

**Are all paper ballot solutions  
created equal?**

**What does California know that  
we don't know?**

**AVANTE PRESS CONFERENCE**

- 3:00 PM, August 21, 2007 (Tuesday)
- Fraunces Tavern Museum, Flag Gallery, 3<sup>rd</sup> Floor,  
54 Pearl Street, New York, NY 10004



# VOTING SYSTEM DILEMMA?

## FL “Educated” Choice:

- **Change to Optical Scan & Paper Ballots**

## CA “Default” Choice:

- **Use Optical Scan & Paper Ballots**

## New York Activist Groups’ Choice:

- **Push to use Optical Scan & Paper Ballots**

## Other Activists’ Group Choice:

- **Hand Count Paper Ballots**



- **Optical scan paper ballot systems receive little scrutiny. *Are there hidden dangers that we don't know about?***



# Are Paper Ballot Systems Necessarily More Secure Than A Properly Designed & Engineered DRE with VVPB?

AP Wednesday, January 24, 2007 - Updated: Jan 26, 2007 05:25 AM EST

## Ohio election workers convicted of rigging '04 Presidential recount

CLEVELAND - Two election workers were convicted Wednesday of rigging a recount of the 2004 presidential election to avoid a more thorough review in Ohio's most populous county.

<http://news.bostonherald.com/politics/view.bg?articleid=179006>

***Which System? Optical Scan Paper Ballots!***



# Guard Against Misplaced Ballots

The Intelligencer *August 18, 2007*

<http://www.theintelligencer.net/page/content.detail/id/51908.html>

***When the votes were counted last Saturday night — or at least, when everyone thought they all had been counted — it appeared that voters had approved table gambling at a Cross Lanes dog track by a razor-thin margin. More than 45,000 ballots were cast; the apparent margin of approval was just 33 votes.***

***Then, election workers began finding ballots that hadn't been counted. In six different precincts, a total of 438 uncounted ballots were discovered. All of them were from "early voting" in advance of the day on which the referendum was held.***



- **Are there any fundamental differences between the disgraced and outlawed punch card optical scanning systems and the Marksense paper ballot optical scan system?**



# Question: Are there real differences between traditional marksense ballots & punch-card ballots?

## Punch-card Paper Ballots:

1. Voters punch holes to make choices on paper ballots
2. Holes that are not punched or removed completely will not be read correctly: % error?
3. Almost no errors when holes are punched cleanly
4. Voters are not notified how their ballots are read and recorded
5. Punch cards may be tampered with post election
6. *Punch card ballots are outlawed*

## Mark-sense Paper Ballots:

1. Voters mark ovals to make choices on paper ballots
2. Ovals that are not marked adequately or smeared by erasures will not be read correctly: % error?
3. Slightly more errors even when ovals are marked properly
4. Voters are not notified how their ballots are read and recorded
5. Paper ballots are even easier to tamper with post election
6. *Paper ballots are viewed as secure*

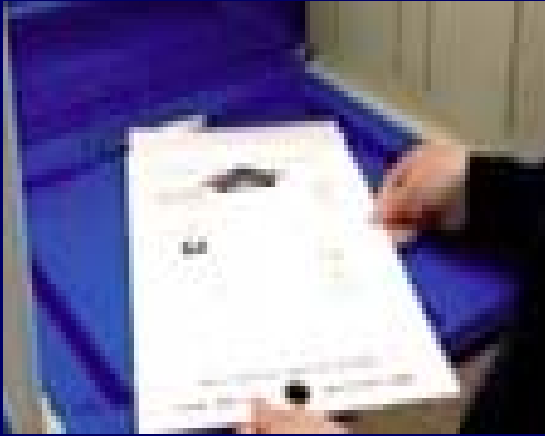
Hint: LA unintentionally humored us with “INK-A-VOTE” by marking on the punch card ballots instead of punching the holes.



- **If optical scan paper ballot systems are better choices, are all PBOS created equally?**



# Optical scan systems are “direct recording electronics” also!



①

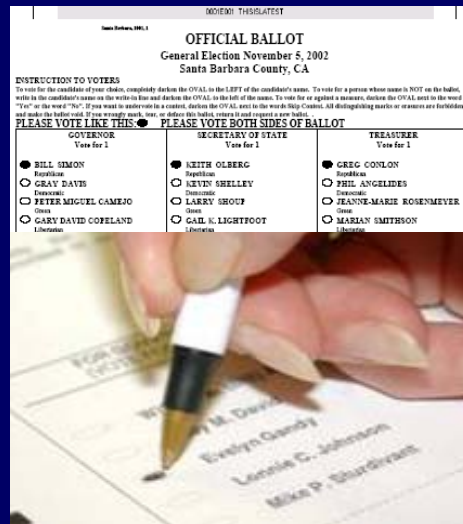
Voter signs-in and is given a paper ballot.

## Vulnerabilities:

1. ***Bogus ballots*** are readily made.
2. ***“Errors” in chain-of-custody*** of blank ballots and voted ballots are common.
3. ***Cost and errors*** are inherent in printing and managing thousands of different ballot styles.



# Optical scan systems are “direct recording electronics” also!



② Voter marks his ballot.

## Vulnerabilities:

1. **1.5% voter errors in under and over votes for Presidential races** plus additional errors.
2. **3.5-20% voter error rates** are common for other lesser races.

# Optical scan systems are “direct recording electronics” also!



③

Standard optical scan systems only indicate any over-votes or under-votes!

(Indicating specific contest is NY State Laws only)

## Vulnerabilities:

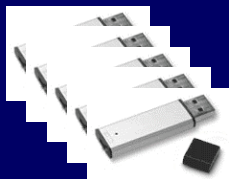
1. Ballots are ***scanned & counted electronically*** with 0.5% or more inherent error rates (marginal marks & skewing).
2. PBOS only tells you that you have some “over-voted” or “under-voted” contests but ***NOT how your ballot is read!***
3. There is ***less transparency*** than with a DRE and VVPR that your vote is counted or counted correctly!



# Optical scan systems are “direct recording electronics” also!



④ Opscan reports local tallies on flash memory (R/W)



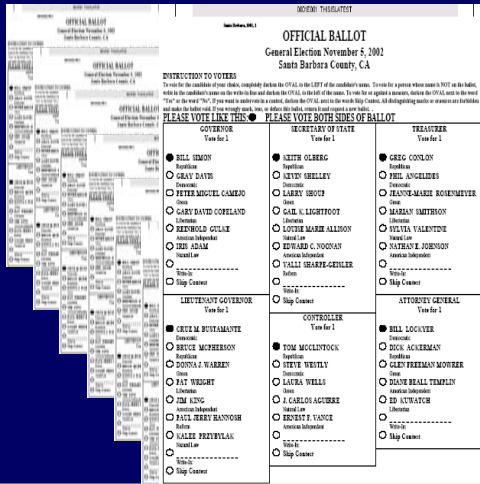
⑤ Central vote consolidation uses flash memory.

## Vulnerabilities:

1. Today, traditional systems use read/write flash memories to transfer vote tallies. ***Flash memories can be changed without a trace.***
2. No digital images (photos) of the paper ballots are captured. If the ***retained paper ballots are erased, smeared, tampered, or substituted there is no evidence to trace.***
3. That is, ***all is well as long as the tallies “match” the tampered paper ballots within 0.5-2.0%!***



# Optical scan systems are “direct recording electronics” also!



⑥ Recount & canvassing proceeds with completed, marked ballots.

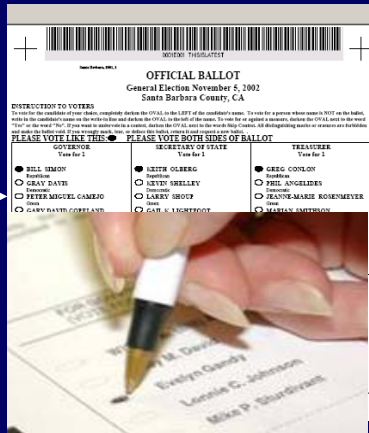
## Vulnerabilities:

- 1. Since no digital images of the ballots are kept, if the tallies match within 2% of the erased, smeared, or substituted paper ballots it is not traceable.**
- 2. With the “no fault” absentee voting, there are plenty of paper ballots that can be added or tampered with.**

# **OPTICAL VOTE-TRAKKER™** **(PRECINCT-BASED)**

**Not All Optical Scan Systems  
are Created Equally in  
Accuracy and Security!**

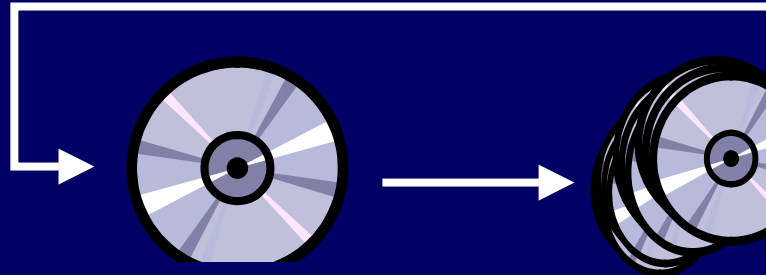
# Not All Optical Scan Systems are Created Equally in Accuracy and Security!



❶ Voter signs in and is given a paper ballot.

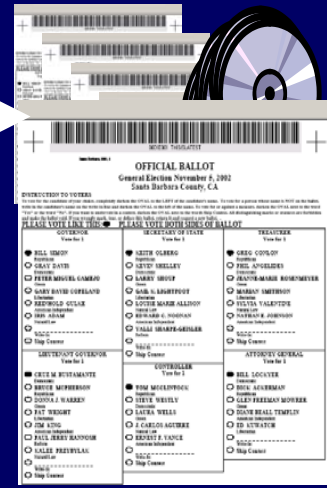
❷ Voter marks his ballot.

❸ Scans & indicates HOW the ballot is deciphered and any over or under votes. Also captures the ballot image.



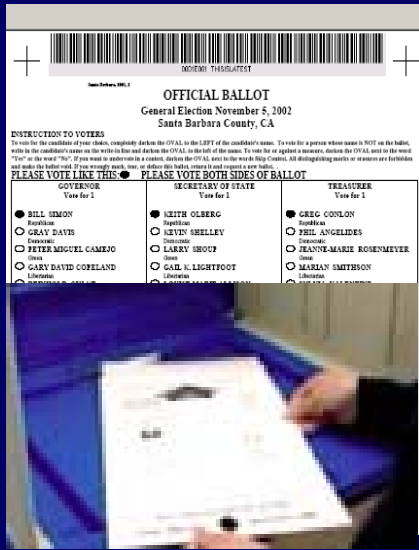
❹ Reports local tallies, ballot images, and event log on write-once-read-many CD-R that was authenticated by the jurisdiction and "signed" by precinct election officials and/or observers.

❺ Central consolidation of votes using authenticated and signed WORM CD-R instead of flash memories.



❻ Re-count & canvass with marked ballots and/or WORM CD-R that can be authenticated

# Not All Optical Scan Systems are Created Equally in Accuracy and Security!



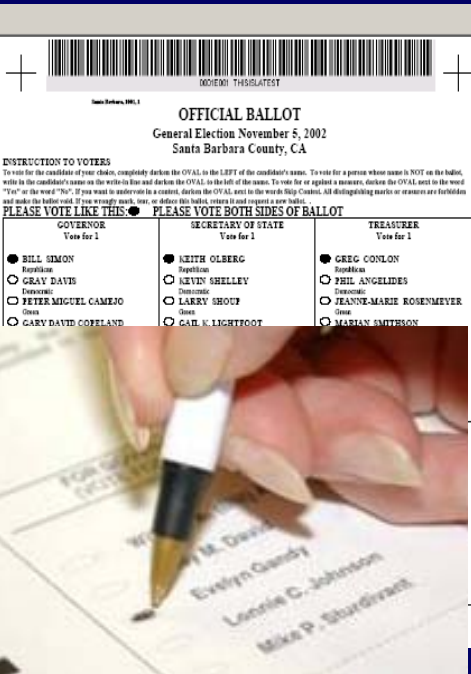
1

Voter signs in and is given a paper ballot.

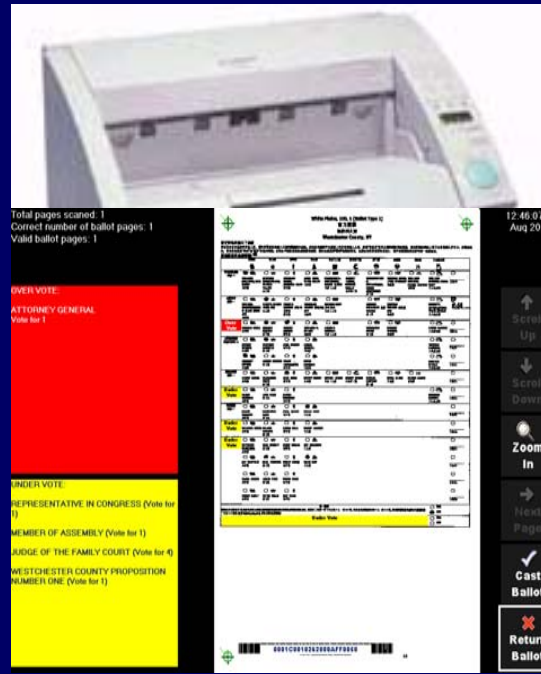
## Vulnerabilities Mitigated:

1. Ballots bear **machine-readable unique random identifiers that cannot be forged or duplicated.**
2. Unlimited numbers of ballot styles can be printed on-demand at the polling places.
3. In response to “privacy” concerns, one can point out that a machine-readable authentication identifier is less of a problem than “no fault” absentee ballots used in many states.

# Not All Optical Scan Systems are Created Equally in Accuracy and Security!



2  
Voter  
marks his  
ballot.



3  
System scans & indicates HOW the ballot is deciphered and any over or under votes and also captures the digital ballot images.

## Vulnerabilities Mitigated:

1. Ballots are scanned and **digitally imaged** as an audit trail.
2. AVANTE OPTICAL VOTE-TRAKKER® **displays exactly how your ballot is read** and any “over-voted” or “under-voted” contests.
3. **Pixel measurements resolve lighter & most smeared markings.**
4. Errors are corrected by completing a new ballot.



White Plains, 100, 1 (Ballot Type 1)  
官方選票  
紐約州大選  
Westchester County, NY

請仔細閱讀以下指南

當您找到您要選擇的候選人後，請用鉛筆將該候選人左側的圓圈完全塗黑。如果您的選擇不在選票上的正式候選人之列，請將“自選名”選項左側的圓圈完全塗黑，並在對應的橫線上寫下您的候選人的名字。對標案查法，請完全塗黑與“贊成”或“反對”對應的圓圈。如果您不願對其職位或選票做選擇，請把完全塗黑與“棄權”對應的圓圈。如果您的選票被撕毀或黏貼，請作廢該選票並重新申請一張新選票。

請按照圖例塗黑標圖：

	共和黨	民主黨	保守黨	自由黨	社會工人黨	社會勞工黨	勞工黨	共產黨	綠黨	自由黨	自選名
市長和副市長 選舉一	WILLIAM SULLIVAN, NEIL CAREY 共和黨	STEPHEN MASSIMILIAN, GLORIA DILLON 民主黨	DOUGLAS STONE, RICHARD RAPP 保守黨	AMNE REET, VICKI GALEY 自由黨	FRANKMAY L. MATTHEWS, DIANE RUBIN 社會工人黨	ROBERT MARSH, SANDRA BELLY 社會勞工黨	CHRISTOPHER R. RICHARDSON, CHRIS CARPENTER 勞工黨	THOMAS REISS, LYNN STEWART 共產黨	WILLIAM MALICKI, FRANK CAPUTO 綠黨	WILLIAM RHODES, LINDA RAPP 自由黨	自選名: _____
州副議長 選舉一	MICHAEL SANTAROGANCI 共和黨	CHERYL SIMON 民主黨	PETER F. SAKTON 保守黨	FRANKLIN MARGO 自由黨	EDGENE RUFF 社會工人黨	ARTHUR SALPACKE 社會勞工黨	THOMAS TURNER 勞工黨	KENNETH INTELLICCHIO 共產黨	KENNETH INTELLICCHIO 綠黨	KENNETH INTELLICCHIO 自由黨	自選名: _____
<b>Over Vote</b>	ARNOLD KRILL 共和黨	ROBERT SQUIRE 民主黨	ROBERT SQUIRE 保守黨	RICHARD & SILVER 自由黨	LOUIS F. MURRAY 社會工人黨	THEODORE POOLE 社會勞工黨	ROBERT TYRRELL 勞工黨	LOUIS PARKER 共產黨	LOUIS PARKER 綠黨	LOUIS PARKER 自由黨	自選名: _____
上訴法庭法官 選舉不連續二	ERNEST SYNDER 共和黨	STEPHEN HARRICK 民主黨	JOEL KAISER 保守黨	CAROL RUSSELL 自由黨				THOMAS LAUNDERS 共產黨	THOMAS LAUNDERS 綠黨	THOMAS LAUNDERS 自由黨	自選名: _____
	HERBERT DIVINE 共和黨	ANDRE DECKER 民主黨	CRAIG HENDERSON 保守黨	HEIDI PIDGEON 自由黨				MORTON STEELE 共產黨	MORTON STEELE 綠黨	MORTON STEELE 自由黨	自選名: _____
美國參議員 選舉一	HARRY RIDER 共和黨	ELIZABETH BAICK 民主黨	GAIL BOSS 保守黨	HARRY RIDER 自由黨	EDWIN LEWIS 社會工人黨	HARRY RIDER 社會勞工黨	SAMUEL LAWTON 勞工黨	NORA KLING 共產黨	GLENN VANCE 綠黨	GLENN VANCE 自由黨	自選名: _____
<b>Under</b>	FRANK PEARSON 共和黨	LOIS KOSS 民主黨	DAVID PIDGEON 保守黨					HOWARD RAGGIO 共產黨	HOWARD RAGGIO 綠黨	HOWARD RAGGIO 自由黨	自選名: _____
州參議員 選舉一	JAMES PIERSON 共和黨	THEODORE KOPF 民主黨	PAUL QUINN 保守黨	BRIAN GETZ 自由黨							自選名: _____
<b>Under</b>	MILDRED DUDO 共和黨	CALVIN MARINO 民主黨	LINDA HALL 保守黨	HARRY SORSES 自由黨							自選名: _____
<b>Under</b>	RAYMOND CARLUSSA 共和黨	ERIC SHEERY 民主黨	MARY BURKE 保守黨	JAY WAITHEUS 自由黨							自選名: _____
	JAY WAITHEUS	SAUL CURKIN	PHILIP PERDS	JOHN BOY							自選名: _____

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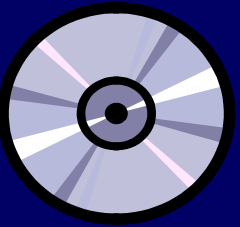
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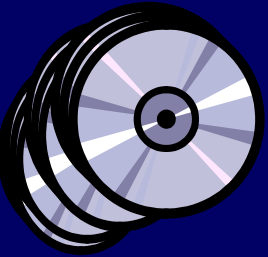
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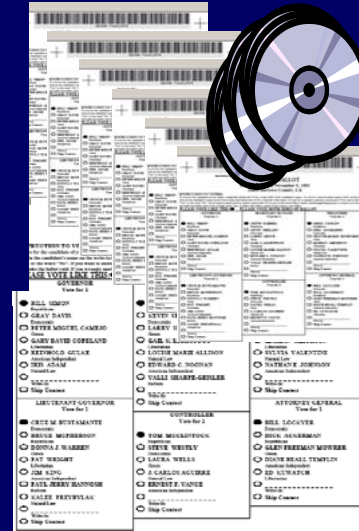
# Not All Optical Scan Systems are Created Equally in Accuracy and Security!



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⑤ Central consolidation of votes using authenticated and signed WORM CD-R instead of flash memories enhances security.



⑥ Recount & canvassing with marked ballots and/or WORM CD-R that can be authenticated.

## Vulnerabilities Mitigated for Precinct-Based Optical Scan System:

1. Since real-time digital ballot images are kept, any submitted and tampered paper ballots can be easily traced.
2. The use of a **signed WORM CD-R as the transfer media** containing the **digital ballot images** and **event log** makes insider tampering almost impossible without being caught.
3. To resolve problems with adding, substituting, or tampering with **absentee paper** ballots, detailed video chain-of-custody monitoring must be used.

### FL “Educated” Choice:

- Change to Optical Scan & Paper Ballots

### CA “Default” Choice:

- Use Optical Scan & Paper Ballots

### New York Activist Groups’ Choice:

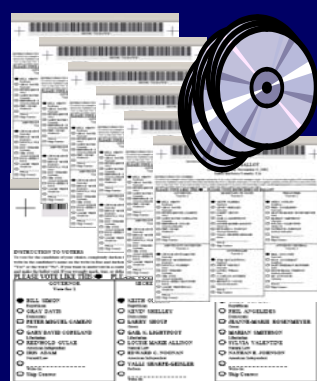
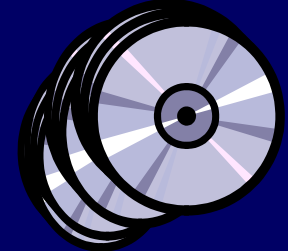
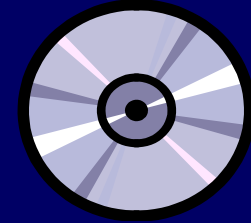
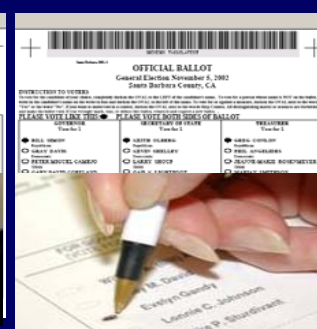
- Push to use Optical Scan & Paper Ballots

### Many Other Activists’ Group Choice:

- Hand Count Paper Ballots

**Is an Optical Scan Paper  
Ballot System the *right or  
wrong* choice?**





1 Voter signs in and is given a paper ballot.

2 Voter marks his ballot.

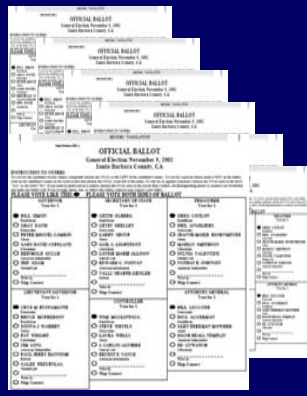
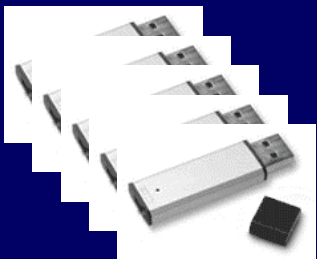
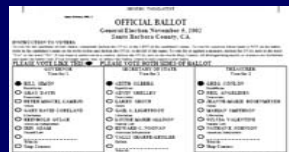
3 Scans & indicates HOW the ballot is deciphered and any over or under votes. Also captures the ballot images.

4 Reports local tallies, ballot images, and the event log on a write-once-read-many CD-R that has been authenticated by the jurisdiction and "signed" by precinct election officials and/or observers.

5 Central consolidation of votes using authenticated and signed WORM CD-R instead of flash memories.

6 Recount & canvass with marked ballots and/or WORM CD-R that can be authenticated.

## Not All Optical Scan Systems are Created Equally in Accuracy and Security!



1 Voter signs-in and is given a paper ballot

2 Voter marks his ballot

3 Optical scans ballot & indicates any over-votes or under-votes

4 Opscan reports local tallies on flash memory (R/W)

5 Central consolidation of votes using flash memory

6 Recount & canvass with marked ballots



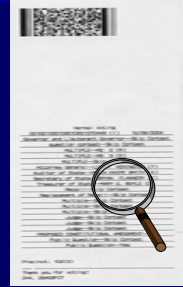
US 6,892,944; 7,077,313; 7,036,730 & pending patents



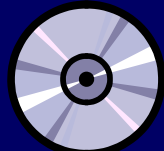
**❶ Voter signs-in and gets a ballot Access "VID" card**



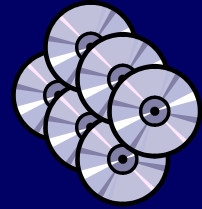
**❷ Voter "guided" to vote on touch-screen DRE**



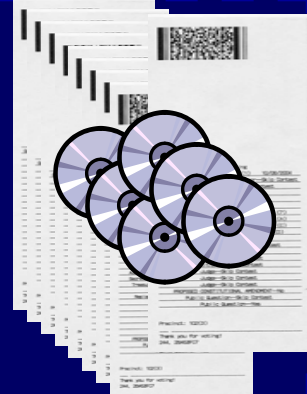
**❸ Voter verified paper ballot (VVPB) as recorded in DRE**



**❹ DRE reports local tallies on CD-R (WORM)**



**❺ Central consolidation of votes using CD-R**

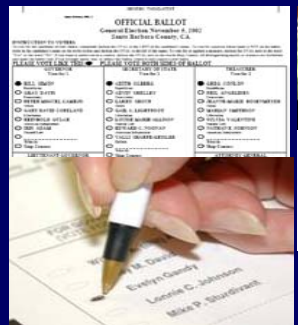


**❻ Recount & canvass with VVPB and CD-R**

**Are you sure your vote is counted and counted correctly?**



**❶ Voter signs-in and gets a paper ballot**



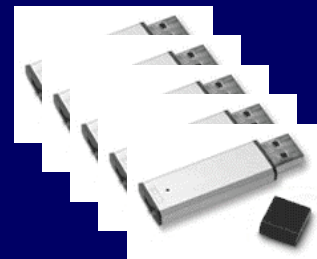
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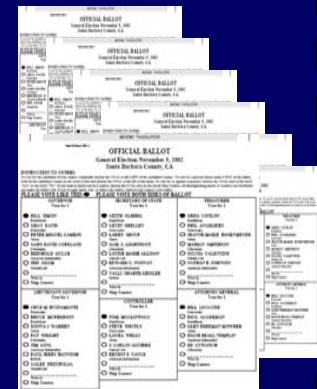
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**❹ Opscan reports local tallies on flash memory (R/W)**



**❺ Central consolidation of votes using flash memory**



**❻ Recount & canvass with marked ballots**



# Scientific Studies Sponsored by New York State Proves the Properly engineered DRE with VVPB More Trustworthy and Easier to Use !

	The voting system was easy to use <sup>5</sup>		Confidence that the system accurately recorded mv vote <sup>6</sup>	
AVANTE DRE	76.5% YES	10.6% NO	82.9% YES	6.5% NO
SEQUOIA DRE	72.9% YES	14.1% NO	79.7% YES	7.7% NO
LIBERTY DRE	80.2% YES	8.2% NO	76.5% YES	7.1% NO
<b>LEVER DRM</b>	<b>73.5% YES</b>	<b>12.3% NO</b>	<b>78.7% YES</b>	<b>6.1% NO</b>
SEQUOIA OP SCAN	65.8% YES	17.4% NO	60.2% YES	18.6% NO
ES&S OP SCAN	63.9% YES	20.6% NO	65.4% YES	12.4% NO
DIEBOLD OP SCAN	67.4% YES	16.8% NO	67.8% YES	13.1% NO



# A Properly Engineered DRE with VVPB is the Only System Proven to Yield 0% Residual Votes (Voter Errors)

<http://www.vote.caltech.edu/Reports/2001report.html>

Table 1 of that report (found on page 21), contains the following data:

RESIDUAL VOTES AS A PERCENT OF ALL BALLOTS CAST, 1988-2000

Machine Type	President	Governor & Senator
Paper Ballot	1.8%	3.3%
Punch Card	2.5	4.7
Optical Scan	1.5	3.5
Lever Machine	1.5	7.6
Electronic (DRE)	2.3	5.9

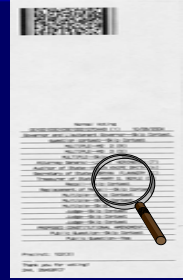
<b>AVANTE DRE (Paging)</b>	<b>0%</b>	<b>0% (2002-2006)</b>
<b>AVANTE DRE (Full-Face)</b>	<b>0%</b>	<b>0% (2006)</b>



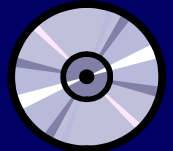
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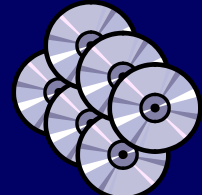
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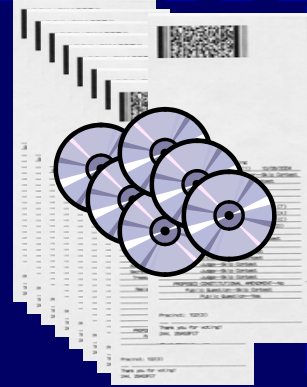
③ Voter verified paper ballot (VVPB) as recorded in DRE



④ DRE reports local tallies on CD-R (WORM)



⑤ Central consolidation of votes using CD-R



⑥ Recount & canvass with VVPB and CD-R

# Not All DREs with VVPR are Created Equally in Accuracy and Security!

Press Office Title to Enlarge Text	REPUBLICAN	DEMOCRATIC	CONSERVATIVE	LIBERAL	SOCIALIST WORKER	SOCIALIST LABOR	LABOR	COMMUNIST	COURAGE	FREE LIBERTARIAN	Write-In	Skip Choice			
GOVERNOR AND LT-GOVERNOR Vote for ONE	WILLIAM BULLIVANT, NEIL CAREY	STEPHEN MASSIMILIAN, GLORIA DILLON	DOUGLAS STONE, RICHARD RAPP	ANNE NEET, VICKI GALEY	FRANK L. MATTHEWS, DIANE RUBIN	ROBERT MARSH, SANDRA REILLY	CHRISTOPHER R. RICHARDSON, CHRIS CARPENTER	THOMAS REISS, LYNN STEWART	WILLIAM MALUCHI, FRANK CAPUTO	WILLIAM RHODES, LINDA GAPP	Write-In	Skip Choice (s)			
COMPTROLLER Vote for ONE	MICHAEL SANTARCANGELO	CHERYL SIMON	PETER F. SAXTON	FRANKLIN MARGO	EUGENE RUFF	PETER F. SAXTON	ARTHUR SALAMACK	THOMAS TURNER		KENNETH INTERLICCHIO	Write-In	Skip Choice (s)			
ATTORNEY GENERAL Vote for ONE	ARNOLD KRILL	ROBERT SQUIRE	ROBERT SQUIRE	RICHARD A. SILVER	LOUIS F. MURRAY		THEODORE POOLE	ROBERT TYRRELL		LOUIS PARKER	Write-In	Skip Choice (s)			
ASSOCIATE JUDGE OF THE COURT OF APPEALS Vote for any TWO	ERNEST SYNDER	STEPHEN HARRICK	JOEL KAISER	CAROL RUSSELL						THOMAS LANDERS	Write-In	Skip Choice (s)			
	HERBERT DEVINE	ANDRE DECKER	CRAIG HENDERSON	HEIDI PIDGEON						MORTON STEELE	Write-In	Skip Choice (s)			
UNITED STATES SENATOR Vote for ONE	HARRY RIDER	ELIZABETH MACK	GAIL ROSS	HARRY RIDER	EDWIN LEWIS	HARRY RIDER	SAMUEL LAWTON	NORA KLING	GLENN VANCE		Write-In	Skip Choice (s)			
REPRESENTATIVE IN CONGRESS Vote for ONE	FRANK PEARSON	LOIS KOSS	DAVID PIDGEON							HOWARD RAGGIO	Write-In	Skip Choice (s)			
STATE SENATOR Vote for ONE	JAMES PIERSON	THEODORE KOPP	PAUL QUINN	BRIAN GETZ							Write-In	Skip Choice (s)			
MEMBER OF ASSEMBLY Vote for ONE	MILDRED DUDO	CALVIN MARRINO	LINDA HALL	HARRY BOSSSES							Write-In	Skip Choice (s)			
JUDGE OF THE FAMILY COURT Vote for any FOUR	RAYMOND CARRUBBA	ERIC SHEEHY	MARY BURKE	JAY WAITKU							Write-In	Skip Choice (s)			
	JAY WAITKUS	SAUL CURRIER	PHILP REBIS	JOHN ROY							Write-In	Skip Choice (s)			
	CAROL CROSS	LEWIS TESE	FIERO FINN								Write-In	Skip Choice (s)			
	DORIS GAULT	PETER VALLE	KAY RAAB								Write-In	Skip Choice (s)			
PROPOSITION NUMBER ONE Press Here to See Detail	YES	NO	Skip Choice (s)	WESTCHESTER COUNTY PROPOSITION NUMBER ONE	YES	NO	Skip	NUMBER ENDMENT s to See	YES	NO	Skip Choice (s)	PROPOSAL NUMBER THREE, AN AMENDMENT Press Here to See Detail	YES	NO	Skip Choice (s)
PROPOSAL NUMBER FOUR, AN AMENDMENT Press Here to See Detail	YES	NO	Skip Choice (s)	PROPOSAL NUMBER FIVE, AN AMENDMENT Press Here to See Detail	YES	NO	Skip	NUMBER LAN MENT s to See	YES	NO	Skip Choice (s)	PROPOSAL NUMBER EIGHT, AN AMENDMENT Press Here to See Detail	YES	NO	Skip Choice (s)
Westchester County - White Plains 1 100 (Ballot Type 1)	For Black/White Display		Reverse Tone Display		<p>Make Change</p>		<p>Cast As Is</p>		<p>per Record Font Size</p> <p>Regular      Large</p>		Cast Ballot				

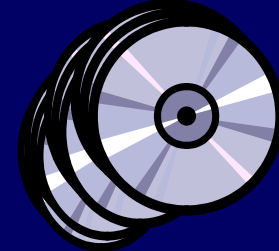
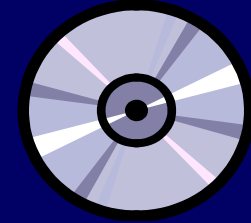
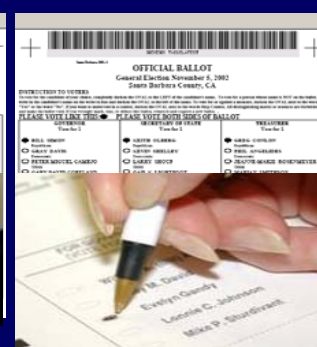
You have not completed those contests whose titles are in pink. If satisfied with current selections, press "Cast As Is". Otherwise, press "Make Change" to modify your selections.

- **DRE with VVPR?**
- **Precinct-Based Optical Scan with Ballot Marking Device?**
- **Precinct-Based Hand Counting with Ballot Marking Device?**

**1. Depends on the jurisdiction.**

**2. Choose systems that have been engineered for security and accuracy.**





➊ Voter signs in and is given a paper ballot.

➋ Voter marks his ballot.

➌ Scans & indicates HOW the ballot is deciphered and any over or under votes. Also captures the ballot images.

➍ Reports local tallies, ballot images, and the event log on a write-once-read-many CD-R that has been authenticated by the jurisdiction and "signed" by precinct election officials and/or observers.

➎ Central consolidation of votes using authenticated and signed WORM CD-R instead of flash memories.

➏ Recount & canvass with marked ballots and/or WORM CD-R that can be authenticated.

## Are you sure your vote is counted and counted correctly?



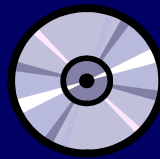
➊ Voter signs-in and gets a ballot Access "VID" card



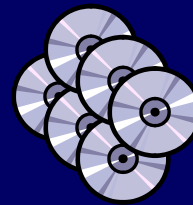
➋ Voter "guided" to vote on touch-screen DRE



➌ Voter verified paper ballot (VVPB) as recorded in DRE



➍ DRE reports local tallies on CD-R (WORM)



➎ Central consolidating votes using CD-R



➏ Recount & canvass with VVPB and CD-R

## Source Codes (High level programming language):

1. Human readable representation-recipe of the instructions that the computer uses for its operation.
2. FEC 2002 VSS and EAC 2005 VVSG all require detailed explanations of source codes (within the source codes) written by all voting system vendors.
3. Standard computers are loaded with different software execution codes so that it can perform different functions between different components (microprocessor, memories, graphic display, etc.) of the computer. All of these sub-components involve firmware (machine-based software) and execution codes of different functional modules.
4. The voting systems use third party operating systems to develop capabilities and provide complicated functions (such as those required for accessible voting features such as foreign languages and speech engines).
5. Most election systems use some established software modules or packages for special database functions and drivers for printer and/or touch-screen displays.
6. Some vendors previously developed simple voting systems (commonly found in 1970-2000) for "touch-button" direct electronic recording using simpler processors such as the Z80, etc. The vendor developed all the required functions and interfaces and thus had available to themselves all software source codes and execution codes.
7. **Most current voting systems providing accessibility features use Microsoft based operating systems because of the abundant availability of functional modules. Additional software from third parties (including Microsoft themselves) is also common.**



## Compilers (Converting high level to machine level language):

1. The Compiler is software that converts human-readable source code into machine-readable execution codes. Some compilers are developed by the developers of the software, such as Microsoft themselves.
2. Having source code without the compiler source code is almost as good as only having execution codes.
3. **Most compilers are pieced together. Full availability of source code is unlikely for Linux or Windows.**



## Execution Codes (Machine level programming language):

1. Execution Codes are computer instructions (machine language) that have been converted (compiled) from the source codes. Execution codes can be escrowed with Federal, State, and County authorities.
2. Expert programmers can make additions and modifications to execution codes directly without using the compiler or language converters thereby changing the source codes.
3. **Vendor developed source codes, and all of the execution codes of the operating system, database, speech-engines, drivers, etc. are all "bound" (hashed) with SHA1 and escrowed.**

The current New York

State Election Code on escrowing **ALL source codes** include:

1. **Vendor developed software modules.**
2. **Third party operating systems.**
3. **Third party software functional modules.**
4. **All drivers for components such as printers, touch-screens, etc.**
5. **All compilers**
6. **All firmware (software inside hardware components) that may include:**
  - **Bios**
  - **Embedded CPU and/or MCU codes**
  - **Graphic chip**
  - **etc.**

