



Halifax Regional Municipality Specified Procedures Report

2020 Halifax Regional Municipality Municipal
Election

October 30, 2020



Dieppe
11 Englehart Street
Dieppe, NB E1A 7Y7
Tel: +1 506 853 3097
Fax: +1 506 859 7190

Fredericton
527 Queen Street
Suite 110
Fredericton, NB E3B 3T2
Tel: +1 506 455 8181
Fax: +1 506 455 8141

Halifax
RBC Waterside Centre
1871 Hollis Street
Suite 500
Halifax, NS B3J 0C3
Tel: +1 902 420 1080
Fax: +1 902 420 0503

Saint John
Red Rose Tea Building
5th floor
12 Smythe Street
Saint John, NB E2L 5G5
Tel: +1 506 634 7000
Fax: +1 506 634 2129

St. John's
Fortis Place
5 Springdale Street
Suite 800
St. John's, NL A1E 0E4
Tel: +1 709 726 2840
Fax: +1 709 726 0345

Ernst & Young LLP
Atlantic Canada
ey.com

Report on results of applying Specified Procedures on the electronic voting system used during the polling period for the Halifax Regional Municipality 2020 Municipal Election

To the Returning Officer of Halifax Regional Municipality

As specifically agreed, Ernst & Young LLP ("we" or "EY") have performed the procedures detailed in Appendix A (the "Specified Procedures") in connection with the electronic voting system used during the polling period (between 8:00 a.m. on October 6, 2020 and 7:00 p.m. on October 14, 2020) for the Halifax Regional Municipality ("HRM") 2020 Municipal Election.

The results of applying the Specified Procedures are set out in Appendix A. The Specified Procedures performed do not constitute an audit or review engagement and, accordingly, no assurance is expressed. Had we performed additional procedures, an audit or review engagement, other matters might have come to light that would have been reported. The sufficiency and appropriateness of the Specified Procedures described in this report are solely the responsibility of the Returning Officer. Consequently, we make no representation regarding questions of legal interpretation or regarding the sufficiency and adequacy of the Specified Procedures described in Appendix A, either for the purpose for which this report has been requested, or for any other purposes.

This report is intended solely for the purpose of assisting the Returning Officer in evaluating the electronic voting system used in the HRM 2020 Municipal Election during the polling period. Any use that a third party makes of our report, and any reliance or decisions made based on it, are the responsibility of such third party. We accept no responsibility for any loss or damages suffered by any third party as a result of decisions made or actions taken based on our report.

Ernst & Young LLP

Chartered Professional Accountants
St. John's, Canada
October 30, 2020

Note - This report is confidential and is intended solely for the use of the Returning Officer, Halifax Regional Municipality. Our report has not considered issues relevant to third parties and we shall have no responsibility whatsoever to any third party which obtains a copy of this report. Any use such a third party may choose to make of this report is entirely at its own risk. EY consents to HRM posting a PDF copy of this final Specified Procedures report in its entirety and unmodified format on HRM's publicly accessible website.

Overview

Background

The Halifax Regional Municipality (“HRM”) engaged a third party, Intelivote Systems Inc. (“Intelivote” or the “software service provider”), to support the electronic voting process during the polling period of the HRM 2020 Municipal Election. Intelivote’s application is the electronic voting system that was utilized. Ernst & Young LLP (“we” or “EY”) was engaged by HRM to perform Specified Procedures before, during and after the electronic voting portion of the polling period.

Electronic voting was available during the polling period (between 8:00 a.m. on October 6, 2020, and 7:00 p.m. on October 14, 2020).

Definition of terms used in this report

For ease of reading, certain terms, acronyms and abbreviations are used within the body of the report. These are explained below:

- ▶ **Acclaimed candidate** - A candidate who is declared the councilor because no one chose to run against the candidate.
- ▶ **Audit PIN/PINs** - PINs that were generated using the electronic voting system’s Auditor Module, which were separately identified and segregated from the Voter PINs and used to perform the Specified Procedures.
- ▶ **Audit votes** - votes that were generated and segregated from the electronic voting system so that they can be monitored and used to perform the Specified Procedures. These votes are created by voting using Audit PINs.
- ▶ **Auditor module** - a module in the electronic voting system that is used to generate Audit PINs, cast audit votes before the advanced polling period and generate electronic voting results before, during and after the advanced polling period.
- ▶ **Datafix** - a Toronto-based data processing company contracted by the HRM to organize elector data and prepare it to be loaded into Intelivote’s database.
- ▶ **.docx (Word)** - format of the files obtained for the performance of the Specified Procedures.
- ▶ **Elector data** - Relevant information about the electors within HRM. This includes their first name, last name, birth date, address, age, division etc.
- ▶ **Electronic voting** - voting via telephone or via computer.
- ▶ **Internet system** - a component of the electronic voting system used to support computer-based voting through the website (<https://halifax.isivote.com>). Audit votes were cast during the polling period using audit PINs within this system.

- ▶ **Intelivote voting application** - the Intelivote Voting Application is a secure online voting solution that was utilized for the Halifax Regional Municipality (“HRM”) 2020 Municipal Election. The Intelivote Voting Application is referred to as the “electronic voting system” throughout the body of this report.
- ▶ **IVR (Interactive Voice Response) system** - a component of the electronic voting system used to support telephone-based voting through the 1-888-371-0341 toll free number. Audit PINs were used in this system to cast audit votes during the polling period.
- ▶ **Non-acclaimed candidate** - Candidates who are running for councilor or Mayor in the Halifax Regional Municipality (“HRM”) 2020 Municipal Election.
- ▶ **Oracle** - Oracle database management system of the electronic voting system.
- ▶ **PIN/PINs (Personal Identification Number)** - this number, along with the date of birth, is used to login and vote in the electronic voting system.
- ▶ **.txt (Text)** - format of the files obtained for the performance of the Specified Procedures.
- ▶ **USB (Universal Serial Bus)** - storage media used to store the encrypted file extract containing the election results from the electronic voting database.
- ▶ **Vote count summary report** - Report, in the Intelivote Voting Application, which shows the total number of votes received for each candidate in each race. This report does not include Audit Votes. This report summarizes the total number of votes received for each candidate across all districts.
- ▶ **.xls (Excel)** - format of the files obtained for the performance of the Specified Procedures.

Data files used in executing the Specified Procedures

HRM and Intelivote provided the following data files from their information systems to support certain Specified Procedures.

Organization	File name	File contents	As referenced in the Appendix A Specified Procedures
HRM	HRM_Eligible_Electors_20200825.txt HRM_MovedUndefined_Electors_20200902.txt	The HRM voter information, which was prepared for upload into the Intelivote Voting Application through Datafix. This information is as at August 25 and September 2, 2020.	Datafix elector data extract
	Candidate List	List of candidates from https://www.halifax.ca/city-hall/elections/official-candidates-2020-municipal-csap-election	Listing of all acclaimed and non-acclaimed candidates
Intelivote	ISI HRM Extract Oct 2.txt	The HRM voter information, as listed in the Intelivote Voting Application, as at October 2, 2020.	Intelivote elector data extract
	Duplicate PIN Check script output.txt	The output of an Oracle script, which was used to determine the number of total PINs as well as the unique number of PINs in the Intelivote Voting Application for the HRM 2020 Municipal Election.	Oracle script
	HRM users and groups.xls	A user listing for all user accounts with access to the Intelivote Voting Application for the HRM 2020 Municipal Election.	Intelivote Voting Application user listing
	dba_users.xls	A user listing for all user accounts with access to the Intelivote database.	Intelivote database user listing

Organization	File name	File contents	As referenced in the Appendix A Specified Procedures
Intelivote	ISI servers information.docx	Word document containing system-generated listing of users at the operating system and database levels of Intelivote's electronic voting system.	Intelivote database user listing

We relied on HRM and Intelivote to provide us with complete, accurate and reliable data files, as described above, on which we performed the Specified Procedures. For any information that was not provided by HRM and Intelivote, we were given Auditor access to the Intelivote Voting Application and were able to obtain this information directly from the Intelivote Voting Application. We did not verify the completeness, accuracy or integrity of this data against any independent source other than as described in the Specified Procedures.

Appendix A - Specified Procedures on the electronic voting system used during the polling period for the HRM 2020 Municipal Election and the results of the Specified Procedures

Step #	Specified Procedures	Results	Timing and occurrence of Specified Procedures ¹		
			Before	During	After
1	<p>Obtain the elector data extract (from Datafix) and the software service provider data extract (from Intelivote).</p> <p>Sub-Procedure A - Compare the total number of records (including totals for Name, Address, Date of Birth and District) for all records in the two data extracts.</p> <p>Sub-Procedure B - Enquire with the Halifax Regional Municipality Returning Officer as to the reason for any discrepancies.</p>	<p>Sub-Procedure A - The total number of records in the Datafix elector data extract was 323,463. The total number of records in the Intelivote elector data extract was 324,288.</p> <p>Sub-Procedure B - There was a discrepancy of 825 records between the Datafix extract and what was loaded into the Intelivote Voting Application. Representations from the Returning Officer indicated that the identified discrepancies were due to new voters who were added to Intelivote as they moved into HRM or reached the age of majority. There were also a number of ineligible voters who no longer reside in HRM or deceased voters who were deactivated in Intelivote. The numbers of new voters added was greater than voters removed resulting in an increase in records in Intelivote, as compared to Datafix.</p>	X		

¹ Note - Electronic voting was available between 8:00 a.m. October 6, 2020 and 7:00 p.m. October 14, 2020. The "Before" period is defined as the period between October 1, 2020 and the start of the electronic advanced voting period. The "During" period is defined as the period where electronic voting was available. The "After" period is defined as the period between the end of the electronic advanced voting period and October 17, 2020. The Specified Procedures were carried out at various times during these periods, as indicated in the Results tables and the results apply only to the particular time(s) indicated.

Step #	Specified Procedures	Results	Timing and occurrence of Specified Procedures ¹		
			Before	During	After
2	Using the HRM data extract noted in Procedure 1 (from Datafix), randomly select a sample of 25 records and visually compare on screen that the Name, Address, Date of Birth, and District are consistent with data in the Intelivote Voting Application.	Name, Address, Date of Birth and District were consistent between the HRM data extract and the Intelivote Voting Application for the sample of 25 records selected.	X		
3	Identify whether duplicate PINs exist in the data extract by reviewing the output of Intelivote's Oracle script test. As the PIN is the main index in the database and the index must be unique, the load will fail if each PIN is not unique.	There were no duplicate PINs identified.	X		
4	Obtain a listing of all system users who can access the electronic voting system (application, operating system and database). Note - Intelivote Systems Inc. ("ISI") modules are included. Obtain representation from the Election IT Project Manager (application), Returning Officer ("RO"), Assistant Returning Officer) and software service provider (Intelivote) System Representative (database and operating system) that those listed users are appropriate.	Representations from the Returning Officer and Intelivote System Representative indicated that all listed system users of the ISI electronic voting system (application and module access; operating systems; and database layers) were appropriate.	X		

Step #	Specified Procedures	Results	Timing and occurrence of Specified Procedures ¹		
			Before	During	After
5	<p>Obtain a listing of all non-acclaimed candidates, and their districts from the municipality. Using Audit PINs:</p> <p>Sub-Procedure A - Visually inspect that all candidate names are set up in the Internet system and are assigned to the correct district.</p> <p>Sub-Procedure B - Listen and validate that the candidate names are audible/set up in the IVR (phone) system and are assigned to the correct district.</p>	<p>Sub-Procedure A - All non-acclaimed candidate names were set up and assigned to the correct district in the Internet system.</p> <p>Sub-Procedure B - All non-acclaimed candidate names were audible/set up and assigned to the correct district in the IVR (phone) system.</p>	X		
6	<p>Attempt to log onto the electronic voting system via telephone to attempt to cast votes prior to the polling period.</p>	<p>Attempted to log onto the electronic voting system via telephone (1-888-371-0341) and observed that access was denied for the following times:</p> <ul style="list-style-type: none"> ▶ Friday, October 2, 2020, multiple points in time. ▶ Saturday, October 3, 2020, multiple points in time. 	X		

Step #	Specified Procedures	Results	Timing and occurrence of Specified Procedures ¹		
			Before	During	After
7	Attempt to log onto the electronic voting system via Internet to attempt to cast votes prior to the polling period.	Attempted to log onto the electronic voting system via Internet (https://halifax.isivote.com) and observed that access was denied at the following time: ▶ Friday, October 2, 2020, 10:18 a.m.	X		
8	Attempt to log onto the IVR (phone) and Internet system with a PIN that is set to "disabled" status.	Attempted to log onto the electronic voting system via Internet (https://halifax.isivote.com) and via telephone (1-888-371-0341) and observed that access was denied.	X		
9	In the test and live environment, perform pre-defined voting selections and attempts for a population of test voters. Sub-Procedure A - Validate the results match those that were expected from the pre-defined voting selections for the population of test voters. View the details of each test ballot using the Auditor Module to verify the vote was counted as cast. Sub-Procedure B - Validate that the blank cast ballots did not enter into the test election results as valid votes but as spoiled ballots.	Sub-Procedure A - Election results matched those that were expected from the pre-defined voting selections for the population of audit votes. Before voting, 178 audit votes were counted as cast. During voting, 178 audit votes were counted as cast. Sub-Procedure B - For all races, the Internet and the IVR (phone) systems did not allow for the casting of blank ballots.	X	X	

Step #	Specified Procedures	Results	Timing and occurrence of Specified Procedures ¹		
			Before	During	After
10.1	Using Audit PINs, cast a vote for each non-acclaimed candidate using the Internet system. Observe that a vote could be cast for each non-acclaimed candidate.	A vote could be cast for each non-acclaimed candidate in the electronic voting system via the Internet system.	X	X	
10.2	Using an Audit PIN that has already been used to cast a vote, via the Internet and the IVR (phone) systems, observe whether additional votes can be cast and recorded in the electronic voting system with the same Audit PIN. Sub-Procedure A - Attempt to log on and vote to the same candidate as the original vote. Sub-Procedure B - Attempt to vote for a different candidate in the same matter.	Sub-procedure A - Additional votes for the same candidate as the original vote could not be cast in the electronic voting system via the Internet and the IVR (phone) systems for an Audit PIN that had already been used to cast a vote. Sub-procedure B - Additional votes for a different candidate could not be cast in the electronic voting system via the Internet or the IVR (phone) systems for an Audit PIN that had already been used to cast a vote.	X	X	
10.3	Using a computer that was already used to cast a complete electronic voting session, conduct two additional complete electronic voting sessions from the same computer using unused voter credentials. Observe whether the Internet system will record the electronic votes from three unique PINs using the same device.	The electronic voting system via the Internet system recorded the unique electronic votes from the 178 audit voter credentials using the same device. More specifically, 89 audit voter credentials were used before the advanced voting period and 89 audit voter credentials were used during the advanced voting period.	X	X	

Step #	Specified Procedures	Results	Timing and occurrence of Specified Procedures ¹		
			Before	During	After
10.4	<p>Sub-Procedure A - Using an Audit PIN, complete an electronic voting session by voting in all eligible matters using the IVR (phone) system.</p> <p>Sub-Procedure B - Using the same Audit PIN, attempt to use the Internet system to conduct an additional complete electronic voting session by voting for the same candidates as voted for using the IVR (phone) system. Observe whether additional votes can be cast for those candidates.</p>	The Audit PINs that were used for a completed electronic voting session in the electronic voting system via IVR (phone) could not be used to log on to the electronic voting system via the Internet system.	X	X	
10.5	<p>Begin a voting session, using an Audit PIN vote for each eligible matter and obtain confirmation of that vote.</p> <p>Disconnect from the system (disconnect access, hang up). Log back onto the system using the same credentials and observe whether the PIN is able to vote for each eligible matter.</p> <p>Observe whether only one vote has been cast for the matter.</p>	Obtained confirmation of the vote for each eligible race in both the Internet and the IVR (phone) systems; then upon disconnecting and logging back into the Internet and the IVR (phone) systems using the same Audit PIN, the systems provided messages indicating that voting had already been completed and would not allow a new vote, with only one vote being cast for each eligible race.	X	X	

Step #	Specified Procedures	Results	Timing and occurrence of Specified Procedures ¹		
			Before	During	After
10.6	<p>Begin a voting session (internet and IVR (phone)).</p> <p>Move through the system prompts but not all the way through completion (i.e. casting a vote). Determine whether a vote was cast or not.</p>	<p>The electronic voting session via the Internet system did not cast a vote.</p> <p>The IVR (phone) voting session via the Internet system did not cast a vote.</p>	X	X	
10.7	<p>Begin a voting session (internet or IVR (phone)).</p> <p>Keep the session active.</p> <p>Using a different physical computer or IVR (phone), attempt to log onto the system using the same set of credentials and observe whether the system will allow the log on.</p> <p>If allowed, attempt to cast a vote in each session.</p> <p>Observe whether only one vote has been counted.</p>	<p>Began an electronic voting session via the Internet system and kept the session active. The same set of credentials were used via the IVR (phone) system. Access was denied using the same set of credentials used for the active Internet voting session. Only one vote was counted.</p> <p>Began an electronic voting session via the IVR (phone) system and kept the session active. The same set of credentials were used via the Internet system. Access was denied using the same set of credentials used for the active IVR (phone) voting session. Only one vote was counted.</p>	X	X	

Step #	Specified Procedures	Results	Timing and occurrence of Specified Procedures ¹		
			Before	During	After
11	Obtain the pre-election Auditor Module Zero Vote Count report from the software service provider's information system and observe whether there are any votes recorded. The timing of this procedure is to occur within 5 minutes prior to the polling period start time.	No votes were recorded in the Vote Count Summary Reports prior to the advanced polling period start time.	X		
12	Attempt to log onto the IVR (phone) system to attempt to cast votes after the electronic polling period has ended.	Attempted to log onto the electronic voting system via IVR (phone) system on October 14, 2020 at 7:00PM and observed a message indicating, "I'm sorry. The electronic voting period has ended. Please refer to your voter instruction letter for further instructions."			X
13	Attempt to log onto the Internet system to attempt to cast votes after the electronic polling period has ended.	Attempted to log onto the electronic voting system via the internet on October 14, 2020 at 7:00PM and observed a message indicating, "Sorry, this Event has concluded."			X

Step #	Specified Procedures	Results	Timing and occurrence of Specified Procedures ¹		
			Before	During	After
14	<p>At the close of the electronic Alternative Polling Period (October 14, 2020, 7pm), observe the following:</p> <p>1. Intelivote will create an extract file from their database containing the election results. This file will be encrypted and written to two separate USB flash drives. Obtain one copy and observe that the other copy has been provided to the Returning Officer. The password will only be provided to the Returning Officer.</p> <p>2. Intelivote will create a printed report of the election results and will place this in a sealed envelope and signatures of the RO and the Auditor will be applied to the seal area. This report will be provided to the Returning Officer.</p>	<p>Observed that the extract file containing the election results was encrypted and written to two separate USB flash drives. Observed that the Returning Officer entered the password during encryption and the password was not shared with anyone. Obtained one of the USB flash drives and observed that the other copy had been provided to the Returning Officer.</p> <p>EY generated the printed report of the election results. Validated that there were vote counts for each non-acclaimed candidate in the report and placed the report in the sealed envelope without revealing the results to the Intelivote personnel and Returning Officer. Signed the sealed area of the envelope and the observed the Returning Officer signing the same sealed area. Observed that the sealed envelope was provided to the Returning Officer.</p>			X

Step #	Specified Procedures	Results	Timing and occurrence of Specified Procedures ¹		
			Before	During	After
15	<p>Election Close (October 17, 2020, 7pm):</p> <p>After the close of the election. The auditor, using the Auditor module, will print off the election results using their ID and compare the electronic voting results they just printed with the electronic voting results from the RO's report printed earlier at the close of the advanced voting on October 14, 2020. The vote counts should be equal, demonstrating no additional votes were added to the system since the advanced voting period ended.</p>	<p>Using the Auditor Module, generated the election results on October 17, 2020 at 7:02 p.m. The Returning Officer also generated the same report from their own ID and printed it. Compared the electronic voting results from the sealed envelope with the electronic voting results printed at the close of the advanced voting and noted that the vote counts were equal, demonstrating no additional votes were added to the system after the advanced voting period ended.</p>			X

EY | Assurance | Tax | Transactions | Consulting

About EY

EY is a global leader in assurance, tax, transaction and Consulting services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY refers to the global organization and may refer to one or more of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. For more information about our organization, please visit ey.com.

For more information, please visit ey.com/ca.

ey.com/ca

© 2020 Ernst & Young LLP. All rights reserved.
A member firm of Ernst & Young Global Limited.