# CRS Report for Congress

Received through the CRS Web

## Federal Voluntary Voting System Guidelines: FAQs

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## Summary

The federal *Voluntary Voting System Guidelines (VVSG)* are a set of technical standards for voting systems that use computers to assist in recording or counting votes. They were released in December 2005 and will go into effect in December 2007. They will replace the 2002 version of the federal voluntary *Voting Systems Standards (VSS)*. The *VVSG* are a partial revision of the *VSS,* with revision focused mainly on accessibility, usability, and security. Several issues have been raised about the *VVSG* that may require congressional attention. Among them is the question of timing. Some vendors claim that there needs to be more time for technology development before the new guidelines become effective; some activists argue that problems with voting systems, and federal requirements, demand more rapid implementation of the *VVSG*. It is generally considered unlikely that the guidelines will have much direct impact on voting systems used in 2006. One exception may be provisions relating to paper-ballot audit trails, which several states now require to be used in conjunction with electronic voting systems. The *VVSG* will be voluntary, but some observers believe that a regulatory approach would be more appropriate given the importance of elections to the democratic process. However, since many states require that voting systems be certified, vendors are expected to treat the *VVSG* in the same way they have treated the *VSS* — as effectively mandatory. For more detail, see CRS Report RL33146, *Federal Voluntary Voting System Guidelines: Summary and Analysis of Issues*, by Eric A. Fischer. This report will be updated in response to major developments.

## What are the Federal *Voluntary Voting System Guidelines* (*VVSG*)?

The Help America Vote Act of 2002 (HAVA, P.L. 107-252) established the federal Election Assistance Commission (EAC) and gave it the responsibility to develop a set of *Voluntary Voting System Guidelines* (*VVSG*). It established the Technical Guidelines Development Committee (TGDC), chaired by the director of the National Institute of Standards and Technology (NIST), to develop recommended guidelines for consideration by the EAC.

The *VVSG* are a set of technical standards for voting systems that use computers to assist in recording or counting votes. Systems covered include most used in the United States — not only DREs (direct recording electronic systems) such as touchscreen voting machines, but also optical scan and punch card systems. Hand-counted paper-ballot and lever-machine systems, which do not involve computers, are not covered. However, they are used by a small and decreasing number of election jurisdictions.

## What is the Status of the *VVSG*?

The EAC began developing the guidelines in 2004, releasing a draft for public comment in June 2005. After considering the thousands of comments that were submitted, and after making revisions in response, the commission approved the *VVSG* in December 2005, stipulating that they will go into effect in two years. Meanwhile, the TGDC has begun work on developing the next version.

## What is the Relationship Between the VVSG and the Federal Voting Systems Standards (VSS)?

The *VVSG* will replace the federal voluntary *VSS* originally developed under the auspices of the Federal Election Commission (FEC). The *VSS*, which will remain in effect until the end of 2007, were developed in response to concerns raised in the 1970s and 1980s about the then largely unregulated voting technology industry. Congress directed the FEC to perform a study on the matter in cooperation with the National Bureau of Standards (now NIST) but did not establish the *VSS* specifically by statute (see CRS Report RS21156 for more detail). The first version was released in 1990, and a testing and certification program began in 1994 under the auspices of the National Association of State Election Directors (NASED). The *VSS* and the NASED certification program are widely credited with having greatly improved the performance of voting systems in several areas, such as reliability and accuracy.

The FEC began a project to update the *VSS* in 1997 and approved the second version in May 2002, while Congress was debating election reform legislation. Enacted in October 2002, HAVA provided a statutory basis for voting system standards, which the act renamed *guidelines,* to distinguish them from the act's voting system requirements, which it called *standards.* HAVA also provided an administrative structure for promulgating the guidelines and for certifying systems under the auspices of the EAC, and also directed NIST to assist in the certification process. HAVA stipulated that the current *VSS* will serve as the guidelines until replaced by the *VVSG.*

Most sections of the *VVSG* are virtually identical to those in the 2002 update of the *VSS*. Major revision focused mainly on usability, including accessibility for persons with disabilities, and certain aspects of security; those sections were completely rewritten. The decision to limit the scope of the revisions resulted from a desire to meet urgent needs while creating a version that could be used in preparation for the 2006 election cycle. HAVA's accessibility requirements go into effect in January 2006, and many states have adopted new security requirements for voting systems, including paper-audit-trail requirements, in the wake of controversies that emerged subsequent to the passage of HAVA (see CRS Report RL32139, *Election Reform and Electronic Voting Systems (DREs): Analysis of Security Issues*, by Eric A. Fischer).

## How are the VVSG Used?

The *VVSG* provide a set of specifications and requirements to be used in the development of computer-assisted voting systems and their certification testing by independent laboratories. They include descriptions of functional requirements and performance standards, as well as requirements for vendors in quality assurance and in configuration management, which involves ensuring that a system functions in specified ways under various modifications and throughout its life cycle. They provide details of the testing process for certification of voting systems, and also include suggested practices for election officials in some areas covered by the guidelines, and discussion of verification concepts for future design of voting systems.

The guidelines are aimed at a broad audience, but most specifically at vendors, testing laboratories, and election officials. Their use is voluntary at the federal level, but many states require that any new voting systems used in the state adhere to them (in most cases, the requirements currently refer to the *VSS*), or to state standards that incorporate similar specifications. The practical effect of such state requirements is that voting system vendors can successfully market systems only if they are certified under the *VSS* or *VVSG*. In this sense, the provisions have acquired some of the force of regulation, in that they are treated by manufacturers as requirements.

Consequently, when a company develops a new voting system, it typically uses the *VSS* (and soon, the *VVSG*) as a source of specifications to which the system must adhere. When the vendor submits the system to an independent laboratory for certification, the laboratory uses the *VSS* as a source of standards against which it tests the system. The system may also need to be certified against state standards to the extent that they differ from the *VSS*. State officials may then use the *VSS* in their state-level certification tests of systems they are considering for acquisition. Private citizens who might wish to test voting systems cannot ordinarily do so because of contractual restrictions imposed by the vendors. While adherence to some specifications can be assessed by knowledgeable citizens when they vote, many provisions can be assessed only in a laboratory.

## What Subjects are the *VVSG* Required to Address?

HAVA does not specifically direct the EAC to include any particular issues in the guidelines. However, in the debate on the House floor before passage of the HAVA conference agreement on October 10, 2002, a colloquy (*Congressional Record,* daily ed., 148: H7842) stipulated an interpretation that the guidelines specifically address the usability, accuracy, security, accessibility, and integrity of voting systems. Also, the act requires NIST to provide support to the TGDC for development of guidelines relating to security, voter privacy, human factors, remote voting, and fraud detection and prevention.

HAVA does establish some specific requirements for voting systems, but leaves the method of implementation to the states. The EAC is required to provide *guidance* for implementing the requirements, but the guidance is not a technical standard and its use is also voluntary. The act is largely silent on the relationship between the *VVSG* and those requirements, which stipulate that voting systems must provide for auditability, accessibility, and ballot verification and error correction by voters, that states must set standards for what constitutes a vote on a given system, and that machine error rates of

voting systems must conform to the standards set in the guidelines. This last is the only direct connection in the act between the requirements and the *VVSG*. HAVA also specifically exempts states from adherence to the *VVSG* as a condition for receipt of payments to meet HAVA requirements.

## What Subjects do the VVSG Currently Address?

The *VVSG* cover largely the same topics as the *VSS*. They include the following:

- The *functional capabilities* a voting system is expected to have. These fall into several categories, including security, accuracy, error recovery, system integrity, auditing, election management, human factors, vote tabulation and reporting, telecommunications, data retention, ballot preparation and control, voting, maintenance, transportation, and storage.
- Performance, physical, design, construction, and maintenance requirements for *hardware*, from printers to voting devices to paper ballots to back-office computer equipment.
- Requirements for *software*, including design and coding, data and document retention, audit record data, and vote secrecy for DREs.
- *Telecommunications* requirements for operation and reporting election results, including performance, design, and maintenance characteristics.
- Essential *security* capabilities, including controls to minimize errors and accidents, protect from malicious manipulation, identify fraudulent or erroneous changes, and protect voting secrecy.
- Requirements for *voter-verified paper trails* (VVPAT) used in conjunction with DREs (this is new in the *VVSG*).
- Requirements for *quality-assurance programs* and *configuration management* throughout a voting system's life cycle.
- Suggested *best practices for election officials* with respect to usability and security requirements.
- Suggested specifications for a class of *vote-verification systems* (which includes VVPAT) that produce at least two separate, independent ballot records that voters can verify before casting and that can be compared in a post-election audit.
- The *certification testing process,* including planning, testing sequence, specific tests required, exemptions (such as unaltered commercial off-the-shelf software), and vendor requirements.

## What Are Major Policy Issues about the VVSG?

Several issues have been raised about the *VVSG* that may require congressional attention. Among them are the following:

*The degree to which the guidelines are voluntary.* HAVA makes the standards voluntary at the federal level and did not give the EAC regulatory authority, but vendors have usually treated the *VSS* as mandatory because of state requirements. Nevertheless, some observers believe that adherence should be mandatory or at least a condition of receiving any federal grants for voting equipment. Others state that mandatory standards

would give too large a role to the federal government and reduce the flexibility of state and local governments to respond to their specific needs.

*What standards can and cannot do.* Standards can address only issues that were considered by the developers of those standards, and the way that they are developed and implemented can also affect the way issues are addressed. The *VSS* and certification process have been criticized for not anticipating the kinds of security weaknesses with DREs that have been discovered in some certified systems, and for limiting testing of systems to controlled laboratory conditions rather than realistically simulated election conditions. The *VVSG* have strengthened the security requirements but the current version has not addressed the second criticism.

*Development and implementation of the VVSG.* The development of standards can involve lengthy deliberations under the best of circumstances, and HAVA may have exacerbated that characteristic by creating a complex process for the development of the *VVSG*. HAVA does not specify an updating cycle for the guidelines, but international standards are often updated on a three- to five-year cycle. Some observers believe that a four-year development cycle is desirable, to permit systems to be used for two federal election cycles without requiring recertification. Others have criticized the process for development of the *VVSG* as being too slow and cumbersome. There appears to be an inherent conflict in responsiveness of the guidelines to, on the one hand, evolving needs and technology and, on the other, time and cost constraints inherent in responding appropriately to such changes. Achieving the right balance is likely to be difficult.

Funding has also been an issue. Although HAVA requires NIST to assist in the development of the *VVSG* and the certification process, it did not authorize any funding specifically for that purpose. Appropriations legislation has been addressing that gap by specifying EAC funds to be transferred to NIST for their support activities. However, funding for the EAC is authorized only through FY2005, and some observers have called for abolishing the EAC after all current HAVA payments to states have been disbursed.

*Certification process.* The development of plans for certification testing has also raised issues. Some observers believe that the public trust would best be served by open certification testing, whereas others believe that the release of proprietary vendor information that would accompany such open testing would be a strong disincentive for investment and innovation by vendors, and therefore counterproductive. The process for selecting testing laboratories has also been criticized, with some observers believing that use of government or nonprofit testing centers would be preferable to the current open competition. However, it is generally recognized that the HAVA process is likely to be superior to the one it replaces, which has been criticized as slow and expensive.

*VVSG revisions.* The first version of the guidelines has only partially revised the *VSS,* and some observers believe that the revisions should have been more comprehensive to address perceived shortcomings of the *VSS.* Some also believe that the added provisions are inadequate to meet accessibility, alternative language, and security needs and that broader and more stringent requirements are required. Others believe that the limited changes in the *VVSG* are more likely to be implementable in the short term. Still others believe that the guidelines have more new requirements for certification than is prudent for an interim document, which is intended to be followed by a more complete revision. It is not clear at this point what the appropriate balance is among those and

other conflicting concerns, and the question of scope is liable to remain contentious at least until the next version of the guidelines is completed and implemented.

*The role of the VVSG in the 2006 and 2008 federal elections.* It is unclear how the relationship between the *VVSG* and HAVA voting-system requirements will be interpreted for the 2006 elections. Until the *VVSG* go into effect in late 2007, federal certification of voting systems will presumably continue to be based on the 2002 *VSS*. However, state or local jurisdictions may choose to require vendors to meet some or all of the *VVSG* requirements sooner. That may be especially important for those jurisdictions that require a voter-verifiable paper audit trail for use with DREs.

Some observers have expressed concerns that if states do not follow the *VVSG* in meeting the requirements, they could be judged not to be in compliance, despite the voluntary nature of the guidelines and the stipulation in HAVA that the methods of implementation are left to states. As a result, uncertainties remain about whether systems already acquired to meet the January 2006 deadline for HAVA requirements will be deemed inadequate in light of the December 2005 release of the *VVSG*.

Another concern is that the proposed fall 2007 implementation date may not leave sufficient time for vendors and states to develop and acquire conforming systems before the 2008 federal election, especially in light of uncertainties about the timeline for the next version of the *VVSG*. How these concerns should be addressed is not clear.

*Voter Registration.* HAVA requires NIST to provide technical support for development of guidelines for the computerized statewide voter registration lists that the act mandates. There are currently no widely accepted standards for those lists. That absence has raised concerns about adequate state implementation of the requirement. The *VVSG* do not address voter registration, but some observers believe they should.

*Use of proprietary software.* Most if not all voting systems use proprietary software for which the code is not publicly available. Some of that software consists of commercial off-the-shelf (COTS) products, and some is written by the vendor. Critics argue that all software should be available for public inspection to ensure that it functions properly and does not have any malicious code. They say that such an approach is essential to ensure public trust. Others disagree, arguing that such an approach would stifle innovation, increase costs by prohibiting the use of most COTS software, and would not result in improved software quality.

*Verification systems, including voter-verified paper audit trails (VVPAT).* The possible need for voter-verification systems has become a matter of public interest because of the controversy over the security of DREs. While most public attention has been paid to VVPAT, other methods arguably show more promise in terms of usability, accessibility, and verification power. Some observers believe that the *VVSG* should require VVPAT, but others believe that the verification provided by that method is of questionable value in practice and may create unforeseen problems of its own. The trend at the state level toward requiring the use of paper ballots has also raised questions about whether such requirements can be reconciled with HAVA accessibility requirements under the constraints imposed by current technology. Several bills have been introduced in the 109th Congress that would make the use of paper ballots a federal requirement, but none have received committee or floor action as of the date of this report.