



Changes to the Municipal Elections Act and related matters impacting the 2018 Election

Date: November 17, 2016

To: Executive Committee

From: City Clerk

Wards: All

SUMMARY

The purpose of this report is to update City Council on the recent changes to the *Municipal Elections Act* (MEA) resulting from Bill 181, *Municipal Elections Modernization Act* and Bill 68, *Modernizing Ontario's Municipal Legislation Act*, 2016. These amendments to the MEA represent the most significant and extensive changes in decades and will impact candidates, voters, municipal councils and election administrators.

This report also reviews the current state of voting technology and recommends that City Council authorize the expenditure to install new modems in the City's existing vote tabulators to allow for their continued use in 2018. This will ensure seamless continuity into the 2018 election and allow staff to further explore a possible partnership with Elections Ontario on the sharing of voting technology for future elections as is proposed in Bill 45, *Election Statute Law Amendment Act*, 2016.

This report also advises that there have been insufficient advances in Internet security to accept the risks of implementing Internet voting for the 2018 general election. The challenges identified by both City staff and security experts in 2014 remain unresolved. Internet voting continues to be vulnerable to security threats and attacks while raising concerns about secrecy of the vote, verifiability and overall election integrity.

RECOMMENDATIONS

1. The City Clerk recommends that City Council:

- a. Request the City Clerk to negotiate and enter into an agreement with Elections Systems and Software Canada, ULC for the supply and installation of new modems and associated software in the estimated amount of \$1.55M exclusive of HST (\$1,577,280 net of HST recoveries), fully funded from the 2016 Council Approved Capital Budget, on terms and conditions satisfactory to the City Clerk and in a form satisfactory to the City Solicitor.

- b. Request the City Clerk to further explore a partnership with Elections Ontario related to the sharing of voting technology for future elections.

FINANCIAL IMPACT

The funding required for the supply and installation of new modems and associated software, at \$1.57 million (net of HST recoveries), is included in the City Clerk's Office 2016 capital budget and 2017-2025 capital plan, approved by City Council at its meeting on February 17, 2016.

Changes in the MEA will significantly increase the operating costs of municipal elections, although many of the costs are unknown at this point. The cost to deliver the 2018 general election will be reflected in the City Clerk's Office 2018 operating budget submission.

Changes to the systems used to support the general elections will be absorbed within the City Clerk's Office 2017 capital budget and 2018-2027 capital plan being considered as part of the 2017 budget process.

If Council, despite the Clerk's advice, proceeds with Internet voting for the 2018 General Election, the City Clerk's Office 2017 operating budget would need to be adjusted by \$1.7 million gross, \$0 net, fully funded from the Election Reserve Fund. The cost of \$1.4 million for Internet voting in 2018 would be included in the City Clerk's Office 2018 operating budget submission.

As the Election Reserve Fund is used to fund both the operating and capital expenses related to the municipal elections, the additional costs to deliver the 2018 general municipal election as a result of MEA changes would significantly draw down the Election Reserve Fund. If Council chooses to proceed with ranked ballots and/or Internet voting, the Election Reserve Fund would be depleted after the 2018 general election. The City Clerk will work with the Deputy City Manager and Chief Financial Officer to determine strategies to replenish the Election Reserve Fund.

Section 7 of the MEA requires that the municipality pay the costs of the election after the Clerk has signed a certificate verifying the amount.

The Deputy City Manager and Chief Financial Officer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

At its meeting on September 30, October 1 and 2, 2015, Council requested the City Manager to include in the submission made to the Province that the Province not proceed with amendments to the MEA to provide for ranked ballots.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.EX8.1>

At its meeting on August 11, 2014, the Government Management Committee requested the City Clerk investigate the cost to extend the life cycle of the existing tabulators.
<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2014.GM32.31>

At its meeting on June 30, 2015, the Executive Committee referred item EX 7.3 back to the City Clerk with the request that she report back to the Committee with an analysis of the election technology marketplace.
<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.EX7.3>

At its meeting on June, 11, 12 and 13, 2013, Council requested the City Clerk form a working group to implement Internet voting for persons with disabilities for the 2014 Municipal Election, and report back with recommendations as to whether Internet voting should be adopted in the 2018 City-wide Municipal Election.
<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.GM22.15>

At its meeting on February 19 and 20, 2014, Council authorized the use of Internet and telephone voting as alternative voting methods for persons with disabilities during the advance vote period in the 2014 Municipal Election and authorized the City Clerk to negotiate and execute an agreement with Scytl Canada Inc.
<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2014.CC48.4>

At its meeting on July 8, 9, 10 and 11, 2014, the City Clerk advised Council of her decision to cancel the Internet voting project for the 2014 Municipal Election. Council requested the City Clerk to report back on a plan for potential implementation of Internet voting in future elections.
<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2014.CC54.5>

COMMENTS

Elections are changing rapidly

The election landscape is changing rapidly and significantly.

- City Council recently approved new ward boundaries which may come into effect for the 2018 election. Ward boundaries are the foundation for elections and will require redrawing new voting subdivision boundaries. This will require a significant amount of work and resources as the voting subdivision boundaries must be provided to MPAC no later than March 31, 2018.
- Staff have conducted five by-elections in the last year, with a sixth by-election scheduled for early 2017. This is more than the previous total since amalgamation, placing additional pressure on staff resources and the preparations for the 2018 election.

- The far-reaching implications of the new MEA, including third party advertising and ranked ballots amongst many other major changes will impact voters, candidates and election administrators.
- When passed, Bill 45, *Election Statute Law Amendment Act, 2016* will authorize the Chief Electoral Officer of the Province of Ontario to use voting technology and make it available to other electoral jurisdictions including municipalities.
- On November 16, 2016 the provincial legislature introduced Bill 68, *Modernizing Ontario's Municipal Legislation Act, 2016* which made additional amendments to the MEA.

These changes will result in elections that are more complicated and more expensive. There are insufficient funds in the Election Reserve to undertake more than the mandatory changes in the new legislation. Any discretionary initiatives will require additional contributions to the Election Reserve. There are insufficient staff and other resources, including time, to carry them out in time for 2018.

Council needs to carefully consider how much additional change to introduce in the 2018 election and the potential consequences for electors, candidates and election staff.

Part A - Summary of Municipal Elections Act Changes

1. MEA changes are far-reaching, the biggest change in decades

On June 9, 2016, Bill 181, *Municipal Elections Modernization Act, 2016* received Royal Assent, amending the *Municipal Elections Act, 1996* (MEA). This legislation establishes the most extensive changes to the MEA in the last 20 years and significantly alters the conduct of municipal elections in Ontario. It will also mean that the 2018 election will cost more.

The following provides an overview of the major changes to the MEA. Appendix "A" provides additional details on these and other changes.

Changes to the Election Calendar

- Shortening of the nomination period from 37 to 13 weeks
- Several changes have been made to other key dates and deadlines

Additional eligibility requirement for Council candidates

- Candidates seeking office on Council must submit 25 endorsement signatures from eligible electors with their nomination paper

Changes to Campaign Finance Rules

- Contributions by corporations and trade unions to Council candidates are banned, however, corporations and trade unions can contribute to third party advertisers

- A candidate may resubmit their financial statement to correct an error up until the filing deadline
- A candidate who misses the filing deadline may file within a 30 day grace period provided they pay a \$500 late filing fee to the Clerk
- A new spending limit for post-election parties and expressions of appreciation after voting day has been established

New provisions aimed at improving compliance with campaign finance rules

- A candidate's nomination fee will be refunded if the candidate files their financial statement on time
- The Clerk is required to publicly identify the candidates and third parties who filed or did not file a financial statement

Rules regulating third party advertising

- A framework to regulate third party advertisers, including contribution and spending limits has been established. This comes into effect on April 1, 2018. Regulations for spending limit amounts and forms have not yet been made.

Election Advertising Requirements

- Requirements for certain information that must be contained in advertisements and provided to broadcasters and publishers and available for public review have been set

Clerk has been given greater authority and responsibilities

- Determining advance vote dates and hours
- Authorizing electronic financial filing system including conditions and limits
- Reviewing all financial statements and identifying and reporting to the Compliance Audit Committee any contributions in excess of the prescribed limits

Council has been given authority to adopt a policy determining when automatic recounts will be conducted

- MEA provides Council with the authority to pass a by-law indicating when an automatic recount will be conducted in circumstances other than those permitted by the MEA. A by-law adopting the policy must be passed on or before May 1 in the year of the election.

Municipalities have the option of conducting ranked ballot elections

- Council must conduct a public education and consultation process to ensure electors understand ranked ballots and their implications before passing a by-law authorizing the use of ranked ballot elections for offices of Council.
- Section 2 of Part A in this report provides additional information on the process for implementing ranked ballot elections including the impacts and considerations. Appendix "B" provides additional details on the rules for ranked ballot elections including the additional results reporting requirements.

In addition to the changes mentioned above, the provincial government on November 16, 2016 introduced Bill 68, *Modernizing Ontario's Municipal Legislation Act, 2016* which made additional amendments to the MEA including:

- Changing the beginning of the term of office from December 1 to November 15
- Increasing the maximum contribution to a candidate or third party advertiser from \$750 to \$1,200. Maximum contribution to a Toronto mayoralty candidate remains at \$2,500.
- Setting out rules for the maximum amount a candidate and their spouse can contribute to the candidate's own campaign.

As this legislation has just been introduced, further review will be required before all of the implications will be known.

Significant efforts needed to implement base changes in time for 2018

The changes introduced by the *Elections Modernization Act, 2016* will greatly impact the planning and conduct of municipal elections. The following identifies the major impacts of these amendments:

- Many election systems will require changes to respond to the various MEA amendments. For example, changes will be required to the Candidate Management System, Electronic Financial Filing System, Electronic Financial Disclosure System, and Election Results System. Although work has begun on some of the systems, staff cannot begin developing the third party registration and reporting system until the province releases the final regulations and forms. Delays in the release of this information will place additional pressure on existing resources and timelines. Appendix "C" provides an overview of the City's integrated elections systems and demonstrates how changes to any one system impacts many others.
- Additional resources will be required to manage the processing of nominations within the shortened nomination period as well as the additional requirement for reviewing endorsement signatures.
- The full impact of third-party advertising is unknown at this time. It is anticipated that there will be significant new resource requirements to create new systems to administer third party advertising including managing registrations and reporting requirements.
- The requirement for the Clerk to review every financial statement, identify and report to the Compliance Audit Committee any contributors who exceed the maximum contribution limits may require the need for specialized resources such as accountants and auditors. There is also the potential for incurring additional costs for the Compliance Audit Committee.

There are also a number of new initiatives underway for the 2018 election including a new voters' list management system, an expanded advance vote program, and voting for homebound electors. The successful implementation of the MEA changes, along with these initiatives, will require significant planning and careful allocation of resources.

2. Council has the option of implementing ranked ballot elections, but there is insufficient time to meet the requirements for doing so

Municipal councils in Ontario now have the option to pass a by-law authorizing the use of ranked ballot elections, but only after conducting a public education and consultation process. A by-law to authorize ranked ballot elections must be passed no later than May 1, 2017 for the 2018 Election.

Regulation 310/16 which was released on September 16, 2016 sets out the matters to be considered by Council before passing a by-law including, costs, availability of technology and the impact the proposed by-law would have on the election administration. The regulation also sets out the public consultation requirements, information to be provided to the public, rules governing voting procedures, counting of votes, recounts and reporting of results.

The regulation requires that, if ranked ballot elections are authorized, it must be used for all offices on Council. It is not authorized for school board elections; school trustees would continue to be elected using the first-past-the-post system.

The regulation lays out a two-step decision-making process before Council can pass a by-law to authorize ranked ballot elections:

- Council must first conduct public consultations and provide the public with the required information, and
- Following the public consultations, Council must consider whether to pass a by-law.

Before passing a by-law, Council must hold at least one open house and one public meeting to give the public an opportunity to review and ask questions about the information provided to them on a proposed ranked ballot by-law.

Council is required to make the following information available to the public:

- A detailed description of how the elections would be conducted, including a description of how votes would be distributed to candidates based on the rankings marked on ballots,
- An estimate of the costs of conducting the election,
- A description of the voting equipment and vote-counting equipment, if any, that is being considered, and
- A description of any alternative voting method being considered.

In making its decision, Council must consider the following matters before passing a by-law:

- The costs to the municipality of conducting the elections,
- The availability of technology, such as voting equipment and vote-counting, equipment and software, for conducting the elections, and
- The impact the proposed by-law would have on election administration.

As discussed in the subsequent section, these requirements cannot be met by the May 1, 2017 deadline for passing the by-law.

Impacts and Considerations

Moving from first-past-the-post to ranked ballot elections would mean significant changes for candidates, electors, voting place staff and election administrators. It would impact every aspect of the election and require substantial investments and numerous changes, some of which are outlined below.

- *Insufficient time to effectively implement ranked ballot elections*

The most significant challenge is the limited timeframe available to effectively prepare for such a change before the start of the 2018 election. Those jurisdictions in the U.S. which use ranked ballots, all of which are much smaller than Toronto, recommend a minimum of two years to fully implement such a system after a decision has been made. Proceeding with a ranked ballot option for 2018 without the appropriate time to properly plan and implement carries significant risks to the integrity of the election and the public's ability to fully participate and understand the process.

- *Broad public consultations will be required prior to passing a by-law by May 1, 2018*

Extensive voter consultation and education is key to voter comprehension when asking voters to change their electoral system. A City as large and diverse as Toronto would need to exceed the minimum requirement of one open house and one public meeting to ensure inclusion, engagement, openness and transparency.

Conducting broad public consultations prior to the passing of the by-law would require significant efforts, time and money. To support these consultations, staff would need to engage external consultants to assist with developing the required information materials, education videos, translated materials, website, advertisements for community and ethno-cultural papers, and conducting online and telephone surveys and in-person open houses.

It is anticipated that such a comprehensive public consultation process would take approximately 9 to 12 months including time for the RFP process, development of the materials, feedback, analysis, and drafting a report to Council. It is clear there is insufficient time to meet the May 1, 2017 deadline to implement ranked ballots for the 2018 general election.

Costs to conduct a broad consultation process will be significant and are estimated to be in excess of \$1,000,000. There would also be internal staff costs associated with managing and supporting this initiative.

- *New vote tabulators would be required*

The City's current vote tabulators and results system do not have the ability to capture and tally ranked ballots. The City would need to acquire new vote tabulators and software that have proven, audited and auditable capacity to provide accurate results for both ranked ballot and first-past-the-post elections. Acquiring, testing and

integrating new tabulators into the City's election infrastructure would take at least 24 months.

As there are no Canadian standards nor any current U.S. certifications for ranked ballot equipment, the City would need to hire third party experts to verify the vendor's algorithms and audit the election results to ensure it meets the legislative requirements and is able to withstand a court challenge.

Logic and accuracy testing of vote tabulators and voter assist terminals is critical to ensure the accuracy and reliability of the equipment. Testing of ranked ballots would be more complex, extensive, and require considerable time, staff, and budget.

- *Ranked ballot design would be significantly different than electors have seen before*

Ranked ballot elections would require a significantly different ballot layout, with the potential for larger, double-sided and/or multi-paged ballots. Appendix "D" provides an example of a ranked ballot design based on what was used in Minneapolis and San Francisco ranked ballot elections in recent years.

Due to the complexity of the ballot, there may be an increase in the number of spoiled ballots due to voter error. It will also be more challenging and time-consuming for voting place staff to issue, manage, and reconcile especially if it is a multi-page ballot. A greater number of ballots will also be required to conduct the logic and accuracy testing due to the number of various combinations and rounds of counting.

- *Voting process would take longer*

Moving to a ranked ballot system would lengthen the voting process as it will take longer for voting place staff to explain the process to voters and for voters to mark their ballots. An increase in the incidences of spoiled ballots will also impact wait times at the vote tabulator and voting screens. To support voters and to avoid additional line-ups, at least one extra staff would be required at each voting location.

- *Training program for voting place staff would require extensive revisions*

Implementing a ranked ballot election would require redesigning the voting place staff training program including the development of new videos, manuals, online tools, reference guides, etc. It will also increase the length and number of training sessions, and the number of trainers and training facilities required. This will require an increase in the budget.

- *Public education and outreach is required throughout the election*

There is no jurisdiction in Canada that uses a ranked ballot system. To ensure the public understands and accepts the new method of voting, the City would need to develop a broad public education and communication campaign prior to, and throughout, the election. This is critical since municipalities using ranked ballots will be essentially running two elections - ranked ballots for council and first-past-the-post for

school board elections. This would create significant challenges for communicating and explaining these voting systems to electors in a city as diverse as Toronto.

External consultants would be required to assist with producing voter education materials, including translating materials in multiple languages. Additional staff resources will also be required to conduct community-based outreach efforts.

- *Final election results would be delayed considerably*

Final results would not be available on election night and for several days after the close of voting. Ranked ballot elections fundamentally change how votes are counted and reported. The timing of the release of official results would depend on the type of elimination method used, the number of races requiring elimination rounds, and the number of elimination rounds required for each race. The additional election results reporting requirements would also impact the release of the results.

- *Potential barriers for persons with disabilities or whose first language is not English*

Council must consider whether the complexity of a ranked ballot system could potentially discourage and/or disenfranchise some voters. A ranked ballot election is a significant departure from the current first-past-the-post system where voters are used to selecting one candidate for each office.

There may be potential barriers for persons with disabilities. One particular area of concern is the length of time it will take to mark a ballot using assistive devices such as audio and/or tactile inputs.

In addition, given the multi-cultural diversity of the City's population, the challenges and demands that already exist when it comes to translation and interpretation services for voters whose first language is not English will likely increase.

- *Ranked ballots would increase the cost of the election by at least 50%*

Implementing a ranked ballot election would greatly increase the overall cost of conducting an election. Additional costs would be incurred for public consultation requirements; a public education and awareness campaign; additional voting place staff to assist at voting locations; redesign of the training materials; additional ballot requirements; third party experts to verify system algorithms and logic and accuracy testing; and additional staff to support research, planning and implementing ranked ballot elections.

Because of the limited time available to assess the new regulatory requirements and the limited experience of other jurisdictions that have implemented ranked ballots (all of which are smaller than Toronto) determining the full cost of implementing ranked ballots is challenging. Based on a preliminary review, staff estimate it could cost at least 50% more than a first-past-the-post election. This does not include the cost to acquire new vote tabulators. This cost would vary depending on a number of factors including whether the equipment is purchased outright or leased or the availability and cost of using Elections Ontario's technology should it become available.

3. Council has the option of holding a referendum for ranked ballots

Section 8 of the MEA provides Council with the authority to pass a by-law to place a question on the ballot that is within Council's jurisdiction. Council could, if it wishes to consider ranked ballots for the 2022 election, place a question on the 2018 ballot.

Section 8.2(1) of the MEA states that the results of the question on the ballot are binding on the municipality if:

- (a) at least 50 per cent of the eligible electors in the municipality vote on the question; and
- (b) more than 50 percent of the votes on the question are in favour of those results.

If Council wishes to place a question on the ballot, it would have to be authorized by by-law no later than March 1, 2018. In reality, Council would need to make this decision much earlier so that staff can develop the necessary public education and awareness campaign and materials. Staff would prepare a subsequent report if Council wishes to pursue this option.

Part B - Voting Technology

1. Vote Tabulators

There have been recent developments at the Province of Ontario where there may be opportunities to share voting technology between Elections Ontario and municipalities.

Because this potential cannot likely be achieved in time for the 2018 election, it is recommended that our existing tabulators be upgraded with new modems to the current 4G standards. The tabulators themselves are robust and proven technology which continue to operate very well. If the modems are not replaced, election night results will be significantly delayed.

It is important that Council authorize the expenditure for the modems to ensure there is adequate time to install the modems, upgrade the software and conduct the necessary testing and integration into the City's election results system.

New provincial legislation will authorize the Chief Electoral Officer of Ontario to make voting technology available to municipalities

On October 19, 2016, the provincial legislature introduced Bill 45, *Election Statute Amendment Act, 2016*, which permits the Chief Electoral Officer to use technology in provincial elections and to make it available to other electoral authorities in Canada. The legislation has received second reading and has been referred to the Standing Committee on General Government. It is unknown when it will receive third reading and Royal Assent.

As the legislation was just recently introduced, staff have not had the opportunity to discuss with Elections Ontario how a possible partnership might work including details such as:

- when the technology RFP would be released including features and requirements of the voting technology and whether these would be suitable for the City,
- costs associated with using the technology, and
- the availability of the technology for general elections and by-elections.

It is not expected that the sharing of this voting technology would be in place prior to the 2018 election, especially since the provincial election date is proposed to be moved to June 2018 in Bill 45.

City's vote tabulators continue to be reliable, quick and accurate

The City's M100 vote tabulators have been used successfully in five general elections, 45 contract elections and ten by-elections, the most recent five by-elections occurring in 2016. The tabulators have proven to be extremely reliable, quick and accurate. In 2014, even with a record voter turnout, 98% of the election results were received and posted within an hour of the close of voting.

Since their purchase in 1999, the City's 1,850 tabulators have been upgraded a number of times:

- In 2008, the City partnered with the vendor to lease 1,500 tabulators to a U.S. jurisdiction for use in their elections. As part of this agreement, the vendor invested approximately \$1.4 M to upgrade the tabulators at no cost to the City.
- In 2009, Council authorized the upgrade of the tabulators' modems to 2G wireless technology. This upgrade enabled the tabulators to transmit the election results electronically during the 2010 and 2014 general elections.
- Over the years, the tabulators' firmware has been upgraded several times to improve their performance and functionality

Because the City owns, rather than leases their tabulators, the City Clerk has maintained close oversight of them in a controlled environment and staff have performed regular preventative maintenance and testing. This oversight ensures that the City's tabulators remain in a stable, secure, ready state and has enabled them to continue to perform consistently and reliably. It also provided the ability to lease them to other jurisdictions and associations for their elections.

Modem upgrade required at a minimum to continue wirelessly transmitting results for the 2018 election

Wireless providers have discontinued support for the 2G modem technology currently used with the City's vote tabulators. The City's current vendor, Election Systems and Software, has provided a quote of \$1.5 million (exclusive of HST) to supply and install new LTE (4G) modems and associated software. If Council decides not to approve the expenditure, there will be significant delays in the City's election results.

The City Clerk is recommending that Council approve the expenditure for the installation of new modems in the City's existing vote tabulators. Upgrading the modems is a low

risk/low cost solution. There is also insufficient time to acquire and test new voting equipment, which is an estimated 24 month process for the RFP, testing and integration of the equipment into the City's election infrastructure.

Upgrading the modems will allow the City to continue the current practice of wirelessly transmitting election results for the 2018 election. This would allow the City Clerk to continue to monitor the development of new voting technologies and to pursue the feasibility of sharing Elections Ontario voting technologies in future elections. Appendix "E" provides a summary analysis of the voting technology marketplace.

The City Clerk has consulted with the Director of Purchasing and Materials Management who has reviewed this report and supports this recommendation.

3. Internet Voting

Fundamentally, the Internet was designed to share information, not to secure it. Though an increasing amount of daily commercial life—from shopping to banking—has moved online, Internet voting poses security challenges that are unique and, in their current state, insurmountable.

The overwhelming consensus among computer security experts is that Internet voting is fundamentally insecure and cannot be safely implemented because of security vulnerabilities inherent in the architecture and organization of both the Internet and commonly used software/hardware:

- Internet voting is extremely vulnerable to a wide range of cyber-attacks, and many of these are impossible to detect.
- Internet voting poses extraordinary and unnecessary risks to election integrity, and even a small issue—were it even detectable—could completely undermine public trust.
- Every jurisdiction whose Internet voting system has been thoroughly examined by security experts—including the long-running system in Estonia—has revealed major vulnerabilities that could allow the system to be hacked, to reverse election outcomes, or to selectively disenfranchise voters, all while going completely undetected.
- Many jurisdictions that ran Internet voting pilots—including Washington, DC, France, and Norway—cancelled the projects due to security issues.
- Issues were reported across a number of Ontario jurisdictions that used Internet voting in 2014 including significantly delayed results in several townships due to the vendor mislabelling files, voters able to cast more than one ballot and the creation of a fake online voting site identical to the real one.
- Internet voting does make the process more convenient for committed voters, but has been shown to have little effect on overall turnout or youth engagement. In

addition, as a system is made more secure it becomes increasingly complicated, and in turn less accessible.

- Neither the technology nor the overall architecture are in place to completely eliminate the risks posed by Internet voting at the current time

Section 42 of the MEA provides Council with the authority to authorize alternative voting methods that do not require an elector to attend a voting place.

The Clerk must strike a balance between accessibility and security while ensuring the secrecy of the vote and the integrity of the election. Failure to conduct an election in a manner consistent with the principles of the MEA could result in a legal challenge. For these reasons the Clerk does not recommend that Council adopt Internet voting.

Cybersecurity experts continue to advise that Internet voting is not secure

Since the City Clerk cancelled Toronto's previous Internet Voting Project in July 2014—concluding that there was insufficient time to build an Internet Voting System that met the City's security and accessibility standards—staff have been closely monitoring new trends and technologies in Internet voting.

What is clear from extensive research, consultation with security experts in both Canada and the USA, and examination of Internet voting in other jurisdictions, is that there still exists no Internet voting system that can fully guarantee security, ballot secrecy and vote integrity.

In a [report](#) released in July 2015 by the U.S. Vote Foundation, their evaluation on the feasibility of secure online elections concluded that:

- No existing Internet voting system is sufficiently secure to be used in public elections
- Every publicly audited, commercial Internet voting system has been found to be fundamentally insecure
- No existing Internet voting system can guarantee either voter privacy or the accuracy of election outcomes
- Vendors are rarely held liable for security failures or election disasters

The Chief Electoral Officers of [Elections Canada](#), [Ontario](#), [British Columbia](#), [Nova Scotia](#), and [Alberta](#) have all investigated Internet voting and concluded the same.

The Internet is not secure; Internet voting is even less so

The internet was designed for the world-wide sharing of information but it is fundamentally insecure. Recent data breaches in both the public and private sectors have highlighted the continued challenge of maintaining Internet security in the face of increased threats.

Internet voting is vulnerable to the same attacks as any other web entity while also offering unique ways of being compromised:

- Viruses/malware on a voter's computer could change, fabricate, or delete votes before arriving at the election server, without anyone's knowledge and with no paper trail to verify voter intent or audit election results
- Targeted distributed denial of service (DDoS) attacks could block voters in certain areas from accessing the online voting portal
- Phishing sites could be created that look identical to the voting page, tricking users into providing their voting credentials

A question that frequently gets asked is "If I can bank online, why can't I vote online?" The answer lies in a fundamental difference in how the two operate:

- There is a pre-existing relationship between banks and their customers that provide banks with detailed information they can use to identify and confirm users. The City can only rely on the voters' list provided by MPAC with limited details on voters (e.g., name, address and sometimes birthdate).
- Online banking can use detailed user information to create logs for every transaction that are fully traceable in the event a problem arises. In contrast, the principle of the secret ballot requires that the link between a voter and their vote be severed, making it impossible to audit results or trace back problems without a paper ballot or receipt.
- E-commerce industries are constantly targeted for cyber-attacks and spend billions of dollars every year developing and maintaining their Internet security systems, as well as reimbursing customers for fraud and stolen funds. If money is taken from a user's bank account, it can be traced and returned. However, a person's vote cannot be 'given back' nor can a vote statement be provided to confirm that a vote was recorded as intended, since doing so would violate the secrecy of the vote.

This tension between the security goals of ballot secrecy and election integrity is why secure Internet voting is considered so much more difficult than commercial transactional systems. It is also why Internet voting is at a higher risk for attacks that go completely undetected.

A compromised Internet vote could have lasting effects

Should something go wrong with Internet voting, the consequences could be severe. Results tampering and the leaking of voter preferences represent some of the worst-case scenarios, but things need not be so extreme to have an adverse impact.

Even a minor security issue that gets fully resolved could still have the effect of making voters distrustful of the process or results and cast doubt on the integrity of the election. An elector's vote cannot be returned, and any failure that has the effect of violating the principles of the MEA could result in a controverted election.

Internet voting does not increase voter turnout or better engage youth

Internet voting is still often seen as worth the risk for its potential effects in stopping the downward trend of voter turnout. However, studies of jurisdictions with Internet voting, both in Ontario and abroad, have consistently shown that:

- Internet voting has little to no effect on turnout, including with youth voters.
- Election officials in Estonia—who have used Internet voting in nationwide elections since 2005—have [concluded](#) that Internet voting "has not been shown to be a mobilizing factor for [casting] a ballot".
- Switzerland conducted a comprehensive statistical analysis of turnout in their elections and [concluded](#) that Internet voting—first introduced in the mid-2000s—had "no effect on turnout, not even among younger citizens (below age 25)".
- Internet voting is used mostly as a 'tool of convenience' by those who have already decided to vote.

In addition, making an Internet voting system more secure also makes the system more complicated and less accessible. It may mean creating passwords, remembering long PINs, or introducing multi-step verification processes to confirm voter identity and eligibility. This increased complexity has the effect of decreasing accessibility to voters with disabilities.

The future of Internet voting is uncertain

The Clerk has the statutory obligation to ensure that any alternative voting method adheres to the following principles of the MEA:

- The secrecy and confidentiality of an individual's vote is paramount;
- The election is fair and must not favour one candidate over another;
- The election is accessible to all voters;
- The integrity of the process is maintained throughout the election;
- Voters and candidates are treated fairly;
- There should be certainty that the results of the election reflect the votes cast; and
- The proper majority vote governs by ensuring that valid votes are counted and invalid votes are rejected so far as reasonably possible.

The security risks associated with Internet voting pose a serious threat to a number of these principles. The Clerk is committed to exploring technological and other solutions that improve voting accessibility but remains of the opinion that current Internet voting systems are not secure enough for large scale use in binding, public elections.

Should Council nevertheless decide to proceed with Internet voting for the 2018 election, it would be offered alongside paper ballots as an optional voting channel during the advance voting period. While security risks cannot be eliminated by 2018, there may be potential strategies to help somewhat mitigate the risks such as requiring

access to an Internet voting system's source code or facilitating an "ethical hack" of the system to uncover and secure against vulnerabilities.

However, the overwhelming conclusion of computer security experts is that security vulnerabilities are inherent to the architecture and organization of the Internet and the hardware and software in common use today. Without significant technological advances, there is almost no possibility that a fully secure Internet voting system can be designed or implemented in the foreseeable future.

The estimated cost for an Internet voting system would be \$3.1M which would include the licensing and hosting of the Internet voting system, training and support, and the hiring of external experts to comprehensively review and test the system.

It is important that any decision to proceed with Internet voting be made as early as possible to give ample time to develop and issue an RFP for an Internet voting system, as well as for system development and thorough security and accessibility testing. A late-term decision to use Internet voting would further compromise its delivery and increase the likelihood of many of the risks discussed above.

CONTACT

Bonita Pietrangelo, Deputy City Clerk, City Clerk's Office, Election Services
416-392-8019, Bonita.Pietrangelo@toronto.ca

SIGNATURE

Ulli S. Watkiss
City Clerk

ATTACHMENTS

Appendix A - Overview of Changes to the Municipal Elections Act, 1996

Appendix B - Overview of Ranked Ballot Election Authority and Rules

Appendix C - City of Toronto's Integrated Elections Systems

Appendix D - Sample Design of a Ranked Ballot

Appendix E - Summary Analysis of Voting Technology Marketplace