



# Course I – Voting Equipment, Acquisition, Operation and Maintenance

State Registered Election  
Official (REO) Certification

Christopher McGinn, Ph.D.  
January 5<sup>th</sup>, 2015



# Agenda

1. History of Voting Systems
2. Voting System Testing
3. Help America Vote Act
4. Texas Voting System Laws
5. Budgets for Voting Systems
6. Operation of Voting Systems
7. Maintenance of Voting Systems



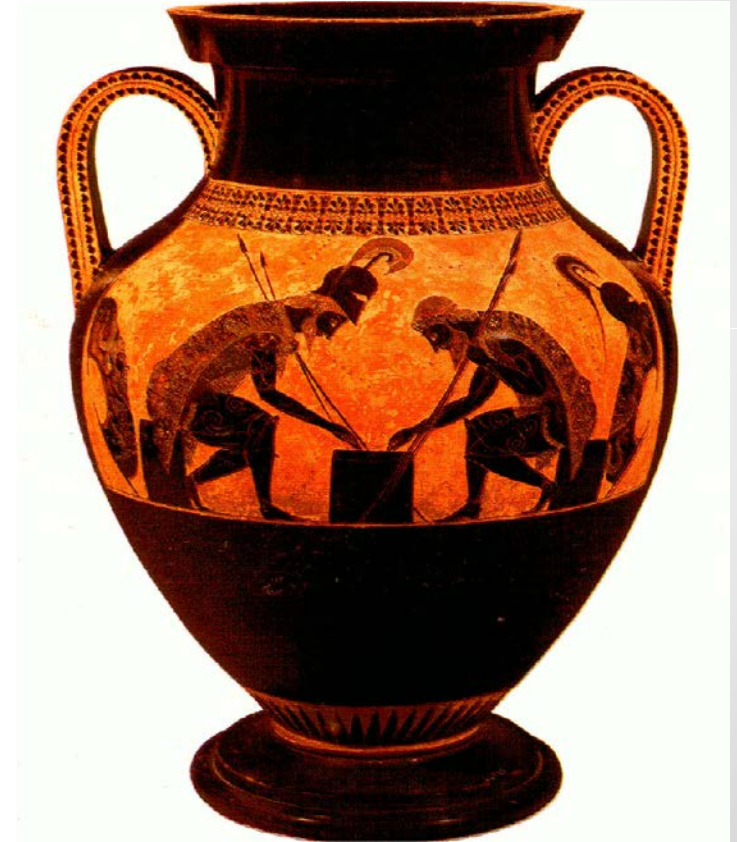


# History of Voting Systems



# The “Original” Voting System

- Ancient Greece - 508 BC.



# The “Original” Voting System

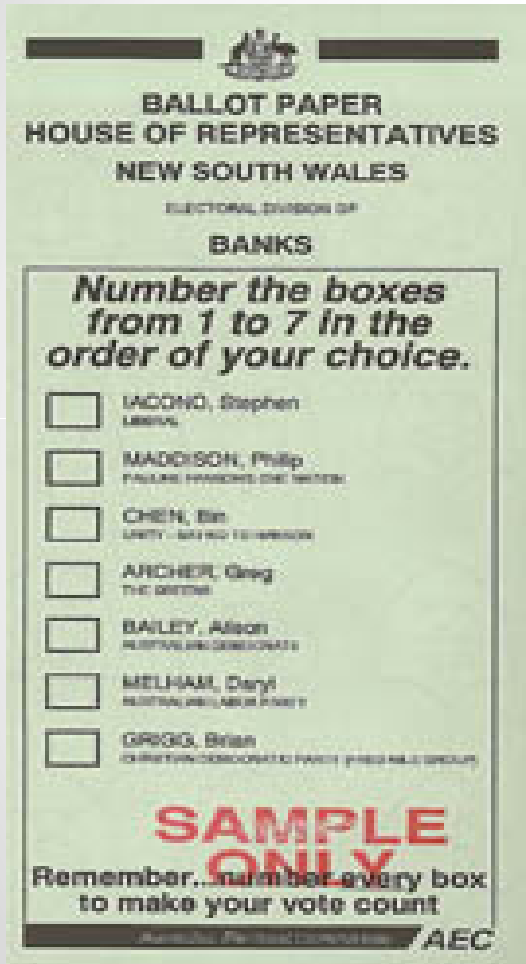
- Ancient Greece - 508 BC.



# History of Voting Machines – Paper

## Ballots

Concern about vote fraud and voter privacy was lead to one of the most important innovations in voting technology. In 1858, an election was held in Victoria Australia using standardized paper ballots that listed all candidates for office.







# History of Voting Machines – Paper Ballots





# History of Voting Machines - Mechanical Lever Machines



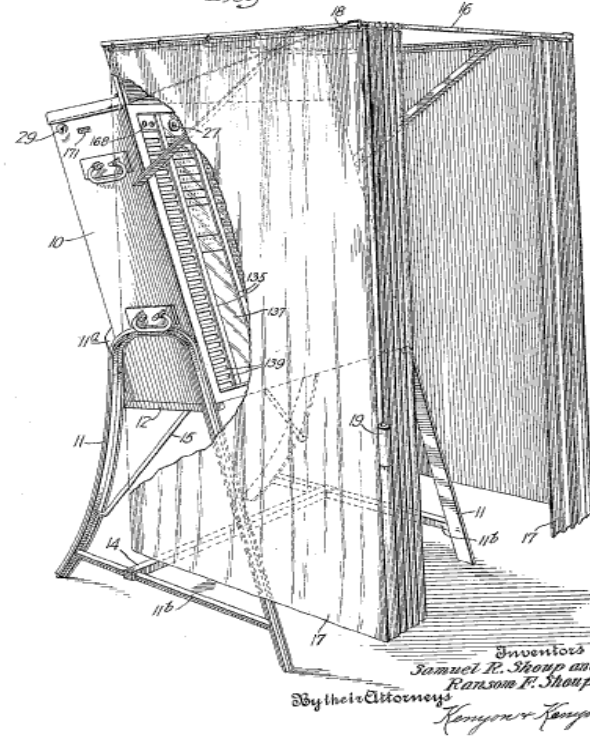
Sept. 15, 1936.

S. R. SHOUP ET AL  
VOTING MACHINE  
Filed July 25, 1929

2,054,102

27 Sheets-Sheet 1

*Fig. 1.*



A lever voting machine completely eliminates all questions of ballot interpretation.

# History of Voting Machines – Punch card Voting

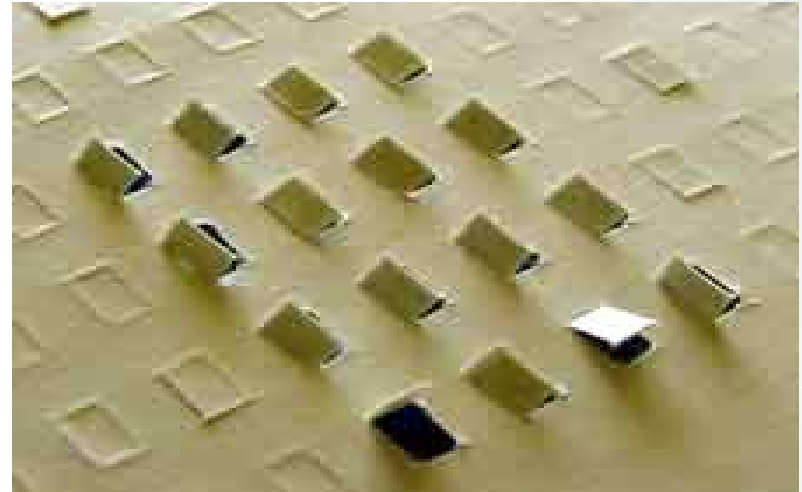
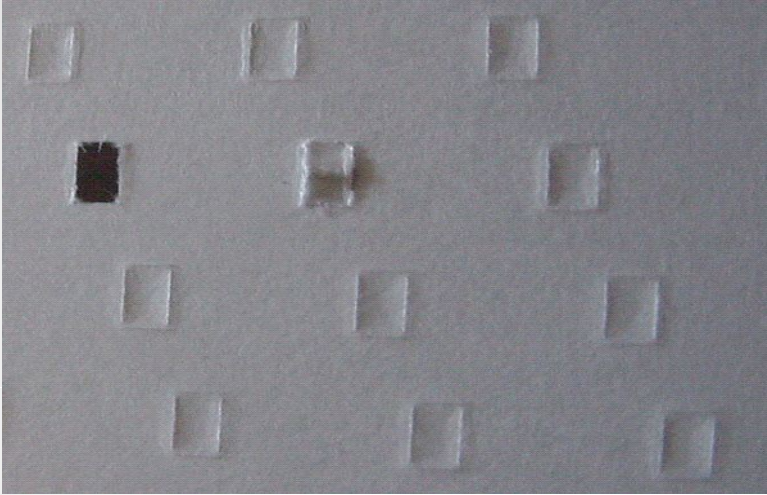
DÓ NOT DETACH STUB-FOLD OVER

1	21	40	59	78	97	117	136	156	176	196	216
2	22	41	60	79	98	118	137	157	177	197	217
3	23	42	61	80	99	119	138	158	178	198	218
4	24	43	62	81	100	120	139	159	179	199	219
5	25	44	63	82	101	121	140	160	180	200	220
6	26	45	64	83	102	122	141	161	181	201	221
7	27	46	65	84	103	123	142	162	182	202	222
8	28	47	66	85	104	124	143	163	183	203	223
9	29	48	67	86	105	125	144	164	184	204	224
10	30	49	68	87	106	126	145	165	185	205	225
11	31	50	69	88	107	127	146	166	186	206	226
12	32	51	70	89	108	128	147	167	187	207	227
13	33	52	71	90	109	129	148	168	188	208	228
14	34	53	72	91	110	130	149	169	189	209	229
15	35	54	73	92	111	131	150	170	190	210	230
16	36	55	74	93	112	132	151	171	191	211	231
17	37	56	75	94	113	133	152	172	192	212	232
18	38	57	76	95	114	134	153	173	193	213	233
19	39	58	77	96	115	135	154	174	194	214	234
20					116	136	155	175	195	215	235

TO BE FILLED IN BY COUNTING BOARD ONLY  
 PRECINCT NO. \_\_\_\_\_ WRITE-IN NO. \_\_\_\_\_



# History of Voting Machines - Chad's



It is noteworthy that 12 punch positions on the 228 position ballot are directly over internal braces inside the mechanism, and that these positions are particularly prone to the development of chad jams that may prevent clean punching in those positions.

# History of Voting Machines - Optical Scan

- 1974 – Optical Scan ballots start to appear.

**OFFICIAL ELECTION BALLOT**  
State of Kansas, County of Johnson  
November 7, 2000

INSTRUCTIONS TO VOTERS  
Return ballot by 7:00 p.m. election day

**GENERAL ELECTION NATIONAL, STATE, COUNTY AND TOWNSHIP OFFICES QUESTIONS SUBMITTED**

**IMPORTANT INSTRUCTIONS TO VOTERS**

Mark your ballot in black ink. Darken the oval to the LEFT of your choice.

Review your ballot before marking it. If you tear, deface, or wrongly mark this ballot, you may return it and receive a new ballot.

To vote for a person, darken the oval to the left of and on the same line with the name of the candidate. Write in votes are allowed only if a blank line is provided under the specific office. Print or write the name clearly and darken the oval to the left of the written name.

To vote in favor of any question submitted upon this ballot, darken the oval to the left of the word "YES".

To vote against a question submitted, darken the oval to the left of the word "NO". Do not make any other marks on the ballot.

Place ballot in the return envelope and seal it securely. SIGN THE ENVELOPE. For your ballot to be counted, by law your signature must be on the envelope.

**FOR PRESIDENTIAL ELECTORS FOR PRESIDENT AND VICE-PRESIDENT**  
(Vote for One Pair)

<input type="radio"/>	DUCHAKIAN AND FOSTER	Republican
<input type="radio"/>	MUSH AND CHERY	Republican
<input type="radio"/>	GOPE AND LEBERMAN	Democratic
<input type="radio"/>	HAGLER AND TOCWATI	Independent/Non-affiliated
<input type="radio"/>	MADER AND LADUKIS	Independent/Non-affiliated
<input type="radio"/>	PHILLIPS AND FRAZER	Democratic
<input type="radio"/>	SHAWNEE AND OLIVER	Libertarian

**FOR U.S. REPRESENTATIVE 3RD DISTRICT**  
(Vote for One)

<input type="radio"/>	PHIL KLINE	Republican/Statewide
<input type="radio"/>	CHRIS BENA	Libertarian/Overland Park
<input type="radio"/>	DEANER MACKER	Democratic/Leawood

**FOR STATE REPRESENTATIVE 23RD DISTRICT**  
(Vote for One)

<input type="radio"/>	JOE KRONWITZER	Democratic/Veneta
<input type="radio"/>	JUDY MORRISON	Republican/Statewide

**FOR COUNTY CLERK**  
(Vote for One)

<input type="radio"/>	JOHN A. BARTOLAC	Republican/Statewide
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**FOR DISTRICT ATTORNEY 10TH DISTRICT**  
(Vote for One)

<input type="radio"/>	PAUL J. MORRISON	Republican/Overland
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**FOR STATE SENATOR 10TH DISTRICT**  
(Vote for One)

<input type="radio"/>	NICK JORDAN	Republican/Overland
<input type="radio"/>	CHERYL MACKER	Democratic/Overland Park

**FOR STATE BOARD OF EDUCATION MEMBER 2ND DISTRICT**  
(Vote for One)

<input type="radio"/>	MIK CAMERON	Republican/Statewide
<input type="radio"/>	SON PATTON	Democratic/Parkville

**FOR REGISTER OF DEEDS**  
(Vote for One)

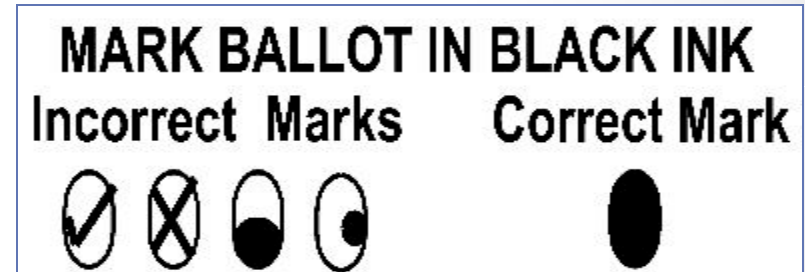
<input type="radio"/>	WICKY DEBROW-COYNE	Republican/Statewide
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# History of Voting Machines - Optical Scan

## Optical Scan (Marksense)

- **Used in scoring standardized tests**
- **Voter fills box or oval or completes an arrow next to printed choice**
- **Completed ballot read by computerized device**





# History of Voting Machines - Optical Scan

## Optical Scan (Marksense)

- **Fill in bubble, connect arrow, darken box**
- **Early relied on graphite content to count**
- **Used Infrared read heads**
- **Newer versions can see almost all marking devices**
- **Newer use Visible Light read heads**

# History of Voting Machines - Optical Scan



**PRACTICE OPTICAL SCAN BALLOT**

CHESTER COUNTY      Commonwealth of Pennsylvania

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**INSTRUCTIONS TO VOTER**

1. TO VOTE YOU MUST BLACKEN THE OVAL (  ) TO THE LEFT OF YOUR CHOICE COMPLETELY. An oval (  ) blackened to the left of the name or any candidate indicates a vote for that candidate.
2. To cast a write-in vote for a person whose name is not on the ballot, you must blacken the oval (  ) to the left of the line provided, and write, print or paste the name in the blank space provided for that purpose.
3. Use only a black pen or marker.
4. If you make a mistake DO NOT ERASE. Ask for a new ballot.
5. Do not fold the ballot unless voting by absentee ballot.

**BEST VOCAL ARTIST**  
Vote for not more than TWO

FRANK SINATRA

ELVIS

PATSY CLINE

BUDDY HOLLY

STEVEN RAY VAUGHN

Write in \_\_\_\_\_

Write in \_\_\_\_\_

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**BEST ICE CREAM FLAVOR**  
Vote for ONE

CHOCOLATE

STRAWBERRY

VANILLA

Write in \_\_\_\_\_

**BEST AUTOMOBILE MANUFACTURER**  
Vote for One

BMW

MERCEDES

GENERAL MOTORS

FORD

Write in \_\_\_\_\_

*Donald C. Nash*  
*Josephine C. City*

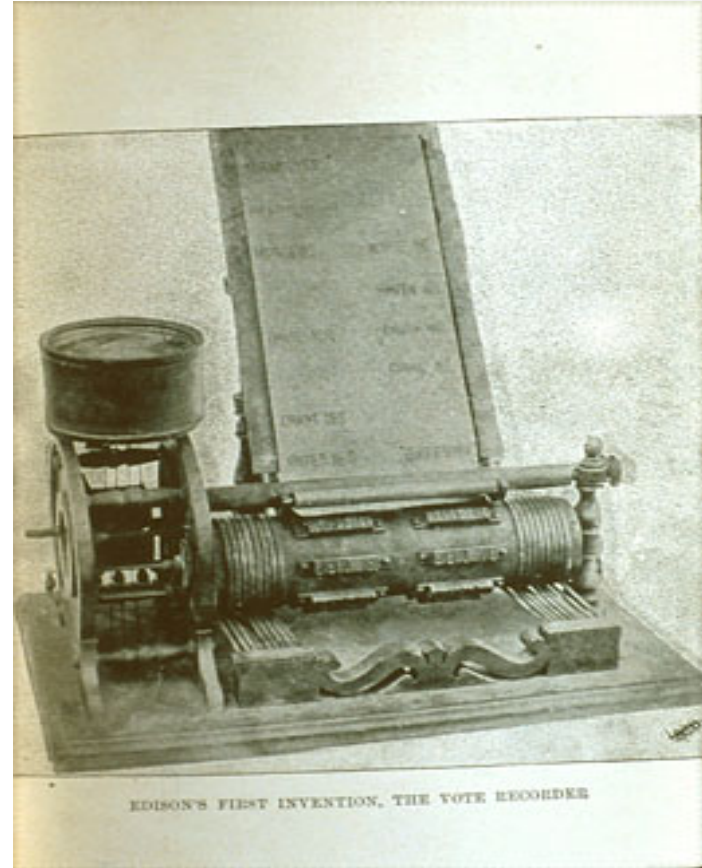
ATGLEN      7/99/03 8mg/0001 8/99/01

**VOTER EDUCATION INFORMATION PROVIDED BY:**

**CHESTER COUNTY VOTER SERVICES**  
601 WESTTOWN RD., SUITE 150  
WEST CHESTER PA 19382  
610-344-6410

# First Electronic Voting Equipment

- 1869
- Thomas Edison's first patented invention
- Vote Recorder
- Never used



# History of Voting Machines – Direct Recording Electronic (DRE)

- **1980's - Electronic implementation of mechanical lever machines**
- **Choices visible on face of machine**
- **On-screen keyboard or other entry device for write-in votes**
- **Touch screen, push buttons, other methods to enter choice directly into electronic storage**
- **Votes stored in machine and on a memory device and added to choices of all other voters**

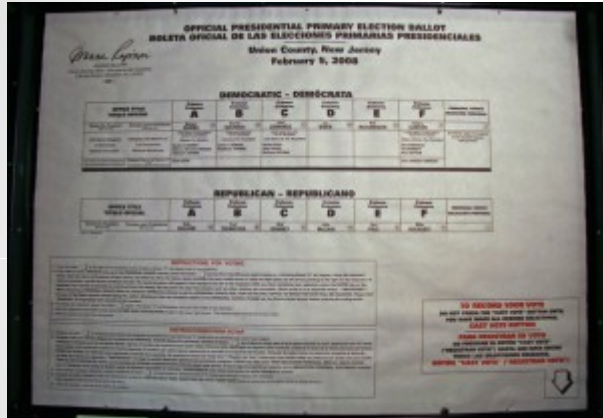
# History of Voting Machines – Direct Recording Electronic (DRE)

- Extremely accurate
- Confirms selection to voter
- No spoiled or unused ballots
- No over-voting
- Back-up battery in case of power failure
- Stores votes in three places
- Fast, efficient tally of results





# First-Generation DRE Machines



# History of Voting Machines – Direct Recording Electronic (DRE)



# History of Voting Systems Testing



# Voting System Testing

- **1970 – SOS in California asks Bob Naegele to develop method for testing voting systems**
  - **1975 – discussion of national standards begins with GAO and Bureau of Standards**
  - **1985-1990 – FEC produces first Voting Systems Standards January 1990**
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# Voting System Testing

- **1990 – NASED begins testing against the developed standards**
- **1997 – Split of hardware and software testing**
- **2002 – FEC updates 1990 standards**
- **NASED begins testing against the 2002 standards**

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# Voting System Testing

- **Help America Vote Act of 2002 (HAVA) creates the EAC**
- **HAVA transfers developing standards from the FEC to the EAC**
- **HAVA requires EAC to set up program to test equipment against federal standards**

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# Voting System Testing

- **HAVA renames voting system standards – Now Voluntary Voting System Guidelines – VVSG**
- **2006 – July, NASED terminates its testing program**
- **2007 – January, EAC launches full testing and certification program**



# 2005 VVSG

- An update to the 2002 VSS
- Recommended to EAC by NIST and TGDC, including three subcommittees:
  - Security and transparency
  - Human factors and privacy
  - Core requirements and testing
- Major updates in accessibility, functionality, security, and usability



# VVSG 1.1

- 2009 – revision to the 2005 VVSG
- Additional best practices
- Clean up of anomalies & deficiencies
- Clarified previous standards
  
- EAC will vote when they have a quorum of Commissioners

# Help America Vote Act

# HAVA – Voting Systems

## Voting Equipment Changes by Equipment Type — Counties

Type of Voting Equipment	Number of Counties			
	Nov-2000	Nov-2002	Nov-2004	Nov-2006
Punch Cards	572	459	330	13
Lever Machines	434	288	264	62
Hand-Counted Paper Ballots	370	304	298	57
Optically Scanned Paper Ballots	1,279	1,360	1,443	1,752
Electronic (DRE) Equipment	309	547	631	1,142
Mixed (Multiple Types)	149	156	148	92
<b>TOTAL</b>	<b>3,113</b>	<b>3,114</b>	<b>3,114</b>	<b>3,118</b>



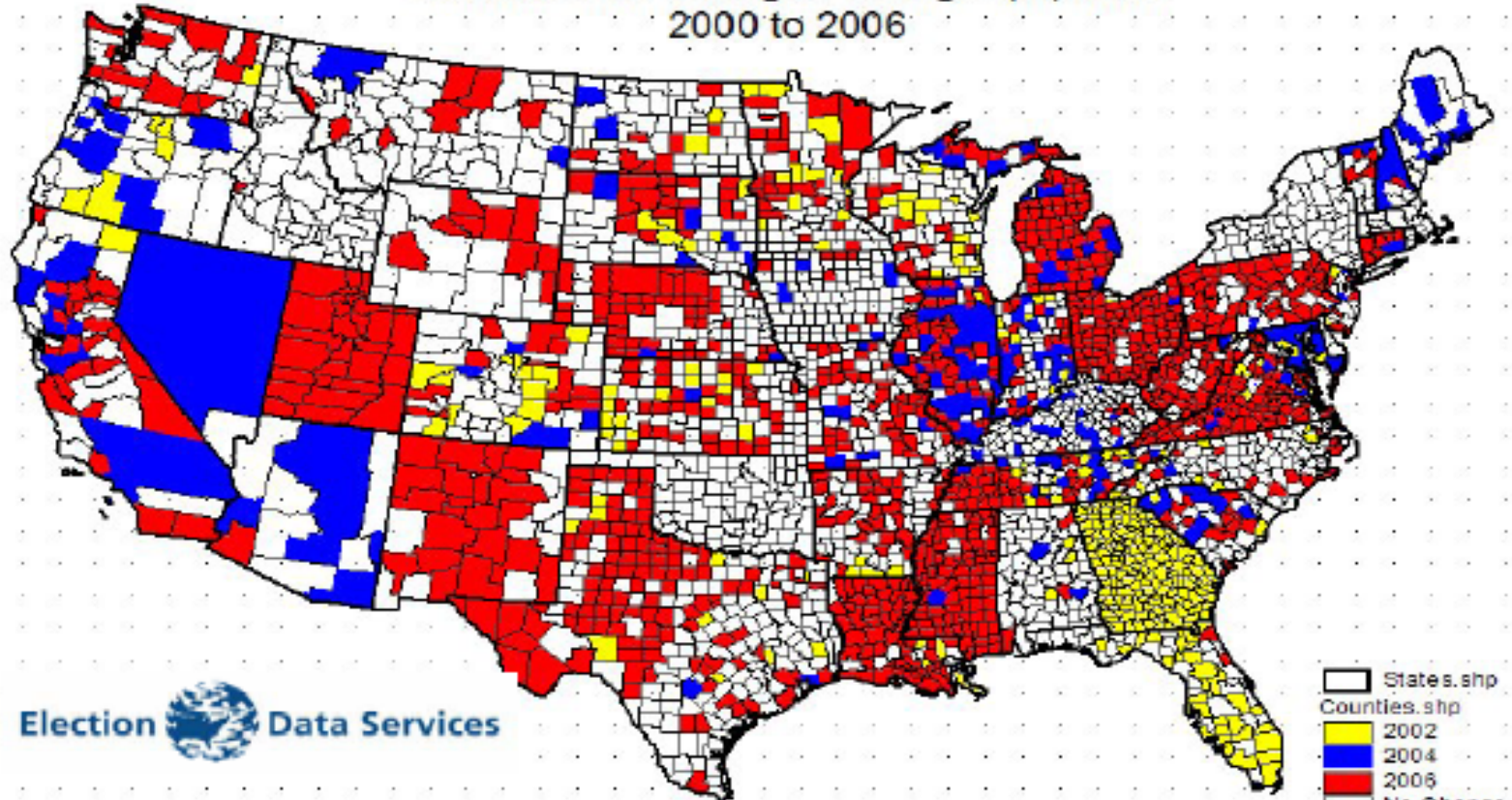
# HAVA – Voting Systems

## Voting Equipment Changes by Equipment Type — Registered Voters

Type of Voting Equipment	Percent of Registered Voters			
	Nov-2000	Nov-2002	Nov-2004	Nov-2006
Punch Cards	30.7	23.1	12.4	0.2
Lever Machines	17.2	14.9	13.2	6.8
Hand-Counted Paper Ballots	1.3	0.8	0.6	0.2
Optically Scanned Paper Ballots	29.5	31.0	35.6	48.9
Electronic (DRE) Equipment	12.4	22.0	29.2	38.4
Mixed (Multiple Types)	8.9	8.2	8.9	5.4
TOTAL	100.0	100.0	100.0	100.0

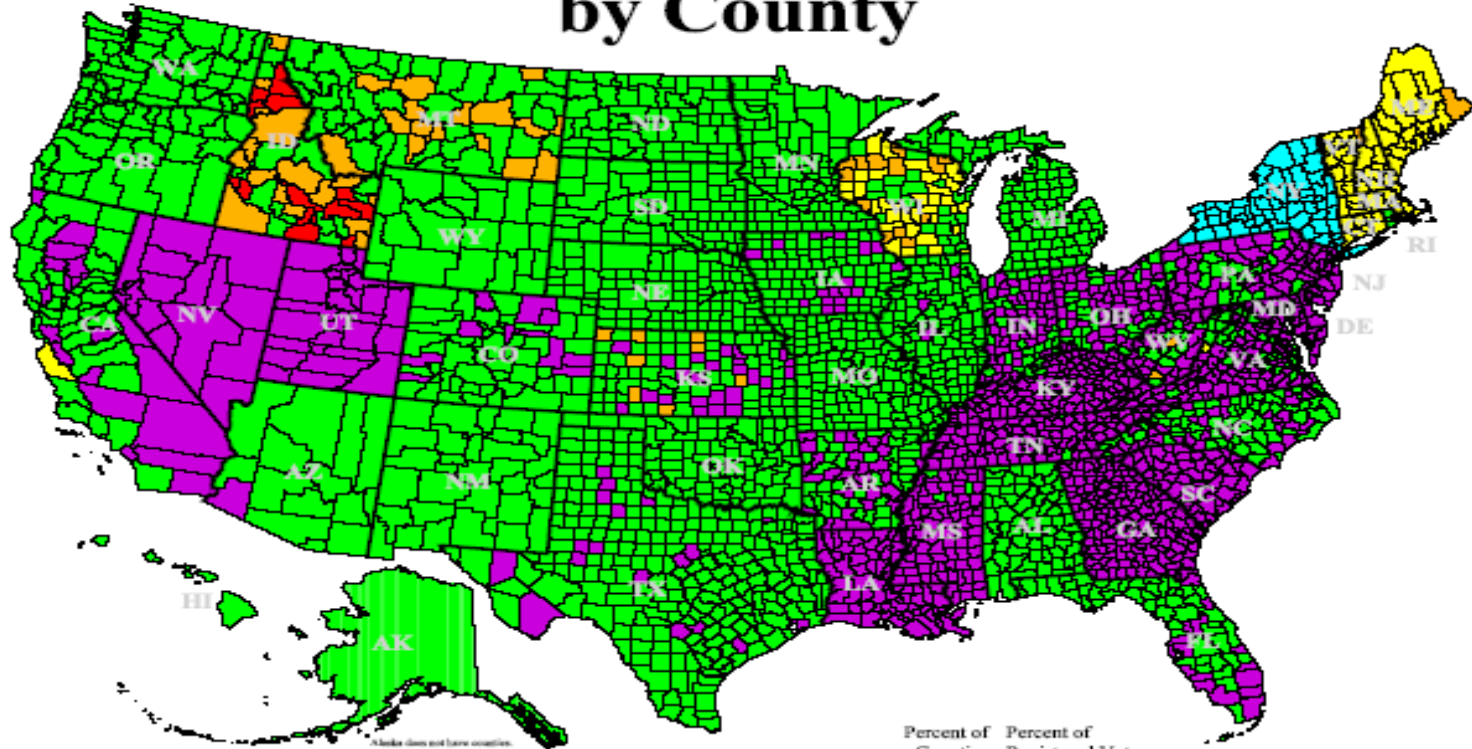
# HAVA – Voting Systems

Counties that Changed Voting Equipment  
2000 to 2006



# HAVA – Voting Systems

## November 2006 Voting Equipment Usage by County



	Percent of Counties	Percent of Registered Voters
Punchcard	.4%	.2%
Lever	2.0%	6.8%
Paper	1.8%	.2%
Optical	56.2%	48.9%
Electronic	36.6%	38.3%
Mixed Systems	3.0%	5.5%

Equipment expected to be used in the November 2006 election as reported by state election officials. The map shows equipment used at polling places, not necessarily absentee or disabled balloting.



# Voting Equipment Laws & Rules

- HAVA (Help America Vote Act of 2002)

- III A - 301:

- **2<sup>nd</sup> Chance Voting**
  - **Audit Capacity**
  - **Accessibility for individuals with disabilities**
  - **Accuracy, and**
  - **Uniform definition of what constitutes a vote**
- 
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# Voting Equipment Laws & Rules

## Second Chance Voting – Sec 301(a)(1) and 301(c)(2)

- **Permit the voter to verify (in a private and independent manner) his/her vote before ballot is cast and counted**
- **Provide the voter opportunity to change the ballot or correct any error before ballot is cast and counted**

# Voting Equipment Laws & Rules

## HAVA 2nd Chance Voting (Continued)

- **Notify the voter of an over vote and what to do to correct the ballot**
- **Ensure that any notification preserves the privacy of the voter and confidentiality of the ballot**
- **Term “verify” cannot preclude paper balloting**



# Voting Equipment Laws & Rules

## HAVA 2<sup>nd</sup> Chance Voting – Over votes (continued)

- Jurisdictions that use paper balloting, punch card, or central count systems (including mail in ballots) can meet the requirements for correcting over votes by:

# Voting Equipment Laws & Rules

- **Establishing a voter education program specific to that voting system that notifies each voter of the effect of over voting; and**
- **Providing the voter with instructions on how to correct the ballot before it is cast and counted (including how to obtain and vote a replacement ballot).**

# Voting Equipment Laws & Rules

## HAVA Sec. 301(a)(2) Audit Capacity

### Voting System must:

- Produce a permanent paper record with a manual audit capacity for the system
- Provide the voter with opportunity to change the ballot or correct any error before paper record produced and
- Make paper record available for recounts

# Voting Equipment Laws & Rules

## HAVA Sec. 301(a)(3) – Accessibility for Individuals with Disabilities

### Voting System must:

- Provide accessibility for disabilities including blind and visually impaired (including privacy and independence) as for other voters

# Voting Equipment Laws & Rules



## HAVA Disabilities (Continued)

- Satisfy this requirement with at least one DRE or other system equipped for disabilities per polling site and
- Meet the accessibility standards if the voting system is purchased on or after 1-1-2006 with HAVA funds
  - Meaning that if systems are bought after this date, all devices have to meet requirements



# Voting Equipment Laws & Rules

## HAVA Sec. 301(a)(4) Alternative Language Accessibility

- Voting system must provide access to alternative languages pursuant to the requirements of Sec. 203 of the Voting Rights Act of 1965.
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# Voting Equipment Laws & Rules



## HAVA Sec. 301(a)(5) Accuracy

- Meet Voting Systems Standards of 2002 under Sec. 3.2.1 for accuracy which requires the equipment to have an error rate of a maximum of one error in 10 million ballot positions



# Voting Equipment Laws & Rules

## HAVA Sec. 302(a)(6) Uniform Definition of What Constitutes a Vote

- Each state must adopt uniform and nondiscriminatory standards that define what constitutes a vote and what will be counted as a vote for each category of voting system used in the state.
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# HAVA Mandates (Certification)

HAVA Section 231(a) (1) (42 U.S.C. §15371(a)(1))  
states:

**“The Commission shall provide for the testing, certification, decertification, and recertification of voting system hardware and software by accredited laboratories.”**

# Texas Voting System Standards

## Sec. 121.001 – Adoption of Voting System

- The decision on whether to adopt a voting system is made by the following authority:
- (1) for general elections for state and county officers, the commissioners court;
- (2) for primary elections, the county executive committee of the political party holding the primary; and
- (3) for any other elections:
- (4) the commissioners court, if ordered by the governor or by a county authority

# Texas Voting System Standards

## Sec. 123.005 – Multiple Methods of Voting at Same Polling Place

- (a) Except as otherwise provided by this code, only one kind of voting system may be used at a polling place in an election.
- (b) Except as otherwise provided by this title, regular paper ballots may not be used at a polling place using a voting system.

# Texas Voting System Standards

## Sec. 123.006 – Adoption of Voting System for Early Voting

- (a) A voting system may be adopted for use in early voting only, regular voting on election day only, or both.
- (b) A voting system may be adopted for use in early voting by personal appearance only, early voting by mail only, or both.
- (c) Only one kind of voting system may be used for early voting by mail. A voting system and regular paper ballots may not both be used in the same election for early voting by mail.



# Texas Voting System Standards

## General Provisions Sec. 121.003 - Definitions

- (1) "Voting system" means a method of casting and processing votes that is designed to function wholly or partly by use of mechanical, electromechanical, or electronic apparatus and includes the procedures for casting and processing votes and the programs, operating manuals, tabulating cards, printouts, and other software necessary for the system's operation.

# Texas Voting System Standards

## General Provisions Sec. 121.003 - Definitions

- (2) "Electronic voting system" means a voting system in which the ballots are automatically counted and the results automatically tabulated by use of electronically operated apparatus.
- (3) "Voting machine" means an apparatus on which voters cast their votes, that records each vote, and that furnishes a total of the number of votes cast for the candidates and for and against the measures.

# Texas Voting System Standards

## General Provisions Sec. 121.003 - Definitions

- (4) "Voting system equipment" means any kind of mechanical, electromechanical, or electronic apparatus for use in a voting system.
- (5) "Automatic tabulating equipment" means equipment, other than a voting machine, that compiles vote totals by ballot sorting, ballot reading, ballot scanning, or electronic data processing.

# Texas Voting System Standards

## General Provisions Sec. 121.003 - Definitions

- (6) "Public counter" means a registering device that cumulatively records the number of voters casting votes on a voting machine and that is constructed and installed on the machine in a way that provides an unobstructed view of the recorded number.
- (7) "Protective counter" means a registering device that permanently records the cumulative number of times that a voting machine has been operated and that is installed in the machine in a way that prevents resetting the device.

# Texas Voting System Standards

## General Provisions Sec. 121.003 - Definitions

- (8) "Registering counter" means a registering device on a voting machine that records the votes cast for a particular candidate or for or against a particular measure.
- (9) "Electronic system ballot" means a ballot designed for use with an electronic voting system.
- (10) "Punch-card ballot" means an electronic system ballot in the form of a tabulating card.

# Texas Voting System Standards

## General Provisions Sec. 121.003 - Definitions

- (11) "Voting system ballot" means a ballot designed for use with a voting system.
- (12) "Direct recording electronic voting machine" or "DRE" means a voting machine that is designed to allow a direct vote on the machine by the manual touch of a screen, monitor, or other device and that records the individual votes and vote totals electronically.

# Texas Voting System Standards

## Sec. 128.001. Computerized Voting System Standards

- The procedures must provide for the use of a computerized voting system with:
  - (1) multiple voting terminals for the input of vote selections on the ballot presented by a main computer; and
  - (2) a main computer to coordinate ballot presentation, vote selection, ballot image storage, and result tabulation.



# Texas Voting System Standards

## Sec. 122.001 Voting System Standards

- A voting system may not be used in an election unless the system:
  - (1) preserves the secrecy of the ballot;
  - (2) is suitable for the purpose for which it is intended;
  - (3) operates safely, efficiently, and accurately and complies with the error rate standards of the voting system standards adopted by the Federal Election Commission;
  - (4) is safe from fraudulent or unauthorized manipulation;

# Texas Voting System Standards

## Sec. 122.001 Voting System Standards

- (5) permits voting on all offices and measures to be voted on at the election;
- (6) prevents counting votes on offices and measures on which the voter is not entitled to vote;
- (7) prevents counting votes by the same voter for more than one candidate for the same office or, in elections in which a voter is entitled to vote for more than one candidate for the same office, prevents counting votes for more than the number of candidates for which the voter is entitled to vote;

# Texas Voting System Standards

## Sec. 122.001 Voting System Standards

- (8) prevents counting a vote on the same office or measure more than once;
- (9) permits write-in voting;
- (10) is capable of permitting straight-party voting; and
- (11) is capable of providing records from which the operation of the voting system may be audited.

# Texas Voting System Standards

## Sec. 122.002 Inspection of Voting System

- The secretary of state may inspect at any time, including the day of an election, a voting system or the voting system equipment used in an election to determine whether the system or equipment complies with applicable standards or deviates from the system or equipment approved by the secretary.

# Texas Voting System Standards

## Sec. 122.033 Approval of Voting System

- (1) a security system capable of preventing operation of the machine;
- (2) registering counters that can be secured against access;
- (3) a public counter; and
- (4) a protective counter.

# Texas Voting System Standards

## Sec. 122.0331 Approval of Voting System

- (a) Copies of the program codes and the user and operator manuals and copies or units of all other software and any other information, specifications, or documentation required by the secretary of state relating to an approved electronic voting system and its equipment must be filed with the secretary.
- (b) Materials described by Subsection (a) that are not on file with and approved by the secretary of state, including any updated or modified materials, may not be used in an election.

# Texas Voting System Standards

## Sec. 122.0331 Approval of Voting System

- (c) The secretary of state shall periodically compare the materials on file with the materials actually used in elections to ensure compliance with this section.
- (d) The program codes and all other software on file with the secretary of state under this section are not public information. The materials shall be made available to the attorney general or the general's designee in any investigation of election irregularities. The materials may be made available in a judicial proceeding on the request of the court or other tribunal but may be viewed in camera only.



# Texas Voting System Standards

## Sec. 123.031 Acquisition of Equipment by County

- (a) A county may contract to acquire the equipment necessary for operating a voting system by purchase, lease, or other means.
- (b) To finance the acquisition of equipment, the commissioners court may issue bonds or other evidences of indebtedness as authorized by general law, payable solely from the county general fund.

# Texas Voting System Standards

## Sec. 123.032 Acquisition of Equipment By Political other than County

- (a) A political subdivision other than a county may contract to acquire the equipment necessary for operating a voting system as provided by this section.
- (b) A political subdivision may lease the equipment from a county in which the political subdivision is wholly or partly situated. If the desired equipment is not available from the county, the political subdivision may acquire it by purchase, lease, or other means from any other source.

# Texas Voting System Standards

## Sec. 123.032 Acquisition of Equipment By Political other than County

- (c) If a political subdivision desires to lease equipment owned by a county the county's duty to lease the equipment is subject to reasonable restrictions and conditions imposed by the commissioners court to:
  - (1) ensure availability of the equipment in elections for which the commissioners court adopted the voting system; and
  - (2) protect the equipment from misuse or damage.
  - (3) The maximum amount that a county in which a political subdivision is wholly or partly situated may charge the political subdivision for leasing county-owned equipment is 10 percent of the purchase price of the equipment for each day the equipment is leased.



# Budget for Voting System



# Lifecycle Cost Iceberg

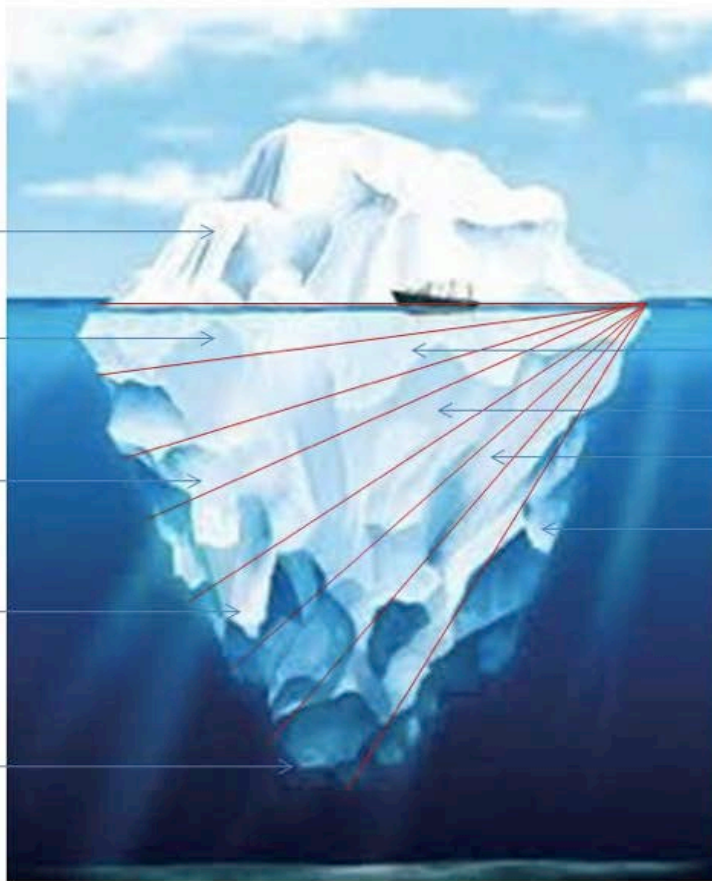
Acquisition Cost

Operation Cost

Software Cost

Training Cost

Retirement and Disposal Cost



Technical Data Cost

Maintenance Cost

Supply Support Cost

Test and Support Equipment Cost



# Finding the Money

- **Determine funding availability early in the process**
  - **Build partnerships with community stakeholders = communicate the need**
  - **Establish your own election-related revenue fund for the purpose of equipment replacement**
- 
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# Developing your Request for Proposal

- **Specify minimum requirements**
  - **Describe your county, including current voting system and vision for the future**
  - **Ask specific questions so that points can be assigned to the various vendor proposals**
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# Rating the Responses

- **Choose Selection Committee**
- **Each member should rate each proposal based on predetermined criteria**
- **Develop composite of the Committee's collective rankings**
- **Conduct interview/demonstrations with top ranked firms**
- **Do not accept proposed costs until after the top ranked firms have been determined**

# Vendor Demonstrations

- **Provide a past election setup of your most complicated election, including a two page ballot**
- **Invite a variety of staff, technicians, party leaders, etc. to attend and complete evaluation forms**
- **Detail major elements to be included in each demonstration**
- **Determine when, and if, the media will be invited**
- **Assure that the same rules apply to all vendors**

# Selecting the Vendor

- **Recommendation should be based on:**
  - **Written Response to RFP**
  - **Interviews and Demonstrations**
  - **Proposed Costs**
- **Purchasing Manager should negotiate the contract**
- **Reserve the right to reject any and all proposals**



# Contract – Do's

- Do tie the RFP to the contract
- Do require detailed documentation from the vendor – manuals and checklists
- Do negotiate extended warranties
- Do include pricing for parts
- Do include costs for election support, software maintenance, upgrades, and paper ballots
- Do include working relationships in the contract
- Do include the Legal staff in all contract negotiations
- Do guarantee prices for a period of time – at least two years

# Contract – Don'ts

- **Don't use the vendor's standard contract**
- **Don't sign the final document without the Legal Department's blessing**
- **Don't automatically make payments unless the vendor has met all of its contractual obligations. Retain at least a portion of your money until everything has been delivered**
- **Don't amend the contract without the Legal Department's approval**

# Managing the Contract

- Select an internal project manager and implementation team
- Develop a timeline for contract deadlines
- Keep copies of all correspondence and document all telephone calls
- Document any delays – do not make automatic payments
- The Legal Department should authorize any delays
- Take affirmative steps to safeguard the confidentiality of the vendor's software
- Pay strict attention to warranty deadlines. Do not agree to “forgive” anything

# Testing Voting Systems



# Texas Voting System Standards

## Sec. 129.021 Acceptance Testing

- Immediately after receiving a voting system from a vendor, the general custodian of election records shall:
- (1) verify that the system delivered is certified by the secretary of state;
- (2) perform a hardware diagnostic test on the system as provided by Section 129.022(b);
- (3) perform a public test of logic and accuracy on the system as provided by Section 129.023; and
- (4) perform any additional test that the secretary of state may prescribe.

# Texas Voting System Standards

## Sec. 129.022 Hardware Diagnostic Testing

- (a) The general custodian of election records shall conduct a successful hardware diagnostic test before a voting system is used in an election.
- (b) The hardware diagnostic test must ensure that each part of the system functions properly as prescribed by the secretary of state.
- Amended by:

# Texas Voting System Standards

## Sec. 129.023 Public Logic and Accuracy Testing

- The procedures for testing shall:
  - (1) direct the testing board to cast votes;
  - (2) verify that each contest position, as well as each precinct and ballot style, on the ballot can be voted and is accurately counted;
  - (3) include overvotes and undervotes for each race, if applicable to the system being tested;
  - (4) include straight-party votes and crossover votes;
  - (5) include write-in votes, when applicable to the election;

# Texas Voting System Standards

## Sec. 129.023 Public Logic and Accuracy Testing

- The procedures for testing shall:
- (6) include provisional votes, if applicable to the system being tested;
- (7) calculate the expected results from the test ballots;
- (8) ensure that each voting machine has any public counter reset to zero and presented to the testing board for verification before testing;
- (9) require that, for each feature of the system that allows disabled voters to cast a ballot, at least one vote be cast and verified by a two-person testing board team using that feature

# Vegas or Voting

# Operation and Management of the Voting Systems

# Texas Voting System Standards

## Sec. 129.051 Pre-Election Security Procedures

- Create and maintain an inventory of all electronic information storage media.
- Develop a procedure for tracking the custody of each electronic information storage medium from its storage location, through election coding and the election process, to its final post-election disposition and return to storage. The chain of custody must require two or more individuals to perform a check and verification check whenever a transfer of custody occurs.

# Texas Voting System Standards

## Sec. 129.051 Pre-Election Security Procedures

- Establish a secured location for storing electronic information storage media when not in use, coding a medium for an election, transferring and installing the medium into voting system equipment, and storing voting system equipment after election parameters are loaded.
- Create a procedure for tracking the custody of voting system equipment once election parameters are loaded.
- Create a recovery plan to be followed if a breach in security procedures is indicated. This plan must include immediately notifying the secretary of state.





# Election Day – Machine Delivery

- All machines should be sealed and secured
- Machines should be cabled and locked together when delivered
- Include delivery requirements in delivery company contract
- Padding and/or strapping of machines?
- Stacking or not stacking of machines?
- Responsibility for loading/unloading of machines?
- Who is responsible for developing the delivery route?
- Deadlines for delivery



# Election Day Support Staff

- IT Support – Opening and Closing
  - Call Centers – For poll workers and for the Public
  - Rovers
  - Field Technicians
- 
-

# Supplies and Procedures

# Security Bag

Johnson County KS

Election Office

(913) 782-3441

015368  
|||||

Red Bag  
AMOS ACTIVITY CENTER

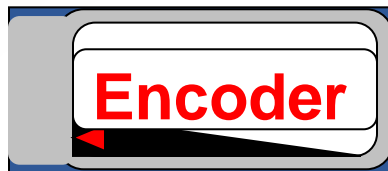
EP001  
November General (11/2/04)

2 Manager Cards

Broken Opening Seal  
|||||

Opening Seal #: 015368

Closing Seal #: \_\_\_\_\_



Johnson County KS  
Election Office  
(913) 782-3441

015368  
|||||

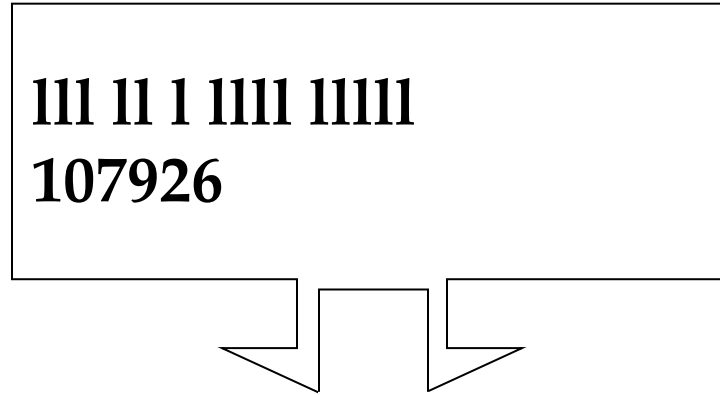
Red Bag  
AMOS ACTIVITY CENTER

EP001  
November General (11/2/04)

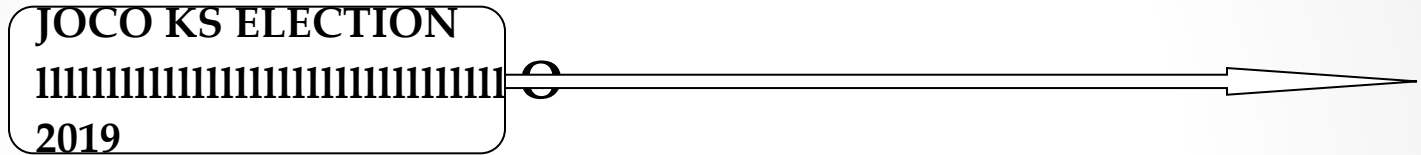
2 Manager Cards  
Broken Opening Seal Opening Seal #: 015368  
||||| Clostin # : \_\_\_\_\_

EP Code 1  
Machine Tapes

# Break-Off Numbered Bar-coded Seals For Bags



# Tamper-Evident Numbered Bar-coded Seals for Machines



# Opening – Closing Report

ELECTION Training 2004 EP CODE: 1

## DO THIS FIRST

### OPENING – CONFIRM SEAL NUMBERS

(Seals may not be removed until at least two board members are present to confirm the numbers.)

**SUPPLY BAGS**

BAG	BEGINNING SEAL NUMBER
CLEAR PC CARD BAG	074088
RED SUPPLY BAG	068630
PROVISIONAL BALLOT BAG (Do not remove)	063721

Keep this sheet with the Mid-day Tally Sheet on the clipboard. Complete bottom half when closing the polls.

### CLOSING – RECORD NEW SEAL NUMBERS

**SUPPLY BAGS**

BAG	CLOSING SEAL NUMBER
CLEAR PC CARD BAG	
RED SUPPLY BAG	

**SIGNATURES OF ELECTION BOARD:**

SAMPLE

**Return in black suitcase.**  
(Use the back to balance during the day.)

6704



# Post Election Audits of Voting Systems/Results

# Suggested Security Procedures

- Control your own election.
- Imagine your worst disaster and plan accordingly. Review and update your Election Administration Plan annually.
- Store voting machines in a sealed booth within a controlled access building.
- Do not network your election software computer within your office or connect to the Internet. Install only the election software on this computer.

# Suggested Security Procedures

- Install computer in a secure room with controlled access, monitored by a video camera.
- Control access to this computer – office staff and vendor.
- Safeguard vendor's election software and each election database in a secure, controlled access place, i.e. fireproof vault.
- Secure all machine keys, voter access cards, and storage media in a separate controlled access room. Develop detailed inventory control procedures.

# Election Verification

- Voters processed = voter receipts
- Ballots issued by machine = voter receipts
- Machine totals = machine tape totals
- Accumulated total = Total of all machine tapes
- Advance paper ballot totals = electronically transferred Advance totals in central count
- Election Day totals + Advance totals = Unofficial Election Night Summary totals
- Precinct totals = Summary totals

# Voting Machine Audit Trail

- Acceptance testing of new equipment
- Pre-election system/setup diagnostics (printout)
- Logic and Accuracy testing of storage media in specific election-day machine (printout)
- Record of System Total (Protective Counter)
- Record of number on bar-coded tamper-evident seal
- Election morning verification of System Total and seal number
- Final election night reconciliation of totals
- Election morning zero report
- Election night results printout

# Voting Equipment Post Election Review

Assemble and review post-election reports:

- Election morning trouble call sheets
- Election Day field supervisor log reports
- Election worker feedback sheets

**Looking to the Future...**

Dean Logan - LA County  
Development of New Voting  
System



- **Discussion?**
  - **Comments.**
  - **Questions?**
  - **Suggestions.**
- 
- **[cmcginn@nccu.edu](mailto:cmcginn@nccu.edu)**