

Vote Early, Vote Often **by Dan Jacoby**

There was a time when the outcome of a local election was predetermined by the local “boss”. Local bosses ran rampant around the country, from George Cox in Cincinnati and Thomas Pendergast in Kansas City, to William Marcy “Boss” Tweed in New York. After World War II, however, local governments began to provide the services their residents needed without “help” from the political machines. And now those bad old times are long gone.

Or perhaps not.

After the election debacle in Florida in 2000, Congress passed the “Help Americans Vote Act” (HAVA). The idea was to ensure that reported results in future close elections would never be challenged, because the process would be accessible and transparent to all. At least, that’s the theory.

In practice, each state gets to decide for itself just what some provisions of HAVA mean, particularly when it comes to choosing voting machines. Here in New York, we’ve been using mechanical “lever” machines roughly since the parting of the Red Sea. They work quite well. They’re easy to use, cheap to maintain, and the results are extremely difficult to fake. But under HAVA, we must replace them, and we’re getting over \$200 million from the federal government to do it.

But with what do we replace them?

There are two basic types of machines being considered. Electronic “touch-screen” machines, known as “Direct Recording Electronic” machines (DREs), are essentially computers where the voter touches the screen to make his or her picks, and the computer records the result. The other type is the “Paper Ballot, Optical Scan” (PBOS) system, in which the voter fills out a paper ballot and then runs it through a scanner that records the vote.

Most companies make both types of machines, and so, all other things being equal, one would think that the companies don’t care which type we buy, just so long as we buy from their company and not a competitor. But all companies stand to make a lot more money by selling us the DREs rather than the PBOS machines, so they’re lobbying hard.

The reason these companies are lobbying hard to sell us DREs is that, on the merits, nobody would buy DREs. These machines fall short in three basic areas: cost, reliability, and verifiability.

Cost

DREs cost more to buy, and even more to maintain. According to a study made of four North Carolina counties over six years, DREs cost over 40% more to maintain than PBOS machines (source: North Carolina Coalition for Verified Voting). Another study comparing DREs in Sarasota county in Florida with PBOS machines in nearby Manatee county showed that DREs cost 20% more in the first three years, and a whopping 67% more over the next three years (<http://www.votersunite.org/info/costcomparison.asp>).

And these studies only looked at maintenance costs. They didn't take into account the significantly higher cost of buying the machines, nor the fact that DREs have to be replaced far more often than PBOS machines.

Maintaining the DREs is more costly partly because these machines can only be maintained and reset for each election by the companies that supply them. In other words, if anything goes wrong, you have to pay the company to fix it. Even if nothing goes wrong, you still have to pay the company to set it up for each election. And their technicians don't come cheap – they can cost as much as \$1,100 per day.

Additionally, DREs have to be replaced every few years, as the frequency of breakdowns increases enormously. (This may account for the significantly higher costs in Sarasota County, Florida, over the second three-year period.) PBOS machines, on the other hand, have a lifetime three or four times as long as DREs. The state of Oklahoma, for instance, has been using the same PBOS machines for about 15 years, with no sign of them wearing out.

Reliability

Anything with moving parts or electronic components is going to break down occasionally. This is true with both PBOS machines and DREs. The fact that machines break down begs three questions: How often do they break down, how quickly (and by what means) can they be fixed, and what happens in the meantime?

In any given election, a typical DRE system is more likely to break down than a typical PBOS system, for two reasons. First, DREs are more complex and therefore have more ways to break down than PBOS machines. Second, three to five times as many DREs are required. In New York City, each election district will require a separate DRE, but several election districts can share one optical scanner. The combination of these two factors, higher complexity and greater numbers, means DREs are far more likely to fail on election day.

One of the major reasons for buying new machines is to increase reliability, so that on election day, voters can get in and out of their polling places swiftly and smoothly. With DREs, that won't happen. The history of the DRE shows that, in every county that uses these machines, some of them will break down on election day. This will require polling places to have emergency paper ballots ready, plus methods for filling them out in secret and locked ballot boxes to store them.

In other words, buying DREs defeats the purpose of HAVA by making it harder to vote, not easier.

In contrast, PBOS machines are far less likely to break down. But when they do (and some will), the voting process will not be interrupted. Voters will still get the same paper ballot, fill it out the same way, and drop it into a box just as easily as they would run it through the optical scanner.

Verifiability

One of the few accomplishments of the New York state legislature, before passing the buck on choosing voting machines, was to require a "voter verifiable paper audit trail" (VVPAT). Unfortunately, even this provision does not insure that the votes are accurately counted, especially when using DREs.

With PBOS systems, there is already a VVPAT, since the ballot the voter fills out is fed through the optical scanner and drops directly into the ballot box. Since the paper trail consists of the ballots actually used by the voters, they are, by definition, voter verified.

With DREs, things are a bit more complicated.

Currently, there are no DREs in use that have a VVPAT. The preferred design change has a spool of paper, similar to the spool used by ATMs at the bank. There is a significant difference, however, that is cause for serious concern.

At an ATM, when your transaction is printed on the paper, the part of the spool on which your transaction is printed is cut off from the spool and handed to you. In the DREs, the "receipt" merely scrolls up behind a window, where you can temporarily see how you voted. After verifying the vote, it continues to scroll up onto another "take-up" spool. At the end of the day, all the paper "receipts" are still on a spool.

This presents three problems.

First, reading the receipts is very difficult. The printing is necessarily very small, because all your votes are printed on a small slip of paper. Reading these receipts will make those hanging chads in Florida look like child's play. In contrast, with PBOS the paper trail is a full-sized sheet of paper, and much easier to read.

The second problem is that the DRE receipts are stored in the order in which people showed up to vote. Currently, when we go to the poll, our name is written on a numbered card, showing the order in which we voted. By comparing the cards to the spool of paper, a poll worker (or anyone else with access to the records) can find out how we voted. In other words, we no longer have a secret ballot.

Conversely, with PBOS systems, voters get their ballots and take them to private voting booths to fill them out and then take the completed ballot to the optical scanner. But voters don't all take the same time to fill out their ballot. Furthermore, each optical scanner can handle several election districts. As a result, there is no way to match the ballots with the numbered cards. The secret ballot is preserved.

The third problem is that, as a general rule, the paper trail will not be checked even if there is a specific, obvious error. If a software programming error simply miscounts the ballots, the glitch may not be obvious, so there won't even be a recount.

With PBOS, the optical scanner is set up by local officials. In many places, the set up is done by two local people – one Republican and one Democrat. The process is easy to follow and extremely difficult to cheat. Its simplicity also makes accidental programming errors much less likely.

With DREs, the programming is done by the manufacturer using proprietary software that no local official gets to see. The pre-election testing is also managed by the manufacturer. Election officials don't get to verify the software or the tests. There is no way to determine whether the paper receipt accurately reflects the machine count. Since 97% of the voting machines will not be checked for accuracy on or after election day, there is no way to verify that the results are correct.

It is easy for a software designer to create a program that, in test mode, prints accurate receipts and tallies the votes exactly as they are cast, but on election day shows significant differences. In other words, the DRE manufacturer can decide the outcome of any election. (For proof, e-mail me at the link below, and I can send you a CD with such a program.)

Conclusion

With DREs, elections can once again be decided not by voters but by “bosses”. This time, instead of the bosses being local citizens, they will be the bosses of a few large companies based outside our area.

DREs are more expensive than PBOS systems, they are less reliable, and the results cannot be verified. For these three reasons, New York’s various Boards of Elections, if they truly want free and fair elections, must choose PBOS systems.

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