

Date of Hearing: April 25, 2018

ASSEMBLY COMMITTEE ON ELECTIONS AND REDISTRICTING

Marc Berman, Chair

AB 2125 (Quirk) – As Amended March 15, 2018

SUBJECT: Election results: risk-limiting audits.

SUMMARY: Requires certain county elections officials to conduct risk-limiting audits in lieu of conducting a one percent manual tally beginning March 5, 2024, as specified. Specifically, **this bill:**

- 1) Defines a “risk-limiting audit” to mean a procedure that ensures a large, predetermined minimum chance of requiring a full manual tally whenever a full manual tally would show an electoral outcome that differs from the outcome reported by the voting system for an audited contest.
- 2) Permits an elections official conducting an election, commencing with the statewide primary election held on March 3, 2020, to conduct a risk-limiting audit in place of the one percent manual tally required under current law during the official canvass of any election in accordance with the provisions of this bill.
- 3) Requires an elections official conducting an election using a voting system that is purchased using state funds, commencing with the statewide primary election held on March 5, 2024 and each election thereafter, to conduct a risk-limiting audit in place of the one percent manual tally.
- 4) Requires an elections official conducting a risk-limiting audit to conduct the audit on at least one countywide and at least one statewide contest, until all counties have transitioned to risk-limiting audits. Defines “countywide,” for the purposes of this bill, to mean an elective office wholly within the county that is voted on throughout the county.
- 5) Requires the Secretary of State (SOS), in consultation with recognized statistical experts, equipment vendors, and local elections officials, to adopt regulations to implement and administer the provisions of this bill. Requires the regulations to do all of the following:
 - a) Establish threshold limits for risk-limiting audits;
 - b) Require the creation of an audit board by the local elections official to govern risk-limiting audits;
 - c) Establish criteria for public education on risk-limiting audits;
 - d) Ensure the security of the ballots and documentation that those procedures were followed;
 - e) Ensure the accuracy of ballot manifests produced by counties;

- f) Establish rules governing the format of ballot manifests, cast vote records, and other data involved in risk-limiting audits;
 - g) Establish procedures for the random selection of ballots to be inspected manually during each audit;
 - h) Establish the calculations and other methods to be used in the audit and to determine whether and when the audit of each contest is complete; and,
 - i) Establish procedures and requirements for testing any software used to conduct risk-limiting audits under this article, and for disclosing the source code of that software.
- 6) Permits ballot images to be used in place of ballots for purposes of risk-limiting audits under provisions of this bill.
 - 7) Requires an elections official to choose at random a percentage of precincts to compare ballot images to paper ballots. Requires the percentage to be prescribed and publicly noticed by the SOS.
 - 8) Defines a "ballot image," for the purposes of this bill, to mean an electronic copy or digital representation of a voted ballot that is an image of the ballot scanned or created independent from the tally or ballot marking system that can be matched back to the original ballot.
 - 9) Requires a risk-limiting audit to be a public process and requires an elections official conducting the election to provide at least a five-day public notice of the time and place of the risk-limiting audit and of the time and place of the selection of the precincts, batches, or direct recording electronic voting machines subject to the public risk-limiting audit before conducting the selection and tally. Defines, for the purposes of this bill, a "direct recording electronic voting machine" to mean an electronic touchscreen upon which appears the names of candidates and ballot titles of measures to be voted on by touching the designated area on the screen for systems that do not contain a paper ballot.
 - 10) Requires an official conducting the election to include a report on the results of the risk-limiting audit in the certification of the official canvass of the vote. Requires the report to identify any discrepancies between the machine count and the risk-limiting audit and a description of how each of these discrepancies was resolved. Provides that in resolving a discrepancy involving a vote recorded by electronic or electromechanical vote tabulating devices, the voter verified paper audit trail shall govern if there is a discrepancy between it and the electronic record.
 - 11) Authorizes ballot images to be used in place of ballots for the one percent manual tally required under current law.
 - 12) Requires an elections official to choose at random a percentage of precincts to compare ballot images to paper ballots when conducting the one percent manual tally. Requires the percentage be prescribed and publicly noticed by the SOS.
 - 13) Provides that the one percent manual tally provisions of law are no longer in effect on and after March 5, 2024.

14) Makes the following findings and declarations:

- a) Transparent, publicly observable auditing of election results is necessary to ensure effective election administration and justifiable public confidence in elections.
- b) Risk-limiting audits provide efficient and cost-effective scientific quality control for election results.
- c) By definition, a risk-limiting audit strictly limits the probability that an incorrect electoral outcome will pass the audit without being corrected.

EXISTING LAW:

- 1) Requires an elections official, during the official canvass of every election in which a voting system is used, to conduct a public manual tally of the ballots tabulated by those devices, including vote by mail (VBM) ballots, using either of the following methods:
 - a) A public manual tally of the ballots canvassed in the semifinal official canvass, including VBM ballots but not including provisional ballots, cast in one percent of the precincts chosen at random by the elections official, as specified; or,
 - b) A two-part public manual tally, which includes both of the following:
 - i) A public manual tally of the ballots canvassed in the semifinal official canvass, not including VBM or provisional ballots, cast in one percent of the precincts chosen at random by the elections official, as specified; and,
 - ii) A public manual tally of not less than one percent of the VBM ballots canvassed in the semifinal official canvass, as specified.
- 2) Requires an elections official to use either a random number generator or other method specified in regulations that shall be adopted by the SOS to randomly choose the initial precincts, batches of VBM ballots, or direct recording electronic voting machines subject to the public manual tally.
- 3) Prohibits an elections official from randomly choosing the initial precincts or selecting an additional precinct for the manual tally until after the close of the polls on election day.
- 4) Requires the manual tally to be a public process and requires an elections official conducting the election to provide at least a five-day public notice of the time and place of the manual tally and of the time and place of the selection of the precincts, batches, or direct recording electronic voting machines subject to the public manual tally before conducting the selection and tally.
- 5) Requires an elections official conducting the election to include a report on the results of the one percent manual tally in the certification of the official canvass of the vote. Requires the report to identify any discrepancies between the machine count and the manual tally and a description of how each of these discrepancies was resolved, as specified.

- 6) Requires the SOS to adopt and publish voting system standards and regulations governing the use of voting systems, as specified. Requires the standards to meet or exceed federal voluntary voting system guidelines set forth by the United States Election Assistance Commission (EAC) or its successor agency, as specified.
- 7) Authorizes a governing board, without formally adopting a voting system, to provide for the experimental use of a voting system in a pilot program, as specified, if the voting system complies with either of the following:
 - a) The voting system is certified or conditionally approved prior to its experimental use; or,
 - b) The voting system meets all of the following requirements:
 - i) Uses only software and firmware with disclosed source code, except for unmodified commercial off-the-shelf software and firmware;
 - ii) Meets the requirements set forth in the SOS's voting system standards and regulations governing the use of a voting system, as specified;
 - iii) Meets the requirements set forth in pilot program regulations adopted by the SOS pursuant to existing law; and,
 - iv) Implements risk-limiting audits, as specified.
- 8) Defines a “partial risk-limiting audit” to mean a procedure that guarantees a large minimum chance of a full manual tally of the votes cast on the pilot system if the electoral outcome is incorrect in part.
- 9) Defines a “risk-limiting audit” to mean a procedure that ensures a large, predetermined minimum chance of requiring a full manual tally whenever a full manual tally would show an electoral outcome that differs from the outcome reported by the voting system for the audited contest.

FISCAL EFFECT: Unknown. State-mandated local program; contains reimbursement direction.

COMMENTS:

- 1) **Purpose of the Bill:** According to the author:

New voting systems and technologies are being developed to make it easier for voters to engage in the electoral process. As exciting as these developments are, we need to be sure we continue to protect against election fraud and prevent any potential hacking of our voting systems. It is important for California to update and modernize its election audit process. Risk limiting audits allow election officials to do their jobs more efficiency and transparently, allowing for voters to feel truly confident their vote was accounted for.

- 2) **One Percent Manual Tally:** After an election, election officials are required to complete the official canvass and certify election results to the SOS's office no later than 30 days after an election. As part of the official canvass, existing law requires elections officials to conduct a public manual tally of ballots cast in one percent of the precincts chosen at random in order to ensure that vote tabulation equipment is operating correctly before the final official canvass is completed. The Legislature established this process, also known as the one percent manual tally, in 1965, over 50 years ago. In California, in order to overturn official election results, existing law requires a recount of the ballots cast in the contest.
- 3) **What is a Risk-Limiting Audit?** According to risk-limiting audit experts, a risk-limiting audit is a method to ensure that at the end of the canvass, the hardware, software, and procedures used to tally votes found the real winners. Specifically, a risk-limiting audit involves a manual tally of randomly selected ballots that stops as soon as it is implausible that a full recount would alter the result. As long as it is statistically plausible that a full recount would overturn the result, the risk-limiting audit continues to examine more ballots. Risk-limiting audits determine precisely how much hand counting is necessary to confirm election results to a given level of confidence. The closer the contest, the more ballots one must examine to have strong evidence – because fewer errors can change the outcome. The higher the desired confidence the more ballots one must examine – because higher confidence requires more evidence. Risk-limiting audits, however, do not guarantee that the electoral outcome is right, but they have a large chance of correcting the outcome if it is wrong.

Risk-limiting audits are highly adaptable. Experts state that risk-limiting audits can check simple plurality contests, multi-winner contests, measures requiring a super-majority, among others and can be conducted for any number of contests in a single election, often using a single sample for greater efficiency. Additionally, risk limiting audits can begin very soon after the election or later in the process, as long as time remains to correct any incorrect outcomes.

There are several varieties of risk-limiting audits and each has various benefits and requirements. Alternative methods of conducting a risk-limiting audit include comparison audits (such as a ballot-level audit) and ballot-polling audits. Ballot-polling audits examine randomly selected ballots until the human eye interpretation of the votes on those ballots gives sufficiently high statistical confidence that a full hand count would confirm the machine results. A ballot-polling audit only requires knowing the overall official result. It does not require precinct level results or more detailed results, which comparison audits require.

In contrast, a comparison audit, such as a ballot-level audit, compares a human interpretation of the votes on randomly selected ballots to the voting system's interpretation of the votes on those ballots. A ballot-level comparison audit entails matching a physical ballot with the voting system interpretation of that ballot (typically known as a cast vote record). A comparison audit continues until there is sufficiently high statistical confidence that a full hand count would agree with the machine results, despite any differences between the audit's manual interpretation of the ballots and the voting system's interpretation of those ballots.

Comparison audits require detailed information from the voting system. They require the voting system to report how it interpreted each physical ballot, in a way that allows the

interpretation of any particular ballot to be checked. In other words, it offers a way to trace a cast vote record back to the corresponding ballot. Some voting systems however, can only report tallies for large groups of ballots, such as precincts, and are unable to record cast vote records. When a comparison audit is feasible, a comparison audit generally requires examining fewer ballots than a ballot-polling audit. Both ballot-polling and comparison audits require a ballot manifest that says how many ballots there are in all and how they are stored, e.g., that lists identifiable groups of ballots and says how many there are in each group.

- 4) **Risk-Limiting Audit Pilot Program and Previous Legislation:** As mentioned above, California's one percent manual tally law requires all county elections officials to randomly select one percent of all precincts after each election and hand count all of the votes on all of the ballots from those precincts. In a regular election year, counties hand count tens of thousands of ballots as part of the one percent manual tally, yet doing so provides little or no statistical evidence that the machine tally found the true winner for each contest on the ballot – and does nothing to correct any erroneous electoral outcomes.

The SOS received a \$230,000 grant from the EAC under Section 271 of the federal Help America Vote Act to conduct a two-year election audit pilot program during 2011-2012 to test new, statistically sound, risk-limiting election audit methods.

The SOS partnered with the University of California for the pilot program to allow Berkeley Statistics Professor Philip B. Stark (Stark) – who originally developed the audit methods to be used in the pilot program – to serve as lead researcher. The EAC grant helped fund the following:

- 1) A contract with the University of California (UC) to allow Stark to serve as lead researcher for the pilot program;
- 2) Partnerships with a mix of thirteen urban and rural counties to participate in the program, which included reimbursement of county elections office costs of up to \$5,000 per county for conducting the audits with the help of county staff and facilities;
- 3) Development and testing of risk-limiting audit methods following elections in 2011 and 2012, by which fourteen audits were undertaken, eleven audits were completed successfully, and three audits following the June 2012 election were not completed due to time constraints between the primary and general elections in 2012;
- 4) Development of web-based tools and procedures for elections officials to use in conducting future audits and refinement of Stark's statistical methods for conducting risk-limiting audits based on the experiences gained in the pilots. The web-based tools allow elections officials to determine initial sample size, select ballots at random in a transparent and reproducible way, determine whether escalation of the audit is necessary based on initial audit results, and report final audit results to the public;
- 5) Reporting and analysis of the cost and effectiveness of risk-limiting post-election audits compared to the current statutory one percent manual tally law; and,

- 6) Development of recommendations for modifications to current voting systems to make voting systems more readily auditable and recommendations for legislation to reform current election audit law.

Additionally, in 2010, the Legislature passed and the Governor signed AB 2023 (Saldaña), Chapter 122, Statutes of 2010, which authorized the SOS to conduct the Post-Election Risk-Limiting Audit Pilot Program.

According to the 2012 final report to the EAC, twenty counties initially volunteered to participate in the program. Ultimately, 14 pilot audits were undertaken in 13 counties and successfully completed in 11 California counties following elections held during 2011–2012. Eight of the audits were conducted following small local elections held in 2011. Two audits were conducted in small counties, Madera and Napa, following the June 2012 Statewide Presidential Primary Election. Four multi-contest audits were started in Marin, Orange, Santa Cruz, and Yolo counties in July 2012 but had to be terminated before completion due to technical difficulties and time constraints between the primary and general election. The multi-contest audit attempted in Orange County faced an additional challenge: a voter-requested recount in one of the contests on the June 2012 ballot which took precedence over the pilot audit. The Marin County audit was ultimately successfully completed in February 2013.

The 11 counties that successfully completed their audits were able to confirm the official election results by reviewing a relatively small number of individual ballots (e.g., a few dozen to a few hundred ballots). By contrast, the statutorily-mandated one percent manual tally conducted in the same elections provided little statistical evidence that the election outcomes were correctly tallied by the voting system, despite requiring substantially more ballots to be hand-counted and examined.

- 5) **Voting System Pilot Projects and Risk-Limiting Audits:** In 2013, the Legislature passed and the Governor signed SB 360 (Padilla), Chapter 602, Statutes of 2013, which significantly overhauled and reorganized procedures and criteria for the certification and approval of a voting system for use in California elections. One of major policy changes in SB 360 was that it changed California's voting system review process and removed the federal pre-certification or qualification requirement. Specifically, SB 360 allowed a person, corporation or county owning or having interest in the sale or acquisition of a voting system to bypass federal review and approval and instead only seek certification or conditional approval from the SOS.

Additionally, SB 360 established a pilot process that authorizes a governing board, without formally adopting a voting system, to provide for the experimental use of a voting system in a pilot program, as specified, if the voting system complies with certain conditions. One of those conditions required the voting system to have the capability to implement risk-limiting audits, as specified. SB 360 defined “partial risk-limiting audit” to mean a procedure that guarantees a large minimum chance of a full manual tally of the votes cast on the pilot system if the electoral outcome is incorrect in part and defined “risk-limiting audit” to mean a procedure that ensures a large, predetermined minimum chance of requiring a full manual tally whenever a full manual tally would show an electoral outcome that differs from the outcome reported by the voting system for the audited contest.

- 6) **Colorado Statewide Risk-Limiting Audit:** In 2009, the Colorado General Assembly approved the use of risk-limiting audits and required a statewide risk-limiting audit by the 2014 general election. Following the legislature's mandate, in 2010 the SOS tested some elements of a risk-limiting audit in Douglas County with the assistance of Colorado State University. In addition to the SOS's efforts, the Clerk and Recorder of Boulder County began independently implementing risk-limiting audit procedures for its post-election audit.

In 2011, the SOS applied for and received a grant from the EAC to conduct a two-year post-election audit pilot program. The need for a pilot program in Colorado was demonstrated by the challenge of moving from the traditional post-election audit to a risk-limiting audit that could be implemented in large or small jurisdictions.

In May of 2013, the Colorado General Assembly passed additional legislation that extended the deadline to implement a statewide risk-limiting audit from the 2014 General Election to the 2017 Coordinated Election.

Last November, Colorado became the first state in the nation to conduct a statewide risk-limiting audit.

- 7) **Governor's Budget and New Voting Machines:** The Governor's 2018-2019 budget proposes \$134 million in one-time General Fund spending to purchase new equipment for county voting systems. This equipment includes hardware, software, and initial licensing to replace existing systems and technology. Under the proposal, counties would provide a dollar-for-dollar match to receive the state funding.
- 8) **Federal Election Security Funding:** On March 23, 2018, President Trump signed the Consolidated Appropriations Act of 2018 (Act)—the omnibus spending bill for the federal fiscal year ending on September 30, 2018. Among other provisions, the Act provided \$380 million in HAVA funding to the EAC to make payments to states for activities to improve the administration of elections for Federal office, including to enhance election technology and make election security improvements. States that receive federal funds are required to provide a match of five percent of the funds received within two years of receiving the federal funds.

According to information from the EAC, California's share of the federal funding is \$34,558,876, and the state's required five percent match totals \$1,727,944. The EAC notes that a joint explanatory statement prepared by Congress to indicate congressional intent on how the funds may be spent specifies that states may use the funds to replace electronic voting equipment that does not have a paper trail; to implement a post-election audit system; to upgrade election-related computer systems to address cyber vulnerabilities; to facilitate cybersecurity training for state and local election officials; to implement established cybersecurity best practices; and to fund other activities that will improve the security of elections for federal office.

- 9) **Arguments in Support:** In support, Secretary of State Alex Padilla writes,

Current law requires that after each election, election officials must test the accuracy of our voting machines by conducting a 1% manual tally. This process

requires election officials to compare results from hand counted ballots, with results from machine tabulated ballots. This process was enacted shortly after election officials started using software to tabulate results from a punch card voting system.

AB 2125 would authorize and mandate election administrators to perform risk-limiting audits of their elections. Risk-limiting audits require hand counting a certain number of ballots to determine whether the reported election outcomes were accurate. The determination of the number of ballots hand counted is based on the winner's margin of victory and errors by the voting machine. Risk-limiting audits have been tested successfully piloted in the State of Colorado and have been recommend for implementation by the Congressional Task Force on Election Security, the Federal Election Assistance Commission, and numerous scholars.

AB 2125 must be amended to address challenges California would face in implementing risk-limiting audits. For instance, most counties do not have voting machines necessary to conduct a risk-limiting audit. Amendments will also be necessary to clarify definitions used in the bill as well as flexibility to accommodate operational challenges. These issues must be addressed but should not postpone the legislation from proceeding.

10) **Related Legislation:** AB 668 (Gonzalez-Fletcher), would place a \$450 million bond act on the June 5, 2018, statewide primary election ballot and authorizes the use of those bond funds for the purchase of specified voting equipment and related technology. AB 668 is pending on the inactive file on the Senate floor.

11) **Previous Legislation:** AB 840 (Quirk), Chapter 820, Statutes of 2017, specified that the one percent manual tally of ballots cast are those canvassed during the semifinal official canvass and does not include provisional ballots. Additionally, AB 840 permitted an elections official, when conducting the one percent manual tally, to select additional precincts, which may include VBM and provisional ballots.

AB 1154 (Nazarian), Chapter 88, Statutes of 2017, prohibits elections officials from randomly choosing the initial precincts or selecting an additional precinct for the one percent manual tally until after the close of the polls on election day.

REGISTERED SUPPORT / OPPOSITION:

Support

California Association of Clerks and Election Officials (sponsor)
League of Women Voters of California
Secretary of State Alex Padilla

Opposition

None on file.

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