Staff Report

Report To: City Council

Report From: Carolyn Stobo, Deputy Clerk & Jeff Smith, By-law Coordinator

Meeting Date: September 20, 2016

Report Code: CL-16-023

Subject: Municipal and School Board Election 2018 – Alternative Voting Methods

Recommendations:

That in consideration of Staff Report CL-16-023 respecting the Municipal and School Board Election 2018 – Alternative Voting Methods, City Council directs staff to:

1. bring forward a by-law to authorize internet and telephone voting as the voting method for the 2018 municipal and school board election;
2. continue to collaborate with other municipalities in Grey County regarding the 2018 municipal election where it is mutually beneficial, including communications, advertising, and policies and procedures; and
3. provide election updates to City Council, as required.

Strategic Initiative:

Setting the voting method for the 2018 municipal and school board election supports the City's mission: Strengthening our community through sound leadership.

Depending on the voting method selected, it has the potential to impact the finance pillar by saving costs and other resources for upcoming and future elections.

Background:

Service Review 2016 Survey Responses and Public Comments

Part of the public feedback process for Service Review 2016, included questions about how the public wished to vote in the upcoming election. A total of 60% of survey respondents either strongly agreed or somewhat agreed that they wanted to vote online in the next municipal election.

A summary of comments is set out in Attachment 1.

Council Direction

On June 10, 2016, City Council adopted Resolution S-160610-012 as follows:

> **"THAT resolution S-160330-015,**
>
> > **'THAT City Council explore the following recommendations respecting Corporate Services: ... b. 2110.2 respecting considering alternative voting methods'**
>
> **proceed to implementation."**

The Clerk's Division has prepared this report as directed to provide an analysis of voting method options for the 2018 municipal and school board election.

Municipal Elections Act Requirements

Municipal and school board elections must be held every four years and are administered by the Clerk as Returning Officer, pursuant to the *Municipal Elections Act, 1996*, S.O. 1996, c. 32 (the "MEA").

Should Council wish to use an alternative voting method for the 2018 election, clause 42 (1) (b) of the MEA provides that a by-law authorizing the voting method must be passed by May 1, 2017.

Election Principles

In considering alternative voting methods, the principles of the MEA must be upheld, including:

- maintaining the secrecy and confidentiality of the voting process and individual votes
- providing an election that is accessible to the voters

- providing an election that is fair and non-biased
- ensuring the integrity of the process is maintained throughout the election
- ensuring the results of the election reflect the votes cast, and that valid votes be counted and invalid votes be rejected so far as reasonably possible
- ensuring voters and candidates are treated fairly and consistently within the municipality.

Meetings with Municipal Clerks in Grey County

Staff in the Clerk's Division have held meetings with Grey County Clerks / Deputy Clerks to review:

- recent Bill 181 amendments to the Municipal Elections Act, 1996
- election procedures and timelines
- alternative voting methods
- possible benefits of collaboration, such as information sharing and joint advertising.

Research on Voting Methods

Staff have undertaken a thorough review of the current research on internet and telephone voting and other voting methods that may be used by municipalities in the upcoming election, including:

- the experiences of the 97 Ontario municipalities that adopted internet and telephone voting in whole or part for the 2014 municipal and school board elections;
- the results of the Internet Voting Project, an academic study by Nichole Goodman and Heather Pyman of the experience of municipal election methods in the 2014 Ontario municipal election, including a mix of urban/rural, density, socio-demographic, seasonal/permanent municipalities;
- an Elections Ontario report on alternative voting technologies and the feasibility of internet voting in a provincial election, though applying these findings to municipal elections is difficult given the significant difference in size, electoral districts and costs at the provincial level.

Information from this research is included in the body of this report and a listing of and links to some of the reports, papers and surveys reviewed is included in Attachment 2 should Council wish to review the research materials.

Dominion Voting Rental, Software License and Services Agreement

Staff have reviewed the City's current Rental, Software License and Services Agreement with Dominion Voting, to provide tabulators and equipment to the City for the 2014 and the 2018 municipal election.

This Agreement guarantees the reduced 2014 rate for the 2018 election, should the City choose an alternative voting method that Dominion provides, such as internet and telephone voting, vote by mail or, as with the 2014 election, continue with paper ballots and tabulators. Dominion was the internet and telephone voting service provider used by a number of other municipalities in Ontario, including Meaford, for the 2014 election.

Analysis:

This report provides analysis and recommendations regarding the following alternative voting methods:

- internet and telephone voting
- paper ballots with poll tabulators
- vote by mail
- combination of multiple voting methods.

Recommended Method – Internet and Telephone Voting

Staff recommend that City Council approve internet and telephone voting as the voting method for the 2018 election, as it best supports:

- greater convenience by providing the most flexibility and opportunity for participation
- improved accessible voting options
- help centres will be located in places like institutions, retirement homes, long-term care facilities, the hospital and other places to promote the election, add electors to the Voters' List, assist voters with information, and offer access to a telephone or computer for voting
- elimination of spoiled ballots
- superior accuracy of the count
- preservation of secrecy

- facilitation of participation by non-resident electors
- improved cost effectiveness (see Financial Implications below)
- the preference of the majority of responses received in the course of the Service Review 2016 public consultation.

How it would work

1. Electors would confirm they are on the Voters' List.
2. In early October, each elector will receive a personal *voter notification letter* containing information to access the voting system by internet or telephone, including the following information:
   - voter's ID number
   - voter's unique PIN to vote
   - URL and telephone number for the voting system
   - voting information, i.e. candidates running for office, location of help centres, legal requirements to vote, how to find more information, etc.
3. Accessing the voting system:
   - electors will be required to confirm they are entitled to vote when accessing the system
   - user must enter his or her ID and PIN number provided on the notice
   - user will follow the prompts and confirm his or her selections.
4. Help centres will be located in places like institutions, retirement homes, the hospital, schools or other places to promote the election or assist voters, and can provide the following services:
   - add an elector to the Voters' List
   - provide assistance and clarification on the election process
   - offer access to a telephone or computer for voting
   - assist any electors requiring assistance in voting.
5. Results may be available as early as 8:30 p.m. on election night, with tabulators not required.

Benefits and Drawbacks of Internet and Telephone Voting

- Convenience
  - provides the most flexibility and opportunity for participation
  - allows for a longer voting period and 24 hours per day voting until Monday, October 22, 2018 at 8:00 p.m.
  - electors can vote in the privacy of their own home or anywhere in the world

    - electors can vote by telephone, tablet or computer
    - help centres will be located in places like institutions, retirement homes, long-term care facilities, the hospital and other places to promote the election, add electors to the Voters' List, assist voters with information, and offer access to a telephone or computer for voting
    - voting online or by internet reflects the preference of the majority of responses received in the course of the Service Review 2016 public consultation
    - 60% of Service Review survey respondents either strongly agreed or somewhat agreed that they wanted to vote online in the next municipal election
    - the vast majority of voters (95%) surveyed as part of the Internet Voting Project praised internet voting as being more convenient, accessible and better enabling their voting rights

- Accessibility
    - independence, dignity, integration, and equal opportunity
    - privacy of voting at home without having to travel
    - voters can use their personal telephones or computers with accessibility features including high volume, headphones of talk-to-you("TTY") features
    - system uses clear and plain language with prompts
    - meets or exceeds provincial standards
    - if assistance is required, as above, help centres will be available throughout the voting period to assist persons with disabilities

- Voter Education
    - new technology, so needs more communication, outreach and education of voters than traditional paper ballot method
    - the Internet Voting Project found that voters who were not satisfied after using internet and telephone voting in the 2014 election said they were frustrated with learning a new voting method
    - help centres will be set up throughout the voting period to update the Voters' List, answer voters' questions and provide assistance to voters, etc.

- Proxies
    - removes the need for proxy voting

- Advance Polls
    - a longer voting period removes the need for advance polls
- Accuracy of Count
    - count is 100% accurate
    - no risk of spoiled ballots or unclear voter intent
- Timing of Results
    - earliest – results should be available by 8:30 p.m.
- Staffing and Resources
    - temporary part-time staff and volunteers required will be significantly reduced, along with associated training time
    - full-time staff resources dedicated to election functions will be significantly reduced
- Costs
    - internet and telephone voting is estimated for 2018 at $80,000
    - estimate includes a significant increase for promotion, communications and advertising of new voting method to voters
- Potential Additional Benefits of Collaboration with other Clerks
    - sharing costs of promotion, communications and advertising
    - shared training efforts
    - reduced staff time developing policies and procedures
- Voter Turnout and Profile
    - research to date suggests there is no clear evidence of any impact on voter turnout
    - mitigates risk of lower turnout due to inclement weather
    - the Internet Voting Project found that there was no noticeable change in the profile of voters, with older voters being slightly more satisfied than younger voters
- Security
    - perception of security concerns and process vulnerability
        - risks are mitigated with comprehensive security controls, including secure data centres, access control, data confidentiality and data integrity - for further details of available security measures see Attachment 3

- voter authentication or verification concerns
  - additional security measures can be taken to ensure the elector the ballot was intended for is the elector filling out that ballot, such as an option requiring the voter:
    - to authenticate his/her identity with a second shared secret beyond the PIN provided in the voter kit to enhance security
    - implementing a “two-step” voter verification process that requires voters to pre-register for online and telephone voting
    - if a two-step voter verification process is implemented, can be overwhelming for the voter
- although there are voter authentication risks, staff feel the risks are minimal, there are security controls in place and voter fraud remains an offence under the MEA
- repeat voting concerns
  - the system includes protections against repeat voting - once an individual has voted he or she will no longer be able to log into the system and vote again and will immediately be marked as voted on the Voters’ List
- system audits will be carried out during voting and after the close of polls
- the Internet Voting Project found 37% of voters who did not use internet voting had security concerns and 32% did not, while voters who did use internet voting found it more private

Experiences of Other Municipalities

- use of internet and telephone voting is on the rise:
  - 12 municipalities in 2003;
  - 20 municipalities in 2006;
  - 44 municipalities in 2010; and
  - 97 of 414 municipalities used it in 2014, with 90 offering internet and telephone for the whole voting period and 59 using internet and telephone exclusively (i.e. not combined with another method)

- the Internet Voting Project found the following for voters:
  - 95% of voters were very satisfied, compared to a satisfaction rate of 68% for paper voting methods

    - internet voting was described as easy, simple, straightforward, private, convenient
    - 98% of voters would vote online again
    - 95% of voters would recommend it to others
    - though some respondents noted challenges for seniors, older voters were the biggest users of internet and telephone voting and older voters had higher satisfaction with internet voting

- the Internet Voting Project found the following for election officials:
    - 96% were satisfied with internet voting
    - described as easy, accessible, convenient, cost efficient, fast results, accurate
    - 97% would recommend it for 2018 municipal elections

- the Internet Voting Project found that most candidates believed internet voting affected their campaign and of those:
    - 50% commented that it had a positive effect
    - 33% believed it had a negative effect
    - 17% of comments were neutral

Alternative Methods Not Recommended

Method 2 – Paper Ballots and Tabulators

Staff only recommend that City Council consider paper ballots with tabulators, if internet and telephone voting is not selected. This recommendation is based on overall costs, additional resources and full-time and part-time staff required, risk of spoiled ballots and later election results. Staff consider the paper ballot method with or without poll tabulators to be inferior to internet and telephone voting.

This option would not reflect the majority of responses in the course of the public consultation for Service Review 2016.

How it worked in 2014

1. Electors would confirm they are on the Voters' List.
2. In early October, each elector will receive a voter notice advising of voting options and identification requirements.
3. Electors may vote at an advance poll, a specialty poll for retirement and long-term care homes or at any of five voting locations on voting day.
4. Voter marks the ballot and feeds it into a tabulator.

5. The memory cards are taken by staff from the tabulators at voting locations, returned to the Clerk's Division and the data is processed by computer to determine results.
6. Results may be available within 60 to 90 minutes of close of polls.

Benefits and Drawbacks

- Convenience and Accessibility
    - provides less flexibility and opportunity for participation than internet and telephone voting
    - provides a more limited voting period (election day and select advance polls)
    - electors must travel to a voting location
    - more difficult for non-resident electors to participate
    - requires persons with disabilities to ask for assistance or use assistive voting equipment available at only one voting location (voting paddles and sip and puff)
- Voter Education
    - less voter education will be required than for internet and telephone voting or vote by mail, since it is a long-standing voting method
- Staffing and Resources
    - approximately 100 part-time staff will be required for voting locations, along with a significant amount of training
    - 14 full-time staff will be required to attend bi-weekly training prior to the election, and to provide oversight and assistance at voting locations
    - recruiting qualified part-time staff with an electronic Voters' List and volunteers to provide services at voting locations is becoming more difficult
    - voting locations have to be secured, leased, set up and cleaned up
- Proxies
    - proxies will be available
- Advance Polls
    - an advance poll must be established
- Accuracy of Count
    - risk of spoiled ballots or unclear voter intent due to voter error with paper ballots

    - use of tabulators provides some controls by confirming when a voter has over-voted, voted in an unclear manner or left a contest blank on the ballot – if an error is discovered, the voter may revise the ballot or direct the tabulator operator to cast the ballot "as is"
- Timing of Results
    - 60 to 90 minutes after close of polls, which is faster than hand-counting but slower than internet and telephone
- Costs
    - paper ballot with tabulators (estimate) - $100,000
    - these costs will continue to increase for successive, elections if paper ballot voting continues at a higher rate than costs for other methods, primarily due to higher costs of required significant numbers of part-time staff and full-time staff, and required contributions to reserves in future years will similarly increase over time
- Security
    - paper ballots are generally recognized as the voting method offering the most security, since this method provides a good audit trail

Method 3 – Vote by Mail

Staff do not recommend that City Council consider vote-by-mail with tabulators, as staff consider this method to be inferior to internet and telephone voting for the City. Although costs would be similar to internet and telephone voting, there is less convenience, greater risks including potential for spoiled ballots, along with full reliance on the postal system to disseminate blank ballots / return completed ballots.

Vote by mail would not support the wishes of the public, as nearly half (48%) of respondents to the 2016 Service Review survey did not want this method of voting. This method is considered more often by predominantly rural areas and areas with significant numbers of seasonal residents.

How it would work

1. Electors would confirm they are on the Voters' List.
2. Electors would receive a personal *voter notification letter* in early October containing a paper ballot with instructions on how to complete and return the ballot by mail or drop box.

3. Either manual counting or a central count scanner/tabulator is recommended to count mailed in ballots.
4. Results may be available in excess of 90 minutes after polls close.

Benefits and Drawbacks

- Convenience and Accessibility
    - vote-by-mail method has the ability to enhance the convenience of voting for some resident and non-resident electors, but some may find it less convenient since there will be a deadline prior to voting day to mail in ballots to ensure receipt by close of poll
    - this method may be more or less accessible than a traditional paper ballot election, depending on individual electors disabilities
    - this method is also less accessible than telephone and internet voting
- Staffing and Resources
    - vote by mail would eliminate or significantly reduce the cost of staffing and voting places
- Proxies
    - removes the need for proxy voting
- Advance Polls
    - removes the need for advance polls
- Accuracy of Count
    - there is a higher risk of spoiled ballots and unclear voter intent due to voter error with mail in ballots, than internet and telephone voting, or paper ballots with tabulators
- Costs
    - costs estimated at $80,000
    - lower costs than paper ballots, due to the reduction in required part-time staff and facility rentals and associated costs
    - additional costs would be required for a central tabulator to ensure results are available within a reasonable time after polls close
    - additional costs will also be required for voter education on a new and different voting method
- Security
    - this method, as with paper ballots, would provide a good audit trail since it requires paper ballots

- potential errors due to mail distribution process
- erroneous or misleading Voters' List data is exacerbated by vote-by-mail
- electors may mistakenly receive voter packages intended for other individuals, including ballots
- privacy concerns arise since voters might return ballots inadvertently disclosing their identity by returning their ballot in the wrong envelope
- there are no automatic controls established in order to prevent a spoiled ballot (i.e., by over-voting) since, even if a central tabulator is used which identifies a potentially spoiled ballot, the voter is not present to correct the error
- full reliance on the postal system to disseminate blank ballots and for the return of completed ballots exposes the election process to considerable risk
- the Internet Voting Project found that 54% of respondents believed that voting by mail is less safe than internet and telephone voting

Method 4 – Combining two or more Voting Methods

Staff do not recommend combining any two methods together, such as internet/telephone voting with paper ballots. In effect, such an approach would result in the conduct of two separate elections at the same time with resulting significantly higher costs, including staff and other resources.

If internet and telephone voting is considered, rather than adding paper ballots for some voters, help centres will address any concerns.

Feedback following the 2018 Election

Should City Council authorize internet and telephone voting for the 2018 election, staff will collect feedback from electors and monitor the voting process throughout the election period. Following the 2018 election, staff will report back to Council outlining accessibility, elector feedback and any issues that may have arisen.

Financial/Budget Implications:

Contributions have been made to the election reserve in the amount of $30,000 in 2015 and 2016, and additional contributions will be made to the election reserve in each of 2017 and 2018 in the equivalent amounts of $30,000.

If paper ballots with tabulators continues as the voting method for 2018 and beyond, the City will see the current contribution to reserves increase as it has historically over time.

If internet and telephone voting is selected as the voting method for 2018, any savings from reserve contributions for the period 2015-2018 will offset future reserve contributions towards the 2022 municipal and school board election.

Communication Strategy:

Any decision of Council will be communicated to the public in keeping with the general strategy for communicating decisions related to Service Review 2016. This will be followed by detailed communications forming part of the 2018 municipal and school board election.

Consultation

City Manager
Director of Corporate Services
Local municipal Clerks, Grey County

Attachments

1. Service Review Survey Results Summary
2. References and Additional Reading
3. Online Voting System Security Measures

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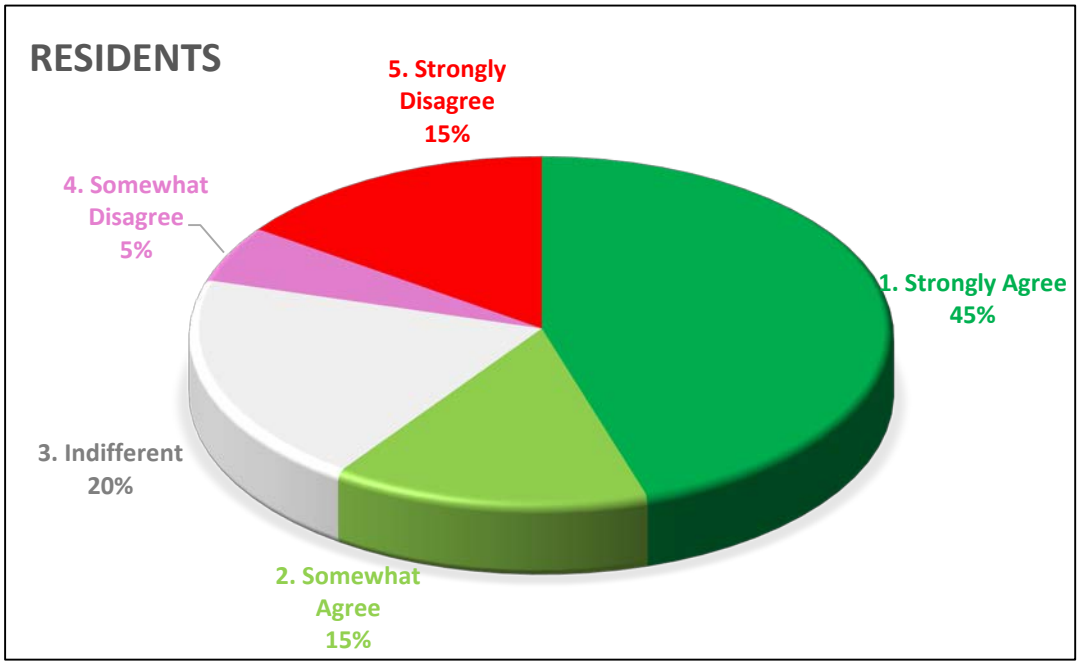
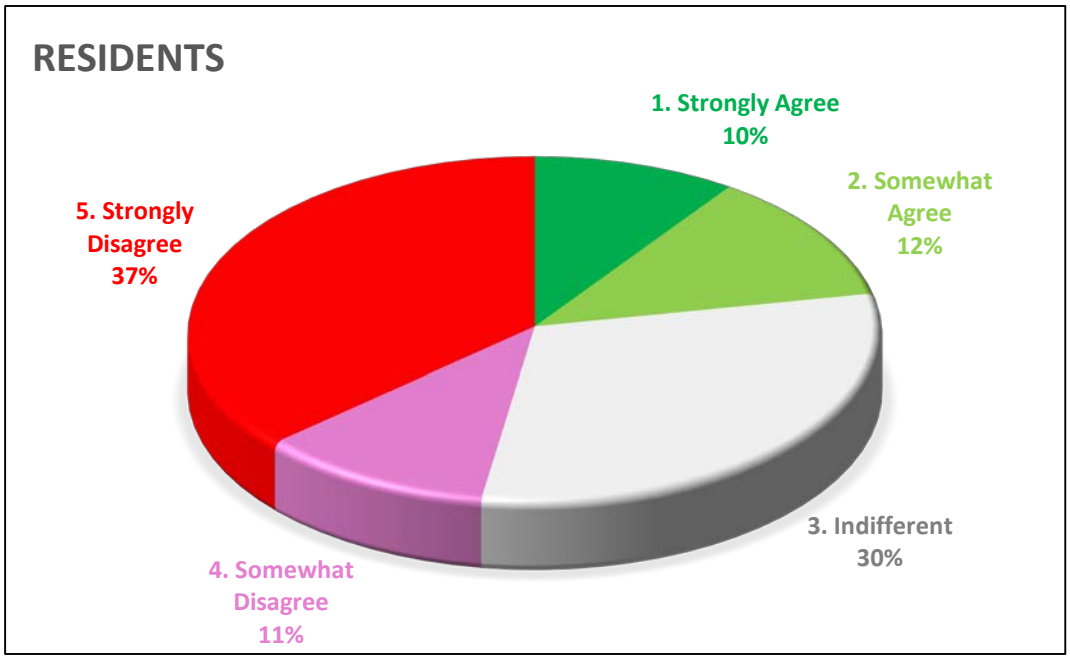
Submitted By:	Wayne Ritchie	Signature on File

Service Review 2016 Survey Results Summary

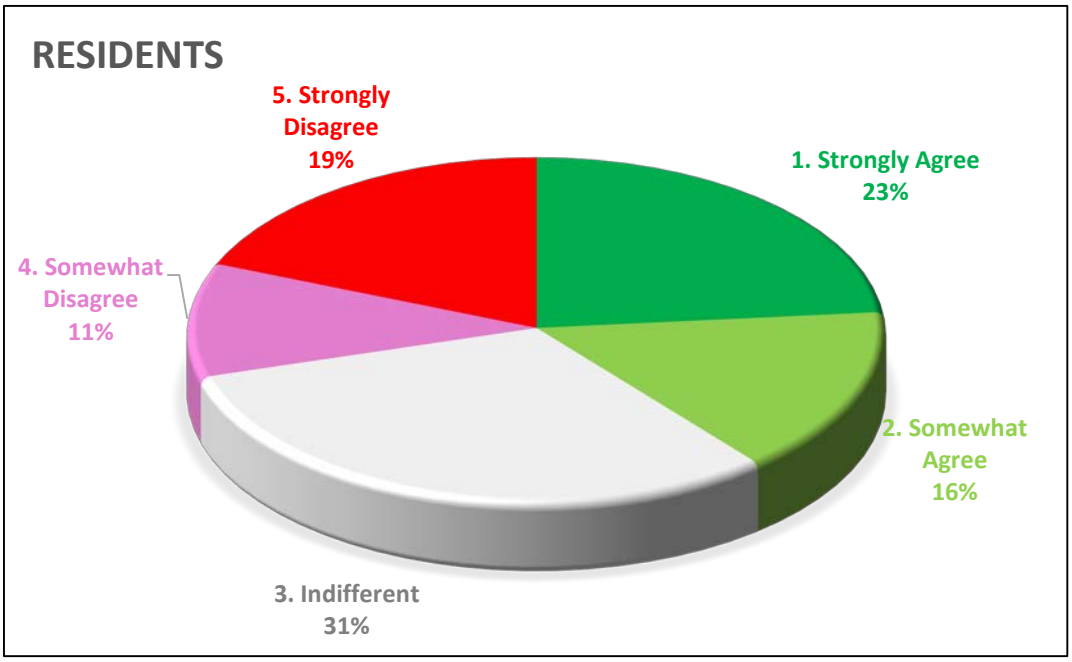
Q4: I want to vote online in the next municipal election.



Q5: I want to vote by mail in the next municipal election.



Q6: I want to vote using the traditional ballot method in the next municipal election.



Other Comments:

___ Many older people are not voting so I think they should be using a ballot.

117 Not everyone can use computer to vote online. So there will be less people voting.

134 Voting electronically would be a welcome idea to explore.

235 Q's 4) 5) 6)
Most people understand the traditional ballot. If one doesn't have a computer or knowledge of same *online would seem impossible or difficult without help as to how to proceed & may require hands-on help unless could be simplified to the greatest extent. *mail: cost of postage & what if ballots are late? (mail delay). What if voters have a change of heart or are undecided until the last minute?

237 Pay attention to voting reform so we're on top of ranked ballot / proportional representation reform in 2018.

287 Q.4.
if it's easy.
Q.6.
I'm for options.

References and Additional Reading

Kimberley Kitteringham, Town Clerk & Stephen Huycke, Public Services Coordinator, Markham's Online Voting Experience, June 17, 2012, Presentation at "Finding Common Ground" – AMCTO's 74th Annual Conference

Blair Labelle, City Clerk, An Analysis of Alternative Voting Methods, July 16, 2013

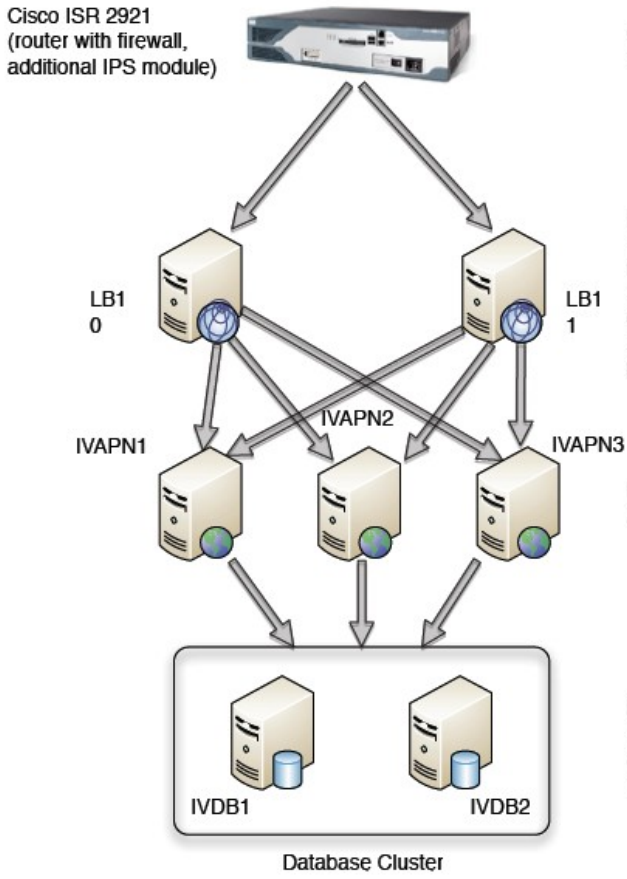
Nicole J. Goodman and Heather Pyman. (2016). Internet Voting Project Report, August 2016

Nicole J. Goodman, University of Toronto & Leah C. Stokes, Massachusetts Institute of Technology, *Internet Voting and Voter Turnout: An Empirical Examination of Local Elections in Ontario, Canada*, Prepared for the Annual Meeting of the International Political Science Association, Montreal, Quebec, July 22, 2014 (www.internetvotingproject.com)

Elections Ontario, Alternative Voting Technologies Report - Chief Electoral Officer's Submission to the Legislative Assembly, June 2013

Online Voting System Security Measures – Dominion Voting

General System Security and Operations



Secured Channel: Dominion IV/IVR System utilizes the SSL protocol to provide a secure channel between voter's web browser and vote processing servers. The complete communication is digitally signed and encrypted.

Security Controls: The Dominion IV/IVR System provides a layered and comprehensive set of security controls for the end-to-end online voting process including pre-voting (election definition), voting (Internet/Telephone voting), and post-voting (results processing, reporting and publishing). Security controls include physical security mechanisms (secure data centers), access control (role based access control and user authentication with real-time audit records), data confidentiality (encryption using NIST verified algorithms such as AES256) as well as data integrity (digital signatures and certificates using NIST verified algorithms such as RSA and SHA256). In addition, the online voting system has a time-controlled validity - the system is operational only when the jurisdiction decides it to be operational.

Controlled Access: Access to the IV/IVR solution is protected by the initial voter authentication process, which interfaces with Voter Management Portal via programmed interface with jurisdiction's voter management system. In that way, the only publicly visible web page is actual voter login page (authentication page). Only after successful voter authentication, the system allows access to the voting pages.

Audit Logs: It would be violation of the voter privacy if the system was designed and configured to record every step that was performed by the voter. Essentially, this would allow reconstruction of voter selections and link voter to the votes. Therefore, the Dominion IV/IVR Solution maintains the audit log at the system backend (server) side when the voting session has started and when it has finished, with the additional information such as IP address, session ID, ballot ID, etc. For additional auditing purposes, Dominion Internet/Telephone Voting Solution also keeps an electronic ballot image record for each ballot cast that can be used for auditing as well as any recount purposes.

All electronic records are digitally signed but maintain voter privacy: If user side (voter) digital signatures were used for ballot signing, the voter privacy would be violated. As such, the jurisdiction would be able to link a voter to the ballot, which would be unacceptable. However, the client side digital certificates can be supported for the voter authentication which will provide mutual (two-way) authentication between the voter and Dominion Online Services web server.

Data files are digitally signed: Regarding protection of data on any data interfaces with external systems, any data files (XML and log files) are digitally signed and encrypted when stored. Any data files (XML and log files or other data) utilize SSL or SFTP secure channels for data communication.

Anti-virus protection: The IV/IVR System utilizes the Avast Enterprise Suite for anti-virus protection. This ISCA certified suite of applications provides the following:

- ☐ Antivirus protection
- ☐ Anti-spyware protection
- ☐ Anti-rootkit protection
- ☐ Resident protection
- ☐ 64-bit OS support
- ☐ Boot-time scan

Protection against repeat voting: Once the voter casts their ballot, the system does not allow the same voter to login again. In addition, as soon as the voter casts their online, the IV/IVR system updates the election database, creates audit records and an electronic ballot image with timestamp, and therefore provides multiple ways to verify that votes have not been modified. Of course, for privacy, the voter management database and the election database are separate systems to prevent any way of linking voters with their votes.

Complete Separation of Voter and Ballot Data: The Voter Management Portal and the Internet/Telephone Voting System databases are separate. Casting of the ballot results in real- time strike-off of that voter on the voter list system. As discussed, no link between voter and votes cast can be established.

Configuration Management: All system components (OS and other components such as database server software) are kept current with the latest patches and updates. All patches and updates are stringently tested by Dominion Quality Assurance Department before release.

Dominion Quality Assurance policy locks down the production version of the election system well in advance of the election event, as it is unwise to update systems too close to an election.

Role based permissions: Dominion provides means for role based permissions within the system. It is up to the jurisdiction to define permissions for each role, if the default set of permissions is not appropriate.

Business Continuity Plans: Dominion IV/IVR System utilizes redundant servers for application and database servers. Load balancers and real-time database synchronization keeps system balanced and protected in case of failure. In addition each server integrates RAID controllers with data mirroring. If required, data periodically can be also transferred to the Customer data center for additional off-site data redundancy.

Dominion uses Cisco based firewalls. Two levels of firewalls are provided within the system with configured filtering rules to allow only certain IP and TCP/UDP ports. All traffic is performed using SSL/HTTPS and SFTP protocols and only these ports are open.

Proper data security and data backup services are integrated within the Dominion IV/IVR System.

As outlined in the Network Diagram, the Dominion IV/IVR solution is deployed on two independent data centre environments, Dominion is the only IV/IVR services company in Canada that can provide this level of data security.

From data protection and backup point of view, all system components are designed around redundancy on several levels - multiple web, application and database servers, RAID controllers for data mirroring, load balancing, multiple levels of networking infrastructure equipment, etc.