per machine per day. Doing the math, it appears that our 880 voters should be okay because based on the Secretary's estimate of 300 voters per machine, 900 voters should be able to be accommodated by our three machines.

But using the state's three minutes per voter rule, our three machines can accommodate only 780 voters, which is barely 70 percent.

Using a more realistic (but still fast) four minutes per voter, the three machines in Ward 4 Precinct 2 will only be able to handle 585 voters during the thirteen hours our poll will be open. At only four minutes per voter not even a 60 percent turnout (660 voters) can be accommodated during the voting day. There will be lines in Ward 4 Precinct 2, perhaps long ones, and most likely in the evening hours and at closing time.

Some counties have purchased or leased additional equipment to remediate this problem, but many have not. Recent press articles reported that some precincts in some Pennsylvania counties have as many as 900 voters allotted to one DRE voting machine. Clearly this is absurd, and a recipe for disaster on November 4 when we get the expected huge turnout. Voters who are forced to wait for a long time to cast a ballot become angry and disillusioned with our electoral process. Worst of all many are forced to simply to leave without voting due to family, school, or employment responsibilities.

When asked about this problem, officials at the Department of State pointed out that the process for signing voters in to the poll book can be a bottleneck where lines form in polling places. They have suggested that improving sign-in procedures will alleviate the problem of lines at the polls. Of course eliminating any bottleneck will help move things along, but where there are simply not enough machines present to handle the number of voters turning out to vote, lines are going to form.

The seventeen Pennsylvania counties that have chosen voter-marked paper ballot systems are at significantly lower risk for this problem. Their paper ballot-based voting systems reduce or eliminate lines in polling places because only the number of privacy booths and pencils available limits the number of voters who can mark ballots at once. Each voter does not have to tie up a machine for the entire time he or she is voting. Scanning and depositing the paper ballot on the way out of the poll takes each voter mere seconds at the scanner.

**RECOMMENDATIONS:** If possible, DRE counties should lease or obtain additional equipment to increase voting machine capacity to no less than one machine for every 200 to 250 registered voters for this election. Emergency paper ballots should be issued if and when more than ten voters (a half-hour or longer wait) are waiting to use a voting machine.

Most importantly, *all* counties should train their pollworkers before this election to be keenly aware that all voters who are in line and waiting to vote at 8 PM when the polls are scheduled to close *must* be provided the opportunity to vote. Polls cannot be closed until all such voters have cast their ballot.

**POST-ELECTION RECOMMENDATION:** Pennsylvania should follow the lead of dozens of other states and pass legislation requiring and funding the use of voter-marked paper ballots. These ballots can be scanned and counted electronically in the precinct while preserving every vote on a voter-verified piece of paper. Such systems do not require a voting terminal to be provided to each voter during the entire time he or she is voting, and allow many voters to cast ballots at once. Lines are much less likely to form when voter-marked paper ballots are used.

#### **PROBLEM #2: UNVERIFIED SOFTWARE MAY COMPROMISE ELECTION RESULTS**

A worrisome problem is that DRE machines provide no voter verified paper ballot, and there is no way to count, recount, or audit the votes without depending on software in these voting systems. If machines fail, there could be no way to recover the election results, and in any event there is really no way to be sure they are truly operating and counting correctly. We have to trust that the software in these machines is doing its job properly if we are to trust the election results.

The Secretary of the Commonwealth has tested and certified an exact version of this software for each machine approved for use in Pennsylvania. But neither the state nor the counties have been verifying that the software running in machines is indeed the version that was tested and certified. Additionally, recent reports and testing such as that done at Princeton University in New Jersey, the "Top To Bottom Review" conducted for California Secretary of State Deborah Bowen, and the EVEREST Report conducted for Ohio Secretary of State Jennifer Brunner, have all shown serious security vulnerabilities in every machine tested.

Some of the vulnerabilities found by the computer scientists preparing these reports are shocking. For example, the Princeton studies show that the Diebold / Premier TSX can have a destructive virus implanted on it in minutes using a simple memory card. The EVEREST report shows that a voter or other person with brief access to an ES&S iVotronic could install potentially malicious software on the machine using only a Palm Pilot and a magnet.

Two-thirds of the computer scientists that prepared the EVEREST report for Ohio come from two prestigious Pennsylvania universities: Penn State and the University of Pennsylvania. Our own officials at the county and state level know of these reports generated by Pennsylvania experts for other states, but have chosen to pay little attention to their warnings. This is very concerning given that the exact same machines tested and found vulnerable are used by millions of Pennsylvania voters. If these problems exist in Ohio, they also exist in Pennsylvania.

Our Department of State and many county election boards have stated that software version numbers are checked during Logic and Accuracy testing before elections, and on Election Day when they are printed out on the screens and results tapes produced by voting machines. This is woefully inadequate, especially in terms of finding a virus or malicious software, because bad software could easily be programmed to produce the correct version number regardless of what is actually running. Worse yet, bad software could be programmed to behave correctly during testing and then move undetectably into its malicious mode during an actual election while erasing every trace of what it has done.

**RECOMMENDATION:** Every county in Pennsylvania using a software-dependent voting system (meaning a system that has no independent voter-marked paper record of each vote) should verify the software in their voting equipment before and after this and every election. This would be done by opening a statistically significant sample of the machines, removing the memory chip or device where the software is stored, and comparing the software on that device to a known clean copy of that software as certified by the Secretary of the Commonwealth.

All testing of voting systems, including Logic and Accuracy and Software Verification, must be done with the general public permitted to attend and observe in a meaningful way.

**POST-ELECTION RECOMMENDATION:** Pennsylvania should follow the lead of dozens of other states and pass legislation requiring and funding the replacement of software-dependent voting machines. We should move statewide to voting systems using voter-marked paper ballots, producing a voter-verified paper for each and every vote. Paper-ballot systems are more cost-effective, and most importantly they allow meaningful recounts and audits of election results. In the event of system failure, the paper ballots preserve the intent of every voter.

**CONCLUSION:**

We believe that these key areas are among the most urgent right now regarding our state's voting systems and voting machines. While it is too late for counties to obtain entirely different machines (or a new voting system) before the election, taking the simple steps we have recommended in this testimony will do much to remediate any problems that are going to occur.

No matter what occurs on November 4, as we move forward into 2009 and beyond Pennsylvania must address the problem of the unverifiable, software dependent voting machines in our state along with our lack of meaningful election audits. If we do not, sooner or later we will pay the price for our inaction in lost votes or a failed election. Voting systems and audits need to be a priority because these machines are not truly safe and the risk to our democracy is simply too great to let this go uncorrected any longer.

No eligible Pennsylvanian must ever be denied his or her fair opportunity to register to vote and cast a ballot, and likewise every Pennsylvania voter deserves to have full confidence that his or her ballot will be counted accurately as cast.