Election Polling Place Finder Problems on Presidential Nomination Primary Day

OFFICE OF THE LEGISLATIVE AUDITOR
STATE OF MINNESOTA

State of Minnesota
Office of the Legislative Auditor

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January 2021

Members
Legislative Audit Commission

The Honorable Steve Simon, Secretary of State
Office of the Minnesota Secretary of State

The Office of the Legislative Auditor undertook a "special review" in response to an incident that occurred on the morning of March 3, 2020, Minnesota's first presidential nomination primary in recent years. On that morning, the Office of the Minnesota Secretary of State's Polling Place Finder website experienced a malfunction and visitors seeking to find their polling place were instead redirected, for 17 minutes, to a website operated by a partisan organization.

Although the Minnesota Secretary of State is elected with partisan affiliation, Minnesota has a well-established expectation that the Secretary of State's office will not allow partisan interests to affect how that office administers elections. Therefore, what occurred on March 3, 2020, caused controversy and concern, and a request for an inquiry by the Office of the Legislative Auditor.

In response, we assessed the accuracy of statements Secretary of State Steve Simon made about the incident during testimony before legislative committees. In addition, we assessed why the incident occurred and the actions the Secretary of State's office has taken to prevent a similar incident from occurring in the future.

This review was conducted by Mark Mathison (IT Audit Director) and Joe Sass (IT Audit Coordinator).

We received the full cooperation of the Office of the Minnesota Secretary of State staff while performing this review.

Sincerely,

Joel Alter
Director, Special Reviews

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Report Summary

The Secretary of State is Minnesota's chief election official. The Office of the Secretary of State (OSS) Elections Division, partnering with county, city, and township election officials, is responsible for the administration of elections. One of the key elections tools managed by OSS is the Polling Place Finder application, which provides website visitors with voting information relevant to their unique locations. However, on the morning of March 3, 2020, Minnesota's first presidential nomination primary since 1992, the Polling Place Finder application encountered performance problems that required OSS to activate its Emergency Elections Plan. OSS redirected visitors to an alternative website for similar information:

Poll-Finder

Due to heavy demand, you may be directed to a trusted external site to find your polling place information.

Click here to search for your polling place.

Polling Place Finder

–Office of the Secretary of State

For 17 minutes, Minnesotans seeking nonpartisan voter information were directed to a website run by a partisan political group. Given the expectation that OSS should not interject partisanship into its administration of elections, this action created controversy and concerns.

In response, Secretary of State Steve Simon said that the redirection to a partisan website was an error caused by staff acting too expediently during an emergency situation and not from any partisan motivation. Secretary of State Steve Simon took full responsibility for the mistake.

Conclusions

We concluded that Secretary of State Steve Simon's statements about the March 3, 2020, incident were accurate. However, we also concluded that the Office of the Secretary of State (OSS) was not adequately prepared to direct voters to an appropriate alternative polling place locator in the event the OSS Polling Place Finder malfunctioned.

First, OSS staff were not familiar with the specific procedures for redirecting visitors from its Polling Place Finder to an alternative solution. In addition, the office emergency plan lacked a detailed definition of an appropriate alternate polling place locator website. These factors, plus a series of missteps by key staff members, resulted in OSS posting a hyperlink to a partisan website. This partisan website also included a registration form where some Minnesotans voluntarily provided their contact information.

Based on our assessment, the March 3, 2020, incident was not the fault of a single OSS staff member, but several OSS employees. While they share responsibility for the incident, we did not find evidence of malicious intent or political motivation by any staff members in the Office of the Secretary of State.

Finally, we believe that OSS took appropriate and necessary steps to help prevent a similar incident from occurring during future elections. However, we provide additional recommendations to OSS to strengthen their system resiliency and emergency preparedness.

Introduction

Background

The Minnesota Office of the Secretary of State (OSS) is a constitutional office in the executive branch of state government. Article V of the Minnesota Constitution established the Secretary of State as one of five executive officers of the state; each are elected to serve four-year terms. Steve Simon has served as Secretary of State since first being elected to that position in 2014.

The office operates under *Minnesota Statutes* 2020, Chapter 5. The Secretary of State's duties include overseeing statewide elections; the review, approval, and filing for all businesses and organizations operating in the state; and administering the state's address confidentiality program to help protect those who fear for their safety.

The Secretary of State is Minnesota's chief election official. The OSS Elections Division, partnering with county auditors, and city and township officials, is responsible for the administration of elections. The Polling Place Finder is one of the key elections systems managed by OSS.

The Polling Place Finder, or Poll-Finder, is a web-based application on which Minnesota voters can enter in their address to find out personalized voting information, such as:

- Polling place locations—where to vote, with maps and directions.

- Information on election districts or precincts.

- Sample ballots, showing candidates and ballot questions for upcoming elections.[1]
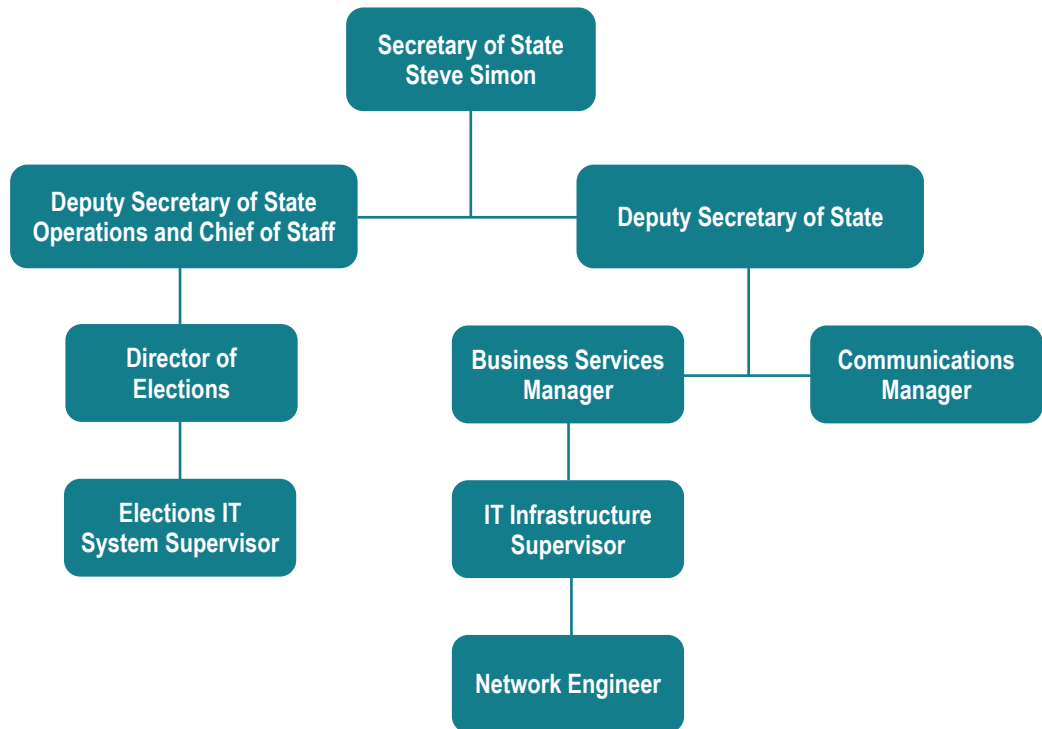
As a constitutional office, OSS is exempt from the consolidation of state government information technology (IT) services that was initiated by the 2011 Legislature. Likewise, OSS's IT services are not overseen by Minnesota IT Services (MNIT), the state's central IT organization. While OSS voluntarily purchases certain services from MNIT, such as wide area network internet services, data center hosting, and e-mail, the office has its own IT staff to manage, secure, develop, and support its applications and operating infrastructure.[2]

The Deputy Secretary of State (one of two in the office) for operations, together with the Elections Director, is responsible for management decisions related to the elections systems. An IT Systems Supervisor reports to the Elections Director and is responsible for technical functions, such as elections systems development and maintenance. Meanwhile, all other IT functions, such as network, desktop, and server management, report to the office's Business Services Manager and the office's second Deputy Secretary of State. Exhibit 1 outlines this structure.

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[1] Poll-Finder is publicly available at https://pollfinder.sos.state.mn.us/.

[2] MNIT's "applicability standard" states that the Office of the Secretary of State is not within the scope of MNIT's consolidation and oversight. See https://mn.gov/mnit/assets/enterprise-information-security-risk -management-applicability-standard_tcm38-323783.pdf, accessed August 5, 2020.

Exhibit 1: Organization Structure for Relevant Staff of the Office of the Secretary of State

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                        │   Secretary of State    │
                        │      Steve Simon         │
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                                    │
            ┌───────────────────────┴───────────────────────┐
  ┌──────────────────────────┐              ┌──────────────────────────┐
  │ Deputy Secretary of State│              │ Deputy Secretary of State│
  │Operations and Chief of   │              │                          │
  │         Staff            │              │                          │
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  ┌──────────────────┐            ┌──────────────────┐   ┌──────────────────┐
  │   Director of    │            │Business Services │   │  Communications  │
  │    Elections     │            │    Manager       │   │    Manager       │
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  │   Elections IT   │            │ IT Infrastructure│
  │ System Supervisor│            │   Supervisor     │
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                                   │ Network Engineer │
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SOURCE: Office of the Legislative Auditor.

March 2020 Poll-Finder Incident

On the morning of March 3, 2020, Minnesota's first presidential primary election since 1992, Minnesotans inquiring on the OSS website about their polling place location or other related information were—for a short period of time—directed to a web page originally developed for the 2016 general election. The web page was run by a partisan political group, the Progressive Change Campaign Committee, referred to as Bold Progressives.[3] While the Bold Progressives web page contained a polling place locator tool, it also encouraged supporters to "make a plan" to vote by entering their name, e-mail address, zip code, and other information into a registration form.[4]

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[3] Bold Progressives is a political action committee (PAC) which advocates for progressive issues and supports progressive candidates at the local, state, and federal levels. Bold Progressives also provides fundraising, volunteer training, and technology services to candidates. The PAC endorsed Elizabeth Warren for the 2020 presidential election, and it campaigns for progressive issues such as expanding Social Security, debt-free college, and Medicare for All.

[4] Bold Progressives published http://act.boldprogressives.org/survey/2016_voteplan/ for the November 8, 2016, general election, encouraging supporters to make a plan to vote.

The redirection of some individuals to this web page caught the attention of many people, including members of the Minnesota Legislature. Among the questions raised were:

1. Why did it happen?

2. What were the details surrounding the event, and what evidence exists about these details?

3. Who may have been impacted by the event?

4. Were internal controls lacking to prevent or detect the event?

5. What change in processes may be needed to prevent an incident such as this from recurring?

To help answer these and other questions, Secretary of State Steve Simon testified to the House State Government Finance Division on March 4, 2020, and again at a meeting of the Senate State Government Finance and Policy and Elections Committee on March 12, 2020. Additionally, Secretary of State Steve Simon provided written responses to questions posed by policy makers and the Legislative Auditor.

In summary, Secretary of State Steve Simon said:

- Poll-Finder experienced periodic service delays and interruptions on the morning of March 3, 2020. Because service had declined to the point of affecting many prospective voters and county election officials, the OSS Elections Director activated the office's Elections Emergency Plan, which describes what to do if Poll-Finder experiences a service disruption. In accordance with the plan, the Elections Director asked OSS IT staff to temporarily direct users to its back-up polling place locator.

- An OSS employee did not follow the OSS Elections Emergency Plan and directed users seeking polling site information to a website that was wrongly believed to be a suitable substitute for Poll-Finder.

- As many as 490 voters were redirected to a website run by a partisan political group, which asked visitors to voluntarily provide their contact information. This occurred for a period of 17 minutes, from 10:31 a.m. to 10:48 a.m.

- As soon as OSS staff discovered the error, they corrected it by redirecting visitors to the approved alternative website until Poll-Finder could be brought back into service later that morning.

- OSS contacted the organizers of the website in question. For the time period in question, the organization identified 69 Minnesotans who voluntarily disclosed identifying information on the website. Two of the 69 people had already provided their information to the website on a previous and unrelated occasion.

- The staff at the partisan website told OSS that data from these 69 people were not shared with any outside organizations. They said they had destroyed the information of the Minnesotans who visited their site during the 17 minutes in question, with the exception of the two people who provided their information at an earlier date. IT staff from the partisan organization provided OSS with documentation confirming that this information had been destroyed.

- The employee who implemented the redirect did not act with an improper political motive.

OLA Objectives

Our objectives for this review were to verify the accuracy of statements made by Secretary of State Steve Simon, both in testimony and in letters written to legislators and OLA regarding the incident, and to assess the effectiveness of the Office of the Secretary of State's actions to prevent similar incidents from occurring in the future. By conducting this review, we intended to create an independent and objective record of the incident and the OSS response.

To meet these objectives, we interviewed OSS staff members involved with the incident and reviewed:

- OSS policy and procedural documentation.

- E-mails and chat transcripts from staff involved.

- Detailed system logs from applicable web servers, database servers, firewalls, the intrusion prevention system, and load balancers.

Finally, we performed our own analysis of the applicable websites.[5] We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our objectives.

We did not look at other aspects of OSS operations, such as the call center that assisted people who called on election day to obtain election information.

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[5] This included the Poll-Finder web page, the Bold Progressives web page, the Voting Information Project's *Get to the Polls* web page, and the Voting Information Project's Voting Information Tool.

Poll-Finder Incident Details

On the morning of Minnesota's presidential nomination primary, March 3, 2020, the Office of the Secretary of State's (OSS) Polling Place Finder (Poll-Finder) and the State Voter Registration System (SVRS) began to experience slowdowns.[6] As a result, these systems were intermittently unavailable for some users. In an effort to provide continuous services to Minnesotans looking for their polling locations, and to help reduce congestion for the SVRS users, OSS's Elections Director instructed the office's IT staff to implement a redirect of users to an alternate website. OSS IT staff developed a temporary web page which informed anyone accessing Poll-Finder that, "Due to heavy demand, you may be directed to a trusted external site to find your polling place information." The IT staff also provided a hyperlink to an alternate polling place locator tool. For 17 minutes, from 10:31 a.m. to 10:48 a.m., the hyperlink directed voters to a web page hosted by the partisan political action committee (PAC) called Bold Progressives.[7] OSS immediately thereafter modified the hyperlink to instead direct voters to a nonpartisan tool called Voting Information Project's *Get to the Polls*.[8] The temporary web page and hyperlink redirecting visitors to *Get to the Polls* remained in place until 11:56 a.m., during which time OSS IT made system changes to improve Poll-Finder performance.

No Evidence of a Cyberattack

In an effort to identify what was causing the slowdowns with the applications, OSS considered whether there had been any cyberattacks to its elections systems, particularly a denial-of-service attack.

The U.S. Department of Homeland Security provides election security services to OSS, including cyber threat detection and incident response.[9] In addition, because OSS purchases wide area network services from MNIT, MNIT provides high-level network monitoring for OSS.[10]

> A **Denial-of-Service (DoS)** attack occurs when a malicious cyber actor floods a target, such as a website, with network traffic until it cannot respond or crashes.
>
> Similarly, **Distributed Denial-of-Service (DDoS)** attacks leverage a large group of hijacked internet-connected devices (referred to as a "botnet") to attack and overwhelm the target. These cyber attacks slow down and eventually prevent legitimate users from accessing the target/website.

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[6] SVRS is another critical election system operated and maintained by OSS.

[7] See http://act.boldprogressives.org/survey/2016_voteplan.

[8] See https://gttp.votinginfoproject.org/.

[9] U.S. Department of Homeland Security, "Election Security," July 14, 2020, https://www.dhs.gov/topic/election-security, accessed July 31, 2020.

[10] MNIT Security Operations Center has some information about high-level network activities. However, logs from election system servers and applications are not part of the MNIT Enterprise Security Information and Event Management services.

E-mails we obtained from OSS IT staff indicate that the Department of Homeland Security and MNIT said they did not see evidence of a denial-of-service or other cyberattack. OSS also briefed the Federal Bureau of Investigation Cyber Division on the incident. Based on our independent review of the OSS firewall, intrusion prevention system, and server logs for SVRS and Poll-Finder, we concur with others' conclusions that the Poll-Finder and SVRS slowdowns were not the result of a denial-of-service or other cyberattack.

Root Cause

Upon concluding that a denial-of-service or other cyberattack was not responsible for slowing down the systems, we interviewed OSS IT staff to understand the cause of the Poll-Finder and SVRS slowdowns. In our interviews, OSS IT staff stated that the slowdowns originated from a malfunctioning *stored procedure* that has since been fixed.[11]

One feature of OSS's Poll-Finder is the ability to provide sample ballots to voters, showing what to expect when they enter the voting booth. A stored procedure retrieves these sample ballots within the Poll-Finder application's database. OSS IT staff told us that, due to the unique nature of Minnesota's first presidential primary, Poll-Finder provided two sample ballots for each address lookup: one for the Republican Party candidates and one for the Democratic Party candidates. The need to retrieve both sample ballots led the Polling Place Finder application to begin consuming excessive processor resources on each of Poll-Finder's database servers.

Consistent with the statements made by OSS IT staff, our review of Poll-Finder application logs found high numbers of *timeout errors* for the stored procedure, indicating the process took too long to load. As voters attempted to view their sample ballots, the retrieval procedure took an excessive amount of time, causing a traffic jam of requests in the system's database.

Poll-Finder and SVRS shared database resources. Therefore, when counties began accessing SVRS on primary day and voters continued using Poll-Finder to load sample ballots, both SVRS and Poll-Finder became overwhelmed, slowed down, and were intermittently unavailable for some users.

FINDING 1: The Minnesota Office of the Secretary of State did not adequately test the Poll-Finder application to ensure that it would meet the unique needs of the presidential primary.

OSS IT staff stated that the offending stored procedure had been in place since approximately 2013. They said they had not performed any sort of load or performance testing on Poll-Finder, noting that this tool had not had issues in prior elections.

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[11] A stored procedure is a block of code saved in a database that can accept input parameters from an application or database process to execute a function or return information. Stored procedures are commonly used to improve the security, performance, and ease of maintenance of an application.

However, this was the first election in which the system returned two sample ballots for each address lookup. Given that the presidential primary introduced different requirements for the system (providing two sample ballots instead of one), we believe that OSS should have treated the election as a unique event and thoroughly tested its system to ensure that it could meet the specific stresses of the primary election.

In preparation for the August 2020 primary and November 2020 general elections, OSS performed performance and load testing for Poll-Finder, and it corrected slow-running processes identified during this testing.

RECOMMENDATION

The Minnesota Office of the Secretary of State should perform regular performance and load testing on its critical election systems to ensure that they will not only provide the necessary functionality, but will also be able to handle volumes of activity that exceed what might be reasonably expected.

We recommend that OSS perform testing of this nature for each major release of its applications and prior to all major elections. Moreover, OSS should develop a baseline of the expected peak "load" for each of its critical election systems and ensure that these systems can continue to function even when levels of user activity exceed these loads.

Poll-Finder "Redirect"

As part of our review, we gained an understanding as to how visitors to the OSS website on presidential primary election day were redirected to both a partisan and nonpartisan website. In addition, we examined who within OSS could make changes to redirect visitors, and the controls to which those changes were subject.

Exhibit 2: Typical Internet Traffic Flow to Poll-Finder

https://pollfinder.sos.state.mn.us/

SOURCE: Office of the Legislative Auditor.

Internet traffic for voters accessing Poll-Finder travels through a networking device known as a load balancer. The OSS load balancer, acting as a single gateway, distributes network traffic across multiple servers, increasing the number of users that an application can serve concurrently. Typically, when Minnesotans access OSS's Poll-Finder from a web browser, the load balancer receives the requests and forwards the traffic to one of several Poll-Finder servers.
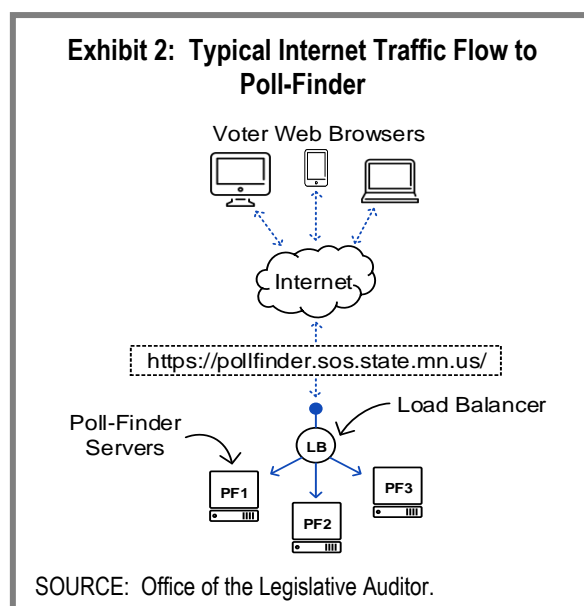
Load balancers can be programmed with rules, which define how they process and respond to requests. For OSS to redirect Poll-Finder to an alternate polling place informational website, OSS IT staff created a rule that provided a temporary web page

instead of forwarding the requests on to the Poll-Finder servers. With this rule in place, anyone who attempted to access Poll-Finder received a simple page stating,

> Due to heavy demand, you may be directed to a trusted external site to find your polling place information. Click here to search for your polling place.

Upon clicking this new Polling Place Finder hyperlink, the web browser would load an alternate web page—either the Bold Progressives web page (http://act.boldprogressives.org/survey/2016_voteplan/) or the Voting Information Project's *Get to the Polls* web page (https://gttp.votinginfoproject.org/)—depending on when the individual attempted to access Poll-Finder.

Exhibit 3: Poll-Finder Redirect to Temporary Web Page
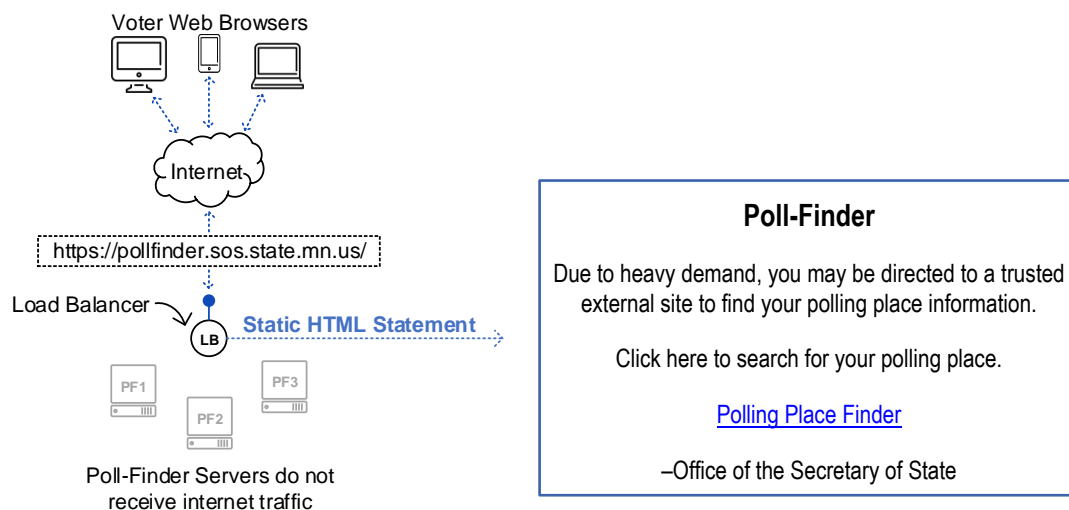
SOURCE: Office of the Legislative Auditor.

Integrity of Polling Location Information

Regardless of whether OSS directed visitors to the Bold Progressives web page or the Voting Information Project's *Get to the Polls* web page, we concluded that Minnesotans would have received identical, accurate polling location information. Our analysis of these sites indicated that each was using the Google Civic Information Application Programming Interface (API) as the basis for obtaining polling location information.

Google, as one of the founders and participants in the Voting Information Project, provides a free-of-charge interface for use by any website, such as the Bold Progressives or Voting Information Project's *Get to the Polls*, to look up election information and data about local, state, and national representatives for any United States residential address. The Google Civic Information API queries data that has been provided to the Voting Information Project—a nonpartisan organization—by county and state election administrators, such as the Minnesota Secretary of State.

While it may be reassuring that the Bold Progressives web page provided visitors with polling place information that was identical to the Voting Information Project's *Get to the Polls* website, the choice of websites had another impact. Visitors to the Bold Progressives site were asked to voluntarily provide their contact information, and some did so. Because Bold Progressives is a partisan organization, this information could have been used for partisan purposes.

Supporting Evidence and Incident Timeline

OSS provided our office with e-mails sent to and from OSS staff, chat transcripts, and server logs that enabled us to construct a detailed timeline of the events that occurred during the March 3, 2020, presidential primary.

Our event timeline correlates with the statements made by Secretary of State Steve Simon and his staff. We found no significant inconsistences between the statements made by the Secretary, his staff, or the documentation and system logs they provided to us.

- **Approximately 7:00 a.m. –** Poll-Finder and SVRS begin to experience issues, resulting in slow performance for users of each system. OSS IT staff begin researching the problem.

- **Approximately 8:00 a.m. –** OSS IT staff isolate the issue to the database. Noting that both Poll-Finder and SVRS reside on the same database servers, work begins to move Poll-Finder to new database servers.

- **Approximately 9:00 a.m. –** OSS Elections Director begins discussions with Elections IT Supervisor regarding redirecting Poll-Finder to Voting Information Project's *Get to the Polls* web page (https://gttp.votinginfoproject.org/).

- **9:55 a.m. –** After database changes had not improved system performance, OSS Elections Director asks OSS IT Staff to redirect Poll-Finder to Voting Information Project's *Get to the Polls* web page (https://gttp.votinginfoproject.org/).

- **10:13 a.m. –** OSS Network Engineer activates the Poll-Finder redirect for internal testing. At this time, the destination is to the Bold Progressives web page (http://act.boldprogressives.org/survey/2016_voteplan), which also utilized the Google Civic Information API, and was temporarily being used by some call center staff.

- **10:16 a.m. –** OSS Network Engineer modifies the redirect—still for internal purposes only—to a different website (https://www.vote411.org/) as its destination.[12]

  We were not able to find formal documentation to support why this change was made. The OSS Network Engineer told us that the change was made after internal discussions with other OSS IT staff. Believing that the Bold Progressives website

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[12] The https://www.Vote411.org website is a nonpartisan voter and election information source supported by the League of Women Voters Education Fund.

did not seem appropriate, they searched the Internet to find a nonpartisan alternative, the Vote411 website.

- **10:23 a.m.** – OSS Communications Manager reviews the temporary web page, looking at the text of the message and not the redirect web page, and responds via e-mail, "It looks OK to me, if that is the solution we need to have."[13]

Between 10:23 a.m. and 10:30 a.m., the OSS Elections IT Systems Supervisor reviewed the temporary web page and tested the hyperlink. Recognizing that the hyperlink was not redirecting to the Voting Information Project's *Get to the Polls* website, the Elections IT Systems Supervisor instructed the OSS IT Infrastructure group to change the hyperlink back to the "original" or "first one." This event occurred in person, rather than via e-mail. Therefore, a written record and timestamp of this correspondence was not available.[14]

- **10:30 a.m.** – Per instructions, the OSS Network Engineer modifies the redirect to the "original" URL—still limited for internal testing—to again use http://act.boldprogressives.org/survey/2016_voteplan as its destination.

The OSS Elections IT Systems Supervisor had meant the "original" that was first sent in an earlier e-mail, which was Voting Information Project's *Get to the Polls* website. However, to the OSS Network Engineer, "original" meant the Bold Progressives webpage that they had originally used for testing.

- **10:31 a.m.** – OSS Network Engineer publishes the Poll-Finder redirect for public use.

- **10:33 a.m.** – OSS Elections Director reviews the temporary web page and responds via e-mail, "Yes, that looks fine."[15]

- **10:45 a.m.** – OSS Elections Director sends e-mail to OSS Elections IT Systems Supervisor questioning the redirect hyperlink.

- **10:47 a.m.** – OSS Elections IT Systems Supervisor again notifies OSS IT Infrastructure Supervisor of the correct alternate polling place locator tool at https://gttp.votinginfoproject.org/.

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[13] When interviewed, the OSS Communications Manager stated to us that their e-mail referred to the statement as published on the temporary web page, and it did not refer to the hyperlink to the alternate polling place locator tool. The Communications Manager said that they did not click the hyperlink to see which alternate polling place locator tool was being used.

[14] The Elections IT Supervisor and the Network Engineer independently substantiated this event during separate interviews.

[15] During our interviews, the OSS Elections Director stated that their e-mail only referred to the statement as published on the temporary website and did not refer to the hyperlink to the alternate polling place locator tool. The Elections Director said that they did not click the hyperlink to see which alternate polling place locator tool was being used.

- **10:48 a.m.** – OSS IT Infrastructure Supervisor modifies the load balancer rule to use https://gttp.votinginfoproject.org/ as the redirect destination.

- **11:27 a.m.** – After back-end database changes were made to correct performance issues, OSS IT Infrastructure Supervisor deactivates load balancer rule internally. OSS begin testing access to its Poll-Finder.

- **11:51 a.m.** – Based on successful testing responses, OSS Elections Director requests that OSS IT staff deactivate the public redirect to https://gttp.votinginfoproject.org/.

- **11:56 a.m.** – OSS IT Infrastructure Supervisor deactivates load balancer rule for public use. Minnesotans can now use the OSS Poll-Finder again.

Internal Controls

To control changes to the Poll-Finder application and infrastructure, OSS designed a variety of internal controls, including, but not limited to:

- Policies and procedures that governed "change management" practices.

- Security access to limit employees' abilities to make changes, based on their job responsibilities.

- Ongoing logging and monitoring of website-related activities.

- Incident response and contingency plans.

We confirmed the existence of these controls. While we did not complete an in-depth security review, we did confirm that only five IT staff could make certain infrastructure changes. During this incident, OSS followed elements of an emergency change management process while implementing their Elections Emergency Plan. However, critical oversights, both by key OSS staff and within the plan itself, contributed to the incident.

FINDING 2: The Elections Emergency Plan lacked key details necessary to successfully direct voters to the alternate polling place locator tool.

The OSS Elections Emergency Plan contained contingency plans for numerous scenarios, including if the Poll-Finder were to become unavailable. According to the emergency plan, "the Google polling place finder is the primary backup to the OSS polling place finder." However, the plan did not include a specific URL or web address for the redirect, nor did it indicate how OSS should inform the public and direct voters to the alternate website. Having never redirected people seeking polling places in the past, and without a specific alternate destination in the emergency plan, OSS staff were left to determine—in an emergency situation on primary election day—where and how to redirect the public.

Our review of OSS e-mails and chats sent between staff members during the incident shows confusion or a lack of knowledge among staff of what the correct URL for the redirect was supposed to be and how it should be implemented. The OSS IT Infrastructure Supervisor initially asked where to direct voters and, even during the incident, e-mails show the Elections Director questioning which URL to use. Moreover, e-mails revealed the Elections Systems Supervisor was the first to inquire about providing a statement because the ultimate destination for the redirect would not look like the OSS website. The OSS Communications Manager quickly drafted a statement. OSS's IT Infrastructure group then had to develop a method to redirect web traffic and display the statement provided by the Communications Manager. This was not something the group was prepared to do, and logs show several changes to the load balancer in quick succession while IT staff worked to put the statement in place.

Although OSS walked through its Elections Emergency Plan prior to the primary election, some confusion could potentially have been averted had the emergency procedures been more thoroughly exercised. These exercises help to identify and work out any lack of clarity or gaps in the plan. OLA believes that the incident would likely have had less impact if (1) the plan contained the alternate polling place locator URL, (2) a statement for the OSS website had been pre-drafted, and (3) the load balancer configuration changes had been pre-scripted.

OSS has since updated its Elections Emergency Plan and made these corrections. Additionally, the office has developed a detailed redirect policy and procedure. OSS staff told us that they performed three tabletop exercises of the Elections Emergency Plan in preparation for the August 2020 primary and November 2020 general elections.

RECOMMENDATIONS

- **The Minnesota Office of the Secretary of State should ensure emergency plans have appropriate levels of details to be actionable.**

- **The Minnesota Office of the Secretary of State should exercise its emergency plans to identify and work out any lack of clarity or gaps in the plan.**

OLA recommends that OSS continue to perform detailed walkthroughs or other exercises of the Elections Emergency Plan prior to every election. Performing these exercises with a regular cadence will help the office to validate that the plans remain up to date and viable. Regular practice also ensures that new staff members understand and can execute their roles.

An Error of "Expediency"

Secretary of State Steve Simon attributed the incident to an individual's error of "expediency." However, our review indicated that multiple staff had a role in this mistake. OSS's IT Infrastructure group initially implemented the incorrect temporary web page for internal review, and there was a lack of clarity and attentiveness by

business staff during the approval of the system change. Errors on the part of several staff members—IT and others—precipitated the Poll-Finder incident.

FINDING 3: The Minnesota Office of the Secretary of State did not properly test its emergency change.

Despite the lack of clarity in the Elections Emergency Plan, with more thorough testing of system changes, OSS staff could have prevented the Poll-Finder from redirecting to a partisan website. Although OSS largely followed its procedures for making emergency changes, OLA found shortcomings with the way the changes were tested and approved.

While OSS was determining how to address problems with the Poll-Finder on primary election day, the OSS Elections IT Supervisor e-mailed the IT Infrastructure Supervisor a statement to include on the temporary web page and included the correct web address for the Voting Information Project's *Get to the Polls* website. The IT Infrastructure Supervisor then forwarded the statement and correct web address to the Network Engineer who was setting up the redirect. When we asked why staff did not use the Voting Information Project's *Get to the Polls* URL that was in the e-mail (https://gttp.votinginfoproject.org/), the OSS Network Engineer told us that the encoded *Safe Links* hid the true web address and staff wrongly believed it led to the Bold Progressives website.

Microsoft Safe Links is a security feature within Microsoft Office 365 that verifies hyperlinks sent within e-mails. It flags URLS that are safe or warns users that a website may be malicious. Microsoft accomplishes this by directing users to a temporary URL, which then verifies the destination and allows the user to proceed if the site is deemed safe. Safe Links rewrites the URL within the e-mail message, using the Microsoft standard URL, which can make it difficult to identify the true destination.

***Get to the Polls* Safe Link as was received by OSS Network Engineer within an e-mail:**
https://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fgttp.votinginfoproject.org%2F&data=02%7C01%7Cfname.lastname%40state.mn.us%7C95ea13b838704595be0c08d7bf8bd59a%7Ceb14b04624c445198f26b89c2159828c%7C0%7C0%7C637188479606437637&sdata=MC7Z7yDStwehML8%2F9I0GTVBmohgPCPsI8wVuhaNAEpc%3D&reserved=0

The OSS Network Engineer told us that, before being aware of the *Get to the Polls* website, they learned of the Bold Progressives URL from a white board within the OSS Voter Information Call Center. We were told that call center staff did not provide the URL to callers, but rather, they had been utilizing the Bold Progressives polling place locator as an alternate solution to assist callers while the Poll-Finder was unavailable.[16] Knowing this, the OSS Network Engineer set up the initial redirect with the Bold Progressives page for internal testing.

Our interviews with the OSS IT Infrastructure team and reviews of the load balancer logs show that there were some hesitations about using the Bold Progressives page. Believing that the Bold Progressives website did not seem appropriate, the Network

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[16] We did not determine why the call center chose the Bold Progressives polling place locator as its alternative tool during the Poll-Finder outages.

Engineer found a nonpartisan alternative, the Vote411 website, and changed the destination of the internal testing redirect.[17]

As part of the testing process, the Elections IT Systems Supervisor recognized that the redirect was not correct and told the Network Engineer to revert back to the original *first* link. The OSS Elections IT Systems Supervisor had meant the link that was sent in an earlier e-mail, which was the Voting Information Project's *Get to the Polls* web page. However, the OSS Network Engineer mistakenly understood the comment to mean the Bold Progressives web page first used for testing. After the Network Engineer once again set the destination to the Bold Progressives web page, the Elections IT Systems Supervisor unfortunately did not verify the accuracy of the change.

Furthermore, the OSS Elections Director and Communications Manager told us that, as part of their approval e-mails, they reviewed the statement as published on the temporary page, but did not click the hyperlink to validate the appropriateness of the redirected website. Had either of these individuals performed more thorough testing and clicked the hyperlink, they would have seen the Bold Progressives or Vote411 website—depending on the timing of the click—and could have identified these as the incorrect destination before approving the redirect for public use.

RECOMMENDATION

The Minnesota Office of the Secretary of State should create and follow defined testing procedures, with formal approvals, for changes to its systems.

As we discuss later in this report, shortly after this incident, OSS itself recognized the need for tighter controls and implemented changes.

The OSS call center was not within the scope of our review, so we do not offer a formal recommendation on the practices of that center. However, the OSS IT staff probably would not have used the Bold Progressives web page for its redirect if the call center had not been using that web page as it assisted callers. As OSS implements the recommendations of Finding 2, it should consider ways to ensure that its call center staff rely only on approved sites.

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[17] The https://www.Vote411.org website is a nonpartisan voter and election information source supported by the League of Women Voters Education Fund.

Office of the Secretary of State—Corrective Actions

In the days following the Poll-Finder incident, OSS leadership and staff took corrective actions to try to safeguard the privacy of voters who had been directed by OSS to the Bold Progressives website on the day of the presidential primary. OSS also took steps to update its policies and procedures to ensure that a similar incident does not happen again.

Impacted Minnesotans

Recognizing that some Minnesotans may have unintentionally provided data to a partisan organization, OSS contacted Bold Progressives on Friday, March 6, 2020, and requested that any data captured by the website as a result of the OSS redirect be "identified and destroyed immediately and not shared in any way with any other organization." E-mail correspondence between OSS and Bold Progressives showed that Bold Progressives initially identified 69 individuals who completed the "Plan your vote!" registration form on March 3, 2020, and identified themselves from Minnesota by including their zip code. According to Bold Progressives, two of these individuals, during a previous and unrelated visit, had already registered with Bold Progressives. These numbers match what was publicly reported by Secretary of State Steve Simon.

However, later e-mail correspondence referenced additional "good faith" review by Bold Progressives identifying two more individuals who completed the form on March 3, 2020, but did not include information on their place of residence. While these individuals did not identify themselves as Minnesotans, they submitted data during the same time window as the other 69 individuals. In total, 71 individuals provided information to Bold Progressives by submitting the "Plan your vote!" form on the web page where OSS had directed voters.

Bold Progressives agreed to remove the information submitted by the 69 previously unregistered individuals, but retained the information from the two who were already present in its database.

Bold Progressives provided screenshots to OSS on March 26, 2020, to demonstrate that it had removed the records; this was 23 days after the Poll-Finder incident. We reviewed the screenshots, which showed (1) the Structured Query Language used to identify the records and (2) a limited amount of data, including unique user identification numbers, date and time of the form submission, state of residence, and whether the individuals were new to the system. While the screenshots do not include personally identifiable information, they provide reasonable evidence confirming records of 71 registrations from March 3, 2020 (including the two individuals who were previously registered and the two individuals who did not provide location information). Screenshots of the removal task and final record counts illustrated to us that Bold Progressives removed the information for the 69 new registrations from its database.

Website Analytic Toolset

Unless a voter had taken steps to remain anonymous before browsing the Bold Progressives web page—such as disabling web-browsing cookies, using a private browsing mode, or opting out of Facebook tracking—Facebook likely acquired browsing information for each Minnesotan who viewed the web page. Unfortunately, OSS was not able to take any corrective actions to remedy this risk.

Our review of the Bold Progressives web page shows that it used website analytics toolsets, including those developed by Google and Facebook. Facebook's Pixel Analytics toolset presented particular privacy concerns because it allows Facebook to associate user actions on non-Facebook websites to a specific Facebook user profile, if one exists, based on a "tracking cookie."[18]

Our testing discovered that Facebook logged the page views and the "Plan your vote!" form submission activities of our auditors when they evaluated the Bold Progressives web page for this review. Close inspection of the data transmitted to Facebook indicated that Bold Progressives did not provide the user-submitted form data to Facebook. However, Facebook's tracking cookie enables it to identify the individual who visited the Bold Progressives page—if they have a Facebook account—and note whether they submitted the form. Thus, there exists the potential to associate an individual's Facebook profile with Bold Progressives, its political ideology or support for a specific cause, and later use this information to target the individual with politically motivated content and advertising.[19] Our review did not include steps to confirm with Facebook or Bold Progressives if these actions did or did not occur.

> *Website analytics* tools monitor the way that users interact with a website through their behaviors and activities. These tools examine the entire process of collection, analysis, and reporting of data generated from the interaction of users with a website. The reports from analytics tools allow webmasters and marketers to understand user interactions, such as the length of time they were on the site, which pages they visited, and if they clicked on links or filled out forms.
>
> **SOURCE: Siteimprove.com**

Concerned individuals can delete their web browser's cookies, utilize Facebook's privacy tools to disassociate this data from their profile, and adjust their Facebook settings to correspond with their individual privacy concerns. While such tracking tools and practices are regularly used across the Internet to analyze user behavior and target advertising, this incident shines a light on the need for public awareness of how personal data can spread beyond an initial page view.

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[18] Tracking cookies, also known as third-party persistent cookies, are stored within a computing device's memory and have a set expiration date. These cookies can be accessed on websites that did not create them. This allows the cookie's creator to collect and receive data any time the user visits a page with a resource belonging to the creator. *Minnesota Statutes* 2020, 13.15, subd. 3, outlines stipulations if a government entity installs a cookie onto a person's computer.

[19] Facebook Cookie Policy, https://www.facebook.com/policies/cookies/, accessed July 6, 2020.

Improving Emergency Plans and Procedures

Following the Poll-Finder incident, OSS made updates to its Elections Emergency Plan. Specifically, the Poll-Finder contingency plan now includes the specific URL web address of the alternative poll finder and lists pre-approved load balancer rules that OSS staff are to activate.

The office also developed a new website redirect policy and a detailed Poll-Finder redirect procedure. The new procedure requires OSS IT Infrastructure staff to first implement the redirect for internal testing, and it requires explicit approval by a division head before publication to the external public website. While these steps follow a similar process to what occurred during the March 2020 Poll-Finder incident, additional steps require logged and trackable communications and approvals corresponding with each step. This provides a written record of the events that can later be reviewed for compliance with the policy. The new procedure, however, is silent as to how the steps and documentation interacts with the office's formal change management system.

> " The OSS website offers resources to assist the public in accessing information or services we provide. There may also be times when online resources internal to our organization may not function properly due to any number of reasons and in those cases, we may redirect the public to pre-approved external online resources to ensure service continuity. It is critical that the public is redirected to the correct external resource and therefore there must be in place procedures for the initiation, implementation and verification that the correct external resources are being provided to the public. This policy lays out that process to ensure continuity of service, as best is reasonably possible.
>
> **— Office of the Secretary of State Website Redirects Policy Statement**

Secretary of State Steve Simon testified to the Legislature that, with the changes to OSS policy and procedures, it would be impossible for an incident of this nature to occur again.[20] While these new processes have strengthened controls and reduced the risk of an improper system change, OSS, like many organizations, remains vulnerable to decisions made by a single IT administrator. We believe that, without strict preventive controls that require dual approvals for a system change to take effect, there will still be some risk of an incident like the March 2020 incident happening again.

FINDING 4: The Minnesota Office of the Secretary of State's newly implemented technical controls do not prevent unilateral changes by OSS IT staff.

OSS load balancers and other IT infrastructure devices provide no system-based controls to ensure that staff follow the administrative process. In actuality, any IT staff

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[20] Minnesota Senate State Government Finance and Policy and Elections Committee, Testimony from Minnesota Secretary of State Steve Simon, March 12, 2020, digital recording (http://archive-media.granicus.com:443/OnDemand/mnsenate/mnsenate_7de51bf5-c0be-4447-8cd2-2e9f8424ffd9.mp3), starting at minute 10.

member with the necessary access to implement changes could make a change that election officials may not desire.

OSS authorized five IT staff to activate, create, and modify rules in the load balancer. Because the load balancer itself does not have workflow functionality or a built-in secondary approval process, any of the five trusted staff could circumvent the steps prescribed in the redirect procedure and direct web traffic to a website of their choosing—whether accidental or intentional. Those actions, however, could be grounds for disciplinary action based on the new OSS Website Redirects Policy.

It can be costly to implement a technology infrastructure that would make it nearly impossible for a person to make a unilateral change. For this reason, OSS may want to perform a cost-benefit analysis to help it decide whether to implement strict preventive controls that require multiple administrators to make a change to a computer system. Alternatively, OSS could rely upon a combination of existing preventative controls and detective controls to meet its risk reduction requirements.[21]

RECOMMENDATIONS

- **The Minnesota Office of the Secretary of State should consider implementing controls that would prevent unilateral changes to its computer systems.**

- **The Minnesota Office of the Secretary of State should perform timely reviews of system audit logs to ensure that only approved changes have been made.**

During the March 2020 incident, the office had enabled audit log functions, which provided a detective control to inform senior IT staff that a change, such as a redirect, had taken place. These logs provided information on time and date, action, and user initiating the change. This information helped us to corroborate the incident timeline as stated by OSS. In the future, these logs should remain enabled because this would provide objective assurance that staff have complied with the new redirect policy, as well as other change management policies. To speed up detection of change events, OSS can also utilize log management toolsets to receive alerts of any changes.

Technical Changes

Secretary of State Steve Simon stated that his office has created a "whitelist" of approved external websites. In this case, the whitelist refers to specific website URLs that have been determined trustworthy and preapproved for use in emergency redirect situations. We confirmed that OSS now has predefined website redirect rules saved within its load balancer. These rules direct website traffic to approved, alternate website URLs. This provides OSS IT staff with a simple and relatively quick method to activate these predefined rules when necessary, rather than building new rules from

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[21] Preventive controls are designed to prevent errors, inaccuracy, or fraud before it occurs. Detective controls are intended to uncover the existence of errors, inaccuracies, or fraud that has already occurred.

scratch during an emergency event. However, web addresses can change over time, and OSS will need to regularly validate that the redirect rule stays current.

In preparation for the August 2020 primary and November 2020 general elections, OSS IT staff migrated Poll-Finder and SVRS to separate database servers. Although it was a coding issue within the Poll-Finder database that initially led to the incident on March 3, 2020, we believe that placing the databases for these applications in separate and distinct environments will be beneficial for the long-term health of the applications. As OSS defines system baselines and performs load testing, as discussed in Finding 1, separate databases should help to ensure the systems perform as expected under stress. Moreover, should either system experience problems, having the systems separated will help to isolate the problem to a single application and ease troubleshooting.

List of Recommendations

- The Minnesota Office of the Secretary of State (OSS) should perform regular performance and load testing on its critical election systems to ensure that they will not only provide the necessary functionality, but will also be able to handle volumes of activity that exceed what might be reasonably expected. (p. 9)

- OSS should ensure emergency plans have appropriate levels of details to be actionable. (p. 14)

- OSS should exercise its emergency plans to identify and work out any lack of clarity or gaps in the plan. (p. 14)

- OSS should create and follow defined testing procedures, with formal approvals, for changes to its systems. (p. 16)

- OSS should consider implementing controls that would prevent unilateral changes to its computer systems. (p. 20)

- OSS should perform timely reviews of system audit logs to ensure that only approved changes have been made. (p. 20)

Joel Alter
Director of Special Reviews
Minnesota Office of the Legislative Auditor
140 Centennial Building, 658 Cedar St.
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Dear Mr. Alter:

Thank you for the opportunity to preview and respond to the Office of Legislative Auditor's "special review" of problems with the Office of the Secretary of State (OSS) polling place finder on the day of Minnesota's presidential nominating primary on March 3, 2020. The review reflects a thorough and comprehensive description of the seventeen-minute website malfunction, with constructive recommendations about how to avoid future difficulties. I appreciate the review's attention to detail, and its ultimate conclusions about the accuracy of my consistent characterization of the incident. I'm also grateful for the review's acknowledgment that the OSS "took appropriate and necessary steps to help a similar incident from occurring during future elections."

As I first said in legislative testimony on the morning after the presidential nominating primary, ultimate responsibility for any problem with the polling place finder rests with me alone. The report details legitimate and explainable human errors by a few OSS staff members that led to a seventeen-minute re-route of select website users to an inappropriate substitute website. But I'm in charge of eliminating the possibility of preventable errors, so fixing any lapse falls to me.
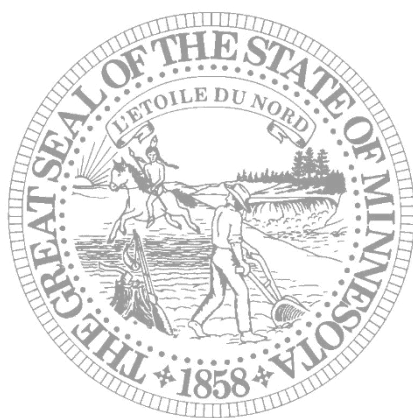
The good news is that in the two subsequent and more complex elections of 2020, the statewide primary election in August and the statewide general election in November, the polling place finder performed flawlessly. In part, that's because OSS staff members directly in charge of the polling place finder were sincerely committed to learning from the March 3rd incident. The trouble-free performance in August and November also stemmed from implementation of internal practices that mirrored substantially all of the OLA recommendations.

Election administration is complex, and there will always be human errors. What matters most, however, is continuing what the review accurately calls "the well-established expectation that the Secretary of State's office will not allow partisan interests to affect how it administers elections." The conclusions of the review leave no doubt that the OSS has met that expectation. My ongoing commitment is to make Minnesota's nation-leading election infrastructure even better.

Sincerely,

Steve Simon

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