

Dear Senator Slossberg, Representative Caruso, and the GAE Committee,

While TrueVoteCT.org has been silent this spring on the issues of the State's new optical scan voting equipment and election procedures, we have not been ignoring your commendable efforts to get feedback from voters, registrars, and concerned citizens on the experience gained in the recent elections using the new equipment. It is clear that election procedures for the new equipment need to be regularized and codified into law, not only for what the registrars' responsibilities are on election day and for post-election audits, but for the whole process, starting with the programming of the memory cards and ballot design and going all the way through to the conduct of the audits, actions to be taken based on the results of the audits, and certification of the election.

Draft bill HB 5888 is an important step in this direction. We support the establishment of an independent, professional audit team with expertise in auditing and statistics to oversee the audit of the results of an election. We are pleased to see the provision that all ballots are to be hand counted, and that additional audits can be ordered when warranted, based on the initial audit results. These provisions are much needed, and we hope they will find their way into law.

We also strongly support Sec. 2 which requires that any recanvass be conducted by hand count. We understand the attraction of using another scanner to recount the ballots that appear to be properly marked, as suggested by Susan Bysiewicz in her testimony to you on February 29, 2008. However, such a procedure is based on faith that the scanners will never make errors counting ballots that appear to be properly marked. We present some arguments below why such faith is unwarranted.

In addition, we present two other concerns with the optical scan equipment that we hope do not get ignored: memory card programming and scanner accuracy.

1. **Recanvasses.** Despite our best efforts to create correct memory cards and to maintain the scanners in top operating condition, mistakes and faults will occur. Not all problems can or will be caught by pre-election tests. For example, hardware errors that occur during an election could cause the end-of-day totals to be wrong even though the machine tested okay prior to the election. Hand-counted recounts are the only way to detect all vote-counting errors, regardless of their cause.

We strongly oppose the suggestion to replace hand-counted recounts with recounts in which ballots that look good to the human eye are re-fed through a different scanner. These are what we call *faith-based recounts* because they are based on faith in the infallibility of the scanners in reading what are deemed to be "properly marked" ballots. But we have no grounds on which to base such faith. The memory card can be mis-programmed. Scanners can fail. Scanners can be mis-calibrated. Scanners don't read ballots in the same way as human eyes. The scanner may be sensitive to slight mis-positioning of the bubbles on the ballot or overall skew in the printing that a human observer would not see. It also sees colors differently than humans and might perceive a mark as either darker or lighter than a human would. A faith-based recount might make for good rhetoric, but it won't give us confidence in the correctness of the election result.

TrueVoteCT urges that all ballots be hand-counted in a recanvass.

- 2. Memory card programming.** The memory cards lie at the heart of the election system. They tell the scanner how to count the votes. Correct programming is essential for an accurate election. Honest mistakes can lead to bubbles on the card being credited to the wrong candidate or being ignored altogether. Malicious mistakes can cause the scanners to intentionally miscount votes or to "flip" votes from one candidate to another. Pre-election testing using the scanners' built-in test mode will detect many honest mistakes. Examination of the contents of the memory cards using the techniques developed by UConn will detect many kinds of malicious mistakes. But nobody can rightly claim that either of these tests are foolproof.

TrueVoteCT advocates that the memory card programming be moved to one or more in-state programming centers that would be run by the State and be under the control of and responsible to the people of the State of Connecticut. These centers should be structured with the same kind of openness and checks and balances that are already in place in the towns for the conduct of elections, including bipartisan monitoring of key election functions and openness to observers.

We have heard the claim that a State agency for programming the memory cards would be no more trustworthy than LHS, given all the corruption that the State has endured in recent times. This argument goes on to claim that it's all the same whether the programming is done in or out of state. We do not buy that argument any more than we would buy the argument that it's all the same whether the Connecticut State Police are run by the Department of Public Safety or by a commercial security company such as Blackwater.

The reasons why it's not all the same are many. LHS is not located within the State of Connecticut and is not directly subject to Connecticut law. LHS is not open to inspection or observation except by invitation. LHS employees are not subject to the ethics standards imposed on Connecticut State employees. LHS can never be forced to have the same level of accountability as an in-state agency, nor will it ever have the same level of transparency and openness as can be achieved with in-state centers. With LHS, we can ask, but we cannot enforce.

- 3. Scanner accuracy.** Optical scanners are computerized devices with several parts, all of which are essential to their correct operation. Much attention has been given to the counting problems caused by defective memory cards and mis-marked ballots, but there seems to be an underlying faith that the machines will record the votes accurately if the memory card passes the pre-election tests and the ballot appears to human eyes to be marked correctly. Sadly, we have little scientific evidence to support either assertion, and much sound reasoning to call these beliefs into question.

In the case of the memory cards, we know that pre-election tests can detect many kinds of problems, but we know little about the likelihood of problems that escape detection by such tests. Professor Shvartsman discovered "junk data" on several of the cards that he tested -- data that shouldn't be there. He believes that this data is inconsequential and will not affect the behavior of the machines, but since he lacks access to the source code of the machines, he cannot say with certainty that this is so. Security experts can tell you about back doors that can be built into programs and that lie dormant until triggered in some way, perhaps by innocuous-

looking data that appears in normally-unused places on the memory card. We have no evidence that such back doors exist in the scanner's firmware, but we also have no evidence that they do not. We do know that the junk data does not belong on the cards, and we have no explanation for why it was there in the first place.

In the case of the ballots, we have little data about the error rates of scanners when fed what appear to be properly marked ballots. We do know that the scanners must be calibrated so that they are neither too sensitive nor not sensitive enough. An overly sensitive scanner may count specs of dust and stray marks on the ballot as votes. An insensitive scanner may fail to record votes that appear to be properly marked. Because the scanners contain many sensors for reading different parts of the ballots, a "weak" sensor might only miscount votes for one candidate, but the effects on that candidate's vote total at the end of the day could be dramatic.

All of this points to the need for rigorous periodic testing and monitoring of the scanners for problems.

We are under the impression that the scanners have built-in diagnostic functions than can be used to test for proper calibration. However, so far as we are aware, these functions have not been used in Connecticut, nor are we aware of any effort to test the scanners for proper calibration after delivery to Connecticut towns.

The scanners also have built-in logging functions that record significant events that take place during an election. These logs can be printed out during the election closing procedures, but election officials are currently instructed to skip that step. We do not know to what extent the information contained in the logs might be useful in monitoring the correct operation of the scanners, but the LHS web site touts this ability as a feature, saying that it "Provides a clear, distinct and complete audit trail to confirm election result, and performs only those functions specified by election officials."

Both of these reliability features that are already present in the scanners have inexplicably been ignored by the Secretary of the State in establishing procedures for the use of the machines in Connecticut elections.

TrueVoteCT recommends that appropriate procedures for periodic testing and recalibration of the scanners be adopted. We further recommend that election officials be required to print out the internal audit log of each machine when the polls are closed and that the printout be attached to the moderator's report of the election results.

Thank you once again for your efforts to enhance trust in Connecticut elections.

Sincerely yours,
--Michael Fischer