

Escrow of Voting System Software

As part of an ongoing effort to evaluate transparency in our elections, Verified Voting recently began researching which states require escrow of voting system software (or similar requirement) as a necessary step for the certification, sale or use of the system.¹

Voting systems are often modified and updated. A state may require escrow to help provide a framework for ensuring that the state-approved version of a system is the one being used in actual elections locally. A prohibition on unauthorized versions of voting system software may not prevent their use, but it should provide a legal guideline which vendors – and local jurisdictions – must follow.

Some states establish that the software must be disclosed in certain circumstances. In most cases, this means the state is required, or reserves the right, to examine the software to try to determine if it functions as the vendor has represented. Although the vendor must still provide the code in order to accomplish this, it is not the same as an escrow provision. For example, a state that requires disclosure of the software for the purposes of initial testing for certification may just leave it at that, and not require re-testing for every modification. In such cases, local jurisdictions could well be using different versions of the system software than that which was originally tested and approved, and no “approved version” would be escrowed.

States for which we have found escrow (or related) provisions include: Arizona, California, Colorado, Georgia, Illinois, Indiana, Minnesota, Missouri, New York, North Carolina, Texas, Utah, Wisconsin and Washington. This should not be considered a comprehensive list. There may be others; we invite you to contact us at observer@verifiedvoting.org if you know of other similar provisions.

Arizona²

With the passage of Arizona’s voter-verified paper record law (SB1557) in 2006, the state included a requirement to escrow computer election programs with the Secretary of State.

Sec. 2. Section 16-445, Arizona Revised Statutes, is amended to read:

16-445. Filing of computer election programs with secretary of state

A. For any state, county, school district, special district, city or town election, including primary elections, utilizing vote tabulating devices as provided in this article, there shall be filed with the secretary of state at least ten days before the date of the election a copy of each computer

¹ Computerized voting systems contain software which in most cases is considered secret by the companies that offer the systems. They suggest that secrecy is necessary for several reasons, e.g. to protect trade secrets and for security. “Security through obscurity” is a concept that has repeatedly been discredited by computer scientists and security experts, said by some to be “neither obscure nor secure.” Voting system software could be improved with an “open source” or non-secret system, where many can evaluate the programs and identify bugs or problems to be corrected. For more about transparency and source code, see Joe Hall’s paper “Transparency and Access to Source Code in Electronic Voting” here: http://www.usenix.org/events/evt06/tech/full_papers/hall/hall_html/

² <http://www.azleg.gov/FormatDocument.asp?inDoc=/legtext/47leg/2r/laws/0394.htm> and <http://www.azleg.state.az.us/ars/16/00602.htm>

program for each election. **The secretary of state shall hold all computer program software filed pursuant to this section in escrow for three years.** The secretary of state shall securely destroy the software filed pursuant to this section on the expiration of the three year period.

B. A copy of any subsequent revision of the computer program shall be filed in the same manner within forty-eight hours following the revision.

C. Any tape or disc used in the programming or operation of a vote tabulating device upon which votes are counted and any tape used in compiling vote totals shall be kept under lock and seal, and if there is a retally of votes, the officer entrusted with the tapes or discs shall submit his affidavit stating that they are the tapes or discs, or both, used in the election and have not been altered.

D. All materials submitted to the secretary of state shall be used by the secretary of state or attorney general to preclude fraud or any unlawful act under the laws of this title and title 19 and shall not be disclosed or used for any other purpose.

E. Each program tape or disc or any other material submitted to the secretary of state shall be returned to the county, city or town within six months after the close of the election for which it was submitted except:

1. When a court ordered recount is pending.
2. When a restraining order is in effect.
3. When any other legal action is pending.

ARS 16-602

K. For any county in which a hand count has been expanded to all precincts in the jurisdiction, the **secretary of state shall make available the escrowed source code** for that county to the superior court. The superior court shall appoint a special master to review the computer software. The special master shall have expertise in software engineering and shall not be affiliated with an election software vendor nor with a candidate and shall sign and be bound by a nondisclosure agreement regarding the source code itself, and shall issue a public report to the court and to the secretary of state regarding the special master's findings on the reasons for the discrepancies. The secretary of state shall consider the reports for purposes of reviewing the certification of that equipment and software for use in this state.

California³

19103. (a) **An exact copy of the source code for all ballot tally software programs shall be placed in an approved escrow facility prior to its use.**

(b) The Secretary of State shall adopt regulations relating to the following:

- (1) The definition of source codes for ballot tally software.
- (2) Specifications for the escrow facility, including security and environmental specifications necessary for the preservation of the ballot tally software program source codes.
- (3) Procedures for submitting ballot tally software program source codes.
- (4) Criteria for access to ballot tally software program source codes.

(c) The Secretary of State may seek injunctive relief requiring the elections officials to comply with this section and related regulations...

³ <http://caselaw.lp.findlaw.com/cacodes/elec/19100-19103.html>

19213. When a voting system or a part of a voting system has been approved by the Secretary of State, it shall not be changed or modified until the Secretary of State has been notified in writing and determined that the change or modification does not impair its accuracy and efficiency sufficient to require a reexamination and re-approval pursuant to this article. The Secretary of State may adopt rules and regulations governing the procedures to be followed in making his or her determination as to whether the change or modification impairs accuracy or efficiency.

Colorado⁴

1-7-511. Election software - voting equipment providers - escrow - definitions.

(1) When a voting system provider submits an electronic or electromechanical voting system for certification pursuant to part 6 of article 5 of this title, **the voting system provider shall place in escrow with the secretary of state or an independent escrow agent approved by the secretary of state one copy of the election software being certified and supporting documentation. The voting system provider shall place in escrow any subsequent changes to the escrowed election software** or supporting documentation.

(2) An officer of the voting system provider with legal authority to bind the voting system provider shall sign a **sworn affidavit that the election software in escrow is the same as the election software being used in its voting systems in this state.** The officer shall ensure that the statement is true on a continuing basis.

(3) As an additional requirement for certification, the voting system provider shall deposit one copy of the election software with the national software reference library at the national institute of standards and technology.

(4) The secretary of state shall promulgate rules in accordance with article 4 of title 24, C.R.S., prescribing the manner and procedures that voting system providers shall follow to comply with this section.

(5) As used in this section, unless the context otherwise requires, "election software" means the software to be installed or residing on election equipment firmware or on election management computers that controls election setup, vote recording, vote tabulation, and reporting.

(6) Notwithstanding any other provision of law, election software and supporting documentation placed in escrow in accordance with this section **shall not be public records** for purposes of article 72 of title 24, C.R.S.

Georgia⁵

CONTRACT FOR A STATEWIDE VOTING SYSTEM

CONTRACT NO. GTA000040

Section 11. ESCROW. Contractor shall place into escrow the source code for all Contractor software in the Election Management System, and for all third party software in the Election Management System, in accordance with an Escrow Agreement substantially in the form attached hereto as Appendix "J", with such changes approved by the Secretary of State. The Escrow Agreement shall be entered into within seven (7) days of the date hereof. The escrow agreement will be a three-party escrow agreement with an escrow agent in Georgia reasonably

⁴ <http://198.187.128.12/colorado/lpext.dll/Infobase4/4/29/1095/12cf?f=templates&fn=document-frame.htm>

⁵ http://www.gaforverifiedvoting.org/docs/ga_contract.pdf, pg. 15; also <http://www.nass.org/Georgia%20RFP.pdf>

approved by the Secretary of State. The escrow will be for the benefit of the State, the Secretary of State and local governments conducting elections.

Illinois⁶

Strictly speaking, Illinois does not have an escrow provision, as far as we have been able to determine. However, there is a provision in statute which requires materials (which some could interpret to include software) used in testing the voting system to be made part of the public record. For this reason we have included it here. Note that Illinois does not require retesting for every modification.

All test plans, test results, documentation, and other records used to plan, execute, and record the results of the testing and verification, including all material prepared or used by independent testing authorities or other third parties, shall be made part of the public record and shall be freely available via the Internet and paper copy to anyone.

Indiana⁷

Indiana requires escrow of voting system software, and also requires re-testing before any modifications to the voting system can be applied. Changes to the system that have not be approved are prohibited. Following is the language of the escrow provision.

IC 3-11-15-7

Applications; contents Sec. 7. (a) Each application must be in writing, sworn to or affirmed by the applicant, under the penalties of perjury, on a form prescribed by the commission, and must satisfy the following requirements:

- (1) Provide the name and address of the vendor submitting the application.
- (2) Provide the telephone number of the vendor.
- (3) Provide the name, address, and telephone number of the individual representing the vendor regarding the application.
- (4) Provide the model name and number of the submitted voting system, stating the hardware, firmware, and software version numbers of the system.
- (5) State whether the voting system is a direct record electronic voting system or an optical scan ballot card voting system.
- (6) Provide a description of the voting system and its capabilities, including the following:
 - (A) Photographs.
 - (B) Engineering drawings.
 - (C) Technical documentation.
 - (D) Fail-safe and emergency backup information.
 - (E) Environmental requirements for storage, transportation, and operation.
- (7) Include an agreement to pay for the total costs of the examination.
- (8) **Provide documentation of the escrow of the voting system's software, firmware, source codes, and executable images with an escrow agent approved by the election division.**
- (9) Provide a functional description of any software components.

⁶ <http://www.ilga.gov/legislation/94/HB/09400HB1968enr.htm>

⁷ <http://www.in.gov/legislative/ic/code/title3/ar11/ch15.html>

(10) Provide schematics or flowcharts identifying software and data file relationships.

(11) Describe the type of maintenance offered by the vendor...

... As added by P.L.3-1997, SEC.332. Amended by P.L.14-2004, SEC.133.

Minnesota

Subd. 2. [ESCROW OF SOURCE CODE.] The contracts must require the voting system vendor to provide a copy of the source code for the voting system to an independent third-party evaluator selected by the vendor, the secretary of state, and the chairs of the major political parties. The evaluator must examine the source code and certify to the secretary of state that the voting system will record and count votes as represented by the vendor. Source code that is trade secret information must be treated as nonpublic information, in accordance with section 13.37. Each major political party may designate an agent to examine the source code to verify that the voting system will record and count votes as represented by the vendor; the agent must not disclose the source code to anyone else.

Missouri⁸

3.4 Escrow Agreement:

3.4.1 The contractor must provide voting systems with the exact source code as was evaluated and qualified by the Secretary of State. At any time, upon the request of the State, the Secretary of State's office or the agency, the contractor shall provide source code data to prove an exact match. The contractor must execute an escrow agreement with an escrow agent for the contractor's source code for each system fully qualified by the Secretary of State's Office. At a minimum, the agreement must:

- a. Identify an escrow agency;
- b. Provide the software source code for all voting system components in a minimum of two formats (one human readable and one machine readable) to the escrow agent;
- c. Provide the software documentation to the escrow agent;
- d. Contain a statement confirming that the State of Missouri and the agency will, within seven (7) days of the occurrence of one of the following events, receive full access to the source code and unlimited rights to continue using and supporting the software at no cost to the State or the agency should the vendor:
 - i) Become insolvent; or
 - ii) Make a general assignment for the benefit of creditors; or
 - iii) File a voluntary petition of bankruptcy; or
 - iv) Suffer or permit the appointment of a receiver for its business or assets; or
 - v) Become subject to any proceeding of bankruptcy or insolvency law, whether foreign or domestic; or

⁸ Missouri's provision was found in the Single Feasible Source (SFS) contract documents awarded by the State. A link to the relevant document is here (see pages 15-16):

<http://www.sos.mo.gov/elections/hava/docs/finalSFSAgreement.doc>

- vi) Wind up or liquidate its business voluntarily or otherwise and the State has reason to believe that the vendor will fail to meet future obligations; or
 - vii) Discontinue support of the provided products or fail to support the products in accordance with its maintenance obligations and warranties.
 - e. Contain a statement agreeing to notify in writing the ITA that qualified the system, giving the State of Missouri full access to “final build”, records and test results related to the qualification tests at no charge to the State or the agency; and
 - f. Contain a statement agreeing that the escrow will stay in place throughout the contract and any subsequent option years, as well as warranty and post-warranty periods at no cost to the State or the agency.
- 3.4.2 In addition to the escrow terms required in section 3.4.1, the contractor shall require that the escrow agent:
- a. provide to the Secretary of State's office and the agency, written confirmation that the source code deposited in escrow by the contractor is identical to the source code for the system that received full qualification by the Secretary of State's office. This initial verification and written confirmation must be completed and received by the Secretary of State's office and the agency no later than seventeen (17) days after the date of contract award; and
 - b. provide to the Secretary of State's office and the agency, written confirmation that the source code deposited and maintained in escrow by the contractor is identical to the source code for the system that received full qualification by the Secretary of State's office upon request by the Secretary of State's office or the agency during the contract period and during each contract renewal period. Such written confirmation shall be received by the Secretary of State's office and the agency no later than twenty-four hours of the date of the request; and
 - c. not hold or exercise any direct or indirect financial interest in the contractor. If the escrow agent develops a financial interest in the contractor, the escrow agent shall (1) advise the contractor of the financial interest, (2) notify the Secretary of State's office and the agency of the financial interest immediately, and (3) transfer the deposited materials to another certified escrow agency which has no financial interest in the contractor within ten (10) days of such notification.
- 3.4.3 The contractor shall not hold or exercise any direct or indirect financial interest in the escrow agent. If the contractor develops a financial interest in the escrow agent, the contractor shall (1) advise the escrow agent of the financial interest, (2) notify the Secretary of State's office and the agency of the financial interest immediately, and (3) transfer the deposited materials to another certified escrow agency in which the contractor has no financial interest within ten (10) days of such notification.
- 3.4.4 The contractor shall provide to the Secretary of State's office a finally executed escrow agreement no later than ten (10) days after the date of contract award.

New York⁹

§ 7-208. Escrow requirements. Prior to the use of any voting machine or system in any election in the state, on or after September first, two thousand six, the state board of elections and the local board of elections using such voting machine or system shall:

1. Require that the manufacturer and/or vendor of such voting machine, system or equipment shall place into escrow with the state board of elections a complete copy of all programming, source coding and software employed by the voting machine, system or equipment which shall be used exclusively for purposes authorized by this chapter and shall be otherwise confidential.

2. Require that the manufacturer and/or vendor of such voting machine, system or equipment file with the state board of elections and the appropriate local boards of elections a waiver, prepared by the state board of elections, which shall waive all rights of the vendor or manufacturer to assert intellectual property or trade secret rights in any court of competent jurisdiction hearing a challenge to the results of any election and requesting that programming source coding, firmware, and software as well as voting machines or systems be tested by independent experts under court supervision and at the conclusion of such proceeding shall be sealed.

3. Require that the manufacturer and/or vendor of such equipment file with the state board of elections and the appropriate local boards of elections a consent to having and cooperating in the testing of any programming, source coding, firmware, or software, pursuant to an order of any board of elections or court of competent jurisdiction. Any such board or agent thereof shall be required to maintain the confidentiality of any proprietary material.

North Carolina¹⁰

With respect to all voting systems using electronic means, that the vendor provide access to all of any information required to be placed in escrow by a vendor pursuant to G.S. 163-165.9A for review and examination by the State Board of Elections; the Office of Information Technology Services; the State chairs of each political party recognized under G.S. 163-96; the purchasing county; and designees as provided in subdivision (9) of subsection (d) of this section.

(d) Subject to the provisions of this Chapter, the State Board of Elections shall prescribe rules for the adoption, handling, operation, and honest use of certified voting systems, including all of the following:

(9) Notwithstanding G.S. 132-1.2, procedures for the review and examination of any information placed in escrow by a vendor pursuant to G.S. 163-165.9A by only the following persons:

- a. State Board of Elections.
- b. Office of Information Technology Services.
- c. The State chairs of each political party recognized under G.S. 163-96.
- d. The purchasing county.

Each person listed in sub-subdivisions a. through d. of this subdivision may designate up to three persons as that person's agents to review and examine the information. No person

⁹ <http://public.leginfo.state.ny.us/menugetf.cgi?COMMONQUERY=LAWS> (Section 7-208)

¹⁰ <http://www.ncga.state.nc.us/Sessions/2005/Bills/Senate/PDF/S223v7.pdf>

shall designate under this subdivision a business competitor of the vendor whose proprietary information is being reviewed and examined. For purposes of this review and examination, any designees under this subdivision and the State party chairs shall be treated as public officials under G.S. 132-2.

Texas¹¹

Texas' requirement comes from the state's Administrative Code regarding certification requirements. It is not described as an escrow provision, but it does require that the vendor ensure the Secretary of State receives the software, and modifications to the system must also have gone through federal testing processes.

Texas Administrative Code. Title I, Part 4, Chapter 81, Subchapter D, Rule 81.60(2)
The applicant must have the nationally accredited voting system test laboratory deliver a copy of all nationally qualified software/firmware and source codes for the system and/or system components requested for Texas certification, directly to the Secretary of State no later than 45 days prior to examination.

Utah¹²

Utah's requirement was taken from the State's Request for Proposals (RFP) for providing voting systems. Strictly speaking, it is not described as an escrow provision. However, there is a mandatory requirement to supply source code to the state. Further, the Lieutenant Governor (Utah's chief election official) may "designate individuals to inspect and review proprietary software as part of an evaluation of new voting equipment systems under consideration for purchase."¹³ We have not yet determined whether different versions are allowed in use.

Requirement 37 Supporting Documentation

The offeror shall provide the following documentation as part of the proposal:

- System operator's manual;
- Environmental requirements for storage, transportation, and operation, including temperature range, humidity range and electrical supply requirements;
- User manuals detailing system functionality;
- Copy of a letter from the offeror, to each ITA, that:
 1. Directs the ITA to send a copy of the completed ITA qualification report to the State;
 2. Authorizes the ITA to discuss their procedures and findings with the State; and
 3. Authorizes the ITA to allow the State to review all records of any qualification testing conducted on the voting system or its components.
- Software and firmware documentation, information, and materials, including the following:
 1. A copy of the release software, firmware, utilities, hardware, and instructions required to install, operate and test the voting system.

¹¹

[http://info.sos.state.tx.us/pls/pub/readtac\\$ext.TacPage?sl=T&app=9&p_dir=N&p_rloc=81364&p_tloc=&p_ploc=1&pg=17&p_tac=&ti=1&pt=4&ch=81&rl=60](http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=T&app=9&p_dir=N&p_rloc=81364&p_tloc=&p_ploc=1&pg=17&p_tac=&ti=1&pt=4&ch=81&rl=60)

¹² <http://purchasing.utah.gov/BidHeaders/8750.pdf> (See Page 24)

¹³ <http://le.utah.gov/~code/TITLE20A/htm/20A05016.htm>

2. Diskettes, tapes, or compact disks containing copies of all source code files required to develop the system object code and firmware; with any utilities, hardware, and instructions required for the State to read the source code on a personal computer with a MS-DOS or Microsoft Windows operating system;

3. System flow chart describing information flow; entry and exit points; and the relationship of programs, device drivers, data files, and other program components;

4. Identification of version, release, and modification levels of all software and firmware components;

5. Identification of the steps and procedures required to generate all program modules providing system functions for which certification or provisional certification is requested;

6. Identification of all compilers, assemblers, development libraries, device drivers, operating systems, and monitors required to generate and operate the executable programs;

7. Identification of all program elements which are static and not subject to change in either content or use when distributed for sale, during testing, or during operation; and

8. Identification of all program elements which are not static and therefore are subject to change in content or use when distributed for sale, during testing, or during operation.

Status: **Mandatory**

Washington¹⁴

(2) The source code of an electronic voting system must be placed in escrow and be accessible by the secretary of state under prescribed conditions allowing source code review for system verification.

Wisconsin¹⁵

5.905 Software components. (1) In this section, “software component” includes vote–counting source code, table structures, modules, program narratives and other human–readable computer instructions used to count votes with an electronic voting system.

(2) The board shall determine which software components of an electronic voting system it considers to be necessary to enable review and verification of the accuracy of the automatic tabulating equipment used to record and tally the votes cast with the system. The board shall **require each vendor of an electronic voting system that is approved under s. 5.91 to place those software components in escrow** with the board within 90 days of the date of approval of the system and within 10 days of the date of any subsequent change in the components. The board shall secure and maintain those software components in strict confidence except as authorized in this section. Unless authorized under this section, the board shall withhold access to those software components from any person who requests access under s. 19.35 (1).

(3) The board shall promulgate rules to ensure the security, review and verification of software components used with each electronic voting system approved by the board. The verification procedure shall include a determination that the software components correspond to the instructions actually used by the system to count votes.

¹⁴ <http://apps.leg.wa.gov/WAC/default.aspx?cite=434-335-030>

¹⁵ <http://www.legis.state.wi.us/statutes/Stat0005.pdf> see pg. 21-22; also see State Election Board administrative rules here: <http://elections.state.wi.us/docview.asp?docid=2440&locid=47>

(4) If a valid petition for a recount is filed under s. 9.01 in an election at which an electronic voting system was used to record and tally the votes cast, each party to the recount may designate one or more persons who are authorized to receive access to the software components that were used to record and tally the votes in the election. The board shall grant access to the software components to each designated person if, before receiving access, the person enters into a written agreement with the board that obligates the person to exercise the highest degree of reasonable care to maintain the confidentiality of all proprietary information to which the person is provided access, unless otherwise permitted in a contract entered into under sub. (5).

(5) A county or municipality may contract with the vendor of an electronic voting system to permit a greater degree of access to software components used with the system than is required under sub. (4).

History: 2005 a. 92.

El Bd 7.03: Continuing Approval of Electronic Voting System:

(1) The Board may revoke the approval of any existing electronic voting system if it does not comply with the provisions of this chapter. As a condition of maintaining the Board's approval for use of the voting system, the vendor shall inform the Board of all changes in the hardware, firmware and software, and all jurisdictions using the voting system.

(2) The Vendor shall, at its own expense, furnish, to an agent approved by the Board, for **placement in escrow, a copy of the programs, documentation and source code** used for any elections in the state.

...

(5) For good cause shown, the Board may exempt any electronic voting system from strict compliance with ch El Bd 7.