E-Voting Failures in the 2006 Mid-Term Elections

A sampling of problems across the nation

A report prepared by
VotersUnite.Org
VoteTrustUSA
Voter Action
Pollworkers for Democracy
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Executive Summary

This account of the November 7, 2006 election draws on surveys from participants in Pollworkers for Democracy, reports from voters who called the Election Incident Reporting System and Voter Action, and reports collected by VotersUnite.Org from the national and local media. In all, we looked at 1022 reports of problems associated with electronic voting equipment from 314 counties in 36 states.

Many reports depicted multiple problems experienced by a single voter or pollworker; thus the total number of problems discussed in this paper is greater than the number of reports reviewed. While some reports reference a single incident, others reference widespread incidents (such as the 800 e-voting machines that malfunctioned in Westmoreland County, Pennsylvania). The first section of our report shows the geographical extent of problems. The second, a set of case studies, explores the problems in four locales in greater depth.

The mid-term election revealed that the promise of easier voting, more accurate tallies, and faster results with electronic systems has not been fulfilled. Voters in some jurisdictions waited in line for hours to cast their ballots. Others cast their ballots accidentally before they were done because they pressed the wrong button or left without casting their ballots because they didn't press the right button. Many voters watched the machine highlight a candidate they didn't select or fail to indicate a vote for a candidate they did select and were then blamed for not being able to use a computer correctly.

Many polling places couldn't open on time because of machine failures, and complex procedures often left pollworkers frustrated and reluctant to serve again. Election directors were often forced to rely on voting equipment vendors to set up the election, administer it, and tally the votes because it was too complicated for their personnel to handle. Others blamed themselves for not following the poorly documented, non-intuitive procedures required to collect and tally the votes.

After the polls closed, poll workers and election officials struggled with a myriad of reporting problems. Many couldn't retrieve data from memory cards or couldn't get the tally software to combine totals from different computerized systems, while others couldn't figure out why the software was subtracting votes instead of adding them, or adding them two and three times instead of only once; couldn't determine for sure whether the first set of results was correct, or the second set, or the third; couldn't explain why one out of every six voters didn't have an electronic vote recorded for a hotly contested race; or why the machines recorded more ballots than the number of voters who signed in to vote.

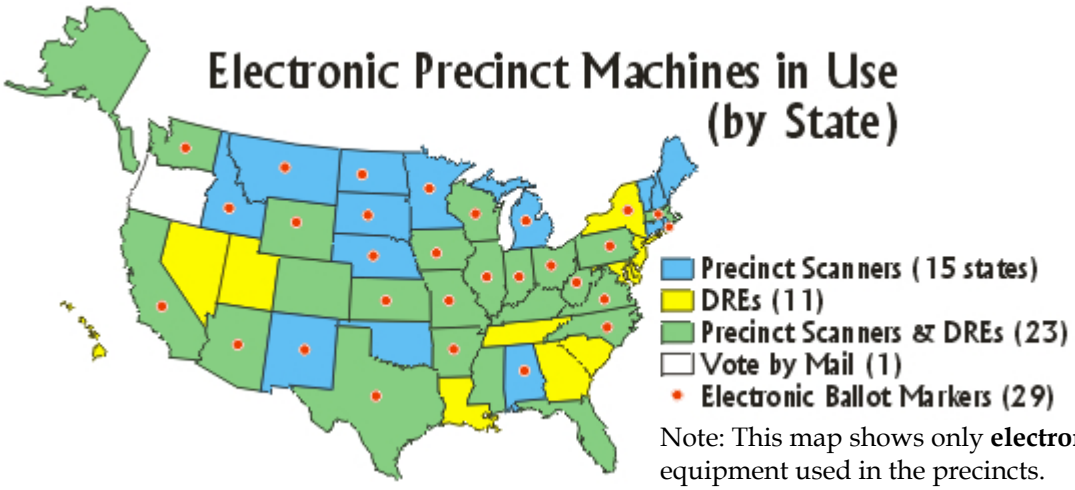
Often hidden from public view, equipment malfunctions such as these have normally been exposed only when they are severe enough to attract media coverage. Reports from Pollworkers for Democracy and voters provided additional insight into the extent of these problems. The frequency of reports of difficulties retrieving results even casts doubt on the accuracy of the certified results in affected areas, particularly since it is reasonable to assume that many such retrieval problems were never reported.

An increasing number of voters, poll workers, and election officials are finding the election process to be more difficult, not easier, and confidence in the final tallies has been undermined. While our source material is neither a complete list of problems nor even a representative sampling, the number of incidents and the broad range of problems reported is indicative of the widespread failure of electronic voting systems across the country and how this failure affected the experience of voters on November 7, 2006.

Extent of Each Type of Failure

For each of the 1022 reports, we determined the machine type or types referenced in the report and categorized the incident into one or more of 13 categories. We divided the machine types into three basic classes: Direct Record Electronic (DRE), paper ballot scanners, and Electronic Ballot Markers (EBM). For the purpose of analyzing the problems associated with voter-verified paper audit trails (VVPAT), we separated out the incidents that occurred in jurisdictions using DREs with VVPAT.

For each category, this report describes the types of problems experienced and the range and extent of the problems that occurred with each class of electronic machine. The map below shows the classes of electronic equipment used in each state. DREs were used in 34 states; precinct scanners, in 38 states; and EBMs, in 29 states. All states use central count optical scanners for absentee and/or mail in ballots.



Note: This map shows only **electronic** equipment used in the precincts.

The following table shows the number of problem reports for each class of electronic machine. It also shows the total number of states and counties reporting problems and the different makes of machines for which the problems were reported.

Machine Class	# Reports	# States	# Counties	# Models
All Classes	1022	36	314	21
DREs	760	29	239	11 [1]
Scanners	209	24	79	8 [2]
EBMs	57	14	22	2 [3]

[1] DREs with problems were identified as one of these 11: Sequoia Advantage and Edge (all models); Diebold DREs (all models); Hart InterCivic eSlate; Microvote Infinity and M464; ES&S iVotronic (all models); Unilect Patriot; Danaher Shouptronic 1242; AVS WINVote; VTI VoteWare. No problems were reported for the Avante Vote-Trakker (used in NY).

[2] Precinct scanners with problems were identified as one of these 6: Diebold AccuVote OS (all models); ES&S M-100 and InkaVote; Optech 3P Eagle; HartInterCivic eScan and BallotNow; Sequoia Insight. Two types of central count scanners malfunctioned: Optech 400C and ES&S 650.

[3] EBMs with problems were AutoMARK (27 states), InkaVote (CA, MO). No problems were reported for the Populex (NY and WI).

Opening of the Polls Delayed or Impeded by Machine Problems

A total of 103 of the reports we reviewed reference late poll openings caused by machine issues. Most often, these problems were described as the e-voting machines failing to start up. In some instances, it was because the internal clock was set incorrectly and didn't allow the machines to start properly. In other cases, the access cards were missing or programmed incorrectly. Some machines didn't start up properly due to errors in printing the "zero" tapes, which are supposed to show that no votes were yet recorded on the machine. Other reports simply said the machines were down.

Machine Class	# Reports	# States	# Counties	# Models
All Classes	103	21	57	9
DREs	93	18	50	7
Scanners	2	2	2	2
EBMs	9	6	7	2

Quotes from a few reports

From Shasta County, CA, a poll worker reports about the Sequoia Edge:

"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 (sic). We ran out of tape in 3 machines and we had been given only one backup tape. We had to close 2 machines down. We lost people in the morning because of the wait. Some came back later."

From Johnson County, IN, a poll worker reports about the ES&S iVotronic:

"After we used the procedure that was given to the inspector, three machines out of four were not available at the start of voting."

From Prince George County, MD, a voter reports about the Diebold TS:

"At 7:00 AM only one machine is working. Nobody seemed to know how to fix the other one. Long lines of people trying to get to work."

Mishaps and Malfunctions at Poll Closing

This category includes problems encountered when closing out the machines at the end of day. In some cases, machines were closed incorrectly. In others, there were difficulties combining totals from different ballot types. In several cases, the tally software counted some precincts multiple times or failed to count them at all. Sometimes, data on the memory cards was corrupted, so technicians had to find another way to retrieve the totals. And, in some jurisdictions, memory cards holding the ballot data were lost.

Machine Class	# Reports	# States	# Counties	# Models
All Classes	43	11	19	6
DREs	39	11	18	5
Scanners	0	0	0	0
EBMs	4	1	1	1

Quotes from a few reports

From Pender County, NC, a poll worker reports about the ES&S iVotronic:

"WE COULD NOT CLOSE OUT THE MACHINE, the instruction manual was totally inept and useless and the home office answered us NOT, they (I SWEAR this is true, we called the operator to check for conversation, so to interrupt....) had the phones OFF THE HOOK."

From San Francisco County, CA, a poll worker reports about the 3P Eagle optical scanner:

"Voter turnout was heavy, so because of the high number of ballots, the bin was so full that the workers crumpled the ballots badly when they carelessly struggled to remove the ballots at the end of the day. I don't think they could be used for recounts if necessary. I went to help take them out so they came out intact. The person was in a hurry to go home, I think. It's a long day."

From Palm Beach County, FL, a poll worker reports about the Sequoia Edge:

"I did not see original setup of zero tapes except to see that they were all at '0'; I didn't see the incorrect date and time on machine 9493 (10/13/06, ...PM) until we took the tapes out at the end of the day. We tried reprinting the tape but it was the same and we called the Board of Elections but they said nothing could be done at that point."

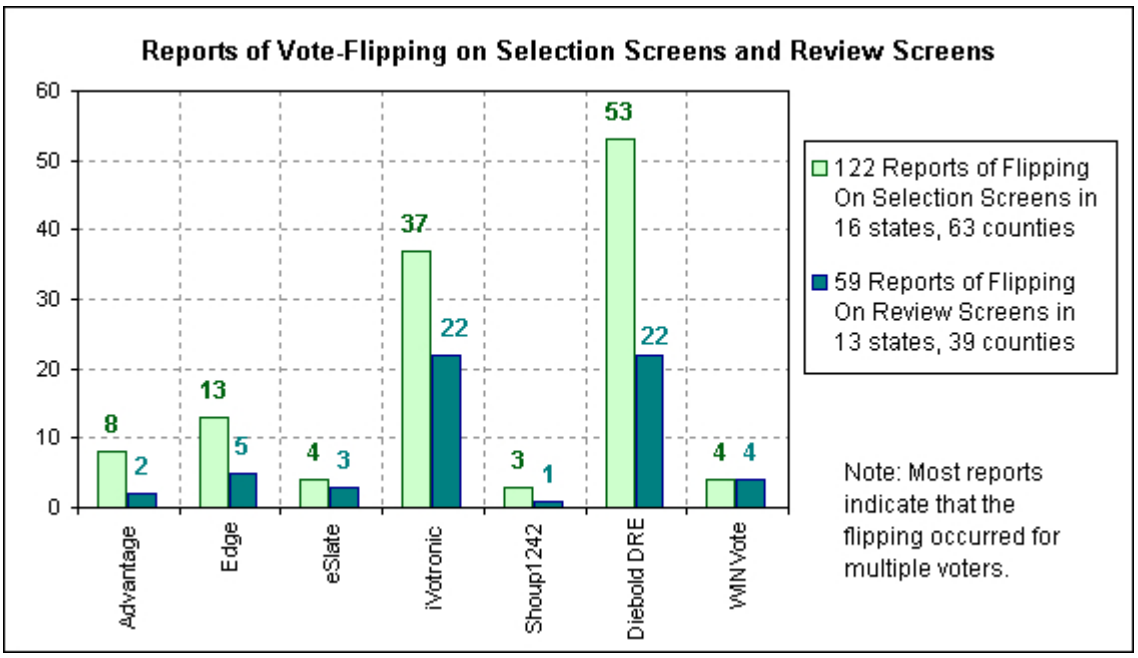
Vote-Flipping and Lost Votes

Vote flipping, in which the voter's selection is not reflected on the screen, is a phenomenon associated only with DRE machines. We encountered two distinct types of vote flipping:

Vote-Flipping on Selection Screens. When the voter makes a selection, it either remains unhighlighted on the screen or an opposing candidate's name is highlighted instead. Often this problem is attributed to calibration problems on a touch screen, but it is important to note that vote-flipping occurred even on e-voting machines that do not use a touch screen, such as the Hart InterCivic eSlate, Sequoia Advantage, and Danaher Shouptronic 1242. This category also includes incidents in which selections were already made when the voter began voting.

Vote-Flipping on Review Screens. After the voter finishes making selections, the voter's choices are lost or presented inaccurately on the summary review screen. While incorrect calibration may be the cause of some of the vote-flipping on the selection screens, calibration errors cannot account for discrepancies between the selections indicated on the selection screen and those on the review screen.

The chart below summarizes the vote-flipping reports, showing the number of reports for each model of DRE.



Quotes from a few reports of vote-flipping on the selection screen

From Monmouth County, NJ, a voter's experience with the Sequoia Advantage:

"Candidate King's information was already lit up. She was able to vote for the candidate of her choice, but this was troublesome."

From Baltimore, MD, a voter's experience on the Diebold TS:

"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; the judge 'played with it' again. Finally got everything right on the screen but he has no confidence that they got it right in the end. Took 1/2 hour to vote."

From St. Louis County, MO, a voter's experience with the ES&S iVotronic:

"The machine was pre-set (lights were lit) to vote for the Republican ticket. He had to unclick the Republican ticket and then click the Democratic ticket."

From Indian River County, FL, a voter's experience with the Sequoia Edge:

"Family of three went to vote. Father and particularly daughter had trouble with touch-screen voting machines. Daughter had to touch desired candidate five times to get the right candidate. The machine kept going back to the candidate that she did not want (Katherine Harris). She and the father were both eventually able to vote correctly."

Quotes from a few reports of vote-flipping on the review screen

From Sarasota County, FL, a poll worker reports about the ES&S iVotronic:

"People were complaining regularly that after marking choice for 'Christine Jennings', Democratic Candidate, their vote for that candidate did not appear on the final review. They had to go back and do it over to get it to stick. Voters voiced concerns that others might not follow through on the final review to catch and correct the omission. "

From Calloway County, KY, a professor at Murray State University reports his experience with the Hart InterCivic eSlate in early voting:

"I tried to vote a straight ticket, but when I checked the final page, which summarizes one's vote, I noticed that I had voted for some of the candidates of the other party. I went to the first screen again and ticked the straight ticket box for the Democratic party, and, again, I found that for all of the contested races the Republican boxes were ticked."

From Philadelphia, PA, a voter's experience with the Danaher Shouptronic 1242:

"Selection for Democratic Governor -- light does not show up for Rendell. Voter has already voted."

Voter-Verified Paper Audit Trail (VVPAT) Problems

These two categories apply only to DREs equipped with voter-verifiable paper audit trail (VVPAT) printers.

VVPAT Doesn't Match the Screen. This category includes incidents when the text on the paper trail did not match the text or choices on the review screen.

VVPAT Unavailable. The paper trail was not operable for some reason. In some cases, the printer ran out of paper. In others, the paper jammed or the printer simply wouldn't operate. In a few cases, there was a cover over the printout, hiding it from the voter's view.

Problem Type	#Reports	States	#Counties	Models
VVPAT No Match	5	AR, CA, OH, UT	4	2: Diebold; iVotronic
VVPAT Unavailable	42	AR, CA, IL, NC, OH, WA	21	4: Diebold; Edge, iVotronic; eSlate

Quotes from a few reports of VVPATs that didn't match the voters' choices

From San Diego, CA, a voter's experience on the Diebold TSx:

"Voter voted on a proposition and the printed summary did not register her vote."

From Montgomery County, OH, another voter's experience on the Diebold TSx:

"Print out on issues 4 and 5 was opposite of what the voter voted."

From Cook County, IL, a voter reports his experience with the Sequoia Edge II Plus:

"Used the touch screen voting machine - if this is the new technology, forget it. When I would touch on the candidate of my choice, in several instances the check mark would jump to the other candidate. After finally resolving this I reviewed my choices on the screen (before seeing a printout) only to find that six candidate choices had mysteriously changed, so again I went back to correct these 'mistakes.' Finally, everything looked good so I ran the printout to review my choices only to find that again choices (different ones) were wrong so I went back and made the changes - imagine my dismay when this happened two more times after that. At last everything was right so I pushed the final button to have my votes cast - or were they??? Sure hope so !

PS - Election judges were very nice but they could not explain why this was happening and yes, my hands were clean. "

Quotes from a few reports of the unavailability of VVPATs

From San Diego, CA, a voter reports about the Diebold TSx:

"Machine was electronic with paper trail. Voter was supposed to be able to view paper trail to confirm voted correctly, however paper trail window was blocked with a 'for office use only' label."

From Cuyahoga County, OH, a voter reports about the Diebold TSx:

"Paper trial not printing. Poll worker said it has been doing that all day and no one has complained. Voter said not acceptable, could not verify vote."

From Del Norte, CA, a voter reports about the Sequoia Edge:

"Voter voted on a touchscreen machine. She asked for a printout of her vote but was told that a printout was not available. The poll worker did not write down her complaint."

From Franklin County, OH, a voter reports about the ES&S iVotronic:

"Paper jammed in the voting machine; paper is supposed to tell you how you are voting but caller couldn't see it (to verify it) because of the paper jam; voting personnel said that vote would count."

From Orange County, CA, a voter reports about the Hart InterCivic eSlate:

"Caller had voted in Anaheim using eSlate machine. Machine is supposed to show an American Flag once ballot has been cast. No flag appeared and caller was unclear as to whether his vote had been counted. Poll worker called County and confirmed that vote had been cast, although no receipt was provided."

Voting Machine Malfunction

This category tracks flawed operation of other types on DREs and EBMs; it does not include scanner malfunctions. Most reports simply say the machines broke down or were not operating. Some reports give more information such as programming errors, corrupt access cards, screens going blank, a card stuck in a slot, candidate names missing from the screen or displayed incorrectly, ballot markers not marking the ballot properly, and other specific issues that rendered the machines unusable.

Machine Class	# Reports	# States	# Counties	# Models
All Classes	646	30	165	21
DREs	444	25	151	11
Scanners	209	24	79	8
EBMs	37	9	14	2

Quotes from a few reports

A news report about the Diebold TSx machines in Utah and Salt Lake Counties, UT says that:

Voter access card encoders for the Diebold touch screens weren't working in at least 32 of 118 polling locations, causing long lines, waits up to two hours, and voters turned away.

From Cuyahoga County, OH, a voter reports about the Diebold TS:

"Voter showed up before 6:30. Machines weren't turned on until 6:30, at which point the line of people stood waiting for the machines to warm up. Machines immediately went down. at 8:50am, only 1 machine working. People walked out without voting."

From Prince George County, MD, a voter reports about the Diebold TS:

"At High Bridge Elementary School in Bowie, Maryland, I completed registering my votes on the touchscreen, and as I was scrolling through the summary pages, my card popped out. I have no idea whether my votes were recorded or not. The election judge said that the screens were "sensitive" and that there was no way to determine whether my vote was counted."

From Essex County, NJ, a voter reports:

"The Sequoia Advantage Voting machine in district 13 Maplewood recorded 28 fewer voters than the number of voters who signed in to vote. The official explanation was 'Voters fled/machine malfunction.' I was the Democratic Challenger at this poll and was there during all busy hours and observed no voters signing in and not staying to vote. This was a clear machine malfunction."

Help America Vote Act of 2002 (HAVA)

The 2006 election is the first election since compliance with HAVA was mandatory. While most reports on the subject point to the accessibility requirement of HAVA [Sec. 301(a)(3)], another HAVA requirement of equal weight is largely ignored.

This requirement is a federal mandate that the error rate of a voting system in counting ballots shall not exceed one vote in 500,000 [Sec. 301(a)(5)]. So, for example, if 5,000 people cast ballots with 100 possible selections on each ballot, the voting system shall not make more than one counting error.

In Waldenburg, Arkansas, mayoral candidate Randy Wooten voted for himself on an ES&S iVotronic voting machine. His wife said she voted for him also, but the final tally showed that he received no votes. His opponents received a total of 36 votes.

From Bexar County, TX, a voter reports about the ES&S iVotronic:

"All machines broken, but no paper ballots available. Telling voters they have to come back to vote. Election Judge was at the polling place and said he was trying to work on the problem. Voter said he had to go to work but planned to return to vote later, and asked if there was a central place where he could cast his vote."

From Arapahoe County, CO, a voter reports about the Sequoia Edge:

"Precinct # 47 all four voting machines were not functioning (polling place officials said the machines turned on but screens were frozen). The precinct had only a few paper ballots that were used up by 8:00 am; voters were sent to another location, precinct 40, where there was a delay while staff 'called downtown' to find out what to do. Of 8 people waiting only about 1-2 actually voted. Caller was able to vote on precinct 40 ballot at about 8:40, doesn't know if it was the same ballot as his own precinct. He voted provisionally, ballot was placed in envelope; he was given an 800 # to call in two weeks and see if his ballot was counted."

From Los Angeles, CA, a voter reports about the ES&S InkaVote:

Voter equipment problem, not properly allowing certain portions of ballot to be marked--voter in question had to attempt 4 to 5 times before the ballot was properly marked. Other voters had their ballots rejected by the optical scanner because of this same reason but did not understand the poll worker due to language difficulties and their votes were not counted. Voter fears that these equipment problems are causing many more ballots to be improperly marked and poll workers having to override ballots.

Scanning Problems at the Precincts

In some cases the scanner was set up incorrectly or scanning incorrectly. In others, the scanner broke down or was rejecting ballots it should have accepted. Except when the polling place had also run out of ballots, voters left their voted ballots with poll workers to be scanned later. The following table shows the number of problem reports for each type of scanner.

Scanner Model	# Reports
Diebold AV-OS	28
ES&S M-100	55
ES&S InkaVote	44
Hart InterCivic BallotNow	1
Hart InterCivic eScan	28
Sequoia 3P Eagle	15
Sequoia Insight	21
Central Count	16

Scanning problems occurred in 24 states, 79 counties, on seven types of precinct scanners, and three types of central count scanners used for absentee ballots.

Scanner problems rarely resulted in long lines or voters turned away from the polls.

Quotes from a few reports

From Hamilton County, Ohio, a voter reports about the Hart InterCivic eScan:

"eScan machines not working. Everyone at the polling place had to put their ballot in an envelope and put it in a black box on the side of the machine. He did vote."

From Ventura County, CA, a voter reports about the Sequoia Insight:

"The Sequoia voting machines are broken. It was not recording (scanning?) votes. He received an incorrect ballot (missing a proposition). The pollworker is keeping ballots that don't scan. The man who made the report said he did an override to get the machine to work but said that no one else was doing that."

From Linn County, IA, a voter reports about the Diebold AccuVote OS:

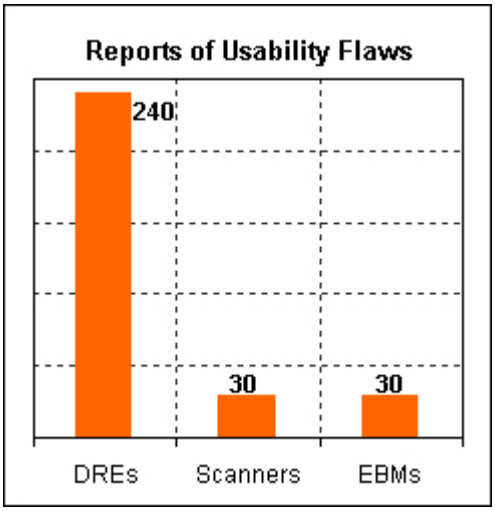
"When voter put his ballot into the scantron machine, he noticed that the number on the machine which records the number of ballots did not change. The machine was reporting that only 25 ballots had been entered today, and it was already 9 am."

From Macomb County, MI, a voter reports about the ES&S M-100:

"Filled out paper ballot. Machine into which you usually insert the paper ballot was jammed so he was told to put the paper ballot in the slot under the machine."

Voters' and Election Officials' Difficulties Caused by Usability Flaws

This category includes the reports that specifically indicate that voters, poll workers, or election directors had trouble performing their respective tasks because of the complexity and/or non-intuitive nature of the procedures required to operate the machines.



Quotes from a few reports

From Santa Clara, CA, a voter reports about the Sequoia Edge:

"Screen sequence is not intuitive so voters often had to ask for assistance to finalize and cast their vote."

From San Diego, CA, a voter reports about the Diebold TSx:

"Voter had trouble moving from page to page. Got many 'trouble' noises when making choices. Took 20 minutes to complete ballot, when he expected to take less than five minutes (as he was fully prepared). He heard similar problems occurring with the machines around him. His wife had voted earlier in the day with the same problems. He was very uncertain that his ballot had been properly recorded."

From Denver, CO, the media reports about the Sequoia DRE system:

Poll workers struggle to learn how to use the Sequoia touch screen voting machines. "Training sessions in Jefferson and Denver counties this week showed that although some judges are comfortable with computerized voting machines, others are baffled. Many of the judges are retired and trying to learn new technologies, often

after years of working all-paper elections. 'I've reached my saturation point,' said Pat Gressett, 77, after more than an hour working with the new computers."

From Nueces County, TX, a poll worker reports about the Hart InterCivic eSlate:
"The election/polling volunteers were unplugging and replugging in the machines at the polling place. There were only 2 machines. Poll workers didn't know what they were doing."

From Los Angeles County, CA, a voter reports about the ES&S InkaVote:
"Caller was able to vote using Ink dot machine, but said that workers seemed to be having problems operating the machine."

From Beaufort, SC, the media reports the problems using the ES&S Unity system:
" 'We thought we plugged results into the computer and refreshed the system, but we didn't,' said Agnes Garvin, county election director."

From Jefferson County, CO, a voter reports about the ES&S iVotronic:
"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. After voting, the voter called Jefferson county clerk's office and spoke with a woman there named Susan Miller. Ms Miller told her that the poll workers were not properly trained and there was nothing she could do to help."

From Somerset County, NJ, a poll worker reports about the Sequoia Advantage system:
"The other pollworkers packed up all the paper materials before checking to see if the ballot number matched the computer number of votes cast, and were confused when I demanded that we dig out those materials and check those numbers. Moreover, there was no mention of that step in any of the written instructions for pollworkers provided by the county. "

From Yellowstone County, MT, the media reports about the ES&S M-100 system:
The election administrator may have counted some absentee ballots twice, so he will recount all ballots in the county. Procedures for the ES&S scanners require that absentee ballots be 'zeroed out' before regular ballots are scanned, and the administrator forgot this step on two scanners.

From Shasta County, CA, a poll worker reports about the Sequoia Edge DRE:
"98% of the voters were intimidated and embarrassed by the machines. We had to help 3/4 of the people who voted cast their final vote. Some took an inordinate amount of time to vote. They all squinted at the machines because they were confused, I didn't see them checking the tape to make sure it was correct."

From San Joaquin County, CA, a poll worker reports about the Diebold TSx system:
"There were three machines per precinct, but all three precincts used all nine machines. So, paper tallies didn't jive up with the print out totals."

Inaccessibility of Voting to People with Disabilities

Incidents in which people with disabilities were unable to use equipment provided specifically for them to vote independently. In many cases, the machines were broken down. In some cases, the poll workers didn't know how to set them up. In others, the machines were operating properly, but the voters found them inaccessible.

Machine Class	#Reports	# States	#Counties	# Models
All Classes	18	11	16	9
DREs	12	9	12	6: Sequoia Advantage and Edge; Diebold DREs; ES&S iVotronic; Hart InterCivic eSlate; AVS WINVote
EBMs	6	3	4	2: AutoMARK; InkaVote

Quotes from a few reports

From San Diego, CA, a voter reports about the Diebold TSx:

"The machines were not yet working, and people were being told to wait a half hour for them to be set up. Voter is handicapped and was given a paper ballot, which she had to fill out at the card table where pollworkers were taking names and addresses from other voters. Voter has been voting at this polling place for 8 years and this is the first time she has had such problems."

From Santa Clara County, CA, a voter reports about the Sequoia Edge:

"The touch screen is difficult for those with decreased manual dexterity."

From Jasper County, MO, a voter reports about the Sequoia Edge:

"Voter is blind. Audio on accessible machine was not working. Election judge was very apologetic."

From Harris County, TX, a voter reports about the Hart InterCivic eSlate:

Voter's e-machine handicapped machine broke down twice. When it did, 1/2 of the other machines had to be taken offline, resulting in a long line.

From Polk County, IA, a voter reports about the ES&S AutoMARK:

"She is blind. Accessible machine was not working. Only one of the poll workers knew anything about the machine, and he was busy doing something else. After waiting 15 minutes for him, she had her husband assist her in voting on a paper ballot."

From Sebastian County, AR, the media reports about the ES&S iVotronic:

The Sebastian County Clerk says the ES&S iVotronic machines, purported to be accessible to people with disabilities, aren't. "The new electronic iVotronics voting machines supplied by Election Systems and Software are not user-friendly for the visually or hearing impaired," she said. "During the primary election," she said, "a visually impaired voter became frustrated when he had difficulty following the lengthy and complicated screen navigation instructions."

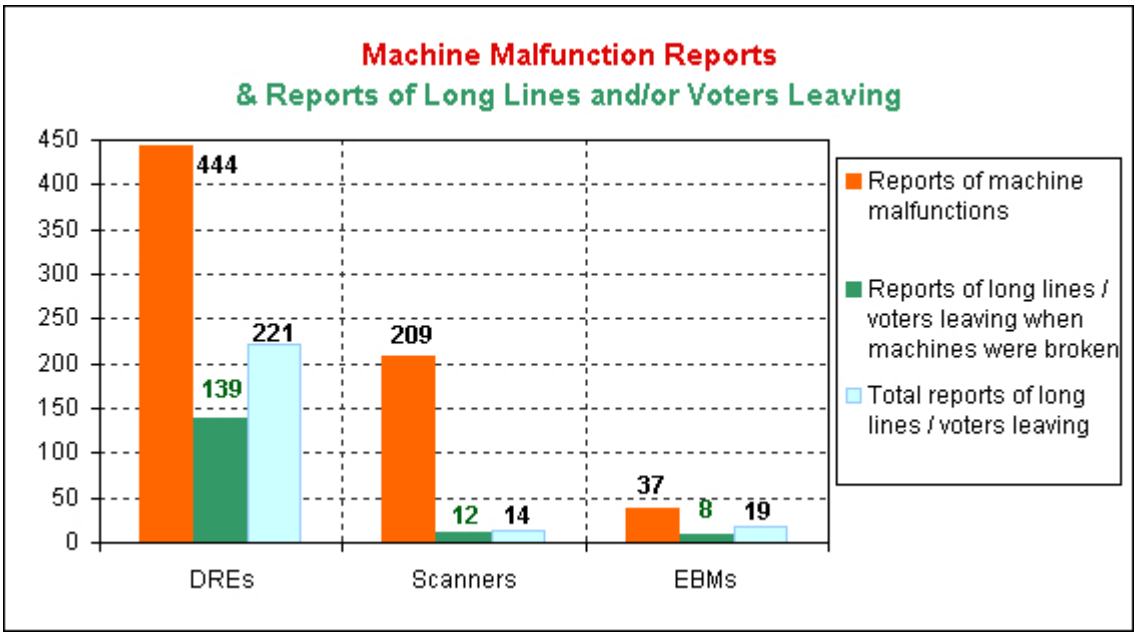
Long Lines and Voters Leaving without Voting

Long Lines. These were reports of voters waiting longer than ½ hour to vote. We did not infer long lines from reports of broken machines.

Voters Left. Most often, voters left without voting because of long lines. Some left or were turned away for other reasons, such as a shortage of ballots, or the machines were broken and they didn't want to wait even though there was not yet a long line. Again, we did not infer that voters left because of long lines or broken machines but relied on incidents of voters actually leaving without voting.

Our reports show long lines in 19 states and voters leaving without voting in 20.

The chart below shows how broken equipment at the polls impacted the long wait times and disenfranchised voters.



Quotes from a few reports

From Jackson County, MO, a voter reports about the ES&S InkaVote:

"When the polling site opened at 6 am the site only had one machine. Another machine was being brought to the site but the poll workers said they don't know how to work the second machine. The poll workers said the site would not be receiving more machines. There are very long lines at the site and people are leaving because they have to go to work and the lines are too long."

From Baltimore, MD, a voter reports about the Diebold TS:

After receiving voting card, machines went down. They waited for someone from

BOE to come, and after a half hour they were given provisional ballots. Voted provisional. Shortly before she left machines came back up. Ended up taking 1.5 - 2 hours to vote.

From Broward County, FL, the media reports about the ES&S iVotronics:
All 14 iVotronic machines stopped working at the Deerfield Beach Tower Club Teen Center. Officials said the machines weren't calibrated for the 7am starting time, so the Personal Electronic Ballots (PEB) used to activate the machines didn't work. Many people turned away said they wouldn't be able to return.

From Denver, CO, the media reports about the Sequoia e-pollbook system:
"Officials estimate that more than 20,000 voters didn't vote because of the delays."

From Franklin County, OH, a voter reports about the ES&S iVotronic:
"3 out of 5 machines are down; a voter reported standing in line from 6:30 AM to 11:30 AM before being able to vote."

Machine Failures in Retrieving Results

This category includes reports of election directors' difficulty combining totals from different systems or retrieving results from memory cards or cartridges. It also includes problems retrieving results from equipment at the polling place or transmitting it by modem. Note: Sources for this information were limited to media reports and reports from poll workers.

System Type	# Reports	# States	# Counties
All Systems	37	18	34
Diebold	7	6	7
ES&S	19	9	18
MicroVote	1	1	1
Sequoia	10	6	8

Quotes from a few reports

From Fairfield County, OH, the media reports on Dec. 7 about a Diebold system:
"The Fairfield County Board of Elections recertified official election results last week after an error attributed to the voting machines' manufacturer produced inaccurate final vote counts." Three outcomes were reversed.

From Yavapai County, AZ, a poll worker reports about a Diebold system:
"Modem failed to connect in reporting process."

From Bibb County, GA, the media reports about a Diebold system:
"The server receiving data from the memory cards had the incorrect host name and wouldn't read the information."

From Lake County, IN, the media reports about a MicroVote system:

The MicroVote system won't combine totals from the new and old e-voting machines, and poll workers' unfamiliarity with the new Infinity raised concerns about whether 60 of the e-voting machines were ever activated on Election Day or properly canvassed after the polls closed.

From Cook County, IL, the media reports about a Sequoia system:

Serious data transmission problems slow the vote tabulation. David Orr is investigating whether it is Sequoia software, hardware, or both.

From a Cook County poll worker:

"When the results from the scanner memory and the results from the touchscreen machine were consolidated electronically, the card activator told me the consolidation was successful, but then told me there were only 12 votes (we had just over 200 people vote)."

From Carroll County, AR, the media reports about the ES&S system:

Officials had trouble merging totals from early voting, absentee ballots, and election day. ES&S technician didn't know how to help them.

From Benton County, AR, the media reports:

ES&S tabulation software subtracted votes as new totals were added. "Each time the election workers submit new precincts, votes already recorded were lost." The corrected totals show a change in the outcomes of 8 races.

Case Studies of Four Locales

Allegheny County, Pennsylvania (Pittsburgh)

Voting Machines Used: ES&S iVotronic touch screen, electronic voting machine

Allegheny County hot line callers reported many incidents of machine failures that created long lines. There were also incidents of vote-switching on both the selection screen and the review screen.

On Election Day, the media reported:

- Non-working machines at eleven polling places early on election day. "It's unclear whether voters will be able to use an alternative voting method at the polling places or if they will have to go somewhere else."
- Twenty units were taken out of service in polling places across the county because of technical failures.
- Some of the machines weren't "zeroing out", which they need to do to start-up — a recurrence of a problem from the primary election. "The zero-vote count is necessary to serve as a baseline and ensure no votes are stored on the machines before official voting begins."
- Vote-switching on the iVotronics was alleged by State Republicans. The complaint, filed with Secretary of State Pedro Cortes alleged this problem was widespread around the state and occurred in 12 counties.

Broken Down Machines. There were 42 broken down machines reported to the non partisan hotlines. For example:

- From the Carnegie Library Polling Location in Pittsburgh:

  "All 3 voting machines at Carnegie Library in East Liberty were not working at 7:30 am when caller arrived to vote. Election officials said they "did" something that made the machines go out, and gave him an emergency paper ballot. But his friend had the same problem at 1 pm in Penn Hills -- and was NOT offered an emergency ballot."

- From the St. Thomas in the Fields Polling Location:

  "Was turned away at the polls because the electronic machines were down. Was in line since 7:10am. Was told to come back later. Was hearing on the radio at about 9:15am that the machines were now working."

- At the Serra Catholic High School:

  "All machines were down. They were back up at 11:15 a.m. They gave out all 50 of the provisional ballots they had, but were supposed to get more."

- At Lemington School:

  "She indicated that her polling place had been shut down because the voting machines were not working. She also indicated that a friend could not vote at Grotto Street (a church) location because the poll was not open."

Machine Malfunction. There were additional reports of vote-switching both on the selection screen and the final review screen:

- From the North Catholic High School Polling Location in Pittsburgh:

  "Attempted to vote race by race, but my choice for US Senate kept coming up as the opposing candidate. After resetting the machine twice, the poll workers suggested doing a 'Write In' for the candidate listed on ballot. Attempted 'Party Line' vote instead, but doing so selected a candidate from a different party for City Council which was unable to be changed with the party line ticket selected. System also had difficulties in recording the vote and, as a voter, I have ZERO confidence as to what was actually recorded for my vote."

- At the Dormant Methodist Church in Dormant:

  "On the screen, there were 2 choices (a) party of choice or (b) split ballot. She chose the split ballot. For one of her selections, a candidate she did not choose came up, she deleted him and continued the ballot. However at the end when she confirmed her screen, that same candidate showed up. She was unable to delete him, so she called in an election official. He was unable to delete the candidate, a total of 3 officials had to come into the booth before the candidate was deleted from her screen. Therefore 3 people saw her entire ballot. The officials were not sure why she was unable to delete the candidate, they stated she may not have pushed the screen hard enough, however it also took 3 officials to finally resolve the matter."

- From the Rogers School Polling Location in Pittsburgh:

  "Review different from original voting. I voted for Casey. When I touched the review button, it showed a check that I voted for Santorum."

- From the Whitehall Elementary School in Pittsburgh:

  "When the voter went to review the votes, the machine had registered one of her votes incorrectly. Voter feels 99.5% sure that she voted correctly -- said she voted very carefully."

Cuyahoga County, Ohio (Cleveland)

Voting Machines Used: Diebold TSx touch screen, electronic voting machine

Still smarting from the long lines and voting machine allocation problems experienced in the 2004 presidential election, Cuyahoga County was again beset with election problems in the 2006 election.

According to an election-day article in the Cleveland Plain Dealer, voters were turned away when:

> "Forty-three of the county's 573 voting places either failed to open on time or couldn't get some or all of their electronic voting machines to work."

Hotline incident reports give us more details.

Broken Down Machines. Over 100 broken down machines were reported to the EIRS system by voters and poll workers in Cuyahoga County.

Some polling locations had as many as 10 machines down at a given time, creating long lines and disenfranchising voters. Some voters were simply told they could not vote because the machines were down, and they were given no additional information. Others were forced to vote on provisional ballots. For example:

"Reserve Square machines are not working properly and they did not clear. Checked for receipt and people were turned away and not allowed to vote via paper ballot".

At the Westwood School polling location in Cleveland: *"Voter reports that as of 6:50 a.m., the voting machines were not working -- apparently there was some issue with respect to paper loading. Voter, along with other voters, left the polling place."*

And at the Hope Academy in Cleveland: *"Voter stated that voting machines are not functioning and he has not been able to vote. He stated that poll workers have not informed voters about the nature of the problem or when the machines will be ready."*

Voter Verifiable Paper Audit Trail Printer Failures. In addition to the complete break down of machines across the county, problems were reported with the voter-verifiable paper audit trail printer attached to the machines. Four out of six problems were reported as unresolved.

- The Zelma George Recreational Center Polling Location in Cleveland:

  "Paper trail not printing. Poll worker said it has been doing that all day and no one has complained. Vote said not acceptable, could not verify vote."

- The Memorial School Polling Location in Cleveland:

  "Two times in the late afternoon, one of the machines had a paper jam. But the EDT was able to straighten the paper pretty well and voting resumed. The tamper tape seems to peel off the paper canisters pretty easily."

- The Alex Hamilton Polling Location in Cleveland:

  "Machine did not print receipts".

- The Boulevard Elementary Center Polling Location in Cleveland:

  "The add-on printer housings on the Diebold TSX machine are very fragile, and are getting damaged, most likely in shipment to the polling places."

- Westwood School in Warrensville Heights:

  "45 minute wait, problems feeding paper. Poll workers are offering provisional ballots if voters don't want to wait: options are provisional ballot or wait 45+minutes. Also, voters are required to write their names on top of their ballots; voter feels that this compromises privacy."

- Shaker Heights Middle School in Shaker Heights

  "One of our machines (SN 248906) had occasonal printer problems. Once voter complained that he could not read the printout. The paper roll got stuck. I am aware of this happening twice during the day, at 1:35 and at 6:30. The first time, our presiding judge cancelled the vote and had the voter move to the other machine. The presiding judge informed me that he opened the printer door and discovered that something wasn't snapped in right. He snapped it in properly."

Other incident reports described long lines, switched votes, and malfunctioning machines, for example:

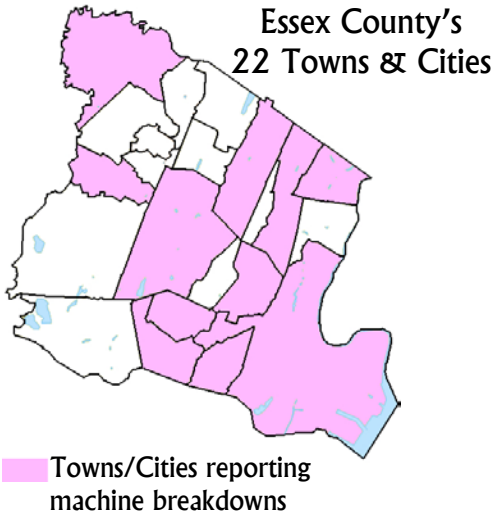
"Some of the machines were not working, some machines were malfunctioning and would just quit in the middle of them voting. People are not sure that their votes went through."

Essex County, New Jersey (Newark)

Voting Machines Used: Sequoia Advantage pushbutton electronic voting machine

Voters, poll workers, and the media reported machine breakdowns and malfunctions in half of Essex County's towns and cities:

Bloomfield
East Orange
Fairfield
Irvington
Maplewood
Montclair
Newark
Nutley
Roseland
South Orange
West Orange



Broken Down Machines. When the machines were not working, some voters received emergency ballots until the polling place ran out; other voters were given provisional ballots; others were simply turned away.

- From the Montgomery Street Elementary School in Bloomfield:

  "Three of the four machines were down. They were handing out provisional instead of emergency ballots. They couldn't reach their supervisor's office. Tech was called. He couldn't fix the machines. "

- From the Louise Spencer Elementary School in Newark:

  "Caller went to polling place in Newark; poll workers turned away voters because they said that the voting machines were broken; caller said that poll workers couldn't find emergency ballots and turned people away."

- About the Northeast School at 603 Grove Street in Montclair, the hot line reports:

  "We've probably gotten 10 calls about this site -- machines broken, unclear if emergency ballots or provisional ballots or being used, or whether those votes will be counted. Voters frustrated and leaving. This seems like a major problem to me, so if you can find someone to address it sooner, I think that should happen."

- In Nutley:

  "Nutley, precinct 5, Ward 2. Only one machine was working."

Machine Malfunction. At least one machine is reported to have lost votes.

- In Maplewood:

  "The Sequoia Advantage Voting machine in district 13 Maplewood recorded 28 fewer voters than the number of voters who signed in to vote. The official explanation was 'Voters fled/machine malfunction.' I was the Democratic Challenger at this poll and was there during all busy hours and observed no voters signing in and not staying to vote. This was a clear machine malfunction."

Harris and Fort Bend Counties, Texas (Houston)

Voting Machines Used: Hart InterCivic eSlate dial-operated electronic voting machine

The predominant issues reported in the Houston area were the confusion of voters using an unfamiliar machine with a non-intuitive design and, again, broken voting machines.

Confusing Operation of the Machine. A detailed poll worker's report published in a local paper, Fort Bend Now, described design flaws in the straight-party voting on the eSlate. As voters discovered that marking a candidate after voting a straight ticket removed all their previous votes, they became confused. Many accidentally cast their votes prematurely, and others lost their privacy when they were forced to call poll workers to help them recover. The poll worker wrote:

> *"With eSlate, when a straight party box is marked, the entire ballot is marked. Several people then went down the ballot and marked the already marked box. When this happens, a blue screen appears, saying that the voter has changed their straight party choice. It also cancels the vote for that person."*
>
> *"We asked people, 'Are you familiar with the eSlate?' If they said no, and most people said no, we often tried to instruct them. We talked about the 4-digit code, the Enter button and Select wheel, the Cast Ballot button. It was too much information. I literally got a sore throat from constantly repeating this information. When we got too tired, we just told voters to read the directions and let them fend for themselves. In at least two cases, voters who received no verbal instructions prematurely pushed the Cast Ballot button. We told them we were sorry but they were done voting."*

The poll worker also described voter disenfranchisement caused by the confusing summary review screen:

> *"Another problem came when casting a ballot. After using the Select wheel and Enter button, a voter would arrive at the final page of the summary. Instead of pushing the Cast Ballot button they would click Enter one more time. This would send them back to the ballot, causing much confusion."*
>
> *"The Cast Ballot button only worked at the last summary page. At other summary pages, pushing Cast Ballot merely sent voters to the next summary page. At this point, a number of puzzled people asked for help. Two people walked out the door and we had to chase them down so they could finish casting their ballots."*

And he pointed out the potential for fraud when voters need so much assistance:

> *"Here is the big problem with the eSlate. When there are a large number of requests for assistance, an unscrupulous poll worker has opportunites to trip up voters from the other party."*

Broken Down Machines and Other Equipment Problems. As with other locations, broken down voting machines were a consistent issue in the Houston area. Reports of long lines from machines that were broken or not working properly were called in to the non-partisan EIRS hotline and reported in the media. Emergency paper ballots were not available.

- From a polling location near the Galleria area of Houston:

  "Voters were not able to cast complete electronic ballots because of machine malfunctions at a polling place near the Galleria."

- From the Multi Service Center serving Ward Three in Houston-

  "A-J machines not working. Voter was told to come back in 30 minutes or later this afternoon, and doesn't think she will be able to vote today because the lines will be too long later."

- Four machines were down at a polling location in the 77048 zip code

  "There was no way to vote. The doors opened at 7 - he left after 8. They were not offering the people the chance to vote by paper ballot."

- From Precinct 57 at the Reagan High School Polling Location:

  "Got there before doors open. 7 comes and goes. Can't start because missing access codes from electronic voting machines. Waited 10-15 minutes. Supposed to have 10 machines, initially 6 machines. Only 4 operational, 2 off to side. Huge line 1:15 to vote. Hated it. Worse ever seen because of electronic voting."

- At the Oak Lake Baptist church in Sugar Land, a suburb of Houston:

  "Voting was stopped in our heavily Dem, high (for Sugar Land-- approx 60%) minority precinct for 55 minutes, from 7:45 a.m. to 8:55. Several people waited but several also left. There was not alternative method of voting offered. The wrong JBC had been delivered, used for 45 minutes (recording 64 votes), then noticed and voting was stopped. 55 minutes later the 'tech' brought our machine, hooked it up and voting commenced. The lines at our polling place were 1.5 to 2.5 hours long in the morning and evening."

- From a polling location in the 77001 zip code:

  "There is only one machine working; lots of people in line (irritated). There are 3 broken machines."

Conclusion

Certainly there were polling places where the voting went smoothly, no equipment malfunctioned, all registered voters who attempted to cast ballots were able to do so without difficulty, and election administrators had no problems retrieving and tallying results.

But the 1022 problem reports we analyzed revealed such widespread election problems of so many different types that they cannot be ignored or considered anomalies. The evidence presented indicates that electronic voting in its current form is systemically flawed and will require significant corrective measures to remedy the problems that have been exposed.

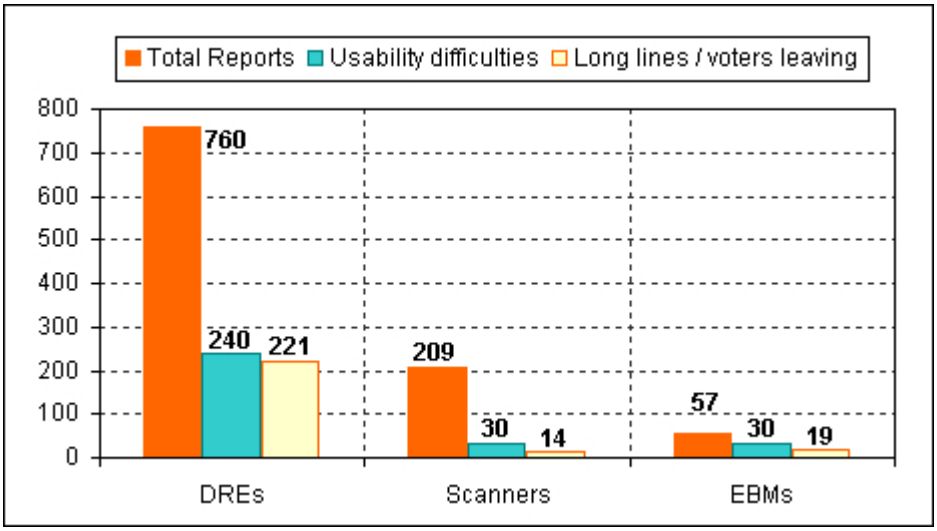
The reports described many polling places where chaos reigned. Across the country, poll workers with little or no technical expertise, insufficient training, and virtually no field experience were required to set up, operate, and troubleshoot complex electronic equipment. If their "human error" caused so many election disruptions, we must consider that it might be a mistake to require our election process to depend on the accurate use of high-tech equipment.

Voters reported confusion over how to use the equipment, difficulty knowing what to do when it didn't work as they were told it would, and concern that their votes may have been counted incorrectly or not counted at all. They reported standing in line for hours because the machines weren't working; many reported that they and other people left because they were unable to wait. If the machines are causing confusion, creating long lines at the polls, and disenfranchising thousands of voters, we must consider whether the equipment is benefiting the democratic process or hampering it.

The incident reports also reveal an additional, cloaked threat to fair voting practices when locales choose direct record electronic voting systems. Repeatedly, case studies indicate that voters were directed to cast their vote on provisional ballots when the e-voting equipment didn't work. However, provisional ballots are intended only for voters whose registration is in question. The improper use of provisional ballots for duly registered voters frustrated by failed DREs is a very disconcerting consequence of poorly functioning equipment and inadequate contingency plans.

The problems experienced cannot be blamed entirely on the implementation of new equipment in this election cycle. For example, 78 problems were reported about the DREs Georgia has been using since 2002, and the equipment which is now the subject of legal challenges in Sarasota County, Florida has been in place since the 2002 primaries.

Notably, while precinct scanners are used in 38 states and central count scanners are used in all states, DREs are used in only 34 states. Nevertheless, as the following chart shows, there were over three and a half times as many reports of problems with DREs; nearly nine times as many usability difficulties with DREs; and over fifteen times as many reports of long lines and/or voters leaving without voting. In fact, scanner or EBM malfunctions only resulted in long lines and/or voters leaving without voting when poll workers failed to allow voters to deposit ballots for later scanning.



The myriad reports from this most recent election make it clear that in the rush to implement electronic voting systems, we have put ourselves at the mercy of the equipment and the vendors who sell, service, and support it.

- Voters, poll workers, and election administrators alike encounter difficulties as they attempt to participate in an election process burdened with a wide variety of technical difficulties.
- Malfunctions of polling place equipment, failures associated with vote retrieval, loss and corruption of memory cards, and unexplained canvass anomalies cast doubt on the certified results and frequently lead to fruitless speculation rather than answers.
- Election outcomes are determined almost exclusively by the results computers report, and evidence indicates that computers will continue to report inaccurate results.

To ensure the health of our democracy, we must recognize and admit the inadequacies of the present systems and adopt pro-active corrective measures. The problems catalogued in this report cannot be rectified by a single corrective measure. Attention is required for all the diverse problems that have been exposed: confusion caused by the complexity of the computerized equipment; long lines at the polls; voter disenfranchisement; dependency on vendor involvement; and questionable outcomes.

See http://www.votersunite.org/info/2006E-VotingReports.xls for a compilation of the 1022 incident reports. If you are asked for a user ID and password, click "Cancel."

Note that this list is not an exhaustive list of problem reports. It includes only those from the first few hours of callers to EIRS, and it does not include the problems reported to partisan hot lines.