

A Response to the Secretary of the State's
New Voting Machine Update for Connecticut Municipalities

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Secretary of the State Susan Bysiewicz sponsored a panel discussion titled "*Best Practices for Voting Machines in Connecticut*" on Wednesday, June 15, 2005. At that time, she distributed a document titled "*New Voting Machine Update for Connecticut Municipalities*" in a question-and-answer format which addresses many questions of importance concerning Connecticut's plans to buy new voting machines. I commend the Secretary for putting this information in writing and for opening up these issues to public discussion.

I do not agree with all of the answers that the SOTS has supplied. In some cases, I believe they omit important information that needs to be brought into public discussion. In others, I find that her answers conflict with my own understanding. To further the public discussion of these important and complicated issues, I have gone through her questions one by one and added my own comments and opinions where I have felt that her answers were inadequate. For each question, I have indented both the question and the SOTS answer to it. My response, if any, follows without indentation and ends with a horizontal rule.

Why does Connecticut have to buy new voting machines?

By January 1, 2006, the HAVA (Help America Vote Act) requires that each polling place have one machine that allows persons with disabilities, including non-visual accessibility for the blind and visually impaired, to vote privately and independently in a manner that provides the same opportunity for access and participation enjoyed by non-disabled voters. The Secretary of the State's Office (SOTS) has issued an RFP (request for proposal) to purchase 771 voting machines (one machine for each of Connecticut's 769 polling places and two machines for the SOTS).

What are federal Help America Vote Act voting machine requirements?

In addition to HAVA mandating that by January 1, 2006, each polling place have one voting machine available that is accessible for individuals with disabilities, HAVA also requires that all voting systems 1) permit the voter to verify selections in a private and independent manner, 2) provide the voter the opportunity to change their choices before the ballot is cast and 3) produce a permanent paper record (with a manual audit capacity) of the total votes cast after the election.

Since all of the requirements found in HAVA are federal law, the State of Connecticut must comply with its provisions or face review by the Department of Justice.

Let me emphasize that HAVA imposes additional voting systems requirements besides those dealing with accessibility, and the RFP does not address those additional requirements. Further, the SOTS has indicated that the existing HAVA funds received by the state will not be available to the towns for use in complying with those requirements.

Does HAVA mandate that there be more than one machine per polling place that is accessible to persons with disabilities?

HAVA mandates that each polling place in the country have at least ONE accessible voting machine in place by 1/1/06 so that persons with disabilities can vote privately and independently. This one machine will be in addition to the number of lever machines already in use at each polling place.

Did Connecticut receive enough federal funds to comply with HAVA and to replace all lever voting machines in the state?

The SOTS received approximately \$33 million in federal funding that will be used to purchase the accessible voting machines by 1/1/06 as required by HAVA. Since the SOTS is still in the process of reviewing bids, the cost per voting machine is not yet known. Once that figure is known, the SOTS can determine if the remaining \$33 million in federal funding is sufficient to replace all lever voting machines.

The \$33 million is not all available for the purchase of voting machines. Some money has already been spent, and some has been allocated in the 2003 State HAVA plan for other purposes such as poll-worker training and voter education. I estimate that about \$24 million is available for voting machine purchases. Of that, the current RFP for 771 DRE machines will use about \$6 million, leaving \$18 million that could be used for lever machine replacements.

Although the cost of replacing all lever machines with DRE machines acquired under the current RFP cannot be known with certainty until the bids are in, all indications are that the \$24 million in available federal funding will be far from sufficient. My estimate is that the costs to replace all lever machines with DRE machines is \$42 million, leaving a shortfall of approximately \$18 million to be covered by the towns.

These figures come from a detailed cost analysis that I prepared last March and submitted to the SOTS office at that time. My analysis also explores two other options and concludes that the available federal funding would be just adequate to replace all of the state's lever machines with accessible optical scan systems. To do so would require modifying the State HAVA Plan and reissuing the RFP.

Do lever voting machines meet federal HAVA requirements?

The fate of remaining lever machines is still unknown, however, it is very likely that they will not meet the federal audit requirements of HAVA. *While HAVA does not specifically prohibit their use, HAVA does require that any machine used in a federal election produce a paper record of the total votes cast after the election. We are aware that a number of lever machines do produce this record by use of the "Print-o-Matic"*

function and that several more can be retrofitted to use this function as well. The Voting Machine Service Center, a business that services lever machines, testified that they have a “Print-o-Matic” attachment to the lever machine that produces the audit capacity required under HAVA. The SOTS wrote to the Voting Machine Service Center in 2003 asking them to outline how the lever voting machine can be retrofitted to meet this requirement. The SOTS did not receive a response from the Voting Machine Service Center, therefore, many of the lever machines in their current form do not meet the audit trail capacity requirement found in HAVA.

Nobody knows how the HAVA requirements will eventually be interpreted by the courts. Because there are currently no standards for implementing HAVA requirements, one can only rely on a good-faith reading of the HAVA language in order to determine what likely will or will not be acceptable. I agree with the SOTS interpretation that lever machines without the “Print-o-Matic” attachment will likely not meet the audit trail capacity requirement of HAVA. Whether they will be in compliance if equipped with the “Print-o-Matic” attachment is unknown, for some have suggested that the required permanent paper record must include a listing of all ballots cast and not just the total votes for each candidate. The question revolves around the interpretation of what it means for a permanent paper record to have an “audit capacity”.

What will happen to the lever voting machines?

Municipalities Do NOT need to replace all lever voting machines by 1/1/06. SOTS will purchase one machine per polling place prior to the federal 1/1/06 deadline with federal funds already received.

HAVA Title III, §301, specifies that any lever voting machines MUST be brought into compliance with the manual audit capacity requirement by 1/1/06. Lever machines do not necessarily have to be replaced, but they must at least be upgraded with the “Print-o-Matic” attachment. (See above.) A recent quote from Voting Machine Service Center, Inc. shows the upgrade cost to be between \$1695 and \$1895 per machine, plus shipping.

The machines being purchased by the SOTS are only to satisfy the §301(a)(3) requirements for accessibility. Responsibility for upgrading lever machines falls on the towns.

Will the new voting machines have a full-faced ballot like the lever machines?

Yes. Connecticut General Statutes mandate that all voting machines used in the state must have a full-faced ballot. In other words, the voter must be able to see or hear all candidates on the same screen.

Nowhere in the Connecticut General Statutes does the term “full-faced ballot” appear. The Statutes are rather explicit about how candidates names are to be laid out on the rows and columns of a lever machine, but the so-called full-faced ballot requirement is one of historical belief and interpretation rather than one of explicit legislation.

Legislative help is needed to clarify exactly how the existing ballot requirements are to be translated to newer technologies. For example, what are the ballot legibility requirements? The RFP specifies no minimum font size for DRE machines when meeting the full-face requirements. Voter with poor eyesight who are not legally blind and have no familiarity with aids to the blind might find that they are unable to vote at all because they can neither read the ballot display nor successfully navigate the audio response unit. For another example, what does it mean for a voter who is blind to “hear all candidates on the same screen”?

Can lever machines still be used for elections held after 1/1/06?

Yes. Lever voting machines can still be used for elections held in 2006. However, after 2007, lever machines must meet the minimum standards established pursuant to HAVA, the most significant of which is to produce a paper record of the vote totals at the end of the election. Unless the lever machines can be retrofitted to meet these requirements, municipalities will be forced to replace the machines. Municipalities have the option to take advantage of the remaining federal HAVA funds and purchase electronic machines from the current RFP. *In addition, HAVA does not allow towns to use federal HAVA money to upgrade lever machines under any circumstance.* Towns will have to use municipal funds to upgrade their lever voting machines in order to meet the federal HAVA requirements of a paper record of the total number of votes at the end of the election. If municipalities chose to retrofit existing lever machines with the “Print-o-Matic” function, they must do so with existing municipal funds.

This answer conflates two different sections of HAVA to come up with an answer that is just plain wrong. The deadline for compliance with HAVA Title III §301 requirements is 1/1/06. Section §301(d) says:

(d) Effective Date.--Each State and jurisdiction shall be required to comply with the requirements of this section on and after January 1, 2006.

The 1/1/07 deadline concerns additional restrictions on the use of HAVA Title II funds. Namely, “if purchased with funds made available under title II on or after January 1, 2007,” a voting system must meet the voting system standards for disability access.

The clear implication is that until 1/1/07, Title 2 funds do *not* have this restriction and can be used for other purposes consistent with the State’s HAVA plan. Therefore, I disagree with the SOTS assertion that HAVA does not allow towns to use federal HAVA money to upgrade lever machines under any circumstance.

The intent is that federal funds are to be used by the states to upgrade their voting systems to meet the new HAVA requirements. The states are explicitly given great latitude in how they go about this. Each state was required to submit a plan on how they would meet HAVA requirements, and HAVA funds must be used in ways that are consistent with that plan. Although Connecticut’s 2003 HAVA plan currently does not anticipate using federal funds for upgrading lever machines, there are rather straightforward provisions for modifying the plan that could be put into effect by the SOTS should she desire to use federal funds for this purpose. To date she has not invoked them.

Will Optical Scan Voting Machines be considered for purchase?

Any voting machine vendor could have submitted a bid on Connecticut's voting machine purchase if they believed that their systems fully complied with both Connecticut Election Law and existing Federal Law. In addition, our General Statutes require that ANY voting machines used in an election must have federal certification and this federal certification must have been received prior to submitting a bid for the RFP. Even though some vendors may have been in the process of applying for federal certification at the time of the RFP, they must have had federal certification prior to submitting a bid.

Again, this long and complicated answer confuses several different issues.

1. The RFP was specifically for **Direct Recording Electronic ("DRE") Voting Machines**. DRE machines are only one of several types of voting machines described in Connecticut's General Statutes and SOTS Regulations. The RFP contains specific requirements that refer to characteristics of DRE machines and cannot be met by other voting systems. For example, requirement 4.4.1.11 says,

Each DRE Voting Machine must include a minimum of three means of recording votes (Sec. 9-241-23 Regulations). Votes shall be recorded within the equipment's internal memory, on hard-copy output and on a removable memory device. Vendors must describe how their proposed system meets or exceeds this requirement.

(The referenced section of the SOTS Regulations concerns specific requirements for *DRE* machines.) Vendors of other kinds of voting systems would have been unable to meet the requirements of the RFP even if their systems fully complied with both Connecticut Election Law and existing Federal Law.

2. Our General Statutes do indeed require that ANY voting machines used in an election must have federal certification, but it is only the RFP that required that this federal certification must have been received PRIOR to submitting a bid. Indeed, our General Statutes also require that voting machines must have state certification, but the RFP specifically allowed vendors to bid on machines that lacked state certification at the time of submission. One effect of the SOTS decision to make federal certification but not state certification a precondition to bidding was to exclude from consideration promising new technologies such as optical scan systems with accessible ballot marking devices.

What happens at the polling place on Election Day when a person with disabilities enters the polling place to vote?

The voter will be directed to the new voting machine since that machine is accessible to persons with disabilities. Poll workers will be trained on how to interact with persons with disabilities.

Will there be a spare new voting machine at each polling place in case it is needed?

HAVA does not mandate that a spare accessible voting machine be available at each polling place. However, Connecticut Law requires that either a spare be available (based on the population of voters) or emergency paper ballots be on hand in case of a system failure. In addition, our RFP for new voting machines requires each vendor to describe where the spare machines will be stored and how the machine will be delivered if necessary.

Even though HAVA does not mandate a spare at each polling place, prudence would put one there. Experience in other states with DRE machines shows that they are subject to numerous problems. Disabled Connecticut voters who arrive at the polling place to find the only accessible machine out of service will find that they cannot vote privately and independently as they have been promised.

How do we know that the machines are secure and that votes are counted accurately?

Each machine, at the minimum, will have three layers of protection for each vote. First, each machine will print a paper audit trail that gives the poll worker the total numbers of votes cast (vote by vote) on that machine at the end of the election. Second, the removable flash memory card located in the machine contains the total number of votes cast. Third, the internal memory of the machine also contains the total number of votes cast. In case of a discrepancy regarding the total number of voters, the registrar of voters can review all of these methods.

None of these layers ensure that votes are recorded and counted accurately.

1. The paper audit trail printed at the end of the election only shows the contents of the machine's internal memory at the end of the day. It does not show that the votes were recorded correctly in the first place, or that they weren't changed between the time they were cast and the close of polls.
 2. The removable flash memory card gives additional protection against the accidental LOSS of data in the machine's internal memory but not against CORRUPTION of the votes. If votes are recorded incorrectly when the ballots are cast, both the internal memory and the flash memory card will agree on the incorrect ballots.
 3. Knowing the correct total number of votes cast on a machine is not at all the same as knowing that the votes are recorded correctly and counted correctly.
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Will the machines be audited?

If there is a discrepancy at the end of the election between the number of votes cast on the machine and the number of voters that were checked off the voter registration list, the registrar of voters would audit the machine by reviewing the paper audit trail, the removable flash memory card and the internal system hard drive.

Such a discrepancy would certainly point to a system failure and should trigger an audit. Unfortunately, problems that do not affect the total votes cast, such as failing to record votes for a particular office or posting votes to the wrong candidate, will not be detected in this way.

How will a recount on a new machine be handled?

In the event of a recount, the total number of votes cast on a new voting machine will be reviewed just like they are on a lever voting machine.

DRE machines are not just like lever voting machines. If a lever machine is suspected of errors, its innards are subject to visual inspection. Broken parts and incorrect setup can be spotted by experienced poll workers. Nobody will be able to “look inside” a DRE machine to see what it was actually doing during an election.

What must municipalities do to prepare for the new voting machines?

It is vital that municipalities have accurately reported the correct number of polling places in their town to the SOTS because it is this number that will dictate how many machines each town will receive. For example, if a town reported that it has 10 polling places, it will receive 10 machines.

How much money does the town need to appropriate in its local budget?

Municipalities DO NOT need to purchase these machines or appropriate funds to purchase the “one per polling place” machines. The SOTS received approximately \$33 million in federal funding that will be used to purchase these machines.

Will there be any hidden costs for the municipality?

Since a municipality already pays for the cost of printing materials, moderator training, and storage of the lever voting machines, there will very few additional costs above what a municipality already budgets for these items. These additional costs may be printer paper, computer disks and related items.

This is only part of the story. Having a second, incompatible, voting system in addition to the one already in use will considerably increase the cost of poll-worker training and the complexity of running an election.

In addition, DRE machines have more stringent storage requirements than lever machines. The RFP simply asks the vendors to assess the existing town storage facilities and to specify what improvements the towns must make. The towns will apparently be responsible for the cost of those improvements. While it’s unclear exactly what those improvements will be, Sec. 9-241-4 of the State regulations suggests that the manufacturer of a DRE machine might include a provision “for access to commercial electrical power in the storage facility for regular recharging of the back-up power supply.” Additional environmental controls might also be necessary in order to protect the sensitive electronic equipment from extremes of temperature and/or humidity.

How much does a new voting machine cost?

It will depend on the make and model of the machine. The State of Connecticut is purchasing all 771 voting machines in order to increase our buying power with the price of the machines.

In my cost analysis, I used the figure of \$7,782 per machine. The oft-cited \$3,000 to \$5,000 figure applies to machines that lack a full-face ballot capability and accessibility options such as audio response units and puff tubes. A full-face ballot machine necessarily has a physically large display unit, which greatly increases both the capital cost of the machine as well as the operational cost, due to increased costs for storage and transport.

What is the timeline for use of new voting machines?

The new voting machines will be delivered to municipalities before the 1/1/06 HAVA-mandated deadline and will be available for use in any federal election held after 1/1/06. Therefore, the initial goal for use of new voting machines for the November 2005 election has been changed. Since multiple vendors have submitted bids to the state, their review and evaluation is very lengthy. The RFP Evaluation Team is in the process of rating all bids to ensure that the voting machines meet the federal Help America Vote Act requirements and have passed all federal and state certification. In addition, proper training and education is imperative prior to the use of the new voting machines. In particular, local election officials must have thorough training on the use of the new machines before they are used.

This deadline might turn out to be impossible to meet. The 1/1/06 HAVA-mandated deadline applies to every state in the nation, many of which, like Connecticut, will be placing orders at the end of 2005 with the hope of having systems installed by 1/1/06. In all likelihood, the vendors will be unable to supply machines in sufficient quantities to meet this deadline. Because Connecticut is one of only a few states requiring full-face ballot machines, the market for such machines is relatively small, and manufacturers will naturally give highest priority to their high-volume products.

Will local election officials, municipal leaders and the public have a say in Connecticut's voting machine purchase?

Yes. In October of 2005, the top vendors will participate in public demonstrations in each of Connecticut's five Congressional Districts where Mayors, First Selectmen, Registrars of Voters, Town Clerks and members of the public (including persons with disabilities) will be given an opportunity to rate and evaluate the machines. The University of Connecticut will manage the process and report on the evaluation of each machine. This evaluation criterion will then be used to determine which machine will win the final contract. A final vendor will be chosen and the voting machines will be rolled out to each town prior to 1/1/06.

The public input is coming much too late in the procurement process. The public had no say

in the preparation of the RFP or the requirements for the machines. In particular, they were given no opportunity to evaluate alternate HAVA-compliant voting systems technologies prior to critical decisions being made about the requirements imposed by the RFP. They will only get to try the few machines that have survived the RFP process to date. Nowhere has it been stated how the public input, after being digested by the University of Connecticut, will be used in the evaluation process.

Who is responsible for training of local elected officials?

The chosen vendor is responsible for training of local officials prior to the use of the new machine for any federal election held after 1/1/06. The training will begin soon after voting machines are delivered to each municipality. The local election officials will also rate the vendor on their methodology and effectiveness of the training.

Who is responsible for making sure that the new voting machines are used?

Municipalities, not the Registrars of Voters, are ultimately responsible to ensure that their town will use the new voting machines (one in each polling place) for any federal election held after 1/1/06. If the local election official decides not to use the machines, the municipality may be liable for non-compliance due to possible American with Disabilities Act violations and will face possible State Elections Enforcement Commission and Department of Justice action.

Of course, it is also true that if the local election official decides to use lever machines for any federal election held after 1/1/06, the municipality may be liable for non-compliance due to possible Help America Vote Act violations and will face possible State Elections Enforcement Commission and Department of Justice action.

How long will the new voting machines last?

The chosen voting machine vendor is responsible for maintaining the voting machine. The voting machine will have a useful life of 20 years and an internal warranty of five years. The RFP contains a service contract for maintenance and requires vendors to provide free of charge software upgrades for the life of the machine.

Realistically, no computerized equipment has an expected useful lifetime of 20 years. To believe that the machines will last 20 years just because the RFP “requires” it is wishful thinking.

What if there is a power outage?

Both federal and state certification requires that each machine have a 16-hour battery back up.

The RFP only stipulates

The Proposed System shall provide for continuation of voting operations for a minimum period of

16 hours in the event of interruption of external power

This does NOT say that all features of the machine will continue to be operational; only that voting operations can continue in some form. The RFP invited proposers to spell this out in some detail.

Explain here what aspects of the system will be impacted in case of a power failure. What are the available contingency plans to respond to such a situation on Election Day that will assure its successful completion?

This is an important point since normal computer UPS systems can only sustain power outages ranging from a few minutes up to perhaps an hour. Even laptop computers, which are designed for battery operation, typically can only operate for 4-5 hours before a recharge. The reality is that one will be forced to choose between enormously heavy and expensive external battery systems, portable generators (with their own storage and installation problems), or greatly reduced functionality during the time of an extended power outage.

Who is responsible for storage?

Each municipality is still responsible for storage of this new machine. *Since this machine will be electronic, the municipality must ensure proper storage of the machine in a suitable climate and conditions.* The chosen vendor must contact each municipality to discuss storage and ensure that the storage location meets proper machine needs. Each machine that is federally certified will have already been tested, among other things, to ensure that the machine can withstand various temperature changes and accidental droppage.

This certainly represents an additional cost to the municipalities that was ignored in the response to the direct question about costs.

What will happen to the lever machine mechanics?

The vendor must also train the new voting machine mechanics. *A municipality can still use the same mechanics for their current machines* or they can hire other certified mechanics that are familiar with electronic voting machines.

How many voters can vote on one new electronic voting machine?

The total number of voters that can vote on one electronic voting machine vary by machine. This number is unknown until the vendor tells us how many voters can vote on their particular machine. However, Connecticut law currently requires that up to 900 voters may vote on each voting machine

The number of voters who can vote on one electronic voting machine depends on the design of the machine, the complexity of the ballot, and the experience of the voter. The vendors aren't going to be able to answer this question for us. All we can do initially is to rely on our own experience with lever machines and the experience of other states who have used DRE machines.

The polls are generally open on election day for 14 hours, which equals 840 minutes. If a

voter requires 5 minutes to enter the voting booth, operate the machine, make his or her selections, verify the selections, cast the vote, and leave the booth, then the capacity of that machine is at most $840 \div 5 = 168$ voters on election day. The number will be less if the machines are not continuously busy all day long.

Five minutes per voter was the actual experience in a 2004 Nevada election using DRE machines and is probably what Connecticut can expect initially. With lever machines, some towns have apparently been handling up to 600 voters on a single machine. However, it is highly optimistic to think that DRE machines will ever match that efficiency, given the much larger amount of information that they are capable of presenting to the voter and the additional options they may give each voter such as choice of language, audio response, and vote verification. In my cost analysis, I used the figure of 350 voters per DRE machine, but I consider even that to be optimistically large.

Note that the 900 voters per machine required by Connecticut law is based on the number of *registered* voters, not the number who actually vote on election day. If every registered voter actually came to the polls on election day, I believe that the existing lever machines would be inadequate to handle the load.

How long will it take a voter to vote on the new voting machines?

It is estimated that it may take 1-2 minutes to vote on a machine since it will have a full-faced ballot. However, it may take a voter with disabilities a longer time to cast a ballot.

I consider this to be unrealistically optimistic for the reasons outlined above. I based my cost analysis on $840 \div 350 = 2.4$ minutes per voter.

Will the new machines have a voter verified receipt?

HAVA does NOT mandate that the one machine available in each polling place by 1/1/06 have a Voter Verified Receipt. However, the Connecticut General Assembly recently passed Senate Bill #55 which mandates their use. In anticipation of this legislation, the SOTS has asked all vendors that bid on the RFP to provide this type of attachment in the event that Congress or the State Legislature mandates its use. The passage of S.B. #55 will not impact the timeline of the RFP.

What are the next steps for municipalities?

After 1/1/06, each municipality will have the option to decide if 1) they want to maintain the use of their lever machines if such machines comply with the requirements of HAVA; or 2) arrange through the SOTS to purchase new machines (with \$33 million in federal funds already received) that will replace all of their existing lever machines.

As mentioned above, option (1) is not viable for many towns whose lever machines do not comply with HAVA's manual audit capacity requirement, and option (2) will not be available to all towns since the available federal funds are likely to be insufficient. A third option that

many towns will be forced to take is to upgrade or replace their existing voting systems at their own expense.

How will this happen?

The SOTS will be contacting each municipality after 1/1/06 to inform them of this option. Each municipality, through a vote by its Legislative Body, must notify the SOTS if they wish to replace their lever machines or continue to utilize the lever machines. The SOTS has established a revolving loan fund in order to provide municipalities with funding.

Unfortunately, it isn't up to the towns to decide whether they can continue to use their lever machines. The Elections Assistance Commission has expressed a willingness to provide advice on this matter. I call on the SOTS to send a formal request for an opinion and to do so well in advance of 1/1/06.

Can a municipality decide to split the number of new voting machines used and lever machines used after 1/1/06?

Yes. A municipality can keep using any number of lever voting machines that they wish. However, the amount of federal HAVA funds available to the municipalities is unknown at this time because 1) we do not know how much it will cost to purchase the initial 771 electronic machines and 2) we do not know how many municipalities will choose to participate in this program and to what extent.

This is a good place to mention the option that the SOTS has failed to give to the municipalities: namely, to replace all of the lever machines with accessible optical scan systems. Optical scan systems require much less equipment than DRE systems since many voters can mark ballots with nothing more high-tech than a pen and a privacy booth. Accessibility is provided by computerized ballot marking devices which allow a disabled voter to mark a paper op-scan ballot privately and independently. According to my cost analysis, \$24 million would be sufficient to replace all the lever machines in the entire state. The existing federal funds are adequate to do this, and they can legally be used in this way if the State HAVA plan is amended to indicate that such is the plan, and the procurement is completed before 1/1/07.
