



S.1487 Does Not Solve the Need for Election Reform; It Would Increase Known Problems and Create New Ones

I am Ellen Theisen, founder and Co-Director of VotersUnite.Org, a non-partisan, non-profit organization devoted to collecting and distributing facts about elections and election equipment. This is my testimony to the United States Senate Rules and Administration Committee regarding S. 1487, "The Ballot Integrity Act of 2007" submitted for inclusion in the official record for the hearing on July 25, 2007.

Our work has been used as evidence in lawsuits, legislative debates, and media reports. The 2005 GAO report, "Federal Efforts to Improve Security and Reliability of Electronic Voting Systems Are Under Way, but Key Activities Need to Be Completed," credited our website as an information clearinghouse. Election officials, legislators, the media, and election integrity activists consult us for information.

We have been tracking election issues for over three years, and what we have discovered has convinced us that radical election reform is necessary in this country.

But S. 1487 would worsen the problems that have come to light, rather than solving them. Contrary to many summaries and publicized discussions about the bill, requiring a voter-verified paper audit trail is only one small part of this bill.

The most troubling aspect of S. 1487 is the centralization of election administration. Election administration in the United States has always been local, with some oversight at the State level. This arrangement is one of the checks and balances in our governmental structure – it enables local citizen participation and oversight, and helps keep citizens in charge because we can have greatest control at the local level.

S.1487 would take many administrative decisions and duties out of local and State hands and move it to the federal level where citizens and local governments have the least ability to be heard.

The bill would exacerbate existing problems:

The Election Assistance Commission (EAC) – according to two reports from the Government Accountability Office, many Congressional hearings, and multiple investigative news stories – has shown itself to be incompetent, derelict in its duties, partisan, secretive, and non-responsive to election officials and the public. Few state election agencies have shown themselves be more derelict than the EAC. Nearly all are significantly better-run, more even-handed, and more responsive to the will of the people.

Yet, S.1487 would require states to follow the guidance of the EAC for matters in which the EAC is unqualified, matters that are more appropriately decided and administered at local levels, such as: resource allocation, poll worker training, election observation, voting system selection, and election certification.

Voting machine corporations have shown themselves to be incompetent and untrustworthy. Election officials in many states have filed lawsuits against them for such violations as breach of contract, disrupting elections, and illegally installing uncertified software on machines. Indiana even passed a law specifically to provide severe penalties for illegal behavior of these companies, and North Carolina created new felonies for them.

Rather than requiring more light to be shed on the activities and products of these companies, S. 1487 would declare corporate proprietary rights to supersede citizens' proprietary rights over their own election information, even inviting corporations to file federal lawsuits against citizens who seek transparency in elections. Furthermore, it would mandate the EAC to work with these companies to ensure the public's compliance with corporate secrecy.

To mandate that vote-counting processes and the information surrounding them remain secret from the American public is to move rapidly and irreversibly away from the election transparency we so badly need.

Electronic voting machines (DRE) do not allow voters to verify the electrical votes that are actually cast and counted [in violation of HAVA Section(a)(1)(A)(i)]. In addition to this violation of the essential principle of "one voter, one vote", these machines have been shown — through tens of thousands of reports from voters, poll workers, and the media — to malfunction, disrupt elections, provide false results, break down on election day, cause difficulties for both voters and election officials, and lead to long lines that disenfranchise voters (see Attachment A).

Adding voter-verified paper audit trails to DREs has been shown to be useless (see Attachment B.) Studies prove that the "paper records" don't always match the electronic totals. Voters rarely verify the records, and human factors studies show that the type of inspection necessary for verification is prone to proofing errors by the voters. Current printers jam and break down, and some have been shown to print upside down. Despite the excellence of contemporary printing technologies, it is clear that these vendors have not selected or developed adequate printers.

Yet, rather than ban the use of this failed technology, S. 1487 would require further waste of taxpayer money by mandating that all current DREs be retrofitted with these inadequate printers that provide an unreliable paper trail. Even if the printers worked and voters were able to verify them accurately, the unverifiable electronic records would still be the votes that count. For the same or lower cost, all jurisdictions could provide a true paper ballot that is inherently verified by the voter and undeniably records the voter's intent. (see Attachment C)

Furthermore, while paper ballots have been prone to tampering in the past, chain of custody procedures using modern surveillance cameras and other techniques used in warehouses and banks can be implemented to protect paper ballots. In contrast, it is impossible to establish chain of custody procedures with electronic votes (see Attachment D.)

See Attachment E for brief descriptions of the different types of voting systems.

America's voting system certification process has been a failure, according to all (yes, all) experts. Virtually all the numerous equipment malfunctions that have occurred in recent years have occurred on certified machines. Those who have studied the EAC's recently implemented process say that it contains all the same inherent pitfalls and potential problems as the old process.

Yet, S. 1487 would mandate that all election equipment in use after 2010 must be certified by the historically incompetent EAC through its pitfall-ridden process and take away from states the decision of whether to require federal certification of their voting equipment or to use their own voting system standards.

S.1487 would give the EAC the unprecedented authority to determine which voting systems were legal for use in the states.

Local jurisdictions have borne (and will continue to bear) an enormous financial burden caused by the changes HAVA required. Far from easing that burden, S.1487 would require them to implement significant new programs and comply with significant new regulations at their own expense. Despite these burdens, S.1487 appropriates no funding for States to use in such programs, aside from the \$600 million that is earmarked for vendors.

S. 1487 would also create new problems:

Studies of undervotes (no vote counted in a contest) have revealed valuable information about the comparative reliability of computerized election equipment. These studies have also revealed shocking statistics that point to the selective disenfranchisement of African-American, Native Americans, and Hispanic voters.

Inexplicably, S. 1487 would pervert the use of undervote studies to promote the unequal treatment of "distinct communities" that have been severely disenfranchised in the past. Contrary to evidence, S. 1487 asserts that high rates of undervotes are intentional in some communities. Based on nothing more than the EAC's interpretation of historical patterns, S.1487 would encourage election officials to ignore high rates of lost votes in communities with a history of disenfranchisement, such as African-Americans. But if the same rate of lost votes occurred in other communities of voters, such as white voters, the EAC could require an investigation.

Early voting has been shown to be significantly more vulnerable to tampering and error than election-day poll site voting. The machines cannot be secured between voting days, and ballots cast in early voting on e-voting machines are not secret. Yet, S. 1487 would mandate that early voting be adopted in all states.

Absentee ballots are particularly vulnerable to tampering and loss because there is no continuously-traceable chain of custody. States that have adopted no-excuse absentee voting have taken time to establish procedures to handle the ballots with care and to verify signatures accurately. This difficult process requires time and a strong motivation to do well. Yet, S. 1487 would mandate that no-excuse voting be adopted in all states, whether or not they had procedures in place to handle the ballots reliably.

The hallmark of the Americans with Disabilities Act was its requirement for “reasonable accommodations” to protect the rights of individuals with disabilities. Requiring that voting systems provide a method by which voters with disabilities can independently and privately mark their ballots is certainly a laudable protection of voter rights. But S.1487 would require voting systems to provide an accommodation that is both unnecessary and unreasonable: it would require that the entire process of voting, “including vote verification and vote casting, is equipped for individuals with disabilities.”

This requirement is unnecessary because, as Noel Runyan, blind accessibility expert, points out, independence in depositing the ballot in the ballot box serves no useful purpose as long as ballot secrecy is maintained.

The requirement is also unreasonable because it mandates the use of technology that does not yet exist. S. 1487 would mandate that every polling place provide non-existent technology in order to provide people with disabilities an accommodation that is irrelevant to their right to vote in secrecy.

I encourage the Committee to withdraw this bill and draft an election reform bill using the following principles:

- ◆ Promote checks and balances in election processes.

Confidence in election results is accomplished only when people can confirm the accuracy of the outcome. Requiring that the people trust in the process or those managing the process erodes confidence. The link between a voter and the vote is the only part of an election that should be secret. Congress should ensure that all preparation, tallying, tabulating, aggregating, canvassing, and recounting will be open to the public in a way that allows for meaningful checks on the accuracy of the results.

- ◆ Increase, rather than decrease, election transparency.

Broad citizen oversight is the only way to keep elections clean and honest. Congress should explicitly recognize and clearly establish the civil right of citizens to observe and understand election procedures, because far too many state and local regulations, as well as voting system vendors, have shut the people out and prevented our meaningful observation and participation.

- ◆ Simplify, rather than complicate, the election process.

Advanced technology can be valuable for some purposes. However, its use in elections requires that the general populace be technology savvy. In the effort to ensure access to voting for everyone, high technology has been developed and implemented, yet it denies access to those who are not computer literate. In a way, its use has become a sort of poll tax, whereby computer literate people are more qualified to vote and to be poll workers than those who are not. Congress should move us back toward simplicity in our elections so the general population can understand and participate meaningfully.

A: E-Voting Failed in 10,000's of Precincts in 2006 Hundreds of Thousands were Disenfranchised

This table summarizes an analysis of 1022 problem reports from voters, poll workers, and the media about the 2006 mid-term elections. ¹ It shows the severe failures of e-voting machines (DREs) in eight different categories. Some media reports referenced hundreds of precincts.

Problem Type Example report	Total Reports	DRE Reports / # States
All Categories	1022	760 / 29
Opening of the polls delayed or impeded by machine problems California poll worker: "We had been given 5 machines. One machine would not power up and give us a zero print and another machine would only print in computereze. We ran out of tape in 3 machines. We had to close 2 machines down. We lost people in the morning because of the wait."	103	93 / 18
Mishaps and malfunctions at poll closing North Carolina poll worker: "We could not close out the machine, the instruction manual was totally inept and useless and the home office answered us NOT."	43	39 / 11
Vote-flipping and lost votes Maryland voter: "Problems with the machine changing his vote as he moved onto next issue. Judge kept coming over and pushing buttons trying to fix it. When he finally got to the review screen, about 1/3 were wrong."	181	181 / 20
Voter-verified paper audit trail (VVPAT) incorrect or broken Ohio voter: "Print out on issues 4 and 5 was opposite of what the voter voted."	47	47 / 7
Voting machine malfunction Texas voter: "All machines broken, but no paper ballots available. Telling voters they have to come back to vote."	646	444 / 30
Usability flaws Colorado voter: "As voter was voting, the voter's machine next to her broke down. Election official on-site could not fix it. Her machine asked if she had entered all the questions. She hit the 'confirm' button as instructed. Nothing happened. The election judge reviewed her vote but could not confirm that the machine had worked properly."	300	240 / 23
Inaccessibility of voting to people with disabilities Missouri voter: "Voter is blind. Audio on accessible machine was not working. Election judge was very apologetic."	18	12 / 9
Long lines and voters leaving without voting Florida newspaper: "All 14 iVotronic machines stopped working at the Deerfield Beach Tower Club Teen Center. ... Many people turned away said they wouldn't be able to return."	259	221 / 22

¹ **E-Voting Failures in the 2006 Mid-Term Elections: A sampling of problems across the nation.** Prepared by VotersUnite.Org, VoteTrustUSA, Voter Action, Pollworkers for Democracy. January, 2007.
<http://www.votersunite.org/info/E-VotingIn2006Mid-Term.pdf>

B: Why Voter-Verified Paper Audit Trails (VVPAT) Do Not Work!

In August 2006, Election Science Institute (ESI) released a report entitled, "DRE Analysis of May 2006 Primary; Cuyahoga County, Ohio"². Election Science Institute is a non-partisan, non-profit election science organization, which was commissioned by Cuyahoga County to review how the county's new Diebold touch screen election system performed in the early stages of use.

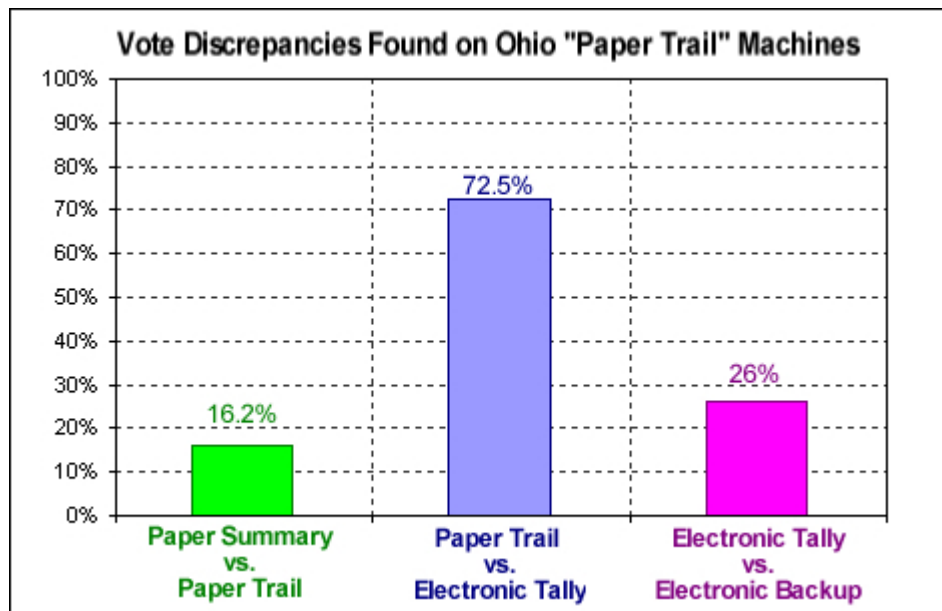
ESI found internally inconsistent, unreliable vote totals on every level. The institute's "key finding" is this:

"The machines' four sources of vote totals - VVPAT individual ballots, VVPAT summary, election archive, and memory cards - did not agree with one another."

All vote totals reported by the system should be identical, regardless of whether the totals are reported on VVPAT summaries, individual VVPAT ballots, or electronically stored data.

ESI's analysis revealed significant discrepancies in every comparison of data that should have matched. It is impossible to know the true totals.

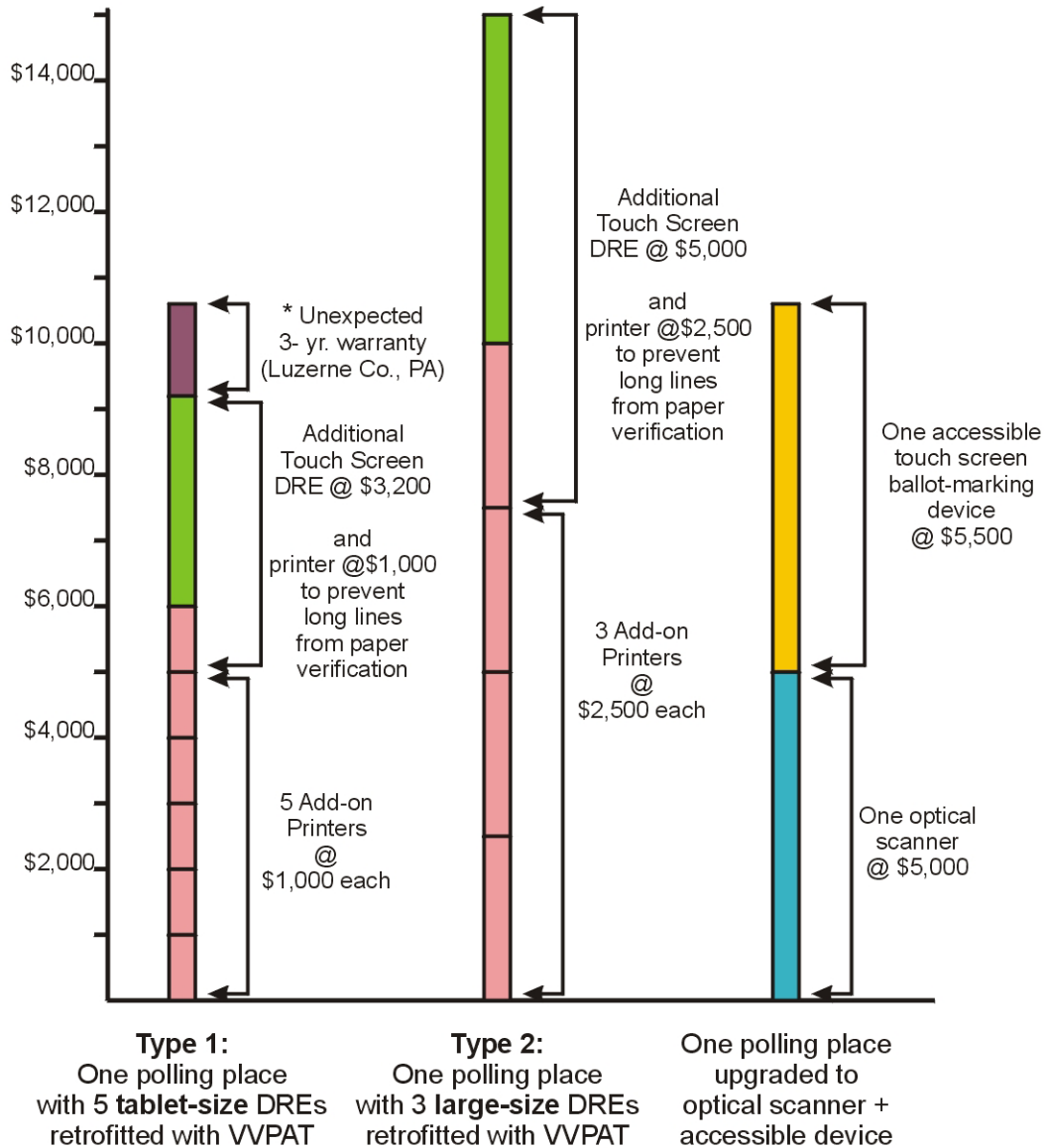
- 1) **Paper vs. paper.** In **16.2%** of the vote centers audited, the VVPAT summaries didn't match the individual VVPAT records.
- 2) **Paper vs. electronic.** In **72.5%** of the audited vote centers, the paper trail totals didn't match the electronic totals!
- 3) **Electronic vs. electronic.** In **26%** of the audited vote centers, the electronic totals in the machines didn't match the electronic totals on the memory cards!



² http://www.votetrustusa.org/pdfs/ESI/esi_cuyahoga_final.pdf

C1: Retrofitting DRE Systems Vs. Switching to Paper-Based Systems

Adding Printers to Either Type of E-Voting Machine Costs MORE than Upgrading to Voter-Marked Paper-Ballot Systems



* "Luzerne County wants a warranty for another three years on touch-screen voting machines bought last year, but "the price is not right," Director of Elections Leonard Piazza said Tuesday.³

"Election Systems & Software wants the county to pay **between \$275,000 and \$322,000** for a three-year warranty, Piazza said. The county last year spent \$2.4 million in federal money to buy 750 ES&S machines, and a one-year warranty has either expired or will expire this year."

[Luzerne County has 175 polling places, so the cost will exceed \$1,700 per polling place.]

³ County says voting machine warranty too costly. Citizen's Voice. 07/18/2007. By Michael P. Buffer. http://www.citizensvoice.com/site/news.cfm?newsid=18598127&BRD=2259&PAG=461&dept_id=455154&rft=6

C2: DRE Systems Cost More to Operate than Paper-Based Systems

Operating Costs of DREs are Higher than Paper Based Systems

An analysis by Lester Sola, the Supervisor of Elections in Miami-Dade County, Florida, showed that election costs — expected to decrease with the use of DREs — have instead soared since the county purchased ES&S iVotronic DREs in 2000 to replace its punch card system. **The operating cost of the DRE system is five times higher.**

Mr. Sola says, "Countywide elections through 2000 had generally cost approximately \$1.5 million." He points out that, in contrast, the November 2002 election cost about \$8 million, and the November 2004 election cost about \$7.27 million.⁴

Mr. Sola compared the operating costs of the county's touch screen system to the costs of optical scan systems. He found that the operating costs of optical scanners were so much lower than DREs that the county would save over \$13 million in the next five years if they purchased optical scanners and removed the touch screens from service, even while paying off the \$20 million outstanding debts for the touch screens.⁵

DREs Have Hidden Costs that Paper-Based Systems Do Not Have

In Mr. Sola's report to the county manager, he recommended replacing the DREs with optical scanners. Among his reasons, he details some of the hidden costs of DREs:

... the \$24.5 million expenditure led to more required expenditures. Indications are that still more expenditures, never envisioned when the equipment was purchased, are impending. For example, ES&S has informed me that we must replace the back-up batteries in our 7,200 iVotronic terminals at a cost of \$147.50 per unit, or approximately \$1 million, and the batteries in our 7,688 Personal Electronic Ballot (PEB) cartridges at a cost of \$8.00 per unit, or \$61,504.⁶

Mr. Sola also estimates **lower** costs for printing, postage, and office supplies when optical scanners are used.⁷

Some of the other costs of DREs, often not anticipated by county officials, include:

- ◆ Secure, environmentally-controlled storage for the machines when they are not in use.
- ◆ Energy costs for keeping the backup batteries charged between elections.
- ◆ Labor costs for security when machines are stored at polling places before an election.
- ◆ Hardware maintenance and repairs and software upgrades for each of the machines. (Optical scanners require much less maintenance and fewer repairs.)
- ◆ Labor costs for hiring additional poll workers (San Diego doubled the number of poll workers when it switched to DREs).
- ◆ Poll worker training, both for longer training sessions and larger number of poll workers to train to use a much more complicated system.
- ◆ Cost of replacing the machines when they age and the technology is no longer supported by the vendor. (Historically, optical scanners have a useful life of 15 years or longer.)

⁴ <http://www.votersunite.org/info/MiamiInitialReportfromSoE.pdf>, page 4.

⁵ page 12.

⁶ page 4.

⁷ page 22.

D: Why “Electronic Ballots” Cannot Be Safeguarded as Paper Ballots Can

Everyone in a democracy understands the importance of handling ballots properly. Procedures for handling and securing paper ballots have been developed over centuries.

Electronic voting machines use high-tech “electronic ballots,” which are nothing more than electrical charges inside a computer. There are no procedures for properly handling and securing electronic ballots. The use of electronic ballots has been compromising our elections with lost votes and unsolvable controversies and must be prohibited by federal law.

Because of the nature of computer data, electronic ballots can **never** be properly safeguarded like paper ballots can. The following table lists the safeguards in place for protecting votes on paper ballots and explains why each one is impossible to implement for electronic ballots.

Essential Safeguard	Why It Can’t Be Adapted to Electronic Ballots
Every eligible voter receives the appropriate ballot.	Software controls the ballot choices presented to each voter. Software flaws can display one or more ballots incorrectly, so election directors cannot even ensure that every eligible voter receives the right ballot.
The voter can make the selections they want.	Many voters, especially the elderly and those without computer experience, are confused or intimidated by computer voting and are unable to even select their intended candidates on the screen. This problem extends to all voters on malfunctioning machines, such as those that flip votes on the screen or fail to display all the races.
The voter can review the ballot and correct errors.	Voters cannot review electronic ballots, because no one can read the internal data inside a computer. So, if a voter’s ballot is incorrect in the internal data, the voter does not have a chance to correct it. Reviewing a screen representation or a paper printout does not suffice, since the voter cannot review the internal ballot that will be counted.
The ballot is protected from tampering.	Computer data is volatile and cannot be protected from tampering or data corruption. Electronic ballots can be altered by proximity to a magnet, power fluctuations or outages, viruses, Trojan Horses, programming “bugs,” commands from a remote computer or a keyboard, and during transmission between devices. In each case, it is impossible to detect that ballots have been altered.
The voters’ selections are correctly tallied.	Election directors cannot observe how vote data is processed inside a computer, so they cannot ensure that the electronic ballots have been tallied correctly. Paper ballots allow results to be meaningfully audited. Electronic ballots do not.

Electronic ballots cannot be safeguarded and should be prohibited.

Federal law should require:

- ◆ Use only paper ballots that are marked by the voter’s hand or an accessible non-tabulating ballot-marking device and counted either by hand or by an optical scanner.
- ◆ Audit a statistically significant portion of all optically scanned ballots to ensure that the equipment correctly tallied the voters’ selections.

E: Overview of Types of Election Equipment (Page 1)

Optical Scanners – Paper Ballots

Overview. The voter marks selections on a paper ballot – either by filling in a bubble or by connecting the ends of an arrow. The ballot is fed into an optical scanner, which reads the marks on both sides of the ballot and tabulates the votes indicated by those marks.

Scanners can manage multiple precincts, and ballots can be fed into them in any direction. Scanners are pre-programmed before each election to read and tabulate the marks on the ballots for that specific election.

There are two main types of scanners.

- ◆ **Precinct scanner.** The voter feeds the completed ballot into the scanner at the precincts. The scanner reads the marks on the ballot in about one second.

If there are errors (such as too many votes for a contest), the scanner rejects the ballot by sliding it out the same slot into which it was inserted. The voter may then correct the ballot, ask for a new ballot, or ask the poll worker to override the scanner's rejection and accept the ballot anyway. Accepted ballots are automatically output into a ballot box under the scanner.

At the end of the day, poll workers print out the results tabulated by the scanner. The scanner also stores results electronically on a memory card to be read by the central computer at the elections office and/or the scanner transmits the results to the central office via modem.

Cost of one unit: \$6,000
Voters served: up to 3,000

- ◆ **Central count scanner.** Ballots are collected at the precinct and carried to the central election office where this high-speed scanner resides. It is also used to scan absentee and vote-by-mail ballots. Elections office personnel feed all the ballots into the scanner, which reads the marks and tabulates the results.

The scanner separates ballots with errors or write-ins by outputting them to a special tray for personnel to examine.

Results are transferred to the central computer in the elections office, normally via cable.

Cost of one unit: \$70,000
Voters served: Unlimited

Election Management System software is required to set up the ballot definitions and aggregate the vote totals. Maintenance and software licensing fees are charged annually. Costs vary.



Precinct scanner



Central count scanner



E: Overview of Types of Election Equipment (Page 2)

Direct Record Electronic (DRE) Voting Machines – Electronic Ballots

Overview. The voter selects candidates from choices displayed on a computer, and when the voter presses a final button, the computer creates an electronic data record in its internal memory, and that electronic record (which the voter cannot verify) is counted as the voter’s ballot.

To begin, the poll worker provides the voter with a mechanism for accessing the correct ballot on the DRE – a programmed access card or cartridge for the voter to insert into the machine, or a number to enter on the keyboard. The voter chooses a language and then makes selections by following the instructions on the computer and taking the indicated actions, such as touching the screen and pressing buttons on the display or on a hand-held device.

Some DREs have features to assist people with disabilities, such as audio instructions for making selections and/or large buttons to press instead of touching the screen. With certain brands of DREs, the poll worker sets up the machine’s assistive features each time a voter chooses to vote with the computerized assistance. With other brands, the assistive features are available at all times.

Some DREs include a Voter-Verified Paper Audit Trail (VVPAT) printer intended to print each voter’s choices for the voter to approve before the choices are recorded electronically. However, the “electronic ballot” (which may not match the paper trail) is counted as the voter’s ballot.

Different types of DREs have different types of controls:

- ◆ **Touch screen system.** The voter touches locations on the screen to indicate their choices and touches special navigation buttons to move from one screen display to the next.

Cost of one unit with VVPAT printer:	\$4,000
Voters served:	200

- ◆ **Push button system.** The voter presses buttons next to the candidate names to indicate their choices. The entire ballot is provided in one display, so no navigation is necessary.

Cost of one unit with VVPAT printer:	\$11,000
Voters served:	300

- ◆ **Dial and button system.** The voter operates a dial and pushes buttons to make selections and navigate from one screen display to the next.

Cost of one unit with VVPAT printer:	\$3,500
Voters served:	200

Election Management System software and peripheral equipment are also required for these systems to set up the ballot definitions, provide voter access, and aggregate the vote totals. Maintenance and software licensing fees are charged annually. Costs vary.

Touch screen system
(screen – approx. 15”)



Pushbutton system



Dial & button system
(screen - approx. 15”)



E: Overview of Types of Election Equipment (Page 3)

Ballot Marking Devices for Disability Access – Paper Ballots

Overview. These devices assist voters in marking their choices on a paper ballot, which is then optically scanned or counted by hand.

Most ballot-marking devices are specifically designed to assist voters with disabilities. Some provide computerized accessibility similar to a DRE. Others offer low-tech solutions.

Computerized non-tabulating ballot marking devices. There are two such devices in use in the United States. Both offer language selection and high-tech computerized features for people with disabilities, comparable to the features offered by DREs, such as audio instructions for blind voters.

- ◆ The voter inserts a standard optical scan ballot into the AutoMARK and uses the buttons and touch screen to make selections. The machine prints marks in the appropriate locations on a ballot, which can then be tabulated by either a precinct scanner or a central count scanner, or by hand.

Cost of one unit (serves one precinct): \$5,700

- ◆ The voter inserts a special InkaVote ballot into the machine and makes selections, either by marking directly onto the ballot through the holes in the punch-card-like booklet, or by using the buttons and touch screens of the voter-assist component. The system includes its own precinct scanner for the special ballots.

Cost of one unit (serves one precinct): \$10,000

Election Management System software is required to set up the ballot definitions and aggregate the vote totals. Maintenance and software licensing fees are charged annually.

Low-tech ballot marking devices. Both non-computerized devices, the Vote-PAD and the Equalivote, provide features to assist voters with dexterity impairments as well as variations of the tactile ballot method that has been in use for many years by people who are blind or have low vision.

For both devices, the poll worker inserts a ballot into a plastic sleeve, and the voter marks the ballot through holes in the sleeve. Instructions are provided in audio, Braille, and large-print formats.

Blind voters can verify their selections through the use of a hand-held wand that vibrates when it senses a mark and is silent when it does not. The use of Braille and the vibrating wand provide independent voting for people who are both deaf and blind.

Cost of one Vote-PAD unit (serves one precinct): \$2,100

Cost of one Equalivote unit, includes booth (serves one precinct): \$3,500

No maintenance or licensing fees apply.

AutoMARK
(screen – approx. 15")



InkaVote



Vote-PAD



Equalivote

