

SECURITY, ACCURACY, AND RELIABILITY OF TARRANT COUNTY'S VOTING SYSTEM

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INTRODUCTION

Tarrant County has been using the Hart InterCivic eSlate electronic voting system for early voting by personal appearance since 2001 and in 2006 began using a blended system on election day comprised of both the eSlate and the Hart eScan voting unit which digitally captures vote selections from printed ballots.

Hart InterCivic's voting systems are the most widely-used electronic voting systems in the State of Texas. Hart's systems are currently used in 102 Texas counties including five of the ten counties having the greatest number of registered voters (Harris, Tarrant, Travis, Denton, and Fort Bend Counties).

This document is provided for Tarrant County voters who have concerns regarding electronic voting systems and who want to know whether their vote cast on an electronic voting device is safe and secure without a "voter-verified paper audit trail." I believe that the information provided in this document can provide confidence to the vast majority of Tarrant County voters that their vote will be accurately counted and reported by our voting system.

While no voting system is perfect, studies show that electronic voting systems offer the most accurate and secure method of voting available:

- It is impossible to "overvote" (vote for more candidates that can be elected).
- Voters are immediately able to completely correct a vote for the wrong candidate.
- Voters must view a summary screen of all races and measures before casting the ballot – this gives voters an opportunity to review and change their choices before a vote is cast.
- Voters are alerted to un-voted or under-voted races on the summary screen.
- It is impossible to incorrectly mark the ballot, eliminating ambiguity regarding voter intent.
- Electronic voting systems have been shown to eliminate racial and language gaps found in the documented error rates of paper-based voting systems (including optical scan).
- Votes are redundantly stored in multiple physical memory locations to preserve election results in the event of equipment failure.

It is also important to remember that voting equipment is only one component of an overall election system that includes citizen involvement, transparency, external security measures, management policies and procedures, and professional election officials. All of these people, procedures, and technologies work together to ensure reliable and trustworthy election results.

WHY WE REPLACED OUR ELECTION DAY VOTING SYSTEM

The Help America Vote Act of 2002 (HAVA) required the county to supply each polling place by January 1, 2006 with a voting system that is accessible for individuals with disabilities, including non-visual accessibility for the blind and visually impaired so that these voters can cast ballots in

a manner that provides the same opportunity for privacy and independence as other voters. The handicapped-accessible eSlate units in each polling place on election day meet this requirement.

In addition, Tarrant County received approximately \$9 million in HAVA grant funding from the federal government. This grant funding gave Tarrant County an opportunity not only to purchase one handicapped-accessible voting unit for each polling place but also to replace the optical scan ballot readers that had been used by Tarrant County since 1995.

HISTORY OF ELECTRONIC VOTING SYSTEMS

Electronic voting systems have been used in jurisdictions throughout the United States since the 1970's. Approximately 30% of the votes nationwide in the 2004 Presidential election were cast using electronic voting devices, and it is estimated that this number will exceed 40% in the November, 2006 election.

According to the American Association of People with Disabilities, "In almost four decades, not a single case of election fraud due to tampering of a system's hardware or software has occurred. Comparably, in the last 40 years, hundreds of cases of election fraud involving paper have occurred and been successfully prosecuted." Electronic voting machines are very reliable and have multiple redundant features to capture and store votes accurately.

DESIGN OF THE HART INTERCIVIC eSLATE VOTING SYSTEM

EQUIPMENT SAFEGUARDS AGAINST UNAUTHORIZED ACCESS

The eSlate system includes both physical and electronic intrusion detection controls, such as numbered wire seals (commonly used in elections), and time-stamped transaction logs that record every system action related to the voting process. Data cannot be inserted or altered by unauthorized personnel because the database structure is proprietary and is protected by encrypted passwords determined by the Elections Administrator.

EQUIPMENT SAFEGUARDS AGAINST EXTERNAL ACCESS

The eSlate voting system is activated by the voter using a randomly generated four-digit code; there are no smart cards or other programmable devices that require an external access point into the voting hardware. This eliminates the possibility of hackers or others being able to gain access to the system in order to tamper with or subvert the election. In addition, the voting devices and tabulation computers are **NEVER** connected to an external network (including the Internet), so there is no opportunity for someone to access the system remotely and alter computer code or election results.

CLEAR AUDIT TRAIL

Each component of the eSlate voting system creates an audit record every time it is accessed or information is changed. All audit records can be extracted and printed in hard copy. All audit reports, audit trail documents, databases, and election reports can be archived in hard copy and/or saved electronically to CD-ROM to preserve information as required by the Election Code.

Ballot images are captured of each vote cast. These ballot images can be printed after the election if a candidate in the election requests a manual recount.

The Texas Election Code requires a real-time printed audit log at the central counting station. This printed log records every event, tally, correction, and report produced from the tabulation system.

All audit logs and reports are public documents that are available for public viewing and/or copying in accordance with the Texas Open Records Act.

NO REPROGRAMMING FOR EACH ELECTION

Unlike some other systems, the eSlate voting system is not reprogrammed with new code for each election; only the election data changes. This eliminates a major source of potential error or manipulation. In addition, the eSlate system allows Elections Department staff (rather than the vendor) to prepare and implement the data entry of party names, candidate names, propositions, precincts, districts, etc. necessary for setting up each election.

EQUIPMENT DESIGNED FOR FAILSAFE OPERATION

The components of the eSlate voting system are networked together at the polling place, allowing the system to store all information (election data and individual vote records) in three physically separate locations. This provides back-up and redundant data storage in the event that any one of the components malfunctions. This is a significant advantage over stand-alone electronic voting devices that have a single point of failure. (As a clarification, although the devices are networked together at the polling place, the system is **NOT** connected to an outside network, including the Internet.)

Automatic creation of vote records in multiple memory locations throughout the course of the voting period eliminates the need to physically collect votes from each voting device upon poll closing. This eliminates a potential source of error.

The eSlate voting system has 18-hours of battery backup to protect against power failures and lost data. All information storage devices are solid-state, and thus are not susceptible to magnetic fields, abusive handling, or loss of power.

INTEGRATED DIAGNOSTICS AND INTERNAL CONTROLS

The eSlate voting system uses error-checking techniques to ensure the accuracy of reading and writing digital data. Repetitive data integrity checks ensure that only authorized devices are communicating on the local network at the polling place, and that the data being communicated originates from a source that has complete integrity with the election database created for the current election. The eSlate voting system also incorporates continuous checking of each data transfer to ensure that the data received at the end of the transfer is the same as the data originated by the source.

MANUFACTURING STANDARDS

The eSlate voting system incorporates a tough polycarbonate display cover that is nearly indestructible. This makes the eSlate voting device better able to withstand vandalism attempts or other potential damage due to accidents than touch screen voting devices.

eSlate voting devices meet the stringent testing requirements of MIL-STD (U.S. Military Standard) 810 for environmental ruggedness, including humidity, vibration, and drop height. These devices are tested in temperature extremes through hot-cold chamber testing, salt fog testing, and water-resistance testing.

VOTING SYSTEMS CERTIFICATION & INDEPENDENT TESTING

FEDERAL CERTIFICATION TESTING

Voting system certification standards employed in Texas are among the most stringent in the nation. Every voting system certified for use in Texas, including the Hart InterCivic eSlate voting system, must comply with the Federal Voluntary Voting System Guidelines (VVSG) promulgated by the U.S. Election Assistance Commission (EAC). Laboratories that test voting equipment are assessed by the National Institute of Standards and Technology (NIST) and accredited by the EAC. These laboratories rigorously test each voting system's hardware, firmware, and software for compliance with the VVSG. Voting systems certified by these testing laboratories are issued a certification to show that they meet or exceed the Federal Voluntary Voting System Guidelines. It is important to note that even though the Federal government considers its standards or guidelines to be *voluntary*, the State of Texas requires its voting systems to meet or exceed these guidelines before they can be used in Texas elections.

STATE CERTIFICATION TESTING

In addition to Federal certification, Texas election law requires the Secretary of State to certify all voting systems used in the state. The Secretary of State's testing involves a team of six examiners. The Secretary of State appoints four examiners, one of whom must be a full-time employee of the Office of the Secretary of State. The Attorney General appoints two examiners, one of whom must be a full-time employee of the Office of the Attorney General. Two of the Secretary of State's appointees must have demonstrated ability and experience in mechanics or electronics appropriate to the system or equipment to be examined, and two of the Secretary of State's appointees must have demonstrated knowledge of and experience in election law and procedure. Before the Texas examination of a voting system, the system must be tested by a U.S. Election Assistance Commission (EAC) accredited laboratory and shall meet or exceed the minimum requirements set forth in Voluntary Voting System Guidelines promulgated by the EAC.

Voting systems vendors must submit each hardware, firmware, and/or software update to the EAC and the Secretary of State for testing in order to maintain their voting system's certification.

VOTING SYSTEM TRANSPARENCY – TESTING, TESTING, TESTING...

LOGIC AND ACCURACY TESTING

The accuracy of electronic voting devices are tested by "Logic and Accuracy" testing before and after each election as required by the Election Code and the Texas Administrative Code to make certain that the voting system is working properly. Votes from hand-marked paper ballots are entered into the electronic voting devices. Printed totals from the electronic system are then compared to the hand-counted results. Additional functional tests are performed manually on each voting device. The schedule of Logic and Accuracy testing is posted in advance of each election, and these testing sessions are open to the public.

In addition, the eSlate voting system prints a “zero report” when the machines are opened and powered-up at the polling place to document that there are no prior votes stored within the system.

HASH TESTING / VERSION CONTROL TESTING

Before each election, version control testing will be conducted to make sure that each component of the electronic voting system is using a certified version of the vendor’s software and firmware.

PARALLEL TESTING OF VOTING EQUIPMENT

Parallel testing of voting equipment involves the random testing of production voting devices on election day. Voting units are selected at random. The selected voting device(s) are taken offline and then used for additional logic and accuracy testing. Unfortunately, at present, there are no requirements or uniform guidelines in Texas for conducting parallel testing.

OTHER SECURITY MEASURES AND PROCEDURES

SECURITY AT THE COUNTY ELECTIONS OFFICE

Recent upgrades of physical security features have been made at the Tarrant County Elections Center including a key-card entry system to control access to our facility including certain areas of the office where voting equipment is stored and rooms where ballot origination computers and election tabulation computers are located. The key-card security system includes a log of each entry into the secured area as well as unsuccessful attempts to enter the secured area. Each employee is issued a uniquely coded key-card that gives him or her access to appropriate areas within the Elections Center building and logs each person’s entry into secure areas. Access into certain secure areas (where ballot origination and tabulation computers are kept) is limited to key Election staff members. Public access to the Tarrant County Elections Center is restricted to the main entrance and each visitor is logged and tracked with a visitor badge. Tarrant County is also in the process of procuring a video camera surveillance system to provide additional security at the Elections Center.

SECURITY AT THE POLLING PLACE

Voting devices are delivered to the polling places several days before election day. Beginning with the November, 2008 elections, all voting equipment is delivered to election day polling places in steel cabinets that are locked and sealed with a numbered seal to prevent unauthorized access. The presiding election judge is required to verify that the correct seals are intact on the delivery cabinet and each voting device and to certify this information on a chain-of-custody log before the equipment may be opened and used in the election.

OTHER MANAGEMENT AND OPERATIONAL PROCEDURES

Internal management and operational procedures are crucial to the success and reliability of any voting system, including our previous our previous voting systems. The following procedures will be carried forward or instituted:

- An audit of each precinct’s electronic tally of the number of votes cast is conducted against the number of signatures in the precinct’s poll book roster.

- Polling place officials are required to certify in writing that the proper locks and seals were found to be intact on the voting equipment before the polls open.
- Polling place officials are required to print and keep a “zero tape” from the voting system before the polls open to ensure that no votes have been pre-loaded into the system.
- A physical inventory of all voting devices is conducted before and after each election to ensure custody of all voting devices is maintained.
- All election judges, early voting workers, county Election staff, and central counting workers undergo extensive training in both voting equipment operation and election law/procedures.
- Bi-partisan staffing is encouraged and employed to the extent possible at election day polling places, early voting polling places, and the central counting station.

WHY CAN'T A PAPER RECORD BE PROVIDED?

Neither federal election law nor the Texas Election Code requires electronic voting systems to produce a paper record commonly referred to as a “contemporaneous paper record” (CPR) or “voter-verified paper audit trail” (VVPAT). Although Hart InterCivic has a CPR device that is used in other states, it has not been certified for use in Texas. Proposed legislation on the state and federal levels that would require a CPR have been previously submitted but have failed due to a lack of wide bipartisan support. Since both of the major political parties in Tarrant County have expressed support for the concept of a “contemporaneous paper record”, Tarrant County has reserved a portion of its HAVA grant funding to purchase CPR printers should they become approved for use in Texas elections.

HOW THEN IS A MANUAL RECOUNT CONDUCTED?

Even if CPR-enabled voting devices were used, current Texas election law does not allow for this type of paper record to be used for recount purposes. Under current state law, only the electronic results or the stored ballot images printed to paper after the election may be used for recounting an election conducted with an electronic voting system.

Persons requesting a recount from an election held with an electronic voting system may request either an electronic recount or a manual recount. In the case of electronic voting systems, a manual recount is conducted by printing the stored ballot images to paper after the election. These printed ballot images are then hand-counted by a recount committee, just as if they were actual paper ballots.

WHY WERE ERRONEOUS RESULTS REPORTED ON MARCH 7, 2006???

Tarrant County reported erroneous election results on March 7, 2006 not because of voting equipment malfunctions, but because of operator error – a failure to follow the correct procedures in combining early voting results with election day results in our reporting software. During the election night tabulation process, election staff updated election day results approximately once per hour in the reporting software. The error occurred when staff used different file names for each update rather than the same file name for each successive update. This caused each incoming results file to add the already-reported election day results with the incoming full file of election day results. Using the same file name for each successive update would have fully replaced the previously reported results with the incoming full file of election results.

It is important to note that Tarrant County's eSlate and eScan voting equipment did not malfunction in any way. Individual vote records stored in the voting equipment were unaffected by the reporting error. When the erroneous vote totals were discovered the following day, the original vote totals were properly combined in the reporting software, and corrected results were released on the afternoon of March 8, 2006.

Since the March 7, 2006 election, we have upgraded firmware and software in our voting systems that allow our early voting and election day systems to operate from the same database. This eliminates the separate reporting software that was necessary in previous elections to provide combined election results.

In addition, the Elections Administration Department has implemented an election night auditing process in which each precinct's electronic tally of the number of votes cast is compared to the number of signatures in the precinct's poll book roster. Conducting such an audit on the night of March 7, 2006 would have immediately exposed the erroneous election results reported.

SUMMARY REMARKS

Tarrant County's voting equipment is only one component of an overall election system that includes citizen involvement, transparency, external security measures, management policies and procedures, and professional election officials. All of these people, procedures, and technologies work together to ensure reliable and trustworthy election results.

The Tarrant County Elections Administration Department is keenly aware that it has front-line responsibility for the integrity of the voting process. We have a commitment to each Tarrant County voter, taxpayer, candidate, elected official, and citizen that each vote is correctly tabulated and reported.

We welcome questions, comments, or concerns regarding the voting process. Please submit questions or comments in writing to:

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