REPORT TO:	Finance & Corporate Services Committee
DATE OF MEETING:	December 10, 2012
SUBMITTED BY:	R. Gosse, Director of Legislated Services/City Clerk
PREPARED BY:	R. Gosse - 2809
WARD(S) INVOLVED:	n/a
DATE OF REPORT:	November 2, 2012
REPORT NO.:	FCS-12-191
SUBJECT:	ALTERNATIVE VOTING – INTERNET VOTING

RECOMMENDATION:

For information and discussion.

EXECUTIVE SUMMARY:

This report looks at the use of internet voting and attempts to answer the question of whether or not internet voting should be introduced as a voting option for the 2014 elections. Staff is of the opinion that it should not be introduced in 2014 based on several factors outlined in greater detail in this report such as:

- Security of an internet voting system;
- Data that suggests it does not increase voter turnout and in particular, younger voters;
- Does not meet all of the principles of a democratic voting process;
- Cost;
- The lack of overarching guidelines especially in the area of voting system security and,
- The absence of a Canadian legal challenge to this voting method.

BACKGROUND:

In June 2011, Council directed staff to report back in 2012 on alternative voting methods and in particular, internet voting and the option of implementing this type of voting for the 2014 municipal elections. This report will focus mainly on internet voting being it is a completely new method of voting for the City of Kitchener.

REPORT:

Internet voting is becoming more prevalent within Ontario and other jurisdictions across Canada and around the World. It is a voting method that allows a voter to submit a digital ballot over the public Internet utilizing a web browser or application through a PC, tablet or smart phone. This voting method provides a great deal of convenience by allowing voters with internet access to vote from any location at any time during the voting period. It is also provides access to the voting process for many voters with a disability.

Despite the apparent conveniences of internet voting, there are risks involved. It is critical that elections are conducted with utmost integrity and in compliance with democratic principles. In

order to maintain public confidence elections should be accessible, transparent, secret, accountable and secure from fraud. Internet voting may not adhere to some of those principles raising the question of whether or not it is important enough to dispense with one or more principles for the sake of convenience and other possible positive outcomes. It is important that decisions with respect to introducing internet voting, take into consideration the need to balance these competing principles.

This report will attempt to bring together information from various papers, reports, data and documents on the subject to assist council in making a decision on whether or not, internet voting is an acceptable and appropriate voting method for the City of Kitchener to introduce in 2014.

The Internet Voting Experience

Internet voting has been trialled over the past decade by several countries and jurisdictions throughout the world. In all cases except one, this voting method has only been offered on a local or jurisdictional level, not on a national level. In addition, except for some Ontario municipalities in 2010, internet voting has been offered as a voting option along with others such as paper ballot, phone voting and mail-in; in other words, internet has not been the sole method of voting.

Europe and Australia

Several European countries have investigated and piloted internet voting and Estonia and Switzerland appear to have embraced this method having conducted several elections with internet voting as an option. Estonia is the only country to have offered internet voting on a national level. Norway conducted its first pilot in 2011 on a limited municipal level and pending the outcome of an extensive post-election report, there are plans to introduce internet voting on a national level in 2017.

Germany, the Netherlands and the United Kingdom have used electronic counting equipment and have trialled internet voting but all three have moved away from these voting options based on certain democratic voting principles not being met. Both Germany and the Netherlands have gone so far as to decommission all electronic voting methods citing lack of transparency, accountability and the fact that equal and free voting could not be verified. The United Kingdom also cited transparency and security issues and found that the majority of internet users would have voted using the other available methods raising questions with respect to cost and value.

Australia piloted internet voting in 2007 but deferred further trials in 2009 citing cost as the major impediment in offering this voting option.

North America

The United States have trialled internet voting but only in limited uses such as primaries and overseas/military voters. Security and risks to voting integrity have been cited as concerns and as such, no internet program has been established on a federal level. According to one researcher, a national policy on internet voting is not expected in the near future. Certain individual States have used internet voting again mostly for military and absentee voters however; security remains an issue with some and there is evidence that a few states are moving back to a paper ballot to be counted either manually or by optical-scan machines.

In Canada, the Federal and several Provincial governments have commenced their investigations into the use of the internet as an optional method of voting. On the federal level the Office of the Chief Electoral Officer has completed the terms of reference for internet voting and if approval is given, will offer the option for a by-election in 2013. It is also expected that if the pilot is considered successful, a federal policy on internet voting including security and

integrity, will be developed sometime in 2015-16. This is much the same for the Ontario government with a goal to pilot the option in 2012 and report back to the Speaker of the House in 2013.

The Alberta and Nova Scotia provincial governments have taken steps to allow piloting of internet voting on both the provincial and municipal levels. Edmonton has conducted a mock vote using the internet and Halifax and a few smaller towns have conducted elections with internet as an option and Halifax is again offering this method for the current 2012 elections.

Ontario

Internet voting was first introduced by the Town of Markham in 2003 and has continued to be an option in the 2006 and 2010 elections. In 2006, several more municipalities offered internet voting and in 2010, 44 municipalities that completed a survey for the Association of Municipal Managers, Clerks and Treasurers of Ontario, indicated use of the internet. Of the 44 municipalities, 6 offered internet as an option and only for advance voting, 8 offered internet as an option including election day and, 30 as the only means of voting along with telephone voting. It should be noted that the 30 municipalities that offered only electronic voting (internet and telephone), the largest in population was approximately 30,000; most were under 15,000.

Results and Outcomes

Throughout most internet voting trials around the world, one factor has become clear; the majority of citizens have generally accepted internet voting as a practical option. This is not to say the majority of citizens embraced the technology rather, they viewed it as an acceptable alternative.

Although it has been found that voters have accepted internet voting as a method for casting votes, there is no evidence to show it increased voter turnout. This is true throughout most, if not all, internet voting trials.

The Town of Markham has been a front-runner in this field, being one of the first jurisdictions in the world to introduce internet voting in 2003. The Town has offered this voting method as part of the advance voting period for the past 3 regular elections and following each election, they contracted a third-party company to undertake an extensive follow-up to assess the effectiveness and value of internet voting.

The follow chart shows the Town of Markham turnout over the 3 years that internet voting was available during advance voting.

	2003			2006			2010
Electors	158000			164500			185470
Turnout	42198			61948			65927
% turnout	26.71%			37.66%			35.55%
internet votes	7210			10639			10597
% internet of turnout	17.09%			17.17%			16.07%
% internet of electors	4.56%			6.47%			5.71%

The post-election analysis undertaken by the consultant for the Town showed that whereas advance voting increased dramatically, 300% in 2003, the overall turnout did not increase significantly. It should be noted that 2003 was a particularly low turnout whereas 2006 and 2010 were closer and perhaps slightly higher than the average turnout for the Town. The consultant's report which included post-election surveys amongst those who utilized internet voting showed that approximately 75% of those using the internet had voted in the previous election and had indicated they would have voted regardless of voting options. This was true in each of the 3 elections however; alternatively, 25% of the voters indicated they did not vote previously showing that the method may attract new voters. In addition, acceptance of those using the internet was very high, not only in Markham but for most other jurisdictions globally. Most respondents indicated they would use the internet in future elections.

The figures from the Cities of Peterborough and Burlington are similar to that of Markham's.

	City of Peterborough				City of Burlington
	2006		2010		2010
Electors	52116		54874		121525
Turnout	25036		24219		45671
% turnout	48.04%		44.14%		37.58%
internet	3473		3951		2500
% internet of turnout	13.87%		16.31%		5.47%
% internet of electors	6.66%		7.20%		2.06%

The 2011 elections held in Norway trialled internet voting for some municipalities which allowed for comparison between those with and without internet voting as an option. The post-election analysis showed clearly that internet voting did not have a positive impact on turnout; the results from those municipalities mirrored the results from municipalities without the internet option. The report also indicated that 89% of internet voters surveyed stated they would have voted if internet voting was not available.

The Town of Markham post-election analysis went beyond just looking at voter turnout; it also included a breakdown by age groups for those who used the internet to cast their vote.

voters by age									
	2003			2006			2010*		
18-24	9%	649		7%	745		18-19	2%	219
25-34	12%	865		11%	1170		20's	11%	1134
35-44	22%	1586		22%	2341		30's	13%	1380
45-54	27%	1947		28%	2979		40's	23%	2412
55-64	19%	1370		21%	2234		50's	26%	2781

64+	8%	577		11%	1170		60's	17%	1827
Unknown	3%	216					70's+	8%	844
	100%	7210		100%	10639			100%	10597

*Note: The Town changed the age groups in 2010.

The results by age groups in Markham are very much the same as in other jurisdictions around the world. In all cases where post-election follow-up was conducted, it was found that the largest users of the internet were by voters age 45 to 55 and the smallest groups were 18-34. In Norway a focus group of teenaged voters was undertaken and it was found that the younger voter viewed walking to a poll to cast a ballot as ceremonial and symbolic of adulthood. They also indicated that it was more important to ask why a young person should vote rather than what method they will use to vote. There is clear evidence that, regardless of geography internet voting does not attract younger voters.

Security, Scrutiny and Auditability

Internet voting does have risks especially in the area of software/hardware security which is one of the main reasons given by opponents of internet voting. Although there is a risk, there is no evidence that a government election utilizing the internet has ever been hacked or suffered a cyber-attack. That is not to say no internet voting system hasn't been hacked, there are several cases of such attacks taking place during a pre-election period when outside persons and groups were invited to test the security of a system.

A security attack on an internet voting system can take place in basically 2 ways: hacking into the servers and; denial of service whereby multiple computers on the internet receive instructions to attack the web site hosting the voting system, essentially overloading and shutting down the web site. Although these risks are real and attacks have taken place, with today's ever evolving security software, the risk is low that a system can be totally compromised.

Another cyber-attack method which could be more detrimental to the voting process and integrity of a voting system is one that does not attack the municipality's servers but rather, attacks the voter's computer. Spyware or another type of intrusive software can be inadvertently downloaded onto a private PC or one that is used by the public such as those available in libraries or cyber-cafes. Once downloaded the hacker could introduce software to change how the voter casts their votes. The important issue here is the fact that no matter how well the servers are protected, there is no way to ensure that the voter's choice has been received correctly. Once again, the risk of this method of attack is considered extremely low especially when it's a municipal election but, it can raise some concerns adding to the public perception that the system is not fool-proof.

The largest impact on an election stemming from security issues is not necessarily the integrity of the system but the cost involved to ensure the system is secure and to satisfy the public and candidates as to any concerns they may have. It is extremely important that the public has complete confidence in any voting system; a lack of confidence may result in lower voter turnout and/or post-election challenges.

In order to mitigate these issues, a Request for Proposal to provide an internet voting system will have to include proof that the system is secure and is certified to certain standards. However; without a Canadian standard, the City would have to decide on an appropriate standard either from another jurisdiction (i.e. Europe) or in consultation with a third-party digital security company. It is assumed that the costs incurred by companies offering internet voting systems to undergo such a security assessment will be passed along to municipalities. In

addition, once a system is chosen and put into place, the municipality must have a security consultant test and verify the integrity of the entire system including hardware. It may also be prudent to have a post-election security audit to ensure and provide proof that the system was not compromised (i.e. no programming code was added during the election).

There is one indisputable fact regarding internet or other Direct-Recording Electronic (DRE) voting system that cannot be ignored; it is the lack of auditability and the inability to re-create the vote. A paper ballot based system regardless how the ballots are tabulated maintains a means of recreating the vote should a recount be ordered. Since a DRE system does not produce a paper copy of any vote, a recount would rely solely on an audit of the system (so many votes received and so many votes counted). This inability to recount votes could be a real issue should an election be challenged and end up in the courts. It is also one of the main reasons that several European countries decided to decommission their DRE systems and not move forward with internet voting. Scrutiny of the election process was another reason.

One of the tenets of a democratic and free election is the ability for the public to scrutinize the process ensuring full transparency. This is even more important for candidates who may appoint scrutineers to observe and ensure the voting process is properly carried out. When voters can cast their vote away from the public eye, it raises questions on whether or not that part of the process is taking place properly and without coercion and/or fraud.

Cost

Holding elections is the basis for our democratic society and therefore costs should not be a factor, however; like everything undertaken by the City, costs must be taken into consideration. The operation of an election should balance cost with convenience to the elector therefore cost to add internet voting as an option should be weighed against the added value it may bring.

In 2010 the cost of holding the elections in Kitchener was approximately $360K made up of: hiring workers, leasing equipment/software, postage and supplies. In 2010 the cost of holding elections in Markham, a municipality with about 25% more electors, was approximately $1.2M.

The current estimated budget for 2014 is $390-$400K without adding internet voting as a voting option. Should internet voting be introduced in 2014 the following chart shows the estimated additional costs to be added to the current budget:

Internet Software	$1.50 - $2.00/elector with estimated 158,000 electors in 2014	$237K - $316K
Postage	Additional postage required; each notification will now be mailed individually rather than grouped by address	$25K
Security Audit	3rd party audit of entire internet system	$10-20K
Promotion	To ensure success, extensive promotion will be required (Markham costs in 2010, $216K)	$50-75K
Total Internet Voting	Total estimated costs using lowest costs in a range	$322K

Current Budget w/o internet voting	Current budget lowest costs to run an election similar to 2010.	$390K
Total 2014 Budget with Internet voting	Total estimated lowest cost with internet option	$712K

Elections are paid out of a reserve that is built up with annual contributions over the 4 years between elections. If internet voting is to be offered in 2014, the current annual contribution to the election reserve will have to be increased by $175-200K in budget years 2013 and 2014 to ensure the additional $300-$400K is available. This will increase the total contribution for the 2 years from $90K to $265-$290K. Should internet voting continue past 2014, then the annual contribution would be reduced so that each year equals 25% of the projected election costs for 2018. The estimate for the contributions between 2014 and 2018 is $200/annum. It is noted that the election reserve also receives interest revenue during the 4 years.

CONCLUSION:

Internet voting has been offered as a voting option since the late 1990's in various jurisdictions around the world, however; the number of countries/jurisdictions that continue to offer internet voting as an option is relatively small. Ontario is one jurisdiction that has seen a steady increase in the number of municipalities offering internet voting albeit; the majority of municipalities are considered to be small with populations less than 30,000.

Where internet voting has been offered, data suggest it has been well accepted by the public as an alternative voting method, however; there is no clear indication that it increases voter turnout. There is data that shows internet voting does not increase voter turnout amongst younger voters.

Security issues are a real threat but most studies conclude that the risk is small to medium. Notwithstanding the risk level, security standards should be in place to ensure public confidence in the election process. It is anticipated, but not guaranteed that the federal government will develop such standards by 2015-16.

Internet voting is very convenient allowing voters the opportunity to vote anywhere at any time during the voting period. Data compiled as part of several post-election studies where internet voting was being piloted showed that the majority of internet users would have voted regardless if internet voting was available or not. Internet voting also offers some voters with a disability the ability to access and participate in the voting process without assistance. This is not the only method to allow accessible voting, there are other methods using paper ballots or touchscreens.

Prior to introducing an internet voting option, consideration must be made with respect to this voting method and how it meets or doesn't meet the democratic principles of an election. There is a lack of transparency and scrutiny when voters are allowed to vote without public oversight that ensures the vote has been cast fairly and without coercion or fraudulently. This is particularly significant for Kitchener in light of the 2010 Ward 9 race that resulted in a 1 vote difference and subsequent recount.

The cost to offer internet voting as one option for electors is significant and cannot be ignored. The estimated cost will double the election budget for 2014 yet, data from other jurisdictions indicate it may not increase voter turnout enough to justify the cost.

In light of the issues raised with respect to internet voting as an additional voting option, it is staff's opinion that it should not be introduced in the City of Kitchener for the 2014 municipal

elections. The earliest election that internet voting should be considered is 2018 by which time it is anticipated security standards will be in place. One event that has not taken place in Canada as of yet that may assist in answering questions regarding security and election principles, is a court challenge. It was a court challenge in Germany that resulted in that country abandoning any further internet voting and the use of DRE voting systems. A challenge in Canada may set the legal parameters for offering internet voting and answer the question with respect to the importance of election principles in context of voting convenience.

ALIGNMENT WITH CITY OF KITCHENER STRATEGIC PLAN:

Efficient and Effective Government: Exploring technological changes to ascertain its appropriateness in enhancing community access to the election process. Positioning the City as a leader in public sector processes; ensuring accountability and transparency.

FINANCIAL IMPLICATIONS:

Financial implications are dependent on whether or not internet voting is going to be offered in 2014. It is estimated that the addition of internet voting as a voting option will add between $325K and $400k to the current budget of $390K.

COMMUNITY ENGAGEMENT:

A draft of this report is to be presented to Compass Kitchener on December 5th for questions and feedback. Compass Kitchener has been looking into voter engagement and turnout including internet voting as an option. The outcome of that meeting will be reported on verbally at the December 10th Finance & Corporate Services Committee meeting.

ACKNOWLEDGED BY:	D. Chapman, DCAO – Finance & Corporate Services Department