

Advantages of Paper Ballot and Optical Scan (PBOS) Systems

All voters use an identical ballot and the same system. Absentee, disabled, military, and provisional voters use the same ballot; and the voter can immediately verify that the right ballot has been issued.

Paper ballots are easily understood by voters and are inherently voter verified. All of us have had experience with pencils & paper; most of us have taken tests or filled out lottery tickets to be read by an optical scanner.

Paper ballots allow each voter to vote only once. Each voter is given a single ballot when signing in at the polling place. Some DREs require "smart cards" to be inserted in the computer to allow voting. These could be compromised and used to vote several times.

Precinct-based optical scanners allow voters to correct mistakes and detect over-votes and under-votes. Incorrectly completed ballots (e.g., over-voted ballots, smudged ballots, etc.) will be rejected by the scanner. Voters can then exchange the spoiled ballot for a new blank ballot and correct their mistakes. In the case of under-votes, they have the option of completing the same ballot or having the scanner accept it as is.

The paper ballot is the official record of the vote. Since the vote is recorded by the voter on the paper rather than electronically, the scanner only counts the votes into memory and then deposits the ballot into a locked ballot box. The paper ballot marked by each voter is the official record of the vote and is used in recounts.

Paper ballots for optical scanners are easy to recount by hand. Lay-out is clear and on quality paper, whereas DRE paper records are light, quickly-fading print on thermal, ATM-type paper; recounts are difficult.

Paper ballot systems easily accommodate additional voters at low cost. If a precinct has an unexpectedly large turn-out, only additional privacy booths must be provided, since a single scanner can handle voters from multiple privacy booths and election districts.

Voters can continue to vote on paper ballots in the event of equipment failure. Both DREs and optical scanners have back-up batteries; but in the event of a prolonged power failure or other type of equipment failure, voting can continue on paper ballots that later are either fed into the scanner or handcounted.

Voting will take less time and lines will move fast with paper ballots. Some people, particularly the elderly, find computers unfamiliar and will find the marking of a paper ballot more comfortable than using DREs. Separate ballot marking devices will enable other voters to continue voting even when it takes longer for a disabled person, an elderly person, or someone needing to use the multi-lingual features of the marking device to vote. Optical scanners take just seconds to read and verify a ballot, and no problems with lines are experienced in states using precinct based scanners.

Only one optical scanner and one small marking-device per precinct will require storage between elections. Optical scanners and ballot markers are much smaller than DREs and can be stacked in storage, requiring far less storage space and cost during the year than DRE systems. They are also small, and easy to transport to and from polling places during elections.

The scanner only counts votes; therefore, it is much less complex and will require much less maintenance and upgrading over the years than DREs which are a newer, unproven technology.

Optical scanners are a reliable, mature technology that has been used successfully in U.S. elections for 20 years. About 30% of precincts in the United States use paper ballots and precinct based optical scan systems. Many states are now adopting PBOS systems to meet HAVA compliance. Arizona, Minnesota, Michigan, Ohio, Oklahoma and West Virginia are some examples of states that have decided to use this reliable, auditable, cost effective voting technology.

Disadvantages of Direct Record Electronic (DRE) Systems

Electronic touch screen or pushbutton systems (DREs) lack transparency. The voter cannot observe the process inside the computer and must simply trust that the votes registered on the screen are correctly processed by the hardware and software of the computer. This lack of transparency is not solved by having a print-out for voter verification. A paper receipt does not rule out bugs or malicious code in the software. It does not erase the influence of vendors in developing and maintaining the equipment. Nor does it erase the effect of having computer novices running electronic elections and the possibility of malfunctioning hardware or software.

Touch Screen computers (DREs) equipped for voter verification raise usability issues. Since the DRE ballot and the printed thermal paper ballot have different formats, the voter cannot easily verify the vote as is possible with an optical scan paper ballot. Humans do not make comparisons accurately when the items are in different formats and locations. Also, the additional time needed to compare the screen with the small DRE printout will slow down the voting process, leading to long lines.

Recounts pose serious problems for DREs as well as for DREs with voter verification printer systems. DRE systems have two ballots - the electronic record stored by the DRE, and the voter verifiable paper ballots printed by the DRE. Disputes about which ballot, paper or electronic, is the "real" ballot can result when totals do not match. In addition, with all DREs, the hardware components and the electronic memory must be preserved for recounts. But the electronic memory must be completely erased between elections. The contents of the electronic ballot must be preserved until any recount litigation is over; this could be a problem when DREs need to be prepared for upcoming local elections.

Logic and Accuracy Tests on DREs Are Complex and Opaque. In one method, election workers follow a script and enter test votes into a DRE via the touch screen. This process can be very time consuming, expensive, and can only be performed on a small fraction of the machines that will be deployed. The second method bypasses the touch screen and uses a "test cartridge" that is plugged into the voting machine to simulate a human casting votes via the touch screen. This method is more efficient; but it is also opaque to anyone witnessing the test, since one cannot verify what the test cartridge is actually doing. By contrast, optical scan voting systems provide a transparent and publicly verifiable means for conducting logic and accuracy tests. A test deck of paper ballots can be marked by election observers and then publicly counted by hand until all agree on the correct count. That test deck can then be run through the optical scanner, and its vote count is then compared to the publicly-verified manual count of that same test deck.

DREs require election districts to manage at least two different systems. With DRE systems, election officials must not only prepare the computers for voting but must also provide paper ballots for absentee, military, and provisional voting. The different types of ballots must be counted and added to the total.

DREs being sold to North Carolina have not been developed yet! The DREs that vendors have demonstrated up to now in North Carolina are not yet fully equipped with disabled accessibility and voter verification features. But state HAVA legislation requires both. Yet vendors continue to demonstrate machines that are not the ones they are trying to sell to NC because they haven't been developed yet! It takes a long time to design, build, test, debug, retest and certify DRE+VVPB equipment. Why are vendors trying to sell NC equipment for use in 2006 that doesn't yet exist?
<http://www.ncvoter.net/compliance.html>

NEVER BUY VERSION 1.0 OF A NEW TECHNOLOGY! North Carolina is looking at spending over \$53 million dollars on DRE systems that are not yet fully designed, built, or tested in actual use. Paper ballots and optical scanners are a superior, auditable, reliable technology with a proven track record that can be purchased and maintained for a fraction of the cost of DREs.

Direct Record Electronic voting machines miscounted over 50,000 votes in North Carolina in 2004. They lost votes, added votes, and subtracted votes. <http://www.ncvoter.net/news.html>