

Report on Montana Election Security
Prepared for the 2019 Montana Legislature
By the League of Women Voters Montana
December 17, 2018

INTRODUCTON

Recent news that foreign governments tried to tamper with state election systems in the United States included an attempt reported by the Montana Secretary of State.¹ Other groups raise concerns about voting irregularities. In light of these concerns, Montana voters across the state are asking:

“How do I know my vote is safe?”

Undermining public confidence in our voting system undermines our democratic process. The League of Women Voters has been educating voters and defending voter rights since its founding in 1920. The intent of our 2019 report is to offer information to Montana voters and legislators on the security of Montana’s election process by comparing Montana’s election process with best practices in comprehensive election auditing and cyber security.

SUMMARY

County-level election administrators administer Montana’s elections, one in each of Montana’s 56 counties. Election administrators act under the guidance of the Montana Secretary of State and Montana state statutes. As demonstrated in the report below, Montana already implements many of the best practices identified by election experts.

The League of Women Voters believes that Montana’s election process can be made more secure by taking the following steps:

- 1. Modernize Montana’s voter registration system and keep it updated.** State election officials are cooperating with the Department of Homeland Security to assess the level of risk that exists in the present system and determine any need to upgrade or replace it. This process should include implementing secure online voter registration.
- 2. Implement more secure systems for overseas voters.** Montana allows voting over the Internet for those who are overseas, a practice that experts say is not safe, even using encryption.

¹ Montana Secretary of State Cory Stapleton, “Montana Elections and the Russians,” electronic newsletter, July, 2018 edition.

3. Implement state-of-the-art risk-based auditing. Risk-based audits that randomly select individual ballots for auditing are more statistically reliable than the current practice of randomly selecting audit units. To check for human error, all counties should conduct risk-based audits, even those counties that initially hand-count ballots.

4. Update or Replace Montana's AutoMark voting machines. Montana's aging stock of AutoMark ballot marking machines is becoming problematic for both the voters who use these machines and for election officials.

5. Remove exact birthdate from the voter roll information available to the public, replacing it with birth year or age. Exact date of birth is a key data point used for identity theft and fraud. Although exact date of birth may be available through other sources or the Dark Web, it should not be easily available from Montana's voter rolls.

SOURCES OF BEST PRACTICES AND RESEARCH USED IN THIS REPORT

In 2008, the League of Women Voters US (LWVUS) convened a task force of election officials and experts from around the country to report on best practices to ensure secure and accurate voting systems. The Task Force report, *Report on Election Auditing*², was issued in 2009 by the LWVUS. Subsequently, the LWVUS submitted recommendations to the Presidential Commission on Elections in 2013. Together, these two documents contained the results of extensive study by the LWV on best practices for the election process. The subject of cyber security was further addressed by the Center for American Progress (CAP) in February of 2018, when it issued *Election Security in All Fifty States*³. The CAP report detailed best practices to guard against cyber attacks. In addition to these written reports, the LWV Montana also completed a survey through the Montana Association of Clerks and Recorders of all 56 counties' election administrators in the spring of 2018. The Montana League of Women Voters extends Special Thanks to the Montana Association of Clerks and Recorders for taking time during the busy pre-primary election season to participate in the 2018 survey.

² Report on Election Auditing, League of Women Voter US, special report published 2009 by LWVUS, 1730 M Street NW, Suite 1000, Washington, DC 20036-4508

³ Election Security in All Fifty States, By Danielle Root, Liz Kennedy, Michael Sozan, and Jerry Parshall, Center for American Progress. Posted on February 12, 2018.

Link:

<https://www.americanprogress.org/issues/democracy/reports/2018/02/12/446336/election-security-50-states/>

The nonpartisan document that follows, prepared by the League of Women Voters Montana, offers a brief summary of these reports and the League's Montana survey. The document also outlines current practices that safeguard the state's election process and identifies steps that can be taken to further improve election security.

BEST PRACTICES FOR DESIGNING ELECTION SYSTEMS

The League of Women Voters believes that an election system should **(1)** allow voters to employ a verifiable paper ballot or other paper record, said paper being the official record of the voters intent; **(2)** allow voters to verify during the voting process, either by eye or with the aid of suitable devices for those who have impaired vision, that the paper ballot/record accurately reflects his or her intent; **(3)** provide ways that vote totals can be verified by an independent hand count of the paper ballot/record; and **(4)** conduct routine audits of the paper ballot/record in randomly selected audit units that are conducted in every election, with results published by the jurisdiction.

How Does Montana Compare?

Montana's election system consists of county election officials and 56 election administrators, one in each county, who conduct elections with the guidance of the Montana Secretary of State. Montana's election system incorporates each of the components recommended by the LWVUS in the statement above.

(1) Montana state law requires that all voting be done with paper ballots and that these ballots be identical to protect voter secrecy.

(2) Montana voters can verify their choices on paper ballots. Those who vote at the polling place may check their ballots before depositing them into vote-counting machines or ballot collections receptacles. Those who vote absentee can verify their intentions by marking their paper ballots at home and checking their ballots before securing them in the secrecy envelopes provided.

(3) Vote totals can be verified by a hand-count of the paper ballots. Montana's less populous counties tally the vote count by using a hand-count. Montana's more populous counties verify

the results of machine-tallied vote counts by doing hand-count totals of selected races.

(4) After each federal election, the Secretary of State randomly selects precincts with machine tallies to be audited. Counties conduct the hand-count audits. The Secretary of State publishes audit results.

BEST PRACTICES FOR ASSESSING OPERATION OF VOTING SYSTEMS

The second critical area for election security requires rigorous oversight to assure that the election process described in rule and law functions as it should. Assessments must occur before, during, and after Election Day.

A. ASSESSING BEFORE ELECTIONS OCCUR

BEFORE ELECTIONS: Voter Registration

Voter registration lists have been targets of hacking attempts. To prevent and detect unauthorized access and data manipulation of voter registration systems, states may take six major actions: **(1)** control who has access to allow authorized persons only; **(2)** create a system to track who logs in and who makes modifications; **(3)** build intrusion detection capability to flag unusual entries; **(4)** conduct periodic analysis to detect weaknesses; **(5)** cooperate with the Department of Homeland Security to identify and assess threats; and **(6)** provide cyber security training to county election officials. In addition, the League of Women Voters US recommends that states adopt secure on-line voter registration, electronic streamlining of voter registration data, and portable statewide voter registration.

How Does Montana Compare?

(1) Montana's voter registration system provides controls to ensure that only authorized personnel have access to the database.

(2) Montana has login capabilities to track modifications and who made them.

(3) The state's system includes an intrusion detection system that monitors incoming and outgoing traffic for irregularities.

(4) Montana officials perform regular vulnerability assessments and security testing on its voter registration system.

(5) Montana officials work with the Department of Homeland Security to assess risks and threats.

(6) Montana regularly provides cyber security training to county election officials.

Montana voters must register before voting. Only citizens of the United States who have lived in Montana for at least the past 30 days are eligible to register.

Voter registration enables the Secretary of State and county election officials to maintain a statewide database of all registered voters. So that no one can vote more than once in any single election, officials use the database to prepare accurate voter lists for all Polling Places. Montana does not have automatic and on-line voter registration or portable statewide registration. Voters can go to the following Secretary of State website to obtain a voter registration form and to check their individual voter registration status at any time:
<https://app.mt.gov/voterinfo/>

All 56 county election administrators responded that the current Montana Votes system for voter registration meets their needs. Twenty-five percent of counties responded that incomplete voter registration forms were a problem. All of these counties have a follow-up process for contacting prospective voters with incomplete forms.

BEFORE ELECTIONS: Protecting the Privacy of Registered Voters

Release of voter roll information to the public has come under scrutiny for putting voters at risk of identity theft. Best practices **(1)** recognize the balance between transparency in allowing access to voter roll information for non-commercial and campaign purposes and **(2)** withholding sensitive voter information that contributes to fraud and identity theft, including Social Security numbers, state Identification numbers and exact date of birth.

How Does Montana Compare?

(1) State law limits release of voter roll information to non-commercial purposes only. For a fee, candidates running for office,

political parties, organizations doing research on voting, and anyone who attests that the data is for non-commercial purposes can obtain data from Montana's voter registration files.

The Secretary of State's office contracts with a private firm to handle requests and track statewide who has obtained voter role information. For a fee of \$5,000, individuals and organizations can pull publicly available statewide voter list data as often as they wish for a year. In 2017 the most frequent user obtained downloads of statewide voter roll information 82 times, with 17 between mid-June and late December, after the special election for U.S. Representative. County election administrators may also provide county-level lists of voter information for non-commercial uses. Thirty-six counties keep logs of who has received county voter roll lists.

(2) State law prohibits the release of Social Security numbers, Driver's license and state ID numbers, and provides for withholding additional information for those at risk of potential harassment, such as police officers, judges, and those with restraining orders. Montana law allows release of elector's exact birthdate.

BEFORE ELECTIONS: Testing and Transparency in Monitoring Machines Used in the Election Process

Malfunctions or manipulation of voting equipment could affect results on Election Day. To prevent machine failure: **(1)** use only machines that have been certified by the US Election Assistance Commission as meeting high standards for performance, reliability, and security; **(2)** conduct logic and accuracy tests before Election Day to ensure that all machines are working properly; **(3)** document the testing results; and **(4)** ensure transparency in the testing process by allowing the public to observe.

How Does Montana Compare?

(1) The Secretary of State maintains a list of equipment approved for use in Montana elections. Equipment on the Secretary's list complies with standards issued by the federal government. County election administrators may use only equipment that is on the Secretary's list.

(2) By Montana law, election officials must test all vote-counting machines within the 30 days prior to an election.

(3) Testing must be documented, and officials must verify that the election equipment used (hardware and software) is the same as that verified during the pre-election testing process. After testing, vote-counting machines are sealed until Election Day.

(4) Testing is open to observation by the public.

BEFORE ELECTIONS: Physical Protection of the Voting System

To physically protect machines used in the voting process, counties must: **(1)** restrict unauthorized access to voting equipment; **(2)** secure equipment during transit and setup at polling locations; and **(3)** prevent exposure of equipment to the Internet or local networks.

How Does Montana Compare?

(1) Only county officials and sworn Election Judges operate voting equipment.

(2) Only authorized officials or Election Judges test or transport vote-counting equipment and supplies.

(3) Once software is installed and tested, vote-counting machines are sealed until polls close. Voting equipment, including vote-counting machines, cannot be connected to networks or the Internet.

BEFORE ELECTIONS: Education and Training

To ensure fair and accurate elections, both voters and election workers need to understand the voting process. Best practices include: **(1)** education of voters to be sure they understand the voting process; and **(2)** education of poll workers to ensure election procedures and rules are followed.

How Does Montana Compare?

(1) Prior to every federal election, the Montana Secretary of State publishes voter information pamphlets and sends a

pamphlet to the residence of each registered voter. The pamphlet is also available online. The pamphlet explains procedures for voter registration, alternate ways residents and non-residents may vote, and types of acceptable identification at the polls. The Voter Information Pamphlet describes assistance available for those with disabilities and lists deadlines for registration and voting. The pamphlet also includes all state ballot issues, providing arguments for and against each.

Instructions for ballot completion are posted in voting booths and sent out with absentee ballots.

(2) The Montana Secretary of State provides training for county election administrators and regularly updates online handbooks and training videos for election administrators and election workers. County elections officials provide training for all of their Polling Place workers.

Survey responses indicated that 50 of the 56 counties have 10 voters or fewer who come to the polls without appropriate identification (ID). If the ID cannot be verified, voters are allowed to vote provisional ballots and bring in ID the next day. All counties provide election judges specially trained in administering provisional ballots.

B. ASSESSING SECURITY ON ELECTION DAY

ON ELECTION DAY: Before Polls Open

Best practices ensure that each polling place: **(1)** functions well, and voters do not experience undue delays; **(2)** offers adequate technical backup support; **(3)** provides sufficient equipment, poll workers, and backup support; and **(4)** provides a secure, monitored absentee voting ballot drop-off.

How Does Montana Compare?

(1) Polling places must be set up and clearly marked with adequate signage before polls open. By 7:00 AM, trained, sworn Elections Judges with visible identification must be at assigned

stations. Voting machines must be set up and tested, with privacy stations available to all voters.

(2) County Elections Offices provide election judges with access to staff support or consultation about problems arising on Election Day, and make technical staff available throughout the day.

(3) Montana provides modest hourly pay to ensure that Polling Places will have adequate numbers of trained Election Judges.

(4) When Polling Places open, they must provide a clearly marked, secure receptacle for absentee ballots voters bring to Polling Place.

Seventeen Montana counties indicated that in 2016-2017 AutoMarks caused difficulties because the machines are old and hard to keep in good repair. Eight counties indicated they had difficulties recruiting enough election judges. Seven counties indicated they had problems with vote counting machines, due in part to paper jams as the ballots were feeding through the machines.

ON ELECTION DAY: While Polls are Open

(1) Best practices call for officials to maintain logs for every voting machine, noting problems, maintenance completed, and who had access to the machines. **(2)** Experts urge elections officials to track incidents and wait times on Election Day.

How Does Montana Compare?

(1) Election Judges work in teams to open and close voting machines and ballot boxes and to transport ballots and voting data. They carefully adhere to written procedures for opening and closing polls, and sign their names in witness of lawful opening and closing of all vote-counting machines. Polling Place judges report technical problems to Elections Office support personnel.

(2) Many counties request Chief Election Judges to file reports that may include incidents and wait times on Election Day. Some counties hold debriefings after an election

C. ASSESSING SECURITY AFTER THE ELECTION

AFTER THE ELECTION: Auditing of Post-Election Procedures and Results

Best practices call for procedures to maintain security as polls close: **(1)** rules for handling ballots and vote tallying machines; and **(2)** methods to account for all ballots in each county.

How Does Montana Compare?

Montana provides written procedures for closure of polling places.

(1) Election Judges follow set procedures for closing the Polling Places and all equipment. Two judges witness the closing of all M100 and AutoMARK voting machines, documenting each seal as the seal is added or removed. Two judges witness the reconciliation of data from the M100 machines and the data collected by Poll Book Judges. Two election judges transport documents and memory card data from Polling Places to county elections headquarters. Ballot boxes are similarly sealed and documented.

(2) Election Judges separate and deliver to the County Elections Office provisional ballots, absentee ballots, machine-counted ballots, and ballots that require hand counting. They document spoiled ballots and replacement ballots. They compare the numbers of ballots cast with machine vote tallies and report all findings.

The League of Women Voters Montana fielded 16 election observers across the state during the 2018 primary election. These observers took note of compliance with election procedures. No discrepancies were found.

AFTER THE ELECTION: Return of Voted Paper Absentee Ballots:

Emails and the Internet are not secure mechanisms for absentee voting. Experts say that: **(1)** domestic absentee voters within the US should use paper ballots returned by mail or delivered to the correct County Elections Office; and **(2)** overseas voters, including military voters, should not return ballots over the Internet, even with encryption.

How Does Montana Compare?

- (1) Montana uses paper absentee ballots. A voter can check the status of their own absentee ballot on the Secretary of State's website: <https://app.mt.gov/voterinfo/>
To protect the integrity of absentee ballots, county election officials check signatures on the absentee ballots against signatures on record. Survey responses confirmed that all responding counties check signatures on every absentee ballot. All counties responded that the secrecy of ballots is preserved by not allowing the same person to open the signature envelope and secrecy envelope at the same time. Montana cannot guarantee, however, that those receiving Montana absentee ballots vote only in Montana.
- (2) Montana allows military and other overseas voters to vote via encrypted email through the Secretary of State's Office, or via paper ballot or email to the counties.

AFTER THE ELECTION: Guidelines to Conduct Audit of Election Outcomes

Post-election outcome audits check election results, uncover discrepancies due to any cause, and provide data for improvement of the voting system/experience.

Best practices call for audit procedures of election outcomes to be available in advance of elections. A good post-election audit law requires that: **(1)** ballots are organized in similarly-sized audit batches; **(2)** batches to be audited are selected randomly by a process open to the public; **(3)** all ballot types in the election are kept for audit (absentee, provisional, overseas, regular); **(4)** all ballots in the selected batches are hand-counted; **(5)** procedures for hand-counting are defined in advance; **(6)** tolerance level for discrepancies are defined in advance; **(7)** next steps to take, if discrepancies exceed the tolerance level, are defined in advance; **(8)** hand-count audit tabulations are open to the public; **(9)** audit results are published and available to the public; and **(10)** audits are done in a manner that preserves the secrecy of the individual ballot.

How Does Montana compare?

(1) Montana law requires that audits be organized by precinct. Audits examine one statewide office race, one federal office race, one legislative office race, and one statewide ballot issue if one exists, in precincts for which ballot scanning vote tallying machines were used to tally the vote.

(2) By law, Montana audits whichever is larger: a minimum of 5% of all precincts or 1 precinct per county. The state chooses precincts to audit through a random selection process using a 10-sided die in a process that is open to the public.

(3) All ballot types are included in the random selection process.

(4) By law, all audits are done using hand counting. Those counties that tally votes initially using the hand-count method are exempt from audit, as they have already done the hand-count procedure.

(5) The procedure for hand counting is laid out in the Election Judge handbook. One person reads the ballot aloud, while two others independently record the votes. The totals for each must match; if not, the hand-count is done again. Audits are open to the public.

(6) The tolerance for discrepancy between the machine count and the hand count is set in law at .5% or 10 votes, whichever is larger.

(7) If tolerance levels are exceeded, three more precincts are audited. These precincts are pre-selected by the Secretary of State at the same time as the original precincts using the same random selection process.

(8) The audit of the three additional precincts is also open to the public.

(9) Results of all audits are published on the website of the Secretary of State and are also posted at county election offices. Election outcomes are not official until the audits and canvass have been

completed. The Secretary of State publishes the official outcome of the election 2 weeks after the election.

(10) State law mandates maintaining the secrecy of each ballot.

The Montana Legislature, the Secretary of State, and the counties may review procedures, working independently or collaboratively to improve the voting system. Montana law requires that such political processes include options for involvement of the public.

County survey responses from the 39 counties required to conduct audits indicate that for 32 counties, typical post-election audits take 4 hours or less. Five counties indicated audits take from 5-8 hours, and two counties indicated audits take from 12-16 hours. Election officials also complete a canvass, accounting for every ballot cast and recorded, and correcting errors, if any. If races are challenged, paper ballots exist to support necessary recounts.

A Brief Explanation of Risk-based Audits

The state of the art for auditing election outcomes is risk-based auditing, a statistical method of analyzing and selecting audit units to minimize costs while maximizing the accuracy of election outcomes.

Risk-based audits are more efficient in limiting the amount of ballots audited, but are complex in their calculation. The perceptions of the public are important, so the choice between risk-based and simple rule may be difficult. Simple rules increase public understanding but may also significantly increase the number of ballots to be hand-counted while proving less statistically sound. The following food example from Philip Stark, Department of Statistics, UC Berkley, explains the difference between risk-based and simple rule random choice selection of audit units.

“Suppose there are 100 bags of 100 jelly beans each, with some bags having a mixture of flavors and others consisting of a single flavor only. Suppose also that each bag is covered with aluminum foil, so that nobody can tell which is which by looking at the bags. I love coconut jellybeans and I want to estimate the number of coconut beans in all 100 bags.

One option would be to choose a bag at random, open it, and count all the beans. I could then estimate the total number of coconut beans by multiplying the number in that bag by 100. If I chose a bag that contained only coconut beans, I would estimate that all 10,000 beans were coconut; if the bag consisted of entirely a different flavor, I would estimate that none of the 10,000 beans was coconut; and if I picked a mixed bag, I would assume the ratio of all 10,000 beans was the same as that in the bag I had picked.

Suppose instead the jellybean bags are all opened by someone else, dumped into a large pot, and stirred well. Suppose I then choose 100 beans at random from the large pot and count the number of coconut beans in that group. The estimate I get in this case will be far more reliable than the estimate I would get by looking at the contents of a single bag, even though in both cases I'm examining 100 jellybeans. To get a similarly reliable estimate on the number of coconut jelly beans in all the bags by drawing individual bags at random, I would have to examine far more bags and count many more jelly beans."⁴

In the example above, the risk-based method mixes all the jellybeans together and randomly selects 100. Translating this to ballots, the ballots are not literally mixed together; rather the ballots to be audited are chosen via a random number generator.

Rather than the number of votes cast, the most significant factor in initially identifying how many ballots to audit is the percentage margin of the winner. For example, in a risk-based audit at 1% tolerance level (i.e., a 99% certainty that the outcome is correct), if the winner has 60% of the vote, then a risk-based audit would initially need to hand-count 78 randomly selected ballots. However, if the winner received 52% of the votes, the number of ballots to be hand-counted goes up to 3840 or all of the votes cast, whichever comes first. To place this in a Montana context for the 2016 general election, there were 29 counties that had fewer than 3840 voters.

STEPS TO FURTHER REDUCE RISKS IN MONTANA'S ELECTION SYSTEM

In addition to the best practices outlined above, another recent study of US election systems concurs with several of the steps the League of Women Voters Montana recommends below. In 2018 The National Academies of Science, Engineering and

⁴ Stark, Philip B. 2010 Risk-limiting vote-tabulation audits: The importance of cluster size. *Chance* 23(3): 9-12

Medicine published “Securing the Vote: a Consensus Study Report”⁵ that recommended risk-based audits and no voting in any form over the Internet.

The League of Women Voters Montana suggests the following steps be taken to reduce risks in Montana’s election system:

1. Modernize Montana’s voter registration system and keep it updated. Montana’s voter registration system is over 10 years old, leaving it vulnerable to cyber-attacks. State election officials are cooperating with the Department of Homeland Security to assess the level of risk that exists in the present system and determine any need to upgrade or replace it. This process should include planning ahead to implement secure online and portable statewide voter registration. Montana voters already have the ability to check their registration status and the status of their absentee ballots by going to the state website: <https://app.mt.gov/voterinfo/>

Maintaining security of the voter registration system is an ongoing process. If successfully breached, hackers could alter or delete voter registration information, which in turn could result in eligible voters being turned away at the polls or prevented from casting ballots that count.

Through 2018 omnibus appropriations, the federal government awarded Montana \$3 million to improve the state’s election security. The funds are administered through the federal Election Assistance Commission (EAC) and are the responsibility of the Montana Secretary of State. Montana’s plan for use of these funds was due to the EAC by September 26, 2018. As of December 17, Montana was the only state without a state plan posted on the EAC’s website. As of this writing, it is not clear how Montana will use these federal funds to improve election security.

2. Implement more secure system for overseas voters. Montana allows voting over the Internet for those who are overseas, a practice

⁵ National Academies of Science, Engineering, Medicine: 2018: “Securing the Vote: Consensus Study Report of the Committee on the Future of Voting: Accessible, Reliable, Verifiable Technology”

that experts say is not safe even using encryption. The Secretary of State's office recently introduced an encrypted mechanism for overseas voters to use in casting their ballot over the Internet. Individual counties allow overseas voting by email or by paper ballot.

3. Implement state-of-the-art risk-based auditing. Risk-based audits that randomly select individual ballots are more statistically reliable than the current system of randomly selecting audit units. To check for human error, risk-based audits should be done in all counties, including those that initially hand-count the ballots.

4. Update or Replace Montana's AutoMark voting machines. Open and fair elections require that every voter be able to review their choices on their paper ballot before casting their ballot. This is becoming problematic for voters who rely on AutoMark machines and election officials alike.

5. Remove exact birthdate from the information from voter rolls available to the public and replace it with birth year or age. Consumer advocates warn against sharing exact birthdate information with strangers. Scammers use exact date of birth to legitimize their actions while contacting individuals over the phone or Internet. While exact date of birth may be available from other sources and from hackers through the Dark Web, it should not be easily available from Montana's voter rolls.

The Election Security Report Committee of the League of Women Voters Montana prepared this report.

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