

Testimony of Michael I. Shamos
Before the U.S. House of Representatives' Committee on House Administration
September 28, 2006

Mr. Chairman: My name is Michael Shamos. I have been a faculty member in the School of Computer Science at Carnegie Mellon University in Pittsburgh since 1975. I am also an attorney admitted to practice in Pennsylvania and before the United States Patent and Trademark Office. Since 1980 I have been an examiner of electronic voting systems for various states. I am currently an examiner for Pennsylvania and have personally performed 118 voting system examinations. I will do my 119th next week.

I view electronic voting as primarily an engineering problem that includes designing processes and procedures. Once the requirements for a voting system are agreed upon, it is then a matter of developing and manufacturing equipment and processes that meet those requirements. The question is whether Congress should be setting technical performance guidelines and engineering standards, as H.R. 550 would have it do, or whether such guidelines should be left to NIST and the EAC, as HAVA has already provided.

The proposed bill is based on three major assumptions, all of which are false. First, it assumes that paper records are more secure than electronic ones, a proposition that has repeatedly been shown to be wrong throughout history. Second, it assumes that voting machines without voter-verified paper trails are unauditible because they are claimed to be "paperless," which is also false. They are neither paperless nor unauditible. Third, it assumes that paper trails actually solve the problems exhibited by DRE machines, which is likewise incorrect.

The reason that mechanical voting machines were introduced over a century ago was to stop rampant fraud involving paper ballots. H.R. 550 would restore us to the year 1890, when anyone who wanted to tamper with an election needed to do no more than manipulate pieces of paper. The very idea that a paper record is secure at all continues to be refuted in every election. A recent example is the May 2006 primary held in Cleveland, Ohio. That state has a VVPAT requirement. When the paper records from the election were examined by an independent study group commissioned by Cuyahoga County, ten percent of the paper records were found to be illegible, defaced or entirely missing.

H.R. 550 provides that in the event of any inconsistency between electronic and paper records, the paper records are irrebuttably presumed to be correct. Applying that provision to Cleveland would have resulted in the disenfranchisement of 10 percent of the electorate because their paper records could not be read. I cannot believe that the numerous sponsors of this legislation contemplated such an outcome.

The argument is made that security problems with DRE voting demand remediation of the type proposed in the bill. Indeed, Prof. Felten at Princeton, Harri Hursti and others have done a great service by exposing security vulnerabilities in voting systems. Some of these vulnerabilities are severe, and require immediate repair. But the point is that they are easily remedied. The question for the Committee is what the proper response to such discoveries ought to be. When tainted spinach was found in California, Congress did not ban the eating or distribution of leafy vegetables, even though least one human life had already been lost. The appropriate reaction to the discovery of a security

flaw is to repair it, not to outlaw an entire category of voting machine with which we have a quarter-century of experience.

It is claimed that observed reliability problems with DRE machines would be alleviated by adding a paper trail. Field experience has shown the opposite. The failure rate of paper trail DREs is double that of DREs without paper trails. It should be obvious that adding a new device with moving mechanical parts to an existing electronic machine cannot improve its reliability.

The effect of H.R. 550 would be to ban electronic voting entirely in Federal elections. The reason is that the bill sets forth conditions that are not met by any DRE system currently on the market in the United States. If it were to pass in its present form, there could be no more electronic voting in this country and Congress would be in the position, after spending \$3 billion on new voting equipment, of spending billions more to replace what it just paid for. I cannot believe that the numerous sponsors of this legislation contemplated such an outcome.

Further, the bill as written mandates a system that would violate constitutional and statutory provisions in more than half of the states. The secret ballot is regarded as an essential component of American democracy. Each one of the DRE paper trail systems that are currently on the market either enables voters to sell their votes, or allows the government and the public to discover precisely how each voter in a jurisdiction has voted. I cannot believe that the numerous sponsors of this legislation contemplated such an outcome.

I am in favor of voter verification. The proposed bill, despite incorporating the phrase "voter-verified" into its title, does not come close to providing real voter verification. While it shows the voter that her choices were properly understood and recorded by the machine, it offers no assurance whatsoever that her ballot was counted, that it will ever be counted, or that it will even be present when a recount is conducted. Once the polls have closed, the voter not only has no recourse or remedy, but is powerless to even determine whether her vote is part of the final tally or to object if she believes it isn't. That is not voter verification, regardless how it may be denominated in the text of the bill. I submit that if the Congress desires to enact a comprehensive statute mandating voter verification, which I favor, it ought to verify whether the proposed legislation actually accomplishes that goal.

Numerous effective verification methods are known that are not based on vulnerable paper records. These have not yet been implemented in viable commercial systems. I understand that scientists at NIST will soon announce another one. If H.R. 550 is enacted, there would be no point in continuing research and development on such better methods, since the statute would prohibit the use of any system not based on paper.

Prof. Ronald Rivest of MIT has recently invented a voting method that allows each voter to verify, after the election is over, that her vote has actually been counted, a feature that is absent from the systems contemplated by H.R. 550. Prof. Rivest's system also allows any member of the public to tabulate the results of the election for herself, so it is not even necessary to trust the official count. These discoveries demonstrate that voter verification is now a ripe area of scientific research, and it is far too early to mandate by statute a bad non-solution to the presumed problem.

My purpose here today is not simply to complain about the bill, but to offer a constructive alternative. As part of my written testimony I have included a complete markup of the proposed legislation that retains its essential positive features, such as

voter verification, but eliminates its ill-advised provisions. I urge the Committee not to report the bill favorably in its present form.

I thank you for the opportunity to testify here today.

Biography of Michael I. Shamos

Michael I. Shamos is Distinguished Career Professor in the Institute for Software Research of the School of Computer Science at Carnegie Mellon University, where he directs graduate programs in eBusiness. He has been associated with Carnegie Mellon since 1975. He is Editor-in-Chief of the *Journal of Privacy Technology*.

Dr. Shamos received an A.B. in Physics from Princeton University, an M.A. in Physics from Vassar College, M.S. degrees from American University in Technology of Management and Yale University in Computers Science, the M.Phil. and Ph.D. in Computer Science from Yale University and a J.D. from Duquesne University. He is a member of the bar of Pennsylvania and the United States Patent and Trademark Office.

From 1980-2000 and from 2004-present he has been statutory examiner of computerized voting systems for the Secretary of the Commonwealth of Pennsylvania. From 1987-2000 he was the Designee of the Attorney General of Texas for electronic voting certification. He has conducted more than 115 voting system examinations. In 2004 he designed and taught a course on electronic voting at Carnegie Mellon University. In 2006 he taught a course on voting system testing for the National Institute of Standards and Technology.

Dr. Shamos has been an expert witness in five recent lawsuits involving electronic voting, including *Wexler v. Lepore* in Florida, *Schade v. State Board of Elections* in Maryland and *Taylor v. Onorato* in Pennsylvania. He was the author in 1993 of "Electronic Voting — Evaluating the Threat" and in 2004 of "Paper v. Electronic Voting Records — An Assessment," both of which were presented at the ACM Conference on Computers, Freedom & Privacy. He has provided testimony on electronic voting to the Pennsylvania legislature and to three committees of the U.S. House of Representatives.

Further information is available at <http://euro.ecom.cmu.edu/shamos.html>.

Markup of H.R. 550 by Michael I. Shamos, Sept. 29, 2006

[Notes: Following is a summary of the chief benefits of the bill:

- It establishes a requirement for voter verification in elections for Federal office. Because states will not invest in multiple systems in the same polling locations, the practical effect is to require verification in all public elections.
- It mandates public disclosure of voting system source code.
- It bans wireless components in voting systems.
- It provides for mandatory audits of the voter-verified records.

The bill suffers from serious deficiencies however, of which these are the most important:

- It mandates paper, the least secure form of record, as the mechanism of verification.
- It provides that the paper record would be the official record of the vote, even if the paper record is illegible, missing or obviously tampered with or defaced. This provision alone would have resulted in the disenfranchisement of 10% of the voters in Cleveland, Ohio in the 2006 primary.
- It imposes a set of technical requirements not currently met by any commercially available DRE system in the United States. Therefore, its *sub rosa* effect is to ban electronic voting entirely.
- It goes too far in requiring disclosure of source code not owned or controlled by voting system vendors, such as operating system code.
- It does not protect the disabled within the original spirit of HAVA.
- It does not go sufficiently far in requiring adherence to Federal voting system guidelines, which are presently voluntary but should be made mandatory.
- It vests audit responsibility in the EAC, which is not equipped for such an activity. Recounting 2% of the popular vote of the U.S. by hand will require 5000 people for a week, which is beyond the capacity of the EAC to administer.
- It attempts in a patchwork manner to prohibit certain conflicts of interest, but does not do so comprehensively.
- It establishes a private right of action under HAVA, which the courts have determined was not the original intent of Congress, which established an administrative complaint procedure. It will result, as has already been seen, in a flurry of frivolous lawsuits by plaintiffs seeking to outlaw electronic voting.

The markup I have provided retains the benefits while eliminating the deficiencies. Explanatory notes in brackets are provided throughout. Material that has been struck through ~~thus~~ is meant to be deleted. *[Italicized material in brackets is to be added.]*

Analysis: The apparent motivation for H.R. 550 is the erroneous assumption that DRE machines without paper trails are unauditible. They are fully auditible if the audit mechanism is tested and found to be working. All DRE machines have the capability of producing an audit trail of complete ballot images. Once it is determined that the audit

mechanism has not been compromised and is not defective, voting can proceed with the assurance that the audit trail can be used in the event of any claim of irregularity.

Even if it is believed that electronic records are subject to tampering, all the evidence is that paper records do not even begin to approach the level of security of redundant, encrypted electronic records maintained on separate physical media. The bill rests on the incorrect assumption that physical ballot security can be maintained in a highly distributed election environment open to all citizens. That is not a solved problem, and there is evidence in every election cycle of lost or mutilated paper records. As recently as May 2006 in Cuyahoga County, Ohio, 10% of the paper records maintained in the election were illegible, tampered with or missing entirely.

Nevertheless, voter verification is an important goal because of its positive effect on voter confidence. The VVPAT is a first crude attempt to provide verifiability. Unfortunately, it does so at the expense of security, secrecy, usability and reliability. It is much too early in the development cycle of verifiable systems to mandate a particular solution by statute, thus extinguishing any reason to continue research and development.]

SECTION 1. SHORT TITLE.

This Act may be cited as the “Voter Confidence and Increased Accessibility Act of 2005”.

SEC. 2. PROMOTING ACCURACY, INTEGRITY, AND SECURITY THROUGH VOTER-VERIFIED PERMANENT RECORD OR HARD COPY.

VOTER VERIFICATION AND AUDIT CAPACITY.—

(1) **IN GENERAL.**—Section 301(a)(2) of the Help America Vote Act of 2002 (42 U.S.C. 15481(a)(2)) is amended to read as follows:

“(2) **VOTER-VERIFICATION AND AUDIT CAPACITY.**—

“(A) **IN GENERAL.**—

“(i) The voting system shall produce or require the use of an individual voter verified ~~paper~~-record of the voter’s vote that shall be made available for inspection and verification by the voter before the voter’s vote is cast. For purposes of this clause, examples of such a record include a paper ballot prepared by the voter for the purpose of being read by an optical scanner, a paper ballot prepared by the voter to be mailed to an election official (whether from a domestic or overseas location), a paper ballot created through the use of a ballot marking device, or a paper print-out of the voter’s vote produced by a touch screen or other electronic voting machine, so long as in each case the record permits the voter to verify the record in accordance with this subparagraph.

“(ii) The voting system shall provide the voter with an opportunity to correct any error made by the system in the voter-verified ~~paper~~

record before the permanent voter-verified ~~paper~~ record is preserved in accordance with subparagraph (B)(i).

~~“(iii) The voting system shall not preserve the voter-verifiable paper records in any manner that makes it possible to associate a voter with the record of the voter’s vote.~~

~~“(iv) In the case of a voting system which is purchased to meet the disability access requirements of paragraph (3) and which will be used exclusively by individuals with disabilities, the system does not need to meet the requirements of clauses (i) through (iii), but shall meet the requirements described in paragraph (3)(B)(ii).~~

[Notes: The above edits preserve the requirement of voter verifiability but removing the word “paper” from “voter-verified paper record” allows non-paper methods of verification. Mandating paper as a requirement removes any incentive for development of alternative methods. There would be no reason for a vendor to develop a system superior to paper if paper were mandatory.

Experience with paper trails in the field has not been good. In the 2006 Primary in Cuyahoga County, Ohio, 15% of the paper records were found to be illegible, defaced or missing altogether. See “Cuyahoga Election Review Panel, Cuyahoga County, OH Final Report (July 20, 2006), available at http://www.cuyahogacounty.us/BOCC/GSC/pdf/elections/CERP_Final_Report_20060720.pdf. Furthermore, the percentage of DREs with paper trails that fail on Election Day is approximately double that of DREs without paper trails.

The requirement in (iii) that the voting system not preserve the paper records in any way that permits associating a voter with a ballot is not met by any VVPAT DRE system currently available in the United States. Sequential paper trails, such as Diebold, Sequoia, ES&S and Hart, permit reconstruction of each voter’s vote from the poll list and are completely unacceptable. The cut-sheet systems, such as Avante, print identifying numbers on the ballot which the voter may record, and thus prove later which ballot is his own.]

“(B) MANUAL AUDIT CAPACITY.—

~~“(i) The permanent voter-verified paper record produced in accordance with subparagraph (A) shall be preserved—~~

~~“(I) in the case of votes cast at the polling place on the date of the election, within the polling place in the manner or method in which all other paper ballots are preserved within such polling place;~~

~~“(II) in the case of votes cast at the polling place prior to the date of the election or cast by mail, in a manner which is consistent with the manner employed by the jurisdiction for preserving such ballots in general; or~~

“(III) in the absence of either such manner or method, in a manner which is consistent with the manner employed by the jurisdiction for preserving paper ballots in general.

“(ii) Each ~~paper~~ record produced pursuant to subparagraph (A) shall be suitable for a manual audit equivalent to that of a paper ballot voting system.

“(iii) ~~In the event of any inconsistencies or irregularities between any electronic records and the individual permanent paper records, the individual permanent paper records shall be the true and correct record of the votes cast. [In the event of any inconsistency between the individual permanent voter-verified records and any other electronic records, upon due investigation of the cause of such inconsistency, the records for each ballot determined by such investigation to be the more reliable shall be the true and correct of the votes cast.]~~

“(iv) The individual permanent ~~paper~~ records produced pursuant to subparagraph (A) shall be the true and correct record of the votes cast and shall be used as the official records for purposes of any recount or audit conducted with respect to any election for Federal office in which the voting system is used[, *unless other records are determined under the procedure of subparagraph B(iii) to be the true and correct records*].

[Notes: it defies logic to declare that a paper record should be irrebuttably presumed to be correct even if there is convincing evidence to the contrary. In the Cuyahoga County situation, for example, literal application of the proposed language would have eliminated 10% of the vote in the county because the paper records could not be located or read. The revision provides for an investigation in the event of a discrepancy, the results of which are to be used to determine which record are reliable.

It is a universal defect of document ballot systems (those in which the official ballot is a piece of paper) that only one original of the ballot exists. Therefore, if anyone defaces, replaces or destroys that ballot, the vote is lost.]

“(C) **SPECIAL RULE FOR VOTES CAST BY ABSENT MILITARY AND OVERSEAS VOTERS.**—In the case of votes cast by absent uniformed services voters and overseas voters under the Uniformed and Overseas Citizens Absentee Voting Act, the ballots cast by such voters shall serve as the permanent ~~paper~~ record under subparagraph (A) in accordance with protocols established by the Commission in consultation with the Secretary of Defense which preserve the privacy of the voter and are consistent with the requirements of such Act.”.

(2) **CONFORMING AMENDMENT.**—Section 301(a)(1) of such Act (42 U.S.C. 15481(a)(1)) is amended—

(A) in subparagraph (A)(i), by striking “counted” and inserting “counted, in accordance with paragraphs (2) and (3)”;

(B) in subparagraph (A)(ii), by striking “counted” and inserting “counted, in accordance with paragraphs (2) and (3)”;

and (C) in subparagraph (B)(ii), by striking “counted” and inserting “counted, in accordance with paragraphs (2) and (3)”.

(b) **ACCESSIBILITY AND VOTER VERIFICATION OF RESULTS FOR INDIVIDUALS WITH DISABILITIES.**—

(1) **IN GENERAL.**—Section 301(a)(3)(B) of such Act (42 U.S.C. 15481(a)(3)(B)) is amended to read as follows:

“(B)(i) satisfy the requirement of subparagraph (A) through the use of at least one direct recording electronic voting system or other voting system equipped for individuals with disabilities at each polling place; and

“(ii) meet the requirements of paragraph (2)(A) by using a system that—

~~“(I) if strictly electronic, physically separates the function of vote generation from the functions of vote verification and casting;~~

“(II) allows the voter to verify and cast the permanent record on paper or on another individualized, permanent medium privately and independently, and

“(III) ensures that the entire process of voter verification and vote casting is accessible to the voter.”.

[Notes: the term “vote generation” has no meaning. Votes are not generated. The term “physically separates” is ambiguous. In any event, a technical requirement such as this belongs in the EAC Voting System Guidelines. If the rejoinder is that the Guidelines are not mandatory then they can be made mandatory for Federal elections.]

(2) **SPECIFIC REQUIREMENT OF STUDY, TESTING, AND DEVELOPMENT OF ACCESSIBLE VOTER VERIFICATION MECHANISMS.**—

(A) **STUDY AND REPORTING.**—Subtitle C of title II of such Act (42 U.S.C. 15381 et seq.) is amended—

(i) by redesignating section 247 as section 248; and (ii) by inserting after section 246 the following new section:

~~“SEC. 247. STUDY AND REPORT ON ACCESSIBLE VOTER VERIFICATION MECHANISMS.~~

“The Commission shall study, test, and develop *[effective verification mechanisms and]* best practices to enhance the *[effectiveness and]* accessibility of voter-verification mechanisms for individuals with

disabilities and for voters whose primary language is not English, including best practices for the mechanisms themselves and the processes through which the mechanisms are used.”.

[Notes: this subsection has been generalized to provide for the development of more and better verification mechanisms, not just improvements in accessibility.]

(B) CLERICAL AMENDMENT.—The table of contents of such Act is amended—

- (i) by redesignating the item relating to section 247 as relating to section 248; and
- (ii) by inserting after the item relating to section 246 the following new item:

“**Sec. 247. Study and report on accessible voter verification mechanisms.**”.

(c) ADDITIONAL VOTING SYSTEM REQUIREMENTS.—

(1) REQUIREMENTS DESCRIBED.—Section 301(a) of such Act (42 U.S.C. 15481(a)) is amended by adding at the end the following new paragraphs:

“(7) **INSTRUCTION OF ELECTION OFFICIALS.**—

Each State shall ensure that all election officials are instructed on the right of any individual who requires assistance to vote by reason of blindness, other disability, or inability to read or write to be given assistance by a person chosen by that individual under section 208 of the Voting Rights Act of 1965.

“(8) **PROHIBITION OF USE OF UNDISCLOSED SOFTWARE IN VOTING SYSTEMS.**—

No voting system shall at any time contain or use any undisclosed software[, *subject to the exception in (i) below*]. Any voting system containing or using software shall disclose the [*specifications, designs, manuals and all other documentation,*] source code, object code, and [*any*] executable representation of that software to the Commission, and the Commission shall make ~~that source code, object code, and executable representation~~ [*the disclosed materials*] available for inspection upon request to any person.

[“(i) **EXCEPTION FOR COMMERCIAL OFF-THE-SHELF SOFTWARE.** —

A voting system may use commercial off-the-shelf software (COTS) and the disclosure in subparagraph (8) shall not be required, provided that (1) no party involved in the design, programming, manufacture or sale of the voting system had any role in designing, programming, manufacturing or selling the COTS; and (2) the COTS was duly examined and certified pursuant to subparagraph (10) below. If the COTS has been modified in any manner, including configuration,

since its manufacture, then the disclosure of subparagraph (8) shall be required as to all such modifications.]

[This is a very significant issue, and the bill goes both too far and not far enough to provide for disclosure. Voting-specific code produced by vendors should be publicly disclosed. However, it is impractical to require disclosure of COTS source code, such as that of the Windows operating system. The revision here exempts “true” COTS, that is, COTS that has not been modified or configured by the system vendor. True COTS is exempt from disclosure only if it has passed testing by a certified laboratory.]

The revision also requires disclosure of documentation and related materials along with code.]

“(9) PROHIBITION OF USE OF WIRELESS COMMUNICATIONS DEVICES IN VOTING SYSTEMS.—No voting system shall contain, use, or be accessible by any wireless, power-line, or concealed communication device at all. *[This prohibition against wireless devices shall not apply to infrared interfaces, provided that no such interface is accessible externally to the voting system.]*

[Notes: technical requirements such as these belong in the Voting System Guidelines, not the statute. Congress is not well-positioned to keep technical requirements up to date, or even to know which ones are advisable. The anti-wireless provision is an example of a hasty and overreaching restriction. Radio frequency wireless should be banned because of the risk of interception or interference with the signals. However, there is no reason to ban short-range (e.g., 1 cm) infrared, where the infrared components cannot be accessed from outside the device.]

[The Help America Vote Act of 2002 (42 U.S.C. 15301) is amended by deleting the word “voluntary” in each occurrence of the term “voluntary voting system guidelines.]

“(10) CERTIFICATION OF SOFTWARE AND HARDWARE.—All software and hardware used in any electronic voting system shall be certified by laboratories accredited by the Commission as meeting *[applicable voting system guidelines adopted as provided in section 222 and as meeting]* the requirements of paragraphs (8) and (9).

[Notes: It’s time to make the voting system guidelines mandatory. Otherwise there is no assurance that voters throughout the country will be voting on systems of comparable levels of quality.]

“(11) SECURITY STANDARDS [CONFLICT OF INTEREST PROHIBITION] FOR VOTING SYSTEMS USED IN FEDERAL ELECTIONS.—

“(A) **IN GENERAL.**—No voting system may be used in an election for Federal office unless the manufacturer of such system and the election officials using such system meet the applicable requirements described in subparagraph (B).

“(B) **REQUIREMENTS DESCRIBED.**—The requirements described in this subparagraph are as follows:

~~“(i) The manufacturer and the election officials shall document the chain of custody for the handling of software used in connection with voting systems.~~

~~“(ii) The manufacturer of the software used in the operation of the system shall provide the Commission with updated information regarding the identification of each individual who participated in the writing of the software, including specific information regarding whether the individual has ever been convicted of a crime involving election fraud.~~

“(iii) In the same manner and to the same extent described in paragraph (8), the manufacturer shall provide the codes used in any software used in connection with the voting system to the Commission and may not alter such codes once the election officials have certified the system unless such system is recertified by such election officials.

~~“(iv) The manufacturer shall meet standards established by the Commission to prevent the existence or appearance of any conflict of interest with respect to candidates for public office and political parties, including standards to ensure that the manufacturer and its officers and directors do not hold positions of authority in any political party or in any partisan political campaign.~~

[Note: There are considerable difficulties with the above section (11). It is impractical and too narrow at the same time. Its title is incorrect since it has nothing to do with security. The notion of the “manufacturer” is not well-defined, as software is often written by one company under contract to a system vendor and it is unclear who the “manufacturer” is in such a circumstance. The term “election officials” is not defined in the statute. Most circumstances under which it is used are harmless, but this one is not. It may make sense for the chief election officer of a state to promulgate regulations for the handling of software and documenting the handling, but the provision is (B)(i) is too indefinite as to who actually has the responsibility.

The concern that programmers might have convictions for election fraud is legitimate, but surely election fraud is not the only crime that ought to be considered. (Bribery of a public official springs to mind as another.) Employers, however, often do not have

accurate information concerning their employees' pasts. The only practical way to obtain such information is through background checks.

In the end, the voter-verified ballot, combined with mandatory certification guidelines and disclosure of source code, ought to protect against even a determined criminal working for a vendor. The prohibition against officers and directors of manufacturers participating in campaigns is unnecessary for the same reason. It would also prohibit such a person from running for public office, which is the right of a citizen to do.]

“(12) PROHIBITING CONNECTION OF SYSTEM OR TRANSMISSION OF SYSTEM INFORMATION OVER THE INTERNET.—No component of any voting device upon which votes are cast shall be[, *or have ever been,*] connected to the Internet.”.

[It is not enough to forbid connecting a device to the Internet – we must be sure it has not been connected at any time in the past, since it might have become infected with malware at such a time.]

(2) REQUIRING LABORATORIES TO MEET STANDARDS PROHIBITING CONFLICTS OF INTEREST AS CONDITION OF ACCREDITATION FOR TESTING OF VOTING SYSTEM HARDWARE AND SOFTWARE.—

(A) IN GENERAL.—Section 231(b) of such Act (42 U.S.C. 15371(b)) is amended by adding at the end the following new paragraph:

“(3) PROHIBITING CONFLICTS OF INTEREST; ENSURING AVAILABILITY OF RESULTS.—

“(A) IN GENERAL.—A laboratory may not be accredited by the Commission for purposes of this section unless—

“(i) the laboratory meets the standards applicable to the manufacturers of voting systems under section 301(a)(11)(B)(iv), together with such standards as the Commission may establish to prevent the existence or appearance of any conflict of interest in the testing, certification, decertification, and recertification carried out by the laboratory under this section, including standards to ensure that the laboratory does not have a financial interest in the manufacture, sale, and distribution of voting system hardware and software, and is sufficiently independent from other persons with such an interest; and **“(ii)** the laboratory, upon completion of any testing, certification, decertification, and recertification carried out under this section, discloses the results to the Commission.

“(B) AVAILABILITY OF RESULTS.—Upon receipt of information under subparagraph (A)(ii), the Commission shall make the information available to election officials and the public.”.

(B) DEADLINE FOR ESTABLISHMENT OF STANDARDS.—The Election Assistance Commission shall establish the standards described in section 231(b)(3) of the Help America Vote Act of 2002 (as added by subparagraph (A)) ~~not later than January 1, 2006~~*[within one year after funds have been made available to the Commission to develop such standards]*.

[Notes: the revision ensures that the Commission will not be required to perform without funding.]

(d) AVAILABILITY OF ADDITIONAL FUNDING TO ENABLE STATES TO MEET COSTS OF REVISED REQUIREMENTS.—

(1) EXTENSION OF REQUIREMENTS PAYMENTS FOR MEETING REVISED REQUIREMENTS.—Section 257(a) of the Help America Vote Act of 2002 (42 U.S.C. 15407(a)) is amended by adding at the end the following new paragraph:

“(4) For fiscal year ~~2006~~*[2008]*, \$150,000,000, except that any funds provided under the authorization made by this paragraph may be used by a State only to meet the requirements of title III which are first imposed on the State pursuant to the amendments made by section 2 of the Voter Confidence and Increased Accessibility Act of 2005.”.

(2) PERMITTING USE OF FUNDS FOR REIMBURSEMENT FOR COSTS PREVIOUSLY INCURRED.—

Section 251(c)(1) of such Act (42 U.S.C. 15401(c)(1)) is amended by striking the period at the end and inserting the following: “, or as a reimbursement for any costs incurred in meeting the requirements of title III which are imposed pursuant to the amendments made by section 2 of the Voter Confidence and Increased Accessibility Act of 2005.”.

SEC. 3. ENHANCEMENT OF ENFORCEMENT OF HELP AMERICA VOTE ACT OF 2002.

Section 401 of such Act (42 U.S.C. 15511) is amended— (1) by striking “The Attorney General” and inserting “(a) **IN GENERAL.—**The Attorney General”; and (2) by adding at the end the following new subsections:

“(b) FILING OF COMPLAINTS BY AGGRIEVED PERSONS.—

“(1) **IN GENERAL.—**A person who is aggrieved by a violation of section 301, 302, or 303 which is occurring or which is about to occur may file a written, signed, *[sworn,]* notarized complaint with the Attorney

General describing the violation and requesting the Attorney General to take appropriate action under this section.

[Notes: Complaints must be sworn and thus made under penalty of perjury to prevent abuse of the right of complaint.]

“(2) **RESPONSE BY ATTORNEY GENERAL.**—The Attorney General shall respond to each complaint filed under paragraph (1), in accordance with procedures established by the Attorney General that require responses and determinations to be made within the same (or shorter) deadlines which apply to a State under the State-based administrative complaint procedures described in section 402(a)(2).

“(c) **CLARIFICATION OF AVAILABILITY OF PRIVATE RIGHT OF ACTION.**— Nothing in this section may be construed to ~~prohibit~~*[allow]* any person ~~from bringing~~*[to bring]* an action under section 1979 of the Revised Statutes of the United States (42 U.S.C. 1983) to enforce the uniform and nondiscriminatory election technology and administration requirements under sections 301, 302, and 303.

[Notes: It is a great mistake to provide a private right of action under HAVA, and such was never intended, hence the administrative complaint procedure. Decisions concerning voting systems are made by duly authorized officials based on examinations they conduct and the results of studies by accredited laboratories. The experience has been that people who feel that a requirement is missing from the guidelines have been filing lawsuits alleging defects in the certification process, attempting to shift to a court the task of making technical determinations that have been left to other bodies by statute. We have already seen a proliferation of litigation of this sort. If a private right of action is conferred, the number of lawsuits will explode.]

“(d) **NO EFFECT ON STATE PROCEDURES.**—Nothing in this section may be construed to affect the availability of the State-based administrative complaint procedures required under section 402 to any person filing a complaint under this subsection.”.

SEC. 4. PERMANENT EXTENSION OF AUTHORIZATION OF ELECTION ASSISTANCE COMMISSION.

Section 210 of the Help America Vote Act of 2002 (42 U.S.C. 15330) is amended by striking “each of the fiscal years 2003 through 2005” and inserting “each fiscal year beginning with fiscal year 2003”.

SEC. 5. REQUIREMENT FOR MANDATORY MANUAL AUDITS BY HAND COUNT.

(a) **MANDATORY AUDITS IN RANDOM PRECINCTS.**—

(1) **IN GENERAL.**—The ~~Election Assistance Commission~~*[chief election official of each state]* shall ~~conduct~~*[cause to be conducted]* random, unannounced, hand counts of the voter-verified records required to

be produced and preserved pursuant to section 301(a)(2) of the Help America Vote Act of 2002 (as amended by section 2) for each general election for Federal office (and, at the option of the State or jurisdiction involved, of elections for State and local office held at the same time as such an election for Federal office) in at least 2 percent of the precincts (or equivalent locations) in each State[, *which precincts collectively shall include at least 2 percent of the registered voters of such State*].

[Notes: It is impractical to repose responsibility for state election audits in the Commission. Each one must be conducted in accordance with state law, and they must be completed at high speed immediately following an election. A 2% mandatory hand count will result in the hand-tabulation of about 2.5 million ballots in a general election. Experiments have shown that hand-counting of ballots, including all necessary steps, takes approximately 20 minutes per ballot (Sacramento County California). If only Federal offices are hand-counted, let us assume the time would go down to 5 minutes, or 12 per hour. Counting 2.5 million ballots would take more than 200,000 man-hours, or 100 man-years. To accomplish this over a period of one week would require 5000 people. While this is only 100 per state, on average, it is far more than could be mustered and managed by the EAC. Thus the revision language hands the responsibility over to the states.

The original text would have recast the EAC as an oversight and enforcement body, which it is not equipped and was not intended to be.]

(2) PROCESS FOR CONDUCTING AUDITS.—~~The Commission shall conduct~~*[required]* ~~an~~ audit under this section of the results of an election *[shall be conducted]* in accordance with the following procedures:

~~(A) Not later than 24 hours after a State announces the final vote count in each precinct in the State, the Commission shall determine and then announce the precincts in the State in which it will conduct the audits.~~

[(A) In every Federal election, the results of any vote count obtained at a precinct or equivalent location shall be publicly posted as soon as practicable following the close of polls.]

(B) With respect to votes cast at the precinct or equivalent location on or before the date of the election (other than provisional ballots described in subparagraph (C)), ~~the Commission shall count by hand~~ the voter-verified records required to be produced and preserved under section 301(a)(2)(A) of the Help America Vote Act of 2002 (as amended by section 2) ~~and compare~~*[shall be counted by hand and*

~~compared with] those records with the [any] count of such votes [publicly posted at the precinct or equivalent location on or before the date of the election] as announced by the State.~~

(C) With respect to votes cast other than at the precinct on the date of the election (other than votes cast before the date of the election described in subparagraph (B)) or votes cast by provisional ballot on the date of the election which are certified and counted by the State on or after the date of the election, including votes cast by absent uniformed services voters and overseas voters under the Uniformed and Overseas Citizens Absentee Voting Act, the Commission shall ~~count by hand the applicable voter verified records required to be produced and preserved under section 301(a)(2)(A) (as amended by section 2) and compare~~*[shall be counted by hand and compared with]* ~~those records with the [any] count of such votes [publicly posted at the precinct or equivalent location] as announced by the State.~~

[Notes: as a general matter, states do not publicly announce vote totals prior to certification of the election, which may not occur until three weeks after Election Day. The revision would require posting of totals at each polling location, which is already commonly done, and to use the publicly posted results as the basis of comparison with the voter-verified records.]

(3) SPECIAL RULE IN CASE OF DELAY IN REPORTING ABSENTEE VOTE COUNT. — In the case of a State in which, under State law, the final count of absentee and provisional votes is not announced until after the expiration of the 7-day period which begins on the date of the election, the Commission shall ~~initiate the [audit] process described in paragraph (2) for conducting the audit [shall commence] not later than 24 hours after the State announces the final vote [public posting of the] count for the votes cast at the precinct or equivalent location on or before the date of the election, and shall initiate the recount of the absentee and provisional votes pursuant to paragraph (2)(C) not later than 24 hours after the State announces the final [public posting of the] count of such votes.~~

(4) AVAILABILITY OF INFORMATION. — ~~Each State and jurisdiction in which an audit is conducted under this section shall provide the Commission with the information and materials requested by the Commission to enable it to carry out the audit.~~

(b) SELECTION OF PRECINCTS. — The selection of the precincts in a State in which the Commission shall ~~conduct hand counts under this section [are conducted]~~ shall be made by the Commission on *[a]* an

entirely random basis using a uniform distribution in which all precincts in a State have an equal chance of being selected, in accordance with such procedures as the Commission determines appropriate, except that—

(1) at least one precinct shall be selected in each county (or equivalent jurisdiction); and

(2) the ~~Commission~~ *[chief election officer]* shall publish the procedures *[to be used]* in the ~~Federal Register~~ *[an official state publication regularly used for announcement of administrative regulations]* prior to the selection of the precincts.

(c) **PUBLICATION.**—

(1) **IN GENERAL.**—As soon as practicable after the completion of an audit conducted under this section, the ~~Commission~~ *[chief election officer]* shall announce and publish the results of the audit, and shall include in the announcement a comparison of the results of the election in the precinct as determined by the ~~Commission~~ under the audit and the final vote count *[publicly posted]* in the precinct *[or equivalent location]* as ~~announced by the State~~, broken down by the categories of votes described in subparagraphs (B) and (C) of subsection (a)(2). *[Such results shall be provided to the Commission within 48 hours.]*

[Notes: The above changes result from shifting responsibility for audits from the Commission to the chief election officials of the states.]

(2) **DELAY IN CERTIFICATION OF RESULTS BY STATE.**—No State may certify the results of any election which is subject to an audit under this section prior to the completion of the audit and the announcement and publication of the results of the audit under paragraph (1), except to the extent necessary to enable the State to provide for the final determination of any controversy or contest concerning the appointment of its electors for President and Vice President prior to the deadline described in section 6 of title 3, United States Code.

(d) **ADDITIONAL AUDITS IF CAUSE SHOWN.**—If the Commission finds that any of the hand counts conducted under this section show cause for concern about the accuracy of the results of an election in a State or in a jurisdiction within the State, the ~~Commission~~ *[Attorney General may require]* hand counts *[to be conducted]* under this section at such additional precincts (or equivalent locations) within the State or jurisdiction as the Commission considers

appropriate to resolve any concerns and ensure the accuracy of the results.

(e) **AVAILABILITY OF ENFORCEMENT UNDER HELP AMERICA VOTE ACT OF 2002.**—Section 401 of the Help America Vote Act of 2002 (42 U.S.C. 15511), as amended by section 3, is amended—

(1) in subsection (a), by striking the period at the end and inserting the following: “or to respond to an action taken by a State or jurisdiction in response to an audit *[required by or performed]* ~~by the Commission~~ under the Voter Confidence and Increased Accessibility Act of 2005 of the results of an election for Federal office or by the failure of a State or jurisdiction to take an action in response to such an audit.”;

(2) in subsection (b)(1), by striking “about to occur” and inserting the following: “about to occur, or by an action taken by a State or jurisdiction in response to an audit ~~conducted by the Commission under~~ *[required by or performed under]* the Voter Confidence and Increased Accessibility Act of 2005 of the results of an election for Federal office or by the failure of a State or jurisdiction to take an action in response to such an audit”; and

(3) in subsection (c), by striking the period at the end and inserting the following: “or to respond to an action taken by a State or jurisdiction in response to an audit ~~conducted by the Commission under~~ *[required by or performed under]* the Voter Confidence and Increased Accessibility Act of 2005 of the results of an election for Federal office or by the failure of a State or jurisdiction to take an action in response to such an audit.”.

[The role of enforcing the audit requirements has been shifted from the Commission, which is not an enforcement body, to the Attorney General, with the Commission in the place of recommending action to the Attorney General.]

(f) **AUTHORIZATION OF APPROPRIATIONS.**—In addition to any other amounts authorized to be appropriated under any other law, there are authorized to be appropriated to the Election Assistance Commission such sums as may be necessary to carry out this section.

(g) **EFFECTIVE DATE.**—This section shall apply with respect to regularly scheduled general elections for Federal office beginning with the elections ~~held in November 2006~~ *[held on and after one year following the date on which a voting system that conforms to the requirements of this section shall become commercially available in the United States, as the Commission shall determine]*.

[Notes: It makes no sense to impose a statutory requirement that is not capable of being met, for to do so would disrupt the electoral process around the country. Therefore the revision provides for a technological development period.

Because of the statutory requirement of verification, great benefit will accrue to the first vendor who produces a conforming system, since that will start a one-year clock for compliance by jurisdictions.]

SEC. 6. REPEAL OF EXEMPTION OF ELECTION ASSISTANCE COMMISSION FROM CERTAIN GOVERNMENT CONTRACTING REQUIREMENTS.

(a) **IN GENERAL.**—Section 205 of the Help America Vote Act of 2002 (42 U.S.C. 15325) is amended by striking subsection (e).

(b) **EFFECTIVE DATE.**—The amendment made by subsection (a) shall apply with respect to contracts entered into by the Election Assistance Commission on or after the date of the enactment of this Act.

SEC. 7. REQUIREMENT FOR FEDERAL CERTIFICATION OF TECHNOLOGICAL SECURITY OF VOTER REGISTRATION LISTS.

Section 303(a)(3) of the Help America Vote Act of 2002 (42 U.S.C. 15483(a)(3)) is amended by striking “measures to prevent the” and inserting “measures, as certified by the Election Assistance Commission, to prevent”.

SEC. 8. EFFECTIVE DATE.

Except as provided in section 6(b), the amendments made by this Act shall take effect as if included in the enactment of the Help America Vote Act of 2002.

[Section 101 of the Help America Vote Act of 2002 (42 U.S.C. 15301) is amended by adding at the end the following new paragraph:

*“(d) **FEDERAL OFFICE DEFINED.**— The term “Federal office” means the office of Senator or Representative in, or Delegate or Resident Commissioner to, the Congress.”]*

[Notes: This change is required to preserve the constitutionality of HAVA. The term “Federal office” was used in HAVA but was not defined. Under the Constitution, Congress has highly constrained power to regulate elections for President and Vice-President, being limited essentially to specifying the date on which electors shall be chosen.

The new definition makes it clear that President and Vice-President are not “Federal offices” for purposes of the statute. The practical effect of the change may be minimal, since in regularly scheduled elections, voting for senators and representatives occurs at the same time as choosing electors for President.]