

# WISCONSIN ELECTIONS COMMISSION

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## MEMORANDUM

**DATE:** For the September 25, 2018 Commission Meeting

**TO:** Members, Wisconsin Elections Commission

**FROM:** Meagan Wolfe  
Interim Administrator

Prepared and presented by:

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**SUBJECT:** Report and Recommendation Regarding Risk Limiting Audits and Post-Election Audits

## I. PURPOSE

The purpose of this report is to provide a brief overview of the concept known as a "Risk Limiting Audit" as it applies to verifying election results. It includes an overview of the process, a discussion of other states which have implemented it, the feasibility of implementing such audits in Wisconsin, and whether current Wisconsin law allows for the administration of Risk Limiting Audits. Finally, this report will identify alternative election-result audit techniques which have been proposed or implemented in other jurisdictions.

## II. OVERVIEW

### A. What is a Risk Limiting Audit?

A risk limiting audit is a manual review of selected election results to ensure that voting equipment and counting procedures indicate the actual winner of an election<sup>1</sup>. The process is used to ensure that vote totals are not inaccurate due to voter marking errors, equipment malfunctions, programming errors, or fraud. A risk limiting audit is essentially a hand recount and comparison of randomly selected ballots to verify that results are accurate within a pre-determined margin of error. During an audit, results that closely match the reported results will require fewer hand-counted ballots. The audit concludes when a sufficient level of confidence in the results is achieved. Audited contests with wide margins are

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<sup>1</sup> Lindeman, Mark, and Philip B. Stark. "A Gentle Introduction to Risk-Limiting Audits." *IEEE Security & Privacy* 10, no. 5 (2012): 42-49.  
doi:10.1109/msp.2012.56.

expected to require a smaller ballot sampling to verify the winner of the contest was correctly identified. Conversely, contests with smaller margins of victory should result in a larger sampling of ballots for the audit and may require a full hand recount of ballots in some scenarios. An audit is successfully completed when the sampled ballots confirm the original results. Unless the audit proceeds to a full hand recount, a risk limiting audit does not confirm the vote totals or vote margin, as it is designed only to produce a confidence level that the winning candidate was properly determined by the vote tally.

## **B. How Does a Risk Limiting Audit Work?**

There are two forms of risk-limiting audit, the ballot-polling audit and the comparison audit.

### **1. Ballot-Polling Audit**

#### **A. Method Explained**

The ballot-polling audit requires less sophisticated voting equipment programming, but generally requires more manual examination of ballots. Due to the lack of a uniform electronic voting system across the state, this method may be more applicable to the Wisconsin election system as it is not as reliant on output from voting machines when the audit is conducted. This form of audit entails examining a random sample of ballots and, when the reported winner's share of the votes gives sufficiently strong evidence to confirm their victory, the audit is complete. The closer the margin, the more ballots need to be counted manually, considering a larger sample is required to ensure the accuracy of a close race (only a small error in the reported results could change who the winner should have been).<sup>2</sup>

To complete the audit calculation for a two-person race, one randomly selected ballot is examined at a time. It is then applied to a formula. If the ballot indicates the winning candidate, one version or portion of the formula is used. If the ballot indicates the losing candidate, a different version or portion of the formula is used. This formula is applied to each ballot examined and the results of each formula are combined or compared to create a value.<sup>3</sup> This calculated value will indicate that either the audit has not achieved the confidence level and should continue or has confirmed the result and may stop. Ballot selection continues until an indication to stop is reached. At the most basic level, a successful audit reveals that random ballot selection has identified more ballots for the winning candidate than losing candidate, thus confirming the results. If the opposite occurs and more ballots are being pulled showing the losing candidate winning, either the wrong result was reported or the sample is still too small and the audit must continue.

There are different approaches to the ballot-polling audit. Drs. Lindeman and Stark have developed one method and formula nicknamed BRAVO, which they describe in "A Gentle Introduction to Risk-limiting Audits."<sup>4</sup> We attempted to simulate an audit using their formula but were unsuccessful due to its complexity and lack of advanced statistical expertise. Another formula was developed by Dr. Ronald Rivest, called the ClipAudit, a slightly simpler method.<sup>5</sup> An even more basic ballot-polling method was

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<sup>2</sup> Lindeman, 2.

<sup>3</sup> The manual calculations can be substituted by entry into an online calculator. For example, <https://www.stat.berkeley.edu/~stark/Vote/ballotPollTools.htm>

<sup>4</sup> Lindeman, 2

<sup>5</sup> Rivest, Ronald L. "ClipAudit: A Simple Risk-Limiting Post-Election Audit." January 31, 2017. <https://arxiv.org/pdf/1701.08312.pdf>.

developed by Dr. Rivest called the DiffSum risk limiting audit.<sup>6</sup> The DiffSum method checks to make sure the number of sampled ballots for the reported winner is greater than the number for the reported loser.

The “risk limit” is the largest chance that the audit will fail to correct an incorrect outcome by not progressing to a full hand tally. The DiffSum method uses the following formula:  $(a - b)^2 > c(a + b)$ , where:

A = number of votes for winning candidate in the sample,  
B = number of votes for losing candidate in the sample,  
C = 1 + number of digits in the total number of votes cast in that reporting unit (if there were 100 votes cast, C=4, because there are three digits in the total number of votes cast).<sup>7</sup> The value for C comes from Dr. Rivest’s formula as set forth in “DiffSum – A Simple Post-Election Risk-Limiting Audit.”

Let’s assume a race for mayor in a city with 100 votes cast was selected for audit, and there are 55 votes for candidate A and 45 for candidate B.

Let’s assume 15 ballots are drawn for candidate A and 5 ballots are drawn for candidate B and we choose of risk limit of 15% (and therefore we use 4 as the factor C because  $1+3=4$ ). Risk limit values range anywhere from 0% (a full hand tally) to 20% depending on the type of audit conducted and the desired risk. For the ballot polling method selected, we recommend a risk limit of 15%, as described above.

Again, the equation is  $(a - b)^2 > c(a + b)$ .

Substituting the actual results, we determine whether  $(15 - 5)^2 > 4(15 + 5)$ ?

The result is  $100 > 80$  and the number on the left side of the formula is larger than the one on the right. Accordingly, the reported results of the election are confirmed with a 15% margin of error (risk limit). If a smaller risk limit is desired, the formula result will be different and may not confirm the reported election results (see footnote 7, below).

## **B. Is Ballot Polling Feasible in Wisconsin?**

This DiffSum formula and procedures are relatively simple to use and can save time in the event of a large number of ballots cast. In fact, Commission staff proposed this method as an optional pilot program to county clerks for the August 14, 2018 Partisan Primary. As part of the county canvass, the canvass would randomly select two reporting units within the county and audit one or more top-of-the-ballot races. Staff recommended that they then poll the ballots in the selected reporting unit. With a high degree of confidence, this “poll” would confirm that the candidate who originally received the highest number of the votes in that reporting unit did in fact receive the highest number of votes. If it did not confirm the candidate’s totals in that reporting unit, additional rounds of ballot polling or a full hand tally would follow.

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<sup>6</sup> Rivest, Ronald L. "DiffSum – A Simple Post-Election Risk-Limiting Audit." November 17, 2017. <https://arxiv.org/abs/1509.00127>.

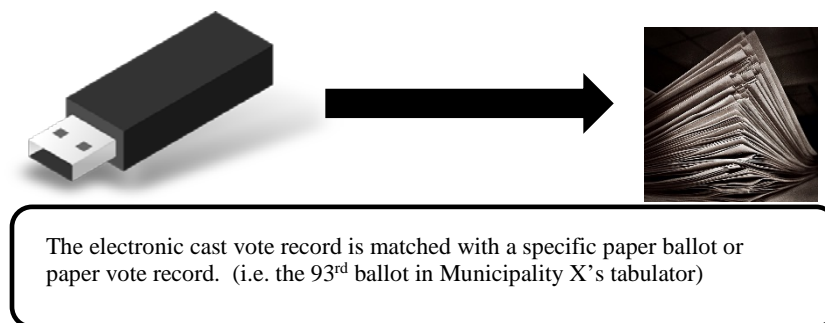
<sup>7</sup> The 1 is the number used in this calculation if you want a 15% risk limit/margin of error. Use 2 for a risk limit of 10% or 3 for 6%.

Unfortunately, none of the counties that piloted post-election audits during their canvass chose to use this option for the Partisan Primary (opting for a full hand tally of selected reporting units instead). In addition, Dr. Philip Stark, an expert in Risk Limiting Audits, has indicated that an audit of a specific reporting unit may confirm the count in a specific reporting unit, but does little to confirm the results of a contest as a whole. He recommended that ballot polling would be more useful if it sampled ballots from the entire universe of ballots cast in a particular race. For example, a Governor's race would require that ballots be sampled across the entire state. At this time, sampling ballots on such a large scale is not feasible (or within the Commission's authority to mandate, as discussed below). However, we believe further study of ballot polling audits would be useful and could be implemented on a smaller scale.

## 2. Comparison Audit

### A. Method Explained

A comparison audit uses batches of randomly sampled ballots and compares the machine tabulation to a manual interpretation of the ballots. If the manual interpretation either confirms or increases the winner's margin (called an "overstatement"), it suggests the electronic equipment has accurately identified the winner. If the winning candidate's margin decreases as a result of the comparison ("understatement"), it suggests an error in the voting equipment's tabulation. To conduct a comparison audit, the voting equipment must have the ability to provide a cast vote record (CVR), that is, an electronic record of how a machine recorded votes for a particular ballot. The comparison audit method further requires that equipment have the ability to match a specific CVR to a specific ballot in a voting equipment's ballot storage bin and it is suggested that each ballot be imprinted with a serial number at the time of tabulation or be kept in order throughout the whole process. Pre-determined random numbers determine which specific ballots from ballot manifests in various jurisdictions should be pulled and examined.



Colorado uses a form of comparison audit and the step-by-step process is instructive. Slightly condensed, the process includes:

- a) Defining the batch size;
- b) Selecting Contests to be Audited and defining the risk limit;
- c) County required to maintain ballots in same order in which they are scanned or imprints ballots with a unique serial number;
- d) County creates a ballot manifest (batch number, number of ballots in batch);

- e) County exports the cast vote record (CVR) and sends to the Secretary of State (SOS) along with ballot manifest;
- f) Secretary of State uses RLA software to randomly select ballots statewide and sends selections to counties;
- g) County Audit boards retrieve the selected ballots and compares to the CVR;
- h) County reports results to the Secretary of State;
- i) Secretary of State determines whether additional auditing is needed and, if so, sends list of additional ballots to retrieve;
- j) County reports results and pertinent data to the Secretary of State at the end of the audit.<sup>8</sup>

## **B. Is Comparison Auditing Feasible in Wisconsin?**

There are multiple obstacles that prevent Commission staff from recommending or pursuing comparison audits at this time. First, as discussed below, the Commission lacks authority to mandate them on a statewide scale. Second, due to the varying types of voting equipment in use it would be highly challenging to issue uniform guidance to the local election officials. In addition, some of the voting equipment may have technical limitations that prevents production of a “cast vote record” or ensuring voter anonymity during the process. Third, because of the multitude of municipalities that use hand-count paper ballots, many of Wisconsin’s municipalities would be left out of a comparison audit altogether. For these reasons, Commission staff does not recommend pursuing comparison audits at this time.

## **III. OTHER STATES WITH POST-ELECTION AUDITS**

While traditional post-election audits have existed to varying degrees for decades, relatively newer risk-limiting audits have been implemented in a handful of states since 2009, when Colorado became the first to pass legislation requiring a risk-limiting audit statewide for future elections. Currently, 35 states and the District of Columbia require a post-election audit of some sort, including Wisconsin. Some states that do not require a post-election audit may have some procedural audit as a part of the post-election process.<sup>9</sup>

### **1. Colorado**

In 2009, the Colorado Legislature passed House Bill 09-1335 requiring all counties to begin using risk-limiting audits (RLAs) following each primary, general, and special election. At the time of passage, risk-limiting audits were to be in place for the 2014 General Election. In 2013, the Colorado Legislature delayed the full implementation of a statewide risk-limiting audit until 2017. The delay came at the request of the counties over “concerns regarding the cost and time restraints of performing a pilot project in their county, along with concerns regarding ballot anonymity during the process.”<sup>10</sup> With the full

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<sup>8</sup> Colorado Secretary of State’s Office. “Comparison Risk-Limiting Audit: Step-By-Step.” March 17, 2017. <https://www.sos.state.co.us/pubs/elections/VotingSystems/riskAuditFiles/ComparisonRLAStepByStep.pdf>

<sup>9</sup> National Conference of State Legislatures. “Post-Election Audits.” September 4, 2018. <http://www.ncsl.org/research/elections-and-campaigns/post-election-audits635926066.aspx>

<sup>10</sup> Election Assistance Commission. “State of Colorado, Risk-Limiting Audit – Final Report.” <https://www.eac.gov/assets/1/28/Risk-Limiting%20Audit%20Report%20-%20Final%20.CO.pdf>

implementation delayed, Arapaho County and the Colorado Secretary of State decided to continue with a pilot program for the 2013 General Election with a modified scope.

Through this trial in Arapaho County, the Colorado Secretary of State identified issues with the lack of technology throughout the state that would allow for local election officials to create a CVR for every ballot. They also recognized that a risk-limiting audit was a new concept and could be a difficult concept to fully understand even for election officials.<sup>11</sup>

Colorado has continued to work closely with the U.S. Election Assistance Commission (EAC) and Dr. Stark to roll out risk-limiting audit trials until the 2017 Fall General Election with 50 of the 56 counties in Colorado certifying the accuracy of their election after the first round of audits in a combination of both ballot-level comparison audits and ballot-polling audits.<sup>12</sup> Colorado has also updated its voting equipment statewide in the time between passage of the original bill in 2009, which has allowed for all but two “legacy counties” to have CVRs for all ballots for the 2018 elections. Colorado’s canvass is conducted pre-canvass.

At Colorado’s invitation, Commission staff attended a demonstration of Colorado’s Risk Limiting Audit for its 2018 Partisan Primary. A brief overview of that site visit can be found attached to this report as **Appendix A**.

## **2. Rhode Island**

Prior to the 2016 General Election, members from the voter advocacy group Common Cause raised issues with Rhode Island’s lack of a post-election audit process. Calls for a post-election audit increased after the 2016 General Election due to allegations of foreign interference nationwide, as well as technical issues in local races that led to ballots being misread by the optical scan voting equipment.<sup>13</sup> The Rhode Island Legislature passed H5704, which granted the Rhode Island Board of Elections the ability to conduct risk-limiting audits on the races of its choosing for all primary, general and special elections starting in 2018. The bill was proposed by the majority party, but received bipartisan support. The passage and signing of H5704 made Rhode Island the second state in the U.S. to require a risk-limiting audit statewide.

Rhode Island will be piloting an RLA for the General Election and is evaluating different types of audits: a ballot polling audit, a comparison audit, or a hybrid of the two systems to best fit the current limitations of their voting equipment. Rhode Island uses the ES&S DS200 scanner and tabulator in its polling places statewide and employs the DS850 high-speed scanner and tabulator to process the absentee ballots that are returned directly to the Board of Elections. The DS200 randomizes the cast voter record, which prohibits the ability for a true comparison audit. (The DS200 is widely used in Wisconsin and has the same limitation). The randomization was put into place by ES&S for voter privacy protection but is purely a result of machine programing. The DS850 does create a sequential cast voter record, which would allow for Rhode Island to conduct a comparison audit. Currently the Board of Elections only uses the DS850 for processing absentee ballots.

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<sup>11</sup> NCSL, “Post Election Audits.”

<sup>12</sup> Colorado Secretary of State. “Risk Limiting Audits.” [https://www.youtube.com/watch?v=2VQd8\\_cPk78&t=1s&index=84&list=WL](https://www.youtube.com/watch?v=2VQd8_cPk78&t=1s&index=84&list=WL)

<sup>13</sup> Rhode Island Dept. of State Elections Task Force. “Elections Administration Recommendations Report.” April 27, 2017  
<http://sos.ri.gov/assets/downloads/documents/ETFRRecommendationsReport4-27-17.pdf>

The Board of Elections has been in contact with ES&S to explore potential software developments that would allow for a sequential cast voter record, thus allowing the potential use of a comparison risk-limiting audit.<sup>14</sup> Currently, the Board of Elections has recruited statisticians from the University of Rhode Island, the Massachusetts Institute of Technology, and Worcester Polytechnic Institute to develop a system that allows output from the current DS200 version to be used to complete a comparison risk-limiting audit, and would also allow for the absentee ballots processed using the DS850 to be used for a comparison audit. Rhode Island's statute authorizing RLAs directs the audit to be conducted pre-certification

### **3. Virginia**

In 2017, Virginia passed S 1254, requiring a risk-limiting post-election audit of all ballots cast with a ballot scanner machine. Currently, the law in Virginia requires that a post-election risk-limiting audit occur after the results have been certified. It went into effect on July 1, 2018.<sup>15</sup> Virginia's audit is conducted after certification and has no effect on election results.

### **4. California**

California has had post-election audit laws on the books since the 1960s. Under current California statutes, all county elections officials are required to randomly select 1% of all precincts after each election and hand count all the votes on all of the ballots for those precincts.<sup>16</sup> In high turnout elections, this can result in the hand counting of tens of thousands of ballots, all without confirming with a high level of confidence that the unofficial outcome of the election is correct.

In 2011, the California Legislature passed AB 2023, which authorized the California Secretary of State to conduct the Post-Election Risk-Limiting Audit Pilot Program. The California Secretary of State had previously received a \$230,000 grant from the EAC to conduct this two-year election audit program during 2011 and 2012. A mix of both primarily urban and rural counties were selected to participate in the pilot program. The pilot program was run alongside the development of risk-limiting audit software that would help localities complete the audit with ease.

Delays in software development led to some localities not continuing with the pilot program for the November 2012 election, and required the California Secretary of State to request an extension of the program, which the EAC granted for 12 months to the end of 2013.<sup>17</sup> There were no statewide nor countywide elections held in California during 2013, but local election officials in Marin County were able to audit a contest from 2012 to test out newly developed software. California's traditional post-election audit is historically conducted during the canvass.

California has been piloting risk-limiting audits and is currently preparing additional test audits after the 2018 General Election.

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<sup>14</sup> Teleconference with Miguel Nunez [Telephone interview]. (2018, March).

<sup>15</sup> Virginia General Assembly. "2017 Session, Chapter 367 § 24.2 -671.1." <http://lis.virginia.gov/cgi-bin/legp604.exe?171+ful+CHAP0367>

<sup>16</sup> California Secretary of State. "Post-Election Risk-Limiting Audit Pilot Program 2011-2013." <http://votingsystems.cdn.sos.ca.gov/oversight/risk-pilot/final-report-073014.pdf>

<sup>17</sup> CA SOS, "Post-Election Risk-Limiting Audit Pilot Program 2011-2013."

## 5. Maryland

In 2016, the State of Maryland replaced its direct-recording electronic voting machines with ES&S products to ensure that voters were casting their ballot with an auditable paper ballot. In addition to bringing in new voting equipment, the Maryland State Board of Elections also piloted its first post-election audit programs. Starting with the 2016 spring primary in Carroll and Montgomery counties, the State Board of Elections conducted a ballot polling audit with risk-limiting principles, a fixed-percentage audit, and an independent automated audit to compare which system would best fit the state's election procedures and affirm election results in a timely fashion.

The ES&S voting equipment used statewide in Maryland creates some obstacles for many types of post-election audits, but especially for a risk-limiting audit.

A fixed-percentage audit requires that votes be audited manually, which was not possible before Maryland transitioned over to the ES&S equipment. The State Board of Elections determined that it would randomly select 1% of precincts in each county, and then manually recount 100% of all ballot images cast in those precincts. One precinct was selected in both counties due to staffing constraints. The fixed-percentage audit confirmed the primary voting system's results, but did not provide the same level of confidence in the total results that the ballot level audit with risk-limiting principles could provide.

The third audit the State Board of Elections performed was an independent automated audit using Clear Ballot Group's ClearAudit software. Since the ES&S equipment does retain a copy of the ballot image, an independent automated audit is a possibility. The State Board of Elections was responsible for transmitting PDFs of all printer-ready primary ballots, the election result reports generated by the primary voting system, and unencrypted images of all voted ballots from the primaries. Clear Ballot Group then processed this information into files to create a file of the ballot images that could be run through the ClearAudit software and produce a total based off of how the voting equipment would have read the ballot. Clear Ballot Group then conducted an independent audit by comparing the reported vote totals from the State Board of Elections against the totals generated from the ballot images from Clear Ballot Group and confirm their accuracy. The results of Clear Ballot Group's independent automated audit confirmed all of the results reported by the primary voting system.<sup>18</sup>

In order to fulfill the requirements for all three audits, the counties were told to export the cast vote record broken downs by party, export and sort the ballot images by precinct and party, and also have a computer workstation ready for the independent automated audit.

After conducting all three audit types on the three selected contests, the State Board of Elections determined that it took approximately 4 hours for election officials to conduct a ballot polling audit using risk-limiting principles, 1.5 hours to complete a fixed percentage audit, and 11.16 hours for an independent automated audit.<sup>19</sup>

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<sup>18</sup> Maryland State Board of Elections. "Post-Election Tabulation Audit Pilot Program Report."

[http://www.elections.state.md.us/press\\_room/documents/Post%20Election%20Tabulation%20Audit%20Pilot%20Program%20Report.pdf](http://www.elections.state.md.us/press_room/documents/Post%20Election%20Tabulation%20Audit%20Pilot%20Program%20Report.pdf)

<sup>19</sup> Maryland State Board of Elections. "Post-Election Tabulation Audit Pilot Program Report."

[http://www.elections.state.md.us/press\\_room/documents/Post%20Election%20Tabulation%20Audit%20Pilot%20Program%20Report.pdf](http://www.elections.state.md.us/press_room/documents/Post%20Election%20Tabulation%20Audit%20Pilot%20Program%20Report.pdf)



After comparing the time and cost associated with the three audits, the Maryland State Board of Elections determined that an independent automated audit through Clear Ballot Group's ClearAudit was the best option for the statewide audit in the 2016 General Election. Although the longest and most expensive option, Maryland officials chose ClearAudit because it provided an audit entirely independent of the primary voting system, and it eliminated any potential for human error. ClearAudit provided a full audit of every ballot cast in the primary in two business days.

The chief drawbacks of a fixed percentage audit, although straightforward, was that it failed to produce a level of confidence in the outcome of the election on a contest-wide scale. In a state with a large difference in population county-by-county, having an equal chance of selecting a precinct with a small number of voters as compared to a precinct in a larger county with a larger number of voters means that it is difficult to plan resources for the audit.

Maryland decided against a ballot polling audit with risk-limiting principles due to the unknown qualities that come with a risk limiting audit. Depending on the margin of the contests being audited, a ballot polling audit with risk-limiting principles could result in a full hand recount. In addition to the potential for a full manual re-tabulation, the State Board of Elections determined that election officials could not begin the planning process for an audit. While cost effective in many situations, Maryland viewed the potential for a full manual re-tabulation as a disqualifying disadvantage. Maryland conducts a procedural audit pre-certification and then a manual audit after certification that has no effect on election results.

#### **IV. LEGAL AUTHORITY FOR AUDIT IN WISCONSIN**

##### **A. Current Audit Statutes and Protocol in Wisconsin**

The following is a brief re-cap of Wisconsin's statewide post-election voting equipment audit, its limitations, and staff's recommendation that counties perform separate canvass-level audits. Wisconsin statutes require that a voting equipment audit take place to evaluate the performance of each type of voting system after each General Election:

**7.08 (6) ENFORCEMENT OF FEDERAL VOTING SYSTEM STANDARDS.** Following each general election, audit the performance of each voting system used in this state to determine the error rate of the system in counting ballots that are validly cast by electors. If the error rate exceeds the rate permitted under standards of the federal election commission in effect on October 29, 2002, the commission shall take remedial action and order remedial action to be taken by affected counties and municipalities to ensure compliance with the standards. Each county and municipality shall comply with any order received under this subsection.

The Wisconsin Elections Commission appears to have broad authority to administer a post-election voting equipment audit which is reflected in the evolution of the audit since it was first put in place in 2006. In 2006, the audit was conducted by staff of the former State Elections Board.<sup>20</sup> In 2008, due to the high cost of sending staff to municipalities, the audit program was reformed so that municipal clerks

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<sup>20</sup> Wisconsin Government Accountability Board. "Voting Equipment Audit Report." March 2015.  
[http://elections.wi.gov/sites/default/files/page/2014\\_voting\\_equipment\\_audit\\_board\\_report\\_pdf\\_13206.pdf](http://elections.wi.gov/sites/default/files/page/2014_voting_equipment_audit_board_report_pdf_13206.pdf).

would conduct the audit locally with assistance from the G.A.B. staff. In 2012, the G.A.B. further reformed the program to double the amount of reporting units to be audited to 100.

Current practice involves the random selection of reporting units of Wisconsin until a minimum of five reporting units is selected for each type of voting system used. Voting system audits previously have been conducted with adequate public notice and occurred no later than two weeks after certification of election results. Auditors manually count votes according to how the machine would have counted votes if programmed properly. Voter intent is not the standard used to evaluate voting equipment performance during the audit. Results are reported to the WEC. For the 2016 Audit, the WEC reimbursed up to \$300 per reporting unit for costs associated with the audit.<sup>21</sup> For 2018, WEC staff will be recommending increasing the number of reporting units that are sampled. This voting equipment audit is aimed at evaluating the error rate of electronic voting equipment in use throughout Wisconsin and does not have, as its primary goal, the verification of results or the correction of incorrect election results. While municipalities may choose to complete the voting equipment audit prior to certification of official results, this audit is not statutorily required to be completed prior to certification.

## **B. Limited Scope of WEC Authority**

The WEC has the authority to restructure the scope of the voting equipment audit. However, it would be limited to the once-every-other-year General Elections. The G.A.B. had already extended its audit by doubling the number of reporting units which were subject to the audit in 2014. Conceivably, an audit could be extended statewide as the statute has no upper limit on the number of ballots or machines audited. Furthermore, the voting equipment audit previously has been conducted up to two weeks after certification of election results. However, there is no statutory provision that would prevent the audit from being conducted earlier, such as before or in conjunction with the canvass.

The statute further states that the Commission shall take and order remedial action to ensure compliance with federal voting standards. Among those standards are the requirements that equipment “record each vote precisely as indicated by the voter and produce an accurate report of all votes cast.”<sup>22</sup> Remediation of machine errors might include re-programming or repairing the equipment so that it gives an accurate count. If there is a problem with the equipment, this could potentially correct an issue before results are verified to the WEC. While this process is aimed at improving the voting equipment count, the statute does not appear to provide explicit authority for the audit to progress to a full hand-recount, such as is a possibility with risk-limiting audits described above.

## **C. Providing Guidance to Counties on Post-Election Audits with Ability to Correct Results**

While current law allows for a form of post-election voting equipment audit that requires local participation, a change in law will likely be required in order to fully implement a risk limiting audit at the state level. Legislation would also be necessary in order to require that any such audit that proceeds to a full hand recount shall alter the official results.

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<sup>21</sup> Wisconsin Elections Commission. “2016 Voting System Audit Requirements.” [http://elections.wi.gov/sites/default/files/memo/20/2016\\_audit\\_procedures\\_pdf\\_15417.pdf](http://elections.wi.gov/sites/default/files/memo/20/2016_audit_procedures_pdf_15417.pdf)

<sup>22</sup> U.S. Election Assistance Commission. “Voluntary Voting System Guidelines Overview (1.1).” 2015, 16. <https://www.eac.gov/voting-equipment/voluntary-voting-system-guidelines/>.

Despite the limitation of implementation on a statewide scale, Commission staff does believe that counties have the ability to voluntarily implement forms of post-election audits as part of their county canvass in fulfilling their mandate to examine and ensure election results are free of defects:

Wis. Stat. § 7.60

(3) CANVASSING. Not later than 9 a.m. on the Tuesday after each election the county board of canvassers shall open and publicly examine the returns. If returns have not been received from any election district or ward in the county, they shall dispatch a messenger and the person having them shall deliver the returns to the messenger. If, on examination, any of the returns received are so informal or defective that the board cannot intelligently canvass them, they shall dispatch a messenger to deliver the returns back to the municipal board of canvassers with written specifications of the informalities or defects and command them to immediately complete the returns or remedy the defects in the manner required and deliver them to the messenger. Every messenger shall safely keep all returns, show them to no one but the municipal clerk and board of canvassers and deliver them to the county clerk with all possible dispatch. To acquire the necessary full returns and remedy any informalities or defects the county board of canvassers may adjourn not longer than one day at a time nor more than 2 days in all.

As a result of the determination that the county canvasses have the authority to conduct such audits as an optional part of their canvass, WEC staff provided guidance to clerks prior to the Partisan Primary with respect to randomly sampling reporting units, and procedures for conducting audits. We have prepared revised draft guidance to clerks for conducting post-election audits as part of the county canvass, and attached it to this Report as **Appendix B**. The guidance we prepared before the Partisan Primary included an option for auditing two randomly selected reporting units within a county either by completing a full-hand tally or by conducting ballot polling within that reporting unit, similar to a Ballot Polling RLA. We have removed the ballot polling option for the upcoming election from the guidance in order to study the method further and solicit feedback from stakeholders.

## V. COULD RLA WORK IN WISCONSIN?

A key part of a prompt risk-limiting audit is the ability to manually interpret the ballots, and, in the case of a comparison audit, in their original positions in the audit trail. This requires some sort of paper vote record that details how the voter decided to cast their ballot. In the State of Wisconsin, a majority of voters cast a traditional paper ballot, either as a hand-count ballot or on an optical scan-capable ballot. Voters who use accessible touchscreen voting machines are provided with a voter verified paper record (sometimes called a Voter Verifiable Paper Audit Trail, or VVPAT) that they that they are able to use to verify their selections before submitting their electronic ballot on the machine. When it comes to being able to manually interpret ballots cast in an election, examination of a paper ballot or VVPAT is possible in every municipality in Wisconsin. While a risk-limiting audit may be possible in Wisconsin, the coordination of such a project shortly after Election Day may not be practical due to the number of different voting systems used across the state and the decentralized nature of the Wisconsin election system.

### A. Hand Count Ballots

As stated in Wisconsin Statutes § 5.40(1), every municipality in the state that has a population of over 7,500 people is required to use voting machines or an electronic voting system in every ward throughout

the municipality for every election.<sup>23</sup> Many municipalities fall below this population requirement, and therefore are not required to use an electronic tabulator to count their ballots.<sup>24</sup> In order for a comparison risk-limiting audit to happen statewide, non-electronic voting municipalities would need to either purchase an electronic voting system that creates a cast vote record or be exempted from a comparison audit altogether.

For non-electronic voting machine municipalities, a ballot polling audit would be possible. As detailed earlier in the report, a ballot polling audit does not require extensive technology, but it does require more manual examination of the ballots.

## **B. Voting Equipment**

Before any voting system is used in the State of Wisconsin, it has to be approved by the Wisconsin Elections Commission.<sup>25</sup> As of March 2018, a majority of municipalities use only two manufacturers for their non-accessible voting equipment, both employing machines that create a randomized CVR. A comparison audit cannot be conducted when the CVR is randomized and no imprinting is done on the ballot. Therefore, comparison audits may not be possible in these municipalities. Eliminating the randomization feature of the voting equipment would require re-programming, testing, and re-certification on both the state and federal level.

## **C. County Reimbursement**

Staff recommends that counties be reimbursed for reasonable costs associated with a voluntary post-election audit, similar to the reimbursement allowed for the voting equipment audit. Specifically, staff recommends reimbursing up to \$300 per county for actual costs incurred (above and beyond the costs of the county canvass). Many counties provide their canvass members and assisting personnel a flat rate for participating in the canvass and some have expressed an unwillingness to participate in an audit as it would extend the time and personnel costs associated with the canvass. The EAC and several other federal election partners have recommended audits as part of an effort to bolster election security. Therefore, staff believes that audit reimbursement to the counties would be an appropriate use of the 2018 HAVA Election Security Funds. While staff cannot guarantee that such funding will be available in future election cycles, reimbursement to counties in 2018 may encourage greater participation in conducting the voluntary post-election audit and generate useful feedback for developing future audit processes.

# **VI. CONCLUSION**

The purpose of this report is to study the feasibility of Risk Limiting Audits in Wisconsin. Commission staff conducted research and examination of the practical realities inherent in Wisconsin's de-centralized elections system, including the varying types of voting systems and methods by which ballots are cast. We believe the Risk Limiting Audit – Comparison Audit method is not possible at this time. We believe the Risk Limiting Audit – Ballot Polling method, or a variation thereof may be appropriate for further study. Such a method could conceivably be employed across municipalities using any type of voting

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<sup>23</sup> Wis. Stat. § 5.40

<sup>24</sup> As of September 2018, approximately 772 municipalities either offer or exclusively use hand-count paper ballots.

<sup>25</sup> Wisconsin Elections Commission. "Voting Equipment." <http://elections.wi.gov/elections-voting/voting-equipment>

equipment or hand-count paper ballots. However, to achieve the maximum utility of confirming a contest's overall result, ballots would need to be sampled from all ballots cast within a given contest. Given the limits of the Commission's legal authority to mandate audits, it would be difficult to employ these methods to effectively confirm the results of a statewide contest. Staff believes further piloting and experimentation of the Ballot Polling method may be appropriate for county canvasses for contests contained completely within a county or one of that county's municipalities.

For the November 6, 2018 General Election, staff wishes to again provide guidance to county clerks that post-election audits may be conducted as part of the county canvass as well as specific guidance related to conducting such audits via full hand tally of randomly selected reporting units. (See **Appendix B**). Staff also intends to continue to study RLAs and solicit feedback from clerks. Given the limitations of existing law and the time constraints involved in the county and state canvass certification, staff believes the Commission may encourage counties to conduct post-election audits and to do so prior to certifying official county results, but that the Commission lacks the authority to require such audits at this time.

**Recommended Motions:**

1. The Commission directs staff to issue guidance related to post-election audits for the 2018 General Election as described on Appendix B. The Commission encourages county boards of canvassers to consider performing such post-election audits after the General Election, and to do so prior to certifying official county canvass results, if county resources and certification deadlines permit.
2. The Commission authorizes reimbursement to the counties for conducting a post-election audit up to \$300 per county for actual costs incurred. Any actual costs incurred over \$300 may be submitted and considered, if funds are available.