

One-Page Concept Proposal for Federal Election Reform Legislation

We recommend splitting current election reform legislation into several separate bills which each address a few topicsⁱ. We agree with the National Association of Secretaries of State “NASS Approach to Federal Legislation”ⁱⁱ. States should have flexibility in meeting or exceeding federal requirements.ⁱⁱⁱ In the interest of brevity, a list of detailed comments follows this one-page list of recommendations.

Immediate Measures for True and Accurate Elections

1. **Manual Audits:** Require *sufficient* verifiable manual audits of election results to ensure that outcomes are correct for all federal races. Provide funds for Audits and **Auditable Voting Systems**. Require replacement of paperless un-auditable voting systems. Require **State Election Audit and Recount Committees**, and create a **U.S. Election Audit and Recount Committee** whose functions would include approving election audit and recount procedures for federal elections; and setting standards and reasonable time frames for state auditable, audit, and voter service reports (see item #5 and definitions).
2. **Security Precautions:** Outlaw Wide Area Network connections to, and wireless capability in, voting equipment; prohibit voting or transferring any voted ballots through any electronic network; and require states to make their security procedures available for public review and input.
3. **Prohibit Practices that Disenfranchise Voters:** See a specific list in “Detailed comments” section.

Sunshine Provisions and States’ Rights

4. **Public Oversight Of Elections:** The public can help to ensure the integrity of elections and audits and prevent voter disenfranchisement only if the public has **Access to Election Data and Records:** In reasonable time frames, require election officials to make publicly available in original paper and electronic form all election data and election records that could reveal fraud or errors in elections or are necessary to verify voter service reports and manual audits, prior to certification of results; and **Public Right to Observe:** Require jurisdictions to allow citizens to observe all aspects of elections. **Election Monitoring Website:** Create a GAO website for publicly displaying the auditable, audit, and voter service reports from the states.
5. **Voter Service Reports:** Require states to submit timely reports of detailed election data that can be used to measure voter disenfranchisement and voter service levels.
6. **Reallocate the Functions of the US Election Assistance Commission (EAC):** Preserve states’ rights and do not reauthorize the US EAC.

Long-Term Improvement Of Voting Systems^{iv}

7. **Require Voting Technology with Disclosed Software, Security, Audit-ability, Privacy, and Independent Ballot Verification for Voters with Disabilities:** Allow ample time for standards-setting including public input and prioritization of possibly conflicting requirements; development of enforcement, testing, and monitoring systems; and for development, purchase, and training cycles; and for development and adoption of State Implementation Plans. To improve existing voting systems, the entire sequential process of setting standards, product development and implementation could take five to ten years, and federal requirements should enable jurisdictions to budget for voting equipment life-spans of at least 10 to 20 years.

Enforcement

After reasonable time frames, **provide swift and certain penalties** when an election jurisdiction fails in a transparency, auditing, or reporting obligation; or disenfranchises its voters. The goal is for election records and auditable, audit, and voter service reports to be available for public review and oversight prior to certification of election results and prior to swearing in of federal office-holders.

Definitions

Auditable Report: In any field, the audited data must be committed first. I.e. An auditable report must be released publicly prior to the random selection of vote counts to audit so that the public can verify the audit. “Auditable report” means a report of detailed vote counts and ballots cast on each vote counting device in each precinct, for each election office, for each candidate and ballot contest, separately for each vote-type including Election Day, early, provisional, absentee, mail-in, military, etc. All ballot types must be tracked separately for that jurisdiction, from provisional to absentee to polling place electronic to polling place paper,... for each vote counting device for each race.

Manual: means a “hand-count” - a counting of the votes, wherein the handling of the voter verifiable paper records is done by human hand and the identification of each vote is determined by a visual inspection of said records by a human being.

Sufficiently Statistically Valid: means that enough machine vote counts are manually counted to give a fixed high probability (say 90% or 99%) of detecting at least one corrupt machine count if enough machine counts were corrupt to wrongly alter the outcome of a race.

Scientific: means that the amount of the manual audits are calculated using mathematical principles that will ensure that electronically counted election outcomes are correct, and that the random selection of machine counts is conducted so that each machine count has an equal probability of selection.

Transparent: means that an average non-technical citizen can observe and fully understand the procedures, well enough to determine if they are being done honestly and properly.

Verifiable: means that the public can verify for themselves that the information is correct. In an election audit, verifiable means the public can verify that manual counts match the machine counts that are used in the tabulation since an auditable report of all machine counts is made public prior to the random selection of machine counts to audit. *To verify election outcomes, election records must be publicly available.*

Detailed Comments

1. **Manual Audits** There are several types of election audits conducted for various purposes such as voting machine audits, pre-election audits of ballot-definition files, manual audits of precinct or batch vote counts, and a thorough examination and verification of all the records associated with conducting an election. These comments discuss manual audits of precinct or batch vote counts. Audits must be sufficiently statistically valid, independent, transparent, verifiable, and scientific. Legislation should require audits to be completed prior to certification of election results. Specify a fixed minimum probability of detecting outcome-altering vote miscount (say 90% or 99%)^v. The amount of vote counts to manually audit in order to detect outcome-altering vote miscount depends on the margin between candidates and other factors. If sufficient discrepancies are found between paper and electronic vote counts to possibly alter an election outcome, the manual audit must be sufficiently expanded. In the event that discrepancies are discovered between the counts obtained from electronic records and counts obtained from voter-verifiable paper records, the paper records shall be the true and correct record of the votes cast, except in the case where evidence exists that indicates that the paper record has been tampered with or damaged, in which case, if an outcome is in question, then a court will decide what the remedy should be. Election jurisdictions should count mail-in, overseas, absentee, or military ballots in batches that are approximately the same size as a median-size precinct count.^{vi} The time between the announcement of the precinct, machine or batch vote counts to be audited and the actual audits should be minimized. Hand counted paper ballots may also be audited in the same manner to ensure accuracy, provided a secure chain of custody is maintained after the initial count. **Funds for Manual Audits:** The costs of auditing all federal elections would be approximately \$8 Million per election, but could cost more, depending on the method chosen to calculate audit sample size. See “Federal Election Audit Costs” <http://electionarchive.org/ucvAnalysis/US/paper-audits/FederalAuditCosts.pdf>. Fund only

independent, transparent, verifiable, sufficient, scientific, sufficiently statistically valid manual audits. **Auditable Voting Systems:** Require *replacement of all paperless electronic ballot voting systems*, replacing them with existing paper ballot optical scan equipment with ballot marking, ballot assist, or telephone voting devices for voters with disabilities. Fund only “fully-auditable” voting systems where all able-bodied voters can directly record votes on a durable paper ballot that is inherently voter-verified. Electronic ballot voting systems are not fully auditable. For information regarding how errors introduced by a post-facto paper record can corrupt manual audits see the Brennan Center report http://brennancenter.org/dynamic/subpages/download_file_36343.pdf Electronic ballot systems may be mis-programmed to introduce errors or omit races on electronically created paper ballot records and voters often do not notice. Fully-auditable systems would require federal funding for precinct-based optical scan systems using durable ballots which will keep voter marks and be suitable for recounts for 24 months. For voters with disabilities, so that they can vote privately and independently, economical voter assist devices like vote-PAD, telephone voting systems, or ballot printing devices like the AutoMARK or Populex, are available. Require that any paper record or paper ballot be sufficiently sturdy in form and marking to support handling for recounts and audits for a minimum of 24 months. In jurisdictions using electronic-ballot equipment, anyone who requests a paper ballot shall be given one that can be tallied using the normal tallying process; and voters shall be instructed to verify the accuracy of printed paper ballot records. Only voting systems that protect voter anonymity (do not store ballots in sequential order) should be funded. It must not be possible to determine the selections made in a provisional or mail-in ballot until after that ballot has been approved for counting.^{vii} **Funds for Replacing paperless DREs with Auditable Voting Systems:** Estimating that there are approximately 67,000 polling places with paperless DRE 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, a reasonable cost for implementing auditable voting systems that would improve the security and accuracy of elections.^{ix} Note that this amount does not include all costs for implementing this equipment such as software configuration or recurring costs. **State Election Audit and Recount Committee** members should include appropriate stakeholder representation, including citizen oversight groups, representatives of all political parties, liaison state and local election officials, and persons with at least Masters degrees in mathematics, statistics, quality assurance, and computer science, for overseeing audits and recounts and for creating any state audit and recount procedures that may be different than an already federally approved audit or recount procedure. State Audit Plans should include approved procedures for when to expand manual audits in response to discrepancies and how to resolve discrepancies whenever discrepancies are discovered between manual and machine counts. There are examples of how states resolve discrepancies found in the March 2007 Electionline report: <http://electionline.org/Portals/1/Publications/EB17.pdf> **U.S. Election Audit and Recount Committee (EARC):** The Vote Count Audit and Recount Committee should be under The National Institute of Standards and Technology (NIST) or the U.S. GAO. Its members should have at least a Masters degree in fields like statistics, mathematics, computer science, computer based security plus members who are election integrity activists, gaming experts, and non-voting election officials^x. This committee would ensure that state audit, recount, and other policies and procedures are adequate to ensure accurate election outcomes and avoid voter disenfranchisement. **For more information** on election audits, see <http://Vote.nist.gov/ElectionIntegrityAudit.pdf> <http://electionarchive.org/ucvAnalysis/US/paper-audits/FourTierAudit/TieredElectionAudits.pdf> <http://electionarchive.org/ucvAnalysis/US/paper-audits/ElectionAuditEstimator.pdf> <http://electionarchive.org/ucvAnalysis/US/paper-audits/VoteCountAudit-UT.pdf>

2. **Security Precautions: Prohibit Network Connections** to all vote casting and counting devices; and require states to provide methods for making their procedures for conducting elections and for securing ballots and voting technology publicly available for citizen oversight, with passwords and encryption codes redacted.^{xi} No network access to central tabulating equipment could preclude non-critical functions during elections such as having exit pollsters obtain immediate election results before the public. Removable write-once physical media, checked for the absence of malicious code, can be used to transfer both election results and programs needed to upgrade systems. Do not fund voting systems that have network hardware.
3. **Prohibit Practices that Disenfranchise Voters:** For example, Prohibit voting by public networks or by faxing ballots to any office other than the local election office; No immaterial, onerous paper weight requirements for voter registration forms; Serious penalties for ballot tampering or vote fraud, and for fraudulently losing registration forms or changing them prior to submission; State issued ID not required, but any reasonable proof of residency for voter identification to vote; Voter sign-in system must be a paper system, not an electronic one subject to crashes, power outages, or network failures; No one other than the voter or a non-partisan election official (or a postal clerk) may make any marks on a ballot envelope, except for an authorized person who returns a ballot to a polling place may sign it as required by the jurisdiction; Penalties for systematically challenging voters; Consider how voter rolls may be scrubbed of people who have allegedly moved, died, or are convicted of crimes; Consider how voter registrations are verified against other databases. (Not everyone has a driver's license or state issued ID card. Sometimes it is unclear what is a middle name or a compound last name; or people use different forms of their names. In some foreign names, the family name is first not last. DMV databases are not always accurate. For guidance on implementing voter registration databases see <http://acm.org/usacm/VRD>); Paper ballots should be available at all polling locations for voters who prefer not to vote using electronic ballots and in case of long lines, power outages, or equipment failures; Automatic reinstatement of federal voting rights for anyone convicted of any felony or other crime who has served their time.
4. **Public Oversight over Elections: Access to Election Records and Data:** Government is the servant of the people, and not the master of them. The people, in delegating authority, do not give their public servants the right to decide what is good for the people to know and what is not good for them to know. The public must be informed so that we may retain control over the instruments of government we have created. Rapid access to public records related to elections is vital for citizen oversight of election integrity, voter registration accuracy, and manual audits. Adequate records must be produced and retained, and records needed to canvass the election must be made available to the public before the election is certified. Information must not be removed from public oversight by placing it outside governmental custody or allowing proprietary rights to be ceded to private parties.

A printout of each voting machine's vote totals must be posted immediately and made available to the public and to certified tabulation observers at the polling place at poll closing to be compared to centrally tabulated totals for the corresponding polling place to be displayed on the Internet. We need a federal statute requiring public access to election records that is similar either to the Freedom of Information Act, or to the National Voter Registration Act of 1993 (NVRA) **Sec. 1973gg-6 (i) "Public disclosure of voter registration activities"**. I.e. we need federal legislation that states something like the following:

"Each State shall maintain for at least 2 years and shall make available for public inspection and, where available in electronic format, provided on a public web site or by photocopying at a reasonable cost, all records concerning the implementation of *elections*. Beginning with 2008 federal elections, all electronic logs, data files and reports which can be produced in electronic form by election systems currently in use should be made available before election results are made official^{xiii}, and the public should be allowed reasonable examination of

relevant paper documents before the election is certified. Beginning with 2010 federal elections, scanned copies of relevant paper records should be made available at least one week before the time period to contest the election has expired, with originals available for authentication if requested;”

Funds for Scanners: Approximately \$3.3 Million to \$29.9 Million would be needed to supply approximately 3300 jurisdictions with special scanners, costing approximately \$1,000 to \$9,000 each, to make the job of scanning paper election records efficient.^{xiii} Allow ample time to sufficiently reduce or eliminate, where necessary, the particular constraints and parameters of current election administration systems (as defined below).

Records which need to be created, retained, and made publicly available in addition to voter-authenticated ballots, include incident, troubleshooting, and problem logs from elections workers, vendors and help desks; ballot accounting and reconciliation forms; assignment logs for voting equipment (including peripherals) serial numbers and locations where equipment has been deployed throughout the election cycle; security area access logs, keycard logs, and videotapes; all computer and voting system audit logs, event logs, error logs, network event and status logs, and process reports, ballot definition files and databases; results tapes and reports including the interim tallies; voter registration lists, records of voters who requested, mailed, and returned mail-in or provisional ballots, voters who signed in at the polls on Election Day and during early voting; certification reports, contracts of sale for voting systems, technical support, maintenance, and repair logs, and all billings, invoices, adjustments and written communications with vendors, and electronic vote count data on central tabulation, voting system printouts, certification and testing reports. All records which are available in electronic format shall be made publicly available on the Internet.

Election Administration Constraints include election timeline requirements and personnel deficiencies. Many jurisdictions rely on nonprofessional and largely volunteer election officials, who are not skilled and do not have the time to carry out demanding bureaucratic tasks such as data collection, entry, compilation and reporting. The implications of adding audit, reconciliation, compilation, and reporting requirements to election administration are broad. To fulfill these requirements, it may be necessary to adjust primary and Election Day timelines. In order for all of the auditing, reconciliation, data collection and entry, copying of records, and reporting activities to be appropriately and correctly implemented prior to any swearing in for Federal offices, more staff, equipment, and computer systems may be needed. Although election officials should never audit their own work and audits would be conducted by independent auditors, election officials must be available during the entire canvass period to assist the auditors with reconciliation, provide ballots and election records, and provide a room with facilities for public observation for both the random selections and the manual audits. The reporting requirements, although vital for citizen verification of election results, would initially, until systems are developed, be particularly onerous for election officials. Getting the data from counties and townships is complicated and time-consuming and would take possibly three weeks of work to accomplish. One election official suggests moving Election Day to mid-October so that the auditing, reconciliation, data collection, input, and reporting activities can be implemented prior to any swearing in for Federal offices. Ample input would be required from election officials, the 50-state Standards Committee, and when formed, the State Election Audit and Recount Committees for the US EARC to develop reasonable timelines for public release of election records and standards and timelines for election data reporting for audit, auditable, and voter service reports.

Public Right to Observe: The right to observe the election process is necessary to empower citizens to ensure election fairness and transparency. Citizens should be allowed to observe close-up or by verifiable, transparent, immediately available, close-up video. Citizens should be able to observe the preparation and administration of elections, real pre-election voting machine testing (not just demos),

the polls, and the transfer of ballots to the central office, the tallying and reporting of the votes, manual audits, recounts, and any post-election testing. All of these should be sufficiently publicly noticed. This requirement should include language that requires jurisdictions to allow genuine observation and recording of the events, not just presence in the room.

Election Monitoring Website: The GAO could create an easy-to-use web site that the public could use for research and independent analysis of election integrity and voter disenfranchisement. The goal is for states' auditable, audit and voter service reports for an election to be submitted and publicly displayed at least two weeks prior to any candidates' swearing in date for the same election and prior to the state deadlines for contesting an election, with the recognition that fulfillment of this goal may require adjustment of election timelines, or reasonable graduated reporting deadlines over several federal election cycles^{xiv}.

5. ***Voter Service Reports:*** must be publicly verifiable. Reports must include the number of registered voters assigned to that polling location, whether polling locations represent one or more precincts (if more, how many), machine allocation, equipment failure and breakdown, under-vote, over-vote, and uncounted ballot rates, absentee and provisional ballot & voter registration handling, and other crucial measures of voter services. Also, after reasonable time frames, include reports on whether supplies ran out, and maximum reported wait time for voting. The goal is to have voter service reports submitted prior to the deadline to contest an election and prior to swearing in. The EARC shall work with election officials to determine what reporting time frames are reasonable for particular data, given the acknowledged election administration constraints (see above).
6. ***Reallocate EAC functions,*** as appropriate, to the General Services Administration (GSA), Federal Election Commission (FEC), US Government Accountability Office (GAO), National Institute of Standards and Technology (NIST), the Technical Guidelines Development Committee^{xv} (TGDC), and a 50-state representational Standards Board, rename it the National Election Standards Board, hire a new administrative staff, and add a 50-state citizens' representational body to jointly assume most of the functions currently filled by the EAC.^{xvi} See these papers on the EAC:
http://electionarchive.net/docs_other/EAC-DoNotReauthorize.pdf
<http://www.votersunite.org/info/TestimonyTheisen03-13-07.pdf>
7. ***Allow Ample Time for Sequential Standards-Setting, Development and Purchase Cycles for New Equipment and Public Disclosure of Voting System Software.*** The normal development cycle for new technological equipment is many years. Standards must be set and enforcement systems must be developed, years in advance of requiring adoption of new equipment. Requirements for independent ballot-verification systems for voters with disabilities and requirements for all voting system software to be publicly disclosed both take long development cycles. Most voting systems currently run primarily on commercial software which cannot be publicly disclosed and which can easily hide undetected malicious code. Open source voting systems would be less costly and more secure, but will require a long development cycle to achieve. Exempting commercial off-the-shelf (COTS) software from being publicly disclosed would exempt over 90% of software, which could hide malicious programs. There is no need to use COTS software on voting systems. The costs are considerable for the complex systems necessary to log voting system components and verify publicly disclosed software. Consider incentives for open source (public) voting system code. All information necessary to validate elections must be produced and made publicly available for the voting system and no restrictions on public access to election records necessary to verify election integrity may be imposed by proprietary claims, nor shall access to election records or results necessary to verify the integrity of the electoral process be placed outside of governmental custody. Detailed explanations of the intricacies of voting system software disclosure are here: http://electionarchive.net/docs_other/dopp/VotingSystemSoftwareDisclosure.pdf

<http://www.cs.berkeley.edu/%7Edaw/papers/testimony-house07.pdf>

A **HAVA State Plan Process** which brings together stakeholders, including representatives of citizen oversight groups, and appropriate experts^{xvii}, would provide an important vehicle for states to develop policies, procedures, and processes appropriate to specific state needs and requirements.

Prioritization of Conflicting Requirements: HAVA and the Voting Rights Act of 1965 with amendments provide a series of open-ended and possibly conflicting requirements for voting systems including security, accuracy, reliability, accessibility, voter privacy, and voter independence. While HAVA focused primarily on accessibility, each of these requirements is valid, but the fulfillment of one may very well negate the attainability of the other. For example, for voters without limbs, independent verification of ballots and ballot privacy conflicts because if ballots are never touched by voters and simply fall into a bin, then ballot secrecy for all voters and *independent* verification for voters with disabilities may be unattainable. Requirements for accessibility and multiple languages, especially due to the open-ended nature of the laws regarding these requirements have thus far created a situation where equally valid priorities, such as security, accuracy, and reliability, have become unattainable under current voting equipment solutions. Ample time must be allowed for studying and determining appropriate priorities for these conflicting requirements so that standards-setting procedures incorporate priorities and avoid creating or perpetuating situations of conflicting and mutually unattainable requirements. Prioritization and federal standards setting should be conducted in conjunction with appropriate State Plan processes, including public input, development of enforcement, testing, and monitoring systems; and for development, purchase, and training cycles. States should be allowed to develop their own standards which meet or exceed federal standards.

Enforcement: Consider both civil and criminal penalties, including a reduction in certain federal funds to be appropriated in the coming year; or only provisionally swearing in Congressional Members or not certifying Presidential electors from states that have disenfranchised their voters by any means, including by failing to audit transparently or by failing to submit auditable, audit, and voter service reports in the required time frames. **Fund Voter Service Reports:** Fund only verifiable, complete voter service reports. **Submission of Reports:** The auditable report required to verify election audits must be submitted prior to the date of the random selection of machine counts for the manual audit; and the audit report used for monitoring vote count accuracy should be submitted prior to election results being made official and must be submitted sufficiently prior to the deadline to contest an election and prior to the swearing in date. Voter service reports, used for monitoring voter disenfranchisement must also eventually be submitted sufficiently prior to the deadline for contesting elections and prior to swearing in dates.

Acknowledgements

Dozens of persons contributed to writing this document over many months of discussion, after dedicating themselves for years to bringing verifiable integrity to U.S. elections. Some of these persons are listed here: <http://electionarchive.org/ucvInfo/US/ExpertsList.pdf>. Recent revisions were based on input from state and county election officials including Bruce Funk, former (23 year) chief election official of Emery County, Utah; and revisions were made by Bev Harris, Director of **Black Box Voting**; and by Phil Fry, **Citizens Alliance for Secure Elections (CASE), Ohio**.¹

This document is available online: <http://electionarchive.org/ucvInfo/US/EI-FedLegProposal-v2.pdf>

¹ Revisions were also suggested by Nancy Tobi, Cofounder of Democracy for New Hampshire and Chair, NH Fair Elections Committee

ⁱ Teams of stakeholders, experts and election officials could collaboratively draft these bills beginning with the language of existing proposals. Teams could consist of persons with expertise in specific topics such as auditing, voter disenfranchisement, election records, election law, voting technology, disability issues, security, election administration, and so on.

ⁱⁱ Adopted February, 2007, NASS stated: “Members of Congress should respect our country’s legal and historical distinctions in federal and state sovereignty and avoid preemptions of state authority when drafting federal legislation. Federal legislation should include a reasonable timeframe for implementing state requirements or programs. Federal legislation that affects the office and duties of the Secretaries of State should be drafted with input from NASS or a representative sample of the Secretaries of State who would be impacted by the bill. Federal legislation that mandates changes to state laws or regulations should include full funding to support those changes. Federal legislation should not curtail state innovation and authority solely for the sake of creating uniform methods among the states; all legislation should grant states maximum flexibility in determining methodologies properly and effectively carrying out the duties of Secretaries of State, including the protection of voting rights.”

ⁱⁱⁱ States should have flexibility to implement standards and procedures that meet and exceed federal requirements.

^{iv} The Holt, Nelson, and Clinton bills would create a “HAVA-like” mess due to insufficient implementation timelines.

^v Recommended language for vote count audit amounts is something like:

- a) at least 1% (one per centum) of each county’s precinct or batch vote counts are audited; and
- b) a sufficient number of vote counts shall be audited to give at least a 99% probability for detecting at least one corrupt vote count if the amount of corrupt vote counts were sufficient to alter the election outcome of any election contest, taking into account the margin between the candidates; and
- c) at least one vote count is audited in each election contest submitted to the voters within each county's jurisdiction; and
- d) in addition to randomly selected precincts in a), b), and c) above, a small number of discretionary precinct vote counts selected by candidates, or alternatively, precinct vote counts which calculations show are “suspicious” □ should be manually audited.

^{vi} All vote counts (precincts or batch or machine counts) should be roughly the same size in order for the audit to be most effective. If the vote counts are not roughly of equal size, then the exact number of vote counts that could wrongly alter an election outcome may be exactly calculated using the number of ballots cast in each vote count, and used to exactly calculate the minimum audit sample size that would ensure that the election outcomes are correct; or the probability of random selection of precincts could be weighted by size as proposed in a recent paper by Ron Rivest.

^{vii} Some jurisdictions do not employ ballot privacy envelopes so that the person(s) who open up the mail-in ballots and verify the legal right of the person to cast a ballot in the election, may also view the choices made by the voters.

^{viii} For accessibility, these jurisdictions could also possibly purchase a telephone voting system, ballot assist devices, ballot marking devices, or possibly add ballot printers to a DRE. According to Noel Runyan, electrical engineer and computer scientist who designs accessible voting systems, “The only voting systems that permit truly accessible verification of the paper ballot are ballot marking devices.” It is possible to provide a single BMC to be used by any voter in the polling place “to give overvote warnings, so a precinct count optical scanner would not be necessary.” See Runyan’s testimony:

http://electionarchive.net/docs_other/HearingTestimony/NoelRunyanTestimonyHouseAdmin-March2007.doc

^{ix} Note that if all DRE voting systems with paper roll VVPATs were also replaced by precinct-based paper ballot optical scan systems, the total fiscal note would be approximately \$990 Million = 74,000 X \$10,000 + 50,000 X \$5,000. The number of precincts was taken from Warren Stewart’s testimony on election reform before the House Admin Committee:

http://electionarchive.net/docs_other/HearingTestimony/StewartTestimony.doc

^x Election officials must be non-voting members of any audit or recount committee because auditing in any fields is done independently of those who conduct the audited activities.

^{xi} “Security by obscurity” is a discredited method of security that leaves any system open to security breaches by insiders whereas systems that permit public scrutiny of security procedures have better security.

^{xii} Note: Because current computerized voting systems already produce audit logs, event logs, as described above, all that is required is to click the menu items to save a copy of each log and report to disk, a task that can be accomplished simply by following properly designed Users Guides for the equipment. This is not a time consuming task, nor does it require special expertise. The single most powerful and efficient improvement to public access can come simply from running copies of electronic reports and saving them to disk, or publishing them online.

^{xiii} The top of the line highest end high speed scanners that can network directly to the county system and convert documents -- including narrow documents like checks or poll tapes -- into digital images, runs for about \$9000. The lowest end model -- tradeoffs being speed and efficiency and networking ability -- is about \$300. To scan all the poll tapes in a LARGE jurisdiction might take staff time of 1-2 days. The other documents will be doable in an hour. The whole time equation could vary wildly depending on the scanner model and whether it will process poll tapes.

^{xiv} In other words, a reasonable deadline for submission of reports might be January 15th in the first federal election cycle in 2008, but by 2010 the reasonable deadline for the same report might be December 15th, as determined by the US Election Audit and Recount Committee in consultation with state and local election officials; moving the deadlines over time until

the goal is achieved to permit public oversight and verification of election results as much as possible prior to certifying election results, and prior to state deadlines for contesting elections, and prior to swearing in ceremonies.

^{xv} The qualifications for TGDC members need to be increased to require a Masters degree in technical fields.

^{xvi} The EAC duties, as described on their website and listed below in lower case, could possibly be delegated as follows:

- Technical guidance on the administration of federal elections. – NIST & STANDARDS BOARD
- Produce voluntary voting systems guidelines. – NIST & STANDARDS BOARD
- Research and report on matters that affect the administration of federal elections. – STANDARDS BOARD, & NIST
- Otherwise provide information and guidance with respect to laws, procedures, and technologies affecting the administration of Federal elections. – STANDARDS BOARD, NIST & CITIZENS GROUP
- Administer payments to States to meet HAVA requirements. – GSA
- Provide grants for election technology development and testing. – NIST.
- Manage funds targeted to certain programs designed to encourage youth participation in elections. – FEC ... STANDARDS BOARD
- Develop a national program for the testing, certification, and decertification of voting systems. – NIST & STANDARDS BOARD
- Maintain the national mail voter registration form that was developed in accordance with the National Voter Registration Act of 1993 (NVRA), report to Congress every two years on the impact of the NVRA on the administration of federal elections, and provide information to States on their responsibilities under that law. – FEC ... STANDARDS BOARD
- Audit persons who received federal funds authorized by HAVA or this bill by Congress. – GAO
- Submit annual reports to Congress describing election activities for previous fiscal year. – APPROPRIATE ENTITIES

^{xvii} The composition and appointment of State Plan Committee Members are details to be worked out.