



Amendment Suggestions for the Senate Ballot Integrity Act of 2007 (S1487)

To Increase Public Verifiability of Election Outcome Accuracy & Eliminate Unfunded Mandates

The following recommendations would make the "Ballot Integrity Act of 2007" (S1487)ⁱ stronger, help it to better match its counterpart House Resolution 811 (which has 216 co-sponsors), and still retain its original intent.ⁱⁱ

1. REMOVE THE AUTHORITY OF THE U.S. ELECTION ASSISTANCE COMMISSION (EAC) TO CONTROL WHAT VOTING SYSTEMS STATES SHALL USE TO COUNT VOTES.

AMEND SECTION 102(a) by striking "and (iv) containing such other information and certifications as the Commission may require."

AMEND SECTION 201(b)(1) by striking "and (II) in the case of systems used in Federal elections on and after January 1, 2010, by the Commission under section 231."

AMEND SECTION 201(b)(1) "(I) in the case of systems used in Federal elections before January 1, 2010, by the Commission or by the State under section 231; and" by striking "before January 1, 2010"

Justification: S1487 sets mandatory rather than voluntary federal voting system standards. Federal voting system standards should remain voluntary guidelines. Voting system software must be frequently updated with security patches if voting systems are to be somewhat secure from tampering. The federal certification process is lengthy and costly and requires that no changes be made to the software after systems are certified. Thus federal certification fixes software in stone and prohibits good security practices. No state should require federal certification of its voting systems under the current process. Giving sole control to the US Executive branch over what voting systems States shall use would, at best, diminish innovation and security in voting systems and, at worst, permit a takeover by the executive branch.

2. REQUIRE PRE-PRINTED PAPER BALLOTS, PAPER POLL BOOK & PAPER VOTER SIGN-IN SYSTEMS AT ALL POLLING LOCATIONS IN CASE OF ELECTRONIC FAILURE.

Pre-printed paper ballots in sufficient numbers to accommodate all voters shall be provided at all polling locations in case of electronic failure. Paper pollbook and voter sign-in systems shall be available in case of electronic failure of electronic pollbook systems. Electronic pollbook systems should under no circumstances be connected to the voting systems directly.

Justification: Without paper ballots available, elections are susceptible to Denial of Service (DOS) attacks, power outages, touch-screen calibration & delay errors, ballot definition errors, long lines, hacking, and other electronic failures and errors which can cause voter disenfranchisement and errors in recording and counting votes. However, having paper ballots available is useless if voters are prevented from signing in to vote by electronic poll book failures or power outages. Voters have been disenfranchised in MD and CO because of electronic poll books. At the very least require official paper registers and paper poll books to be available in case of electronic failure of electronic poll books and

require electronic poll books to use open source software. Anything that allows sole control over both pollbook and voting systems has potential for one notifying the other directly via network - is creating a giant opportunity for digital ballot stuffing.

3. REQUIRE PUBLIC POSTING OF POLLING PLACE VOTE COUNTS & POLLING PLACE REPORTS WHEN POLLS CLOSE; AND REQUIRE PUBLIC RELEASE OF EARLY VOTING & MAIL-IN BALLOTING RECORDS.

Require public posting of polling place vote totals and public posting of any summary data reports that are created by poll workers for the number of total voters who cast ballots, the number of total voters using provisional ballots, the number of voting machines at that polling location, the number of voting equipment breakdowns, failures, or malfunctions, and the counts on each voting machine. I.e. require the public posting of copies [hand-written copies are fine] of any summary vote tallies and election records that are produced at that polling location when polls close; and also publicly release and post all similar records of early voting and mail-in ballot handling and counts [See amendment suggestion #4 below].

Justification: Public posting of polling place vote totals deters any tampering with vote counts or election records created at the polls by enabling detection, and enables the public to know that the vote counts were not tampered with in transit to, or at, the central election jurisdiction location; and enables the public to accurately gauge voter service levels and the accuracy of the voter registration records as required by the National Voter Registration Act.

4. REQUIRE PUBLIC RELEASE AND PUBLIC SCRUTINY OF CHAIN OF CUSTODY AND SECURITY PROCEDURES FOR VOTING SYSTEMS, PAPER BALLOTS, AND ELECTION RECORDS; AND BALLOT DEFINITIONS.

Prior to the Election, publicly release and accept public audit and input on:

1. All written procedures for between-election, pre-election, during election, and post-election chain of custody and security procedures for the security of voting equipment, and also for the security of paper ballots and paper voter registration and election records. Specific passwords and security keys shall be redacted; and
2. Ballot definition files used by voting machines to tally cast votes (for public audit); and
3. Instructions telling the public and political parties how to participate in auditing ballot definitions, and how to observe, or participate in, the chain of custody and security procedures.

After the Election and prior to certification of election results, publicly release copies of all records released to the election auditors to verify the integrity of the audit (See amendment suggestion #8 above)

Funding: Provide funding to each county or township or parish which administers separate elections of \$10,000 for one high-quality, high-speed scanner/copier that can be used to quickly scan all types of election records into electronic and paper forms; and upload electronic copies to the Internet if desired. Total fiscal note would be approximately \$30 Million to facilitate the public release of all election records needed to publicly verify the integrity of the independent manual election audits.

Justification: S1487 currently requires that chain of custody (security procedures) for voting systems and ballots be disclosed to the EAC but does not require that they be disclosed to the public, therefore omitting any public scrutiny of ballot and voting system security procedures. (See Section 201(b) (1)) Having recently tried to do a Google search on paper ballot and election record security procedures, I can tell you that surprisingly, there is not much information available. The concept of "Security by Obscurity" is a discredited concept that gives opportunity by insiders within any system to manipulate

the system. Pre-election public scrutiny of ballot definition files would reduce or eliminate mistakes in ballot definitions which have caused egregious vote miscounts in the past.

5. FUND THE REPLACEMENT OF VOTING SYSTEMS WHICH DO NOT UTILIZE DURABLE, INDIVIDUAL, SCAN-ABLE PAPER BALLOTS; AND FUND VOTING SYSTEMS FOR VOTERS WITH DISABILITIES THAT PROVIDE NON-VISUAL AND ENHANCED VISUAL PAPER BALLOT VERIFICATION AND MECHANISMS THAT DO NOT REQUIRE A VOTER TO MANUALLY HANDLE THE PAPER BALLOTS.

Amend to allocate \$1,000,000,000 (\$1 Billion) to enable States to meet costs to replace voting systems in response to S1487's requirements for a durable, individual paper ballots that protect voter anonymity. Authorize at least \$555 Million for 2007 and another \$500 Million beginning in 2009. Estimating that there are approximately 67,000 polling places with *paperless* digital recording electronic (DRE) voting systems, requiring at least one ballot marking device (BMD)^{viii} per polling place to provide accessible voting for voters with disabilities or alternative language requirements = 67,000 BMDs X \$5,000/machine = \$335 Million. Of the 67,000 precincts, approximately 44,000 do not currently use precinct based optical scanners (PCOS) and would need to purchase one PCOS per polling place = 44,000 precincts X \$5,000/machine = \$220 Million. This would make the total fiscal note approximately \$555 Million to replace *paperless* DRE voting machines by 2008. To replace all DRE voting systems currently using paper roll voter verifiable paper trails (VVPATs) by precinct-based paper ballot optical scan systems by 2012 would require approximately an additional \$500 Million. The total fiscal note would be approximately \$1 Billion.

Justification: Currently S1487 provides \$600 Million which is about what it would cost to replace paperless DREs with precinct-based optical-scan (PBOS) systems and ballot marking devices (BMDs). (Sect. 201(a) (1) (C)) S1487 says that States with paperless voting systems shall certify to the EAC by July, 2009 that they will comply with the new requirements by the deadline of January, 2010 (Sect. 201(a) (2) (A)) S1487 currently requires the elimination of voting systems using VVPT rolls which are not durable and do not protect ballot secrecy, but does not fund adequate monies for replacing them. It would cost roughly \$1 Billion to replace all paperless and paper-roll DRE voting machines with one precinct-based optical-scanner and one ballot marking device for voters with disabilities, for each precinct now using non-compliant DREs; and to upgrade existing BMDs to be able to not require voters to manually handle the ballots.

6. AMEND (SECT. 304) TO REQUIRE *INDEPENDENT* ADMINISTRATION OF ELECTION AUDITS.

APPLY GAO INDEPENDENCE STANDARDS TO THE ENTITY CONDUCTING AUDITS. Require that the State shall administer audits under this subtitle through an entity selected for such purpose by the State in accordance with such criteria as the State considers appropriate consistent with the requirements of this subtitle, except that the entity must meet the general standards established by the Comptroller General, the head of the Government Accountability Office (GAO), to ensure the independence (including the organizational independence) of entities performing vote count audits under generally accepted government accounting standards.

Justification: S1487 permits audits to be conducted internally by election officials (See Section 304 "each State shall establish guidelines and standards for local jurisdictions to utilize in conducting audits..." and "each State shall establish guidelines and standards". Thus S1487 currently permits sham internal audit procedures like Utah's where the manual counts of the voter-verifiable paper ballot records are never compared with the electronic tallies used to tally unofficial vote counts.) Federal election

outcomes determine who controls budgets in the trillions of dollars and affects lives worldwide. Elections should not be exempt from the independent checks and balances envisioned by our founding fathers. Independent audits are customary in business and other fields.

7. AMEND (SECT. 201(D)) TO REQUIRE ELECTION AUDITS TO BEGIN IN 2008.

EFFECTIVE DATE: "Audits shall apply with respect to elections for Federal office beginning with the regularly scheduled general elections held in November 2008."

Justification: S1487 requires no audits until the 2010 election, leaving the 2008 election wide-open to undetected vote tampering, error, and electronic failures. Even if only a few Congressional and/or state elections are miscounted, the control of the US Congress and Executive branch could end up controlled by persons not properly elected by voters. This would require replacing all paperless DRE voting machines prior to the November 2008 election.

8. FUND ELECTION AUDITS. Congress shall authorize \$50,000,000 (\$50 Million) per federal election cycle to reimburse states for the costs of conducting independent audits of vote count accuracy.

Justification: To avoid an unfunded mandate.

9. AMEND TO REQUIRE THAT ELECTION AUDITS VERIFY THE ACCURACY OF ELECTION RESULTS.

Hand counts administered under this section shall be compared to the final unofficial electronic tally of the results of an election; and the unofficial tallies for each auditable precinct or batch vote count shall be publicly released prior to the random selection of such vote counts for the manual audit.

Justification: S1487's audits do *not* currently require comparing the voter verified ballots with the electronic tallies used to tally votes on the central tabulator. Instead S1487 says "the audit shall compare the vote tallies from the hand count of the individual, durable, voter-verified paper records ... with *electronic tallies*" (Sect. 202(a) (1)), so that *any* electronic tallies could be used. This would permit "audits" like Utah's where current interpretation of election statutes by election officials prohibit the election night polling place tallies from being publicly released, and yet the "audit" is conducted by comparing voter verifiable paper ballot roll records with selected printouts of election night polling place DRE vote totals tapes, rather than the actual electronic counts used to tally votes on the counties' tabulators. S1487's current audits do not require vote counts to be publicly announced prior to beginning the audit so that there is nothing in S1487 to prevent vote fraud that is undetectable by audits, in contrast to HR811's provisions.

10. AMEND (SECT. 202) TO REQUIRE 99% CONFIDENCE LEVEL ELECTION AUDIT AMOUNTS.ⁱⁱⁱ

For each federal election contest, require that:

- a) the number of precinct or batch vote counts audited shall give at least 99% probability that at least one corrupt vote count will be audited if the amount of corrupt vote counts are sufficient to alter the election outcome^{iv}; and
- b) at least 1% (one per centum) of precinct or batch vote counts in which votes are cast shall be audited; and
- c) in addition to the randomly selected precincts in a) and b) above, if at least one precinct or batch vote count has not been selected from each county, parish, or township having separate election administration, then one precinct or batch vote count shall be randomly selected for audit from within each county, parish, or township having separate election administration; and

d) in addition to the randomly selected precincts in a), b), and c) above, four discretionary precinct or batch vote counts may be selected for audit by state-wide Senate or Presidential candidates and two discretionary precinct or batch vote counts may be selected for audit by U.S. House candidates; or alternatively, vote counts which calculations show are "suspicious" shall also be manually audited.^v

Details: For each federal race, election audit sample sizes shall be calculated by determining exactly how many miscounted precincts could wrongly alter the election outcome to ensure that the audit sample size is adequate - taking into account the margin between the leading two candidates, the total number of vote counts in the race, and the total number of ballots cast in each precinct or batch vote count. Calculations shall assume that up to 20% of votes could be wrongly shifted without raising immediate suspicion within each precinct or batch vote count.

Justification: S1487's 2% audits over-audit most races and under-audit in cases of close races or races in districts with a small number of total precincts. A 2% audit would *not* detect outcome-altering error in some close US House races and even occasionally, it would not protect a US Senate race in a small state. On the other hand, *99% success rate audits require auditing approximately the same number of precincts overall as a flat rate 2% audit*, and yet protect all US House and Senate races. Flat rate audits like S1487 currently proposes are effective if the total number of precincts in a district and the margins between the leading candidates are sufficient. If the number of total vote counts is small, as in some US House races, then the currently proposed S1487 audit could be ineffective in close races. For an analysis showing that the more effective 99% success rate audits may be less costly, see "Comparison of Proposed Federal Election Audits"

<http://electionarchive.org/ucvAnalysis/US/paper-audits/ComparisonFederalElectionAuditProposals.pdf>

11. AMEND TO PROHIBIT THE CONNECTION OF KEY VOTING SYSTEM COMPONENTS TO NETWORKS.

Amend: No voting system equipment, including equipment on which ballots are programmed, on which votes are cast, on which votes are tabulated or on which votes are stored for physical delivery between polling sites, shall be accessible: via the telephone network, using any technology including modems and Internet messaging; via a cable network; via information-modulated power-line signaling; via satellite; or via other wireless technology. Infra-red communication capabilities shall be allowed only if effectuated by components and sub-systems designed and built specifically for the purpose and so identified as part of the voting equipment and system when the latter were certified. Equipment and systems shall be adequately protected against electromagnetic radiation of signals from the equipment and against signals from external sources. See <http://electionarchive.org/ucvInfo/US/ExpertsList.pdf> for some experts who can help write specific legislative language.

Justification: S1487 currently allows voting devices which tally votes [central tabulating equipment] and devices which are used to program ballot definitions to be connected to the Internet, thus leaving voting systems wide open to malicious tampering through the Internet. (See Section 201(b) (1)). Necessary information can be transferred, updates transferred, and unofficial and official vote tallies stored and transferred using removable media and a separate computer connected to a network

12. REQUIRE QUALIFIED FEDERAL & STATE "ELECTION AUDIT & RECOUNT" (EAR) COMMITTEES.

Amend S1487 to require a US Election Audit & Recount Committee (EARC) and State EAR Committees. Federal and State EAR Committees shall have 15 members.

(1) State EAR Committees shall have:

- a. four members appointed by the four largest state university and college mathematics or statistics departments' chair persons,
- b. four members appointed by the four State political party chairs which garnered the most votes in the last federal election,
- c. two members who are financial auditors from at least two different political parties appointed by the Chief State auditor,
- d. three members appointed by locally-based nonprofit election integrity or open government non-profit organizations,
- e. two members appointees by the two largest local university or college government political science departments' chair persons, and
- f. two election officials appointed by the chief state election official and the association of county or township election officials. Any EARC members who are government officials shall be nonvoting advisory members.

(2) The U.S. EARC shall have similar requirements to the State EAR Committees and be appointed by the US GAO and NIST, and be approved by the US Congress.

Justification: S1487, Section 223 currently requires members of State Audit Committees to be "expert in the field of election audits" - perhaps a former election official who has helped conduct insufficient, sham audits in the past? No States currently conduct sufficient scientific publicly verifiable independent election audits. There must be a requirement for State EARC members to be multi-partisan, to include experts in statistics and mathematics, and to include election integrity advocates. Because the administration of audits must be independent of insiders within the election system, EARC members who are election officials shall be liaison non-voting members. S1487 currently recommends an "Audit Guidelines Task Force" (AGTF) which is more properly named an "Election Audit & Recount Committee" (EARC) because correctly implemented audits remove the necessity for recounts because 99% confidence level audits automatically produce 100% manual counts of voter verifiable paper ballot records whenever it is necessary to ensure with 99% certainty that any outcome-changing miscount would be detected.

13. REQUIRE APPROVAL PROCESS FOR DEVELOPING NEW STATE ELECTION AUDIT PROCEDURES.

New election audit standards may be developed by State Election Audit & Recount (EAR) Committees and submitted for approval to the US Audit and Recount Committee (US EARC). Election audit procedures shall provide 99% or better confidence of detecting any outcome-changing vote miscount. Approval of a new election audit procedure shall require that the new procedure has a 99% probability or better to detect any outcome-changing miscount and that the procedures publicly, transparently, and scientifically verify election outcomes. Approved audit procedures shall be published publicly by the US EARC which operates under the supervision of the US GAO. States may employ the election audit process described in this legislation or may employ any election audit procedure approved for any State by the US EARC.

Justification: States need flexibility to develop and implement new audit procedures in response to improvements in the audit-ability of voting system and the development of improved audit procedures. Currently S1487's voluntary standards for audit procedures are voted on by the US Election Assistance

Commission (EAC). The EAC's current Executive Director and Chair were original board members of a group founded by voting machine vendors called "The Election Center", and the EAC recently voted against a requirement for voter verifiable paper records that are necessary to independently audit machine vote count accuracy. The EAC lacks the necessary qualifications and expertise to approve election audit standards. Without mandatory federal audit standards, many states would implement internal invalid audit procedures which do not confirm the accuracy of election results, such as the majority of states currently conduct.^{vi}

14. AMEND TO REQUIRE PROCEDURES TO ASSURE THAT ELECTION AUDITS ARE PUBLICLY VERIFIABLE AND CANNOT BE MANIPULATED.

PROCESS FOR ADMINISTERING AUDITS

“(a) **IN GENERAL.**—The Election Auditor of a State shall administer an audit under this section of the results of an election in accordance with the following procedures:

“(1) The state shall first provide an auditable report of all unofficial vote counts used to tally the unofficial results for each precinct or batch of ballots counted - including early voting, election day in polling places, provisional, and any mail-in voting - broken out by type of vote counting system (i.e. central count optical scan paper ballots, DRE memory cards, precinct-based optical scan); along with a list of all vote counting devices and serial numbers for each device used to produce each unofficial vote count.

Justification: Committing the data prior to an audit is necessary in any field. There can no effective verification of the accuracy of machine counts unless the manual counts are compared to the tallies that appear in the publicly reported unofficial vote counts. All precinct or batch vote counts which could be audited must be reported publicly prior to beginning an audit.

(2) Within 24 hours after the State announces the final unofficial vote count (as defined by the State) in each precinct in the State, the Election Auditor shall determine and then announce the precincts or batch vote counts in the State in which it will administer the audits.

(3) Within 24 hours of the announcement of the precincts or batch vote counts which will be audited, each election officer shall provide the independent auditors a facility for conducting the audit and take whatever measures are necessary to make available to the independent auditors^{vii}:

- a. All sealed voter verifiable paper ballot records of vote counts selected for the audit, and
- b. All poll books and precinct reconciliation records, and
- c. All electronic voter registration records, and
- d. All records of absentee ballots and provisional ballots requested by, provided to, and mailed back by voters, and
- e. All computerized voting equipment log and audit files, and
- f. All uncounted absentee and provisional ballot records, and
- g. All ballot definition files, and
- h. An addendum to the original auditable report containing any changes to the number of counted and uncounted ballots and votes, with the reasons for the changes documented, and
- i. any other election records that auditors need to verify the integrity of the vote count.

(4) Within 24 hours of announcing the precincts or batch vote counts to be audited, the manual audit shall begin with respect to votes cast at the precinct or equivalent location on or before the date of the election; votes cast other than at the precinct on the date of the election or votes cast by provisional ballot on 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 Election Auditor shall administer the hand count of the votes on the applicable voter-verified paper ballots required to be produced and preserved under section 301(a)(2)(A) of HAVA and the comparison of the count of the votes on those ballots with the final unofficial count of such votes as announced by the State's auditable report of unofficial results.

(b) QUALIFICATIONS FOR AUDITORS.—In administering the audits, the Election Auditor may utilize the services of election administration personnel of the State or jurisdiction, including poll workers **only if the same personnel did not help administer the audited election**, without regard to whether or not the personnel have professional auditing experience. Independent election auditors shall *not* include

- (1) employees or elected officials from any local or state election office,
- (2) employees or persons affiliated with any voting system vendor or supplier,
- (3) anyone who maintains or has special access to the voting system that a voter would not normally have, prior to, or during the auditable election, or
- (4) persons who acted as election judges or poll workers during the auditable election.

Nothing in this clause shall be construed to preclude any employee or elected official from observing the audits or from assisting the independent auditors upon the request of the auditors.

“(c) **LOCATION** The Election Auditor shall, whenever suitable facilities are available, administer an audit of an election at the location where the ballots cast in the election are stored and counted after the date of the election, and in the presence of those personnel who under State law who are responsible for the custody of the ballots.

“(d) **SPECIAL RULE IN CASE OF DELAY IN REPORTING ABSENTEE VOTE COUNT** In the case of a State in which 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 Election Auditor shall initiate the process described in subsection (a) for administering the audit not later than 24 hours after the State announces the final unofficial vote count for the votes cast at the precinct or equivalent location on or before the date of the election, and shall initiate the administration of the audit of the absentee and provisional votes pursuant to subsection (a)(3) not later than 24 hours after the State announces the final unofficial count of such votes.

(e) ADDITIONAL AUDITS IF CAUSE SHOWN

(1) **IN GENERAL.**—If the Election Auditor finds that any one of the hand counts administered under this section do not match the final unofficial tally of the results of an election, the State Election Auditor shall administer hand counts under this section of such additional precincts (or equivalent vote counts) as the Election Auditor considers appropriate, but in no case less than an amount equal to what is prescribed by the US EARC, to resolve any concerns resulting from the audit and ensure the accuracy of the results.

“(2) **ESTABLISHMENT AND PUBLICATION OF PROCEDURES GOVERNING ADDITIONAL AUDITS.**—Not later than August 1, 2008, the US EARC shall establish and publish procedures for carrying out the additional audits under this subsection^{viii}, including the means by which a State shall resolve any concerns resulting from the audit with finality and ensure the accuracy of the results. State EARCs may develop their own procedures and implement them after approval by the US EARC.

“(f) **PUBLIC OBSERVATION OF AUDITS** Each audit conducted under this section shall be conducted in a manner that allows public observation of the entire process.

SELECTION OF PRECINCTS

“(a) **IN GENERAL.**—The selection of the precincts shall be made by the Election Auditor on an entirely random basis using a uniform distribution in which all precincts in a Congressional district have an equal chance of being selected, in accordance with procedures approved by the US Election Audit & Recount Committee (EARC)

(b) After the selection of all randomly selected precincts in (a), if there is not at least one selected precinct or batch vote count in each county or township which separately administers federal elections, then additional precincts shall be selected at random for each audited federal race from precincts in each county or township until there is at least one audited precinct or batch vote count from each county or township.

“(c) **PUBLIC SELECTION.**—The random selection of precincts under subsection (a) and (b) shall be conducted in public, at a time and place announced in advance.

“(d) **MANDATORY SELECTION OF PRECINCTS AND BATCH SIZES OF PRECINCTS ESTABLISHED SPECIFICALLY FOR EARLY VOTING OR FOR ABSENTEE/MAIL-IN BALLOTS.**—If a State establishes a separate precinct(s) or batches for purposes of counting the early voting, absentee or mail-in ballots cast in an election, and if the state does not make absentee ballots sort-able by precinct and include those ballots in the hand count administered with respect to that precinct, the State shall either:

1. manually count all early voting, absentee or mail-in ballots in the audit; or
2. separate early voting, absentee or mail-in ballots into precincts and include those ballots in the hand count administered with respect to those precincts; or
3. count early voting, absentee or mail-in ballots in batches that contain a number of ballots as close as possible to an average-sized precinct and these batch counts shall be assigned unique identifiers and included in the auditable report of unofficial vote counts and be among the precincts in the State in which the Election Auditor shall randomly select and administer the hand counts under this subtitle; or alternatively
4. use 99% success rate election audits, calculating audit sample sizes by using the margins between the two leading candidates and rank-ordering the precinct, early voting, or absentee ballot batch vote counts by size to determine the smallest number of miscounted precinct or batch vote counts which could wrongly alter the election outcome.

Justification: Some states count all absentee or all early votes in one batch count for each jurisdiction. Without using one of the above measures, sufficient vote miscount to alter election outcomes could be hidden in a small number of large early voting or absentee ballot batches or in a small number of very large precincts and be likely to not be selected for a manual audit. A 99% success rate audit handles this situation by properly calculating audit sample size by rank ordering precinct or batch counts by size to determine the exact number required to reverse an election outcome. HR811 improperly handles this problem by allowing a loophole if early votes or absentee ballots are counted in two or a few large batches.

“(e) **DEADLINE FOR ADOPTION OF PROCEDURES BY US EARC.**—The US EARC shall adopt the procedures described in subsection (a) not later than March 31, 2008, and shall publish them in the Federal Register upon adoption.

PUBLICATION OF AUDIT RESULTS

“(a) **SUBMISSION TO US EARC [OR US GAO].**—As soon as practicable after the completion of an audit under this subtitle, the Election Auditor of a State shall submit to the US EARC the results of the audit, and shall include in the submission a comparison of the results of the election in the precinct as determined by the Election Auditor under the audit and the final unofficial vote count

in the precinct as announced by the State and all undervotes, overvotes, blank ballots, and spoiled, voided or cancelled ballots, as well as a list of any discrepancies discovered between the initial, subsequent, and final hand counts administered by the Election Auditor and such final unofficial vote count and any explanation for such discrepancies, broken down by the categories of votes including early, early-provisional, mail-in, election day, election day-provisional for all precinct or batch vote counts for all counting devices as provided in the auditable report of unofficial vote counts.

“(b) **PUBLICATION BY US EARC [OR US GAO].**—Immediately after receiving the submission of the results of an audit from the Election Auditor of a State under subsection (a), the US EARC [OR US GAO] shall publicly announce and publish the information contained in the submission.

“(c) **DELAY IN CERTIFICATION OF RESULTS BY STATE**

“(1) **PROHIBITING CERTIFICATION UNTIL COMPLETION OF AUDITS.**—No State may certify the results of any election which is subject to an audit under this subtitle prior to—

“(A) to the completion of the audit (and, if required, any additional audit conducted under section 323(d)(1)) and the announcement and submission of the results of each such audit to the US EARC [OR US GAO] for publication of the information required under this section; and “(B) the completion of any procedure established by the State pursuant to section 323(d)(2) to resolve discrepancies and ensure the accuracy of results.

“(2) **DEADLINE FOR COMPLETION OF AUDITS OF PRESIDENTIAL ELECTIONS.**—In the case of an election for electors for President and Vice President which is subject to an audit under this subtitle, the State shall complete the audits and announce and submit the results to the US EARC [OR US GAO] for publication of the information required under this section in time for the State to certify the results of the election and provide for the final determination of any controversy or contest concerning the appointment of such electors prior to the deadline described in section 6 of title 3, United States Code.

Justification: S1487 does not require the election results to be committed prior to the audit. Without committing the data first, un-audited counts could be manipulated after the audit to match erroneous electronic tallies. The above procedures are required to ensure that election audits publicly verify the accuracy of election outcomes.

15. ALTERNATE MECHANISMS FOR AUDITS

The US Election Audit & Recount Committee (EARC), under the guidance of the U.S. GAO and NIST, may approve other state audit protocols as an alternate to the audit amounts or procedures required in this legislation.

GUIDANCE ON BEST PRACTICES FOR ALTERNATIVE AUDIT MECHANISMS

(1) **IN GENERAL.**—Not later than May 1, 2008, the Director of the National Institute for Standards and Technology along with the Comptroller General of the US GAO shall appoint members of a US Election Audit and Recount Committee (EARC) according to the requirements of this statute to establish guidance for States that wish to establish alternative election audit mechanisms. Such members shall be approved by Congress. Such guidance shall be based upon scientifically and statistically reasonable assumptions for the purpose of creating an alternative audit mechanism that will be at least as effective in ensuring the accuracy of election results and as transparent as the procedure described in this legislation.

Justification: This amendment gives states flexibility to set better election audit procedures as the science of election audits and the audit-ability of voting system components advances, yet ensures that

any new audit procedures are provably effective by requiring federal approval by a qualified US Election Audit & Recount Committee.

16. AMEND TO PROVIDE EXCEPTIONS TO AUDITS FOR CERTAIN ELECTIONS.

A State shall not be required to administer an audit of the results of an election for Federal office under this subtitle if the winning candidate in the election

“(1) had no opposition on the ballot; or

“(2) received 80% or more of the total number of votes cast in the election for the current and prior audited election under this title, as determined on the basis of the final unofficial vote count of the current election *and the official count of the prior audited election*. [Note: This provision could not take place until 2010, during the second independent audit of federal elections.]

17. AMEND TO PROVIDE EXCEPTIONS TO AUDITS FOR ELECTIONS SUBJECT TO RECOUNT UNDER STATE LAW PRIOR TO CERTIFICATION.

“(a) EXCEPTION.—This subtitle does not apply to any election for which a recount under State law will commence prior to the certification of the results of the election, including but not limited to a recount required automatically because of the margin of victory between the two candidates receiving the largest number of votes in the election, but *only if each of the following applies to the recount*:

“(1) The recount commences prior to the determination and announcement by the Election Auditor of the precincts in the State in which it will administer the audits under this subtitle.

“(2) If the recount procedure would hand count in a publicly observable manner fewer than 100% of the ballots cast in the election—

“(A) the number of ballots hand-counted will be at least as many as would be counted if an audit were conducted with respect to the election in accordance with this subtitle; and

“(B) the selection of the precincts in which the recount will be conducted will be made in accordance with the random selection procedures applicable under this bill.

“(3) The recount for the election meets the requirements relating to public observation and public verifiability.

“(4) The State meets the requirements relating to the publication of results and the delay in the certification of results with respect to the recount.

(5) The *State meets the requirements for independence* of the entity doing the recounts.

(6) The State *follows the audit procedures outlined in this title* to ensure that the recounts publicly verify the accuracy of the unofficial election results.

Justification: Without these conditions, states could avoid independent audits by declaring recounts for all elections and defining recounts, like Utah has, to only count 3% of voter verifiable ballots and never compare these manual counts with the actual unofficial electronic tallies used to count votes which are not even publicly released for the DRE machines that are manual counted in the "recount".^{ix}

18. AMEND (SECT. 224) TO REQUIRE THAT THE "CLEARINGHOUSE OF INFORMATION ON EXPERIENCES OF STATE AND LOCAL GOVERNMENTS" SHALL ALSO INCLUDE THE EXPERIENCES OF STATE ELECTION AUDIT & RECOUNT (EAR) COMMITTEES AND OF VOTERS.

Justification: The "Ballot Integrity Act" sets up a clearinghouse of information on the experiences of state and local governments in implementing audit guidelines that is required to collect the experiences of election officials, who have historically sometimes covered up evidence of election problems, but no experiences of election integrity advocates or voters or expert citizens is collected.

19. REQUIRE THAT VOTING SYSTEMS PAID FOR BY FEDERAL FUNDING SHALL BE "CONTRACTS FOR THE SALE OF CONSUMER GOODS".

Amend S1487 to state that all contracts entered into regarding voting machines paid for by federal funding are, as a matter of law, contracts for the sale of "consumer" goods within the meaning of the Magnusson Moss Warranty Act, and that voters are "consumers" within the meaning of Said Act, for purposes of voting machine contracts and performance with damage and legal cost awards that are sufficient to ensure federal court jurisdiction and provide financial incentives adequate to inducing proactive citizen oversight. .^x

Justification: Voting machines should, at a minimum, measure up to the standards of use car sales. This would give a federal cause of action for damages and attorneys fees to any voter who can prove that the machines did not live up to the contract, and would also prevent the "as is" disclaimers from being combined with Swiss cheese limited warranties for 1 year (a typical scenario) without also reinstating the implied warranties, and thus making the vendors promise that their products will live up to at least ordinary expectations for used car sales.

20. REMOVE THE UNFUNDED MANDATE FOR EARLY VOTING AND NO-FAULT MAIL-IN VOTING.

Do NOT require any early voting or no-fault mail-in voting *unless S1487 is first amended to require the public release of and public review, observation, and oversight of chain of custody; and ballot, voting system, and election records security procedures* for before, during, and after elections, audits, and recounts. [See amendment suggestion #17 above]

Justification Current ballot chain-of-custody and security procedures are not publicly known in most states. Securing a one-day election is difficult. Securing the integrity of voting systems and ballot records during an extended early voting period and securing mail-in ballots is even more difficult. First amend S1487 to require the public release, public scrutiny, and public input and oversight over chain of custody and security procedures for ballots and election records. Only after the public is confident that our ballots and election records can be secured during an extended voting period and that mail-in ballots can be secured, should there be a requirement mandating early voting and no-excuse mail-in voting. This is also an unfunded mandate.

21. PROVIDE FINANCIAL INCENTIVES FOR PUBLICLY OWNED OPEN SOURCE SOFTWARE & PROHIBIT SPENDING ANY FEDERAL FUNDS AFTER JANUARY 2012 ON TRADE SECRET VOTING SYSTEMS OR ON VOTING SYSTEMS WHICH DO NOT PROVIDE SUFFICIENT DISCLOSURE TO DETERMINE IF THE DISCLOSED SOFTWARE RAN VOTING SYSTEMS DURING ELECTIONS. [This is sufficient time to develop new publicly disclosed or open source voting systems.]

Amend S1487 to fund 50% of the costs for federal testing and certification of open source voting systems where only the hardware is commercial off-the-shelf software (COTS). Require that after 2012 no federal funds will be spent on any voting systems with trade secret software on it. The only trade secret COTS software which should be permitted on any voting systems purchased with federal funds after 2012 shall: allow for reverse engineering for voting system evaluation and testing as well as publication of evaluation and tests, including but not limited to usability, performance, errors and bugs; and be firmware used to run hardware; and disclose any information which is necessary to meet the above requirements. All other software on voting systems, including all operating system software; and all software for the purpose of casting, counting, reporting, or tallying votes or vote counts; and all customized software on voting systems must be fully publicly disclosed. Plus only fully publicly disclosed compilers or program-handling code shall be used to convert source code into machine

executable instructions for all software using on voting systems. Software records should conform to an open public standard. NIST added this to the latest voluntary voting system guidelines (VVSG).

Funding: Approximately \$125,000 per voting system for open source optical ballot scanners, and open source ballot marking and ballot verification devices for voters with disabilities and foreign language needs. \$12,500,000 to fund ten such publicly owned voting system technologies.

Justification: S1487 implements discretionary un-enforceable requirements that any software, other than election-dedicated software, be disclosed "as the EAC deems appropriate". To implement this requirement would require either global changes to national and international copyright and trademark laws or, more practically, the development of new fully disclosed voting systems based on open source or publicly disclosed software. S1487 requires partial software disclosure "as necessary to assess the integrity and efficacy of such software" and "only for the purpose of administering or enforcing election laws, or for review, analysis, and reporting" for use in litigation. However S1487 does not require disclosure as necessary for verifying that the certified software was actually used during elections. Open source or fully publicly disclosed software, plus strict change control, and cyclic redundancy check (CRC) checks of software components are essential to verify the software code that was present and used for the election. Consult with experts on the details of developing requirements for such disclosure. See <http://electionarchive.org/ucvInfo/US/ExpertsList.pdf> and <http://electionmathematics.org/em-voting-systems/EIGroupsOpposePublicSoftware.pdf>

22. AMEND "SECTION 301(a)(5) (B) RESIDUAL BALLOT PERFORMANCE BENCHMARK AND (C) HISTORICALLY HIGH INTENTIONAL UNDERVOTES" TO AVOID SANCTIONING VOTER DISENFRANCHISEMENT

Amend to remove "(i) FINDING -- Congress finds that there are certain distinct communities in certain geographic areas that have historically high rates of intentional undervoting in elections for Federal office, relative to the rest of the Nation." **Amend** (ii)(I) TREATMENT OF CERTAIN DISTINCT COMMUNITIES ... the Commission shall -- (I) study and report to Congress on the occurrences of distinct communities that have significantly higher than average rates of historical intentional undervoting; and" to say

"the Commission shall "(I) study and report to Congress on the occurrences of distinct communities that have significantly higher than average rates of intentional undervoting in any Federally audited Federal elections beginning in 2008 elections, ignoring any prior unaudited elections..."

Justification: There is no valid finding of historical "intentional undervoting" in prior elections which were not subjected to any valid independent audits of voter verified paper ballots. Certain distinct communities may have been historically disenfranchised due to their voting patterns and may have been subjected to inadequate voting equipment allocation, machine malfunctions, improper equipment settings, ballot tampering, or vote fraud in prior unaudited Federal elections. This provision of S1487 currently sanctions disenfranchisement of certain distinct communities. This entire section of S1487 must be dropped or amended to only employ for study, election data going forward from the 2008 independently audited Federal elections.

--- END ---

NOTE: Some parts of these suggested amendments are strengthened versions of HR811's provisions.

Acknowledgment: Many of these suggestions are based on the text of House Resolution 811. Review and comments over many years from dozens of election integrity advocates, and computer and statistical experts were very helpful. David RR Webber, CTO, Open Voting Solutions Inc., helped to craft two of these amendment suggestions. <http://openvotingsolutions.net>

Other Discussion of Federal Election Reform Legislation:

Comparison of Proposed Federal Election Audits

<http://electionarchive.org/ucvAnalysis/US/paper-audits/ComparisonFederalElectionAuditProposals.pdf>

Testimony for Submission into the Congressional Record for the S1487 Hearings

<http://electionarchive.org/ucvInfo/US/NEDA-S1487-Testimony.pdf>

An Analysis of the "Ballot Integrity Act of 2007" (S1487) Proposed in the US Senate

<http://electionmathematics.org/em-legislation/BallotIntegrityActAnalysis.pdf>

An Analysis of "The Voter Confidence and Increased Accessibility Act" (H.R. 811)

<http://electionarchive.org/ucvAnalysis/US/Analysis-HR811-Aug2007.pdf>

Support Clean Elections in 2008

<http://electionarchive.org/ucvAnalysis/US/SupportCleanElectionsIn2008.pdf>

Important Facts about the Voter Confidence & Increased Accessibility Act (H.R. 811)

<http://electionarchive.org/ucvInfo/US/FactsAboutHR811.pdf>

One-Page Concept Proposal for Federal Election Reform Legislation

<http://electionarchive.org/ucvInfo/US/EI-FedLegProposal-v2.pdf>

ⁱ The "Ballot Integrity Act of 2007" is co-sponsored by Senators Dodd, Sanders, Inouye, Obama, Brown, Leahy, Menendez, Kennedy, and Clinton. Here are links to S1487 and its press release:

<http://electionmathematics.org/em-legislation/FeinsteinDoddER-bill.pdf>

http://feinstein.senate.gov/public/index.cfm?FuseAction=NewsRoom.PressReleases&ContentRecord_id=c36f5f83-fbbf-a66a-2ae3-9d278d0f4e3c

ⁱⁱ Some, but not all of the language in these suggested amendments was taken from HR811 and revised to improve it.

ⁱⁱⁱ An analysis of the actual costs of 99% success rate audits versus the S1487 2% flat rate audit, using actual election results from all US Senate and US House races in 2002 and 2004 is available in "Comparison of Federal Election Audit Proposals"

<http://electionarchive.org/ucvAnalysis/US/paper-audits/ComparisonFederalElectionAuditProposals.pdf>

^{iv} See <http://electionmathematics.org> Election Audit section for more information. Election audit efficiency can be improved if voting systems are developed which are auditable at the individual machine or ballot levels. This is one reason why NIST, the US GAO along with a new US Election Audit & Recount Committee needs to be permitted to approve alternative election audit procedures in the future.

^v Calculation of "suspicious" precincts shall assume that at most a 20% vote shift per precinct or batch vote count is not suspicious, and compare the partisanship of voters to the partisanship of election results in the current and prior audited elections as recorded in voter history files, or use another available measure.

^{vi} New Mexico is the only state which currently conducts independent election audits. Utah currently conducts sham audits by comparing two paper records of votes both created at the polling place; never comparing the voter verified paper ballot records with the electronic tallies used to tabulate votes on the central tabulator.

^{vii} See Amendment suggestion #17 for funding assistance for states to release these records.

^{viii} Election audits should be expanded (more than doubled in size) under several circumstances.

1. One of the audited vote counts finds over a 20% error rate (or whatever maximum unsuspecting vote shift per precinct assumption was used in calculating the audit sample size), or
2. A certain overall level of miscount spread among all audited precinct or batch vote counts is more than what it would take to alter the election outcome, or
3. A certain level of arbitrary machine error is found that, regardless of its being unlikely to alter the election outcome, causes sufficient concern.

Standards need to be set as currently required by HR811 by August 2008, or the mathematicians on the State EAR Committees need to be consulted to make decisions on expanding audits.

^{ix} Utah's "recounts" merely compare randomly selected voter verifiable paper roll ballot records to printouts of vote totals from DRE memory card contents, but Utah currently prohibits posting polling place totals and does not publicly reveal what the electronic tallies are of each DRE memory card on the central election management machine used to tally unofficial vote counts, so that the Utah process is not a measure of the accuracy of unofficial election results.

^x This idea was suggested by Paul Lehto and then slightly edited by a second attorney.