

1 **TECHNICAL CONFERENCE UNDERTAKING - JT 2.1**

2 **JT 2.1**

3 To explain the percentage distribution increase in General Service less than 50
4 kilowatts.

5

6

7

8 **RESPONSE:**

9

10 A response to this undertaking will be provided as soon as possible.

TECHNICAL CONFERENCE UNDERTAKING - JT 2.2

JT 2.2

To file the asset condition demographics from the previous Distribution System Plan.

RESPONSE:

This undertaking requests the same information as that which was requested in part (c) of interrogatory CCC-47. For ease of reference, Hydro Ottawa has repeated its response to interrogatory CCC-47 below.

A summary of percentage of assets in Poor and Critical Condition from Hydro Ottawa's previous rebasing application can be found in Table 2.2.5 below, as it originally appeared in Exhibit B-1-2: Distribution System Plan.¹ The vintage of information in the table is as of the end of 2014.

Table 2.2.5 – Asset Demographics & Condition

Asset Type	Population	Average Age	% in Poor & Critical Condition
Poles	59,450	39	12%
Polemounted Transformers	15,663	30	11%
Kiosk & Padmounted Transformers	15,663	34	4%
Vault Transformers	3,474	34	7%
Distribution Cables (XLPE)	4,128 km	25	17%
Distribution Cables (PILC)	356 km	35	15%
Underground Switchgear	439	15	2%
Station Transformers	170	36	2%
Station Breakers	1,003	36	5%

¹ Hydro Ottawa Limited, 2016-2020 Custom Incentive Rate-Setting Distribution Rate Application, EB-2015-0004 (April 29, 2015).

TECHNICAL CONFERENCE UNDERTAKING - JT 2.3

JT 2.3

To provide data with respect to the number of assets. Also, to add in an explanation as to how the actual percentage in poor and critical condition was developed.

RESPONSE:

Please refer to Excel Attachment JT 2.3(A): Asset Condition Demographics (2014 Data) for a copy of the asset condition data submitted in Hydro Ottawa's 2016 rate application¹, by asset type, showing both the percentage and number of assets by asset condition category as of December 2014. In addition, please see Excel Attachment JT 2.3(B): Asset Condition Demographics (2014 & 2018 Summary Table) for a summary of the 2014 data presented alongside a summary of the 2018 data.

In Hydro Ottawa's 2016 rate application, the asset condition assessment ("ACA") framework condition categories were not used universally across all asset types. Table A below provides a summary of the different asset condition categories, by asset type, that were in common use at the time and how this historical data from these categories are presented in Excel Attachment JT 2.3(A). Categories in Attachment JT 2.3(A) that do not appear in Table A are left blank, as there is no data with which to populate them.

¹ Hydro Ottawa Limited, *2016-2020 Custom Incentive Rate-Setting Distribution Rate Application*, EB-2015-0004 (April 29, 2015).

1 **Table A – Summary of Asset Condition Categories Used in 2016 Rate Application**

Asset Name	Asset Condition Categories	Equivalent Asset Category in Attachment JT 2.3(A)
Station Transformer	Good	Very Good
	Fair	Fair
	Requires Attention	Poor
Station Switchgear	Good	Good
	Fair	Fair
	Poor	Poor
	Critical	Very Poor
XLPE Cable	Like New	Very Good
	Good	Good
	Fair	Fair
	Poor	Poor
	Critical	Very Poor
Poles, Overhead Transformer, PILC Cable, Underground Transformer, Vault Transformer, Underground Switchgear	Good	Good
	Fair	Fair
	Poor	Poor
	Critical	Very Poor
Civil Structures	Not Applicable	Not Applicable
Overhead Switches		

2
3 In Hydro Ottawa's 2016 rate application, station transformer and breaker assets were evaluated
4 using a legacy ACA framework that is no longer in use, to determine the asset condition. In
5 general, this health index considered the asset's overall condition in combination with its age.
6 The new health formulation carries increased data requirements from field testing that was not
7 performed historically.

8
9 For distribution assets, with the exception of XLPE cable and poles, age was used
10 predominantly to evaluate the condition category. For XLPE cable and poles, additional asset
11 condition data was used in combination with the asset's age. For XLPE cable, the cable's
12 condition was assessed using the results of electronic testing; using available testing data, the
13 condition of the other untested cable segments was extrapolated. The condition of wood poles

1 was determined using a combination of its estimated remaining strength in conjunction with the
2 pole's calendar age. Not all asset types were assigned to a condition category – notably, these
3 were non-wood poles, cable chambers, and overhead switches.
4
5 For the specific thresholds used to evaluate assets in determining which asset condition
6 category applied, including Poor and Critical (as Very Poor was not in use pre-2018), please
7 refer to Section 2.2.3 Asset Demographics and Condition in Exhibit B-1-2: Distribution System
8 Plan of Hydro Ottawa's 2016 rate application.

TECHNICAL CONFERENCE UNDERTAKING - JT 2.4

JT 2.4

To provide documentation that Hydro Ottawa provided to other forms, such as submissions, discussions and assessments informed the regional planning process.

RESPONSE:

A copy of the 2020 Integrated Regional Resource Plan ("IRRP") for the Ottawa Sub-Region has been filed in this proceeding as Attachment PP-11(A): Ottawa Sub-Region 2020 IRRP, in conjunction with Hydro Ottawa's responses to interrogatories. The Independent Electricity System Operator ("IESO") issued this IRRP on March 4, 2020.

As noted on page 1 of that document, Hydro Ottawa was a member of the Ottawa Sub-Region Working Group ("Working Group"), on whose behalf the IESO prepared the 2020 IRRP. In addition to Hydro Ottawa, the Working Group membership consisted of the IESO, Hydro One Networks Transmission, and Hydro One Networks Distribution. As further noted on page 17 of the IRRP, the Working Group was formed "to develop Terms of Reference for this IRRP, gather data, identify near- to long-term needs in the sub-region, and recommend actions to address them."

Hydro Ottawa participated fulsomely in the activities of the Working Group over the course of the IRRP planning process, including through the delivery of several submissions and presentations, as follows:

- Presentation on Hydro Ottawa's short- and long-term projects and planning initiatives, including CDM and behind-the-meter generation, delivered to an April 2018 workshop sponsored by the IESO and Quality Urban Energy Systems of Tomorrow ("QUEST") and hosted by the City of Ottawa, which focused on aligning local energy planning processes

- 1 (see Attachment JT 2.4(A): Presentation to IESO QUEST Planning Workshop - April 26,
2 2018);
- 3 • Participation in joint presentation with the IESO to the City of Ottawa on November 14,
4 2018, during which preliminary needs were identified and summarized, and Hydro
5 Ottawa provided an update on the South Nepean/Cambrian Municipal Transformer
6 Station project as well as on the impacts of the September 2018 tornado event (see
7 Attachment JT 2.4(B): IRRP Presentation to City of Ottawa - November 14, 2018);
 - 8 • Creation and submittal to the IESO of an updated 20-year demand forecast for stations
9 in Hydro Ottawa's service territory (see Appendix B in Attachment JT 2.4(C): Ottawa
10 Sub-Region 2020 IRRP - Appendices);
 - 11 • Confirmation of the adequacy of transformer station ratings and load meeting capability
12 and reliability (see Appendix C in Attachment JT 2.4(C): Ottawa Sub-Region 2020 IRRP
13 - Appendices);
 - 14 • Participation in public engagement webinars held by the IESO on May 29, 2019 and
15 November 27, 2019, along with advanced review of presentations delivered at those
16 sessions (see Attachment JT 2.4(D): Ottawa IRRP Engagement Webinar #1 and
17 Attachment JT 2.4(E): Ottawa IRRP Engagement Webinar #2);¹
 - 18 • Participation in IESO presentations to Ottawa City Councillors:
 - 19 ○ Councillor Jenna Sudds, Ward 4, Kanata North (see Attachment JT 2.4(F): IESO
20 Presentation Kanata North Councillor Sudds - August 20, 2019)
 - 21 ○ Councillor Glen Gower, Ward 6, Stittsville (see Attachment JT 2.4(G): IESO
22 Presentation Stittsville Councillor Gower - October 17, 2019)
 - 23 • Participation in IESO meeting held with City of Ottawa staff on October 17, 2019 to
24 provide an update on the IRRP process and assessments (see Attachment JT 2.4(H):
25 IESO Meeting with City of Ottawa re IRRP - October 17, 2019);
 - 26 • Participation in Working Group discussions to evaluate alternatives for each of the needs
27 that were ultimately identified in section 6 of the IRRP;
 - 28 • Provision of costing information for wires alternatives that were evaluated as part of the
29 options identified in section 7.2 of the IRRP;

¹ The presentations delivered during these webinars included extensive information on how non-wires options were being evaluated as part of the regional planning cycle for the Ottawa Sub-Region.

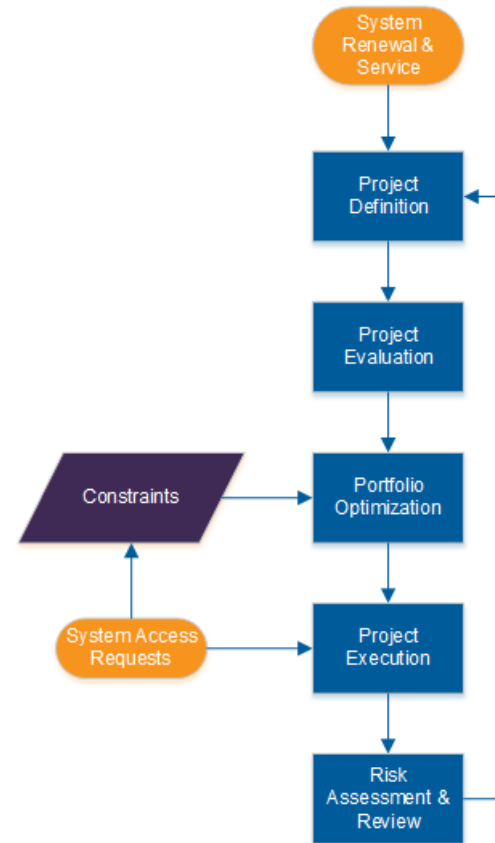
- 1 • Preparation and submittal to the IESO of a Local Achievable Potential Study, which
- 2 evaluated the potential of non-wires options to offset load growth in the Kanata North
- 3 area to help defer or eliminate the need for new distribution infrastructure (this study was
- 4 filed in this proceeding as Attachment 2-4-3(K) on February 10, 2020); and
- 5 • Participation in the review of the draft IRRP report and submission of comments to the
- 6 IESO.



> HYDRO OTTAWA PLANNING

April 2018

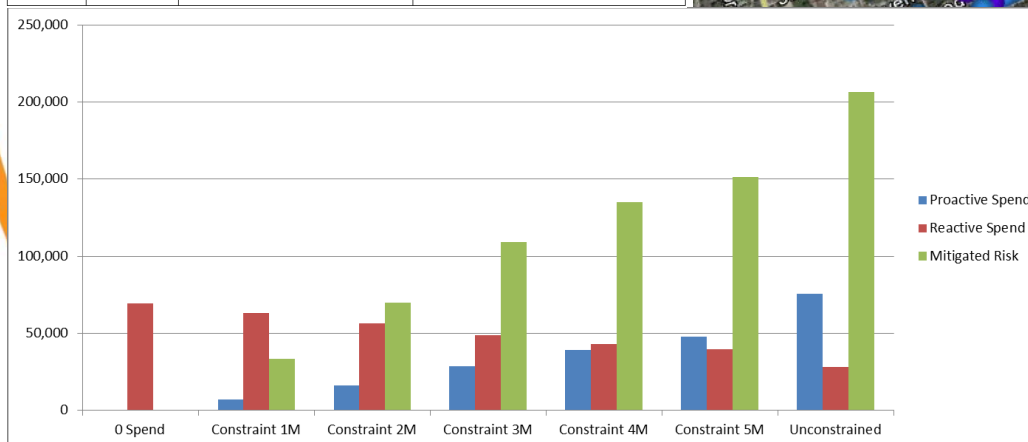
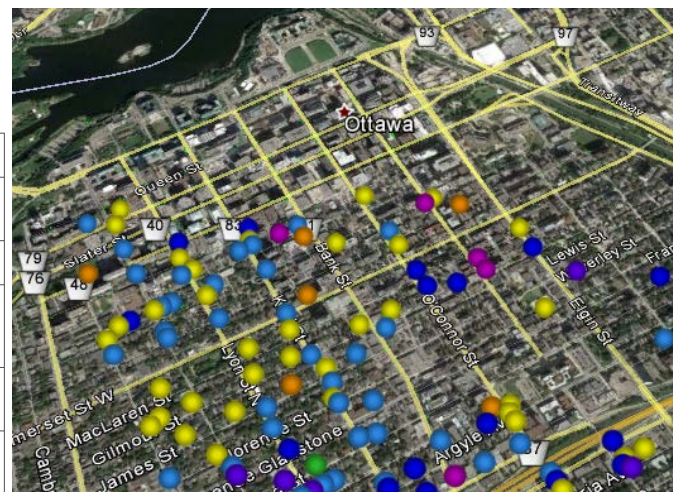
ASSET MANAGEMENT



SYSTEM RENEWAL

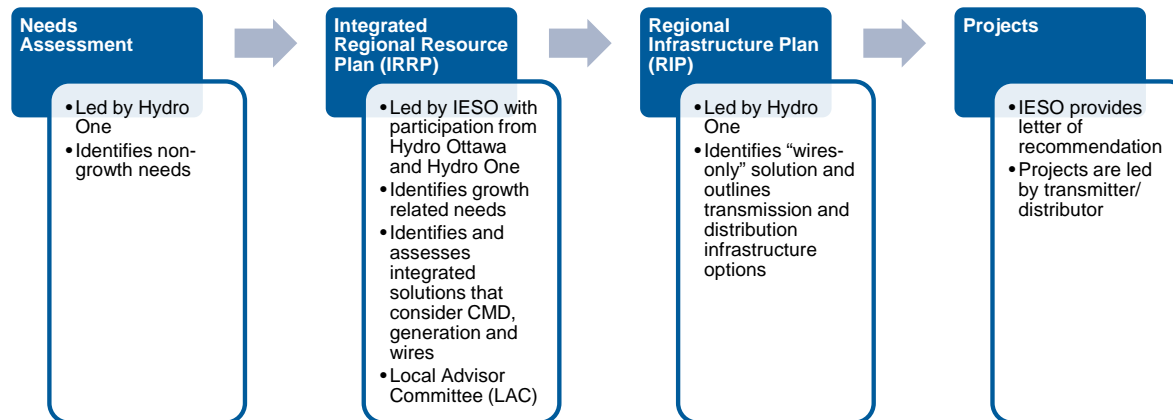
Table 4-1 - Asset condition based on health index

Health Index	Condition	Description	Requirements
85-100	Very Good	Some ageing or minor deterioration of a limited number of components	Normal maintenance
70-85	Good	Significant deterioration of some components	Normal maintenance
50-70	Fair	Widespread significant deterioration or serious deterioration of specific components	Increase diagnostic testing; possible remedial work or replacement needed depending on criticality
30-50	Poor	Widespread serious deterioration	Start planning process to replace or rehabilitate considering risk and consequences of failure
0-30	Very Poor	Extensive serious deterioration	Asset has reached its end-of-life; immediately assess risk; replace or refurbish based on assessment

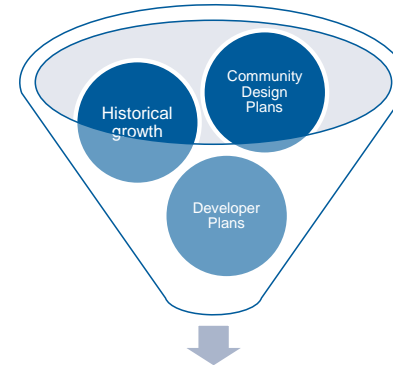
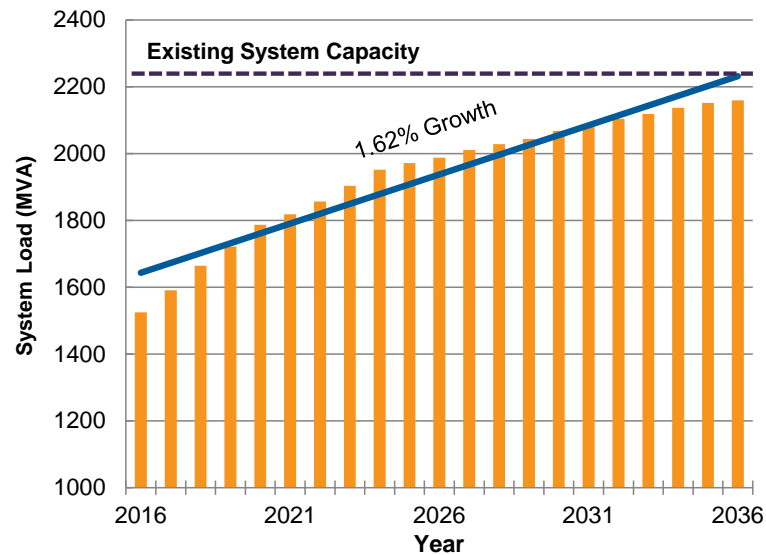


SYSTEM SERVICE – REGIONAL PLANNING

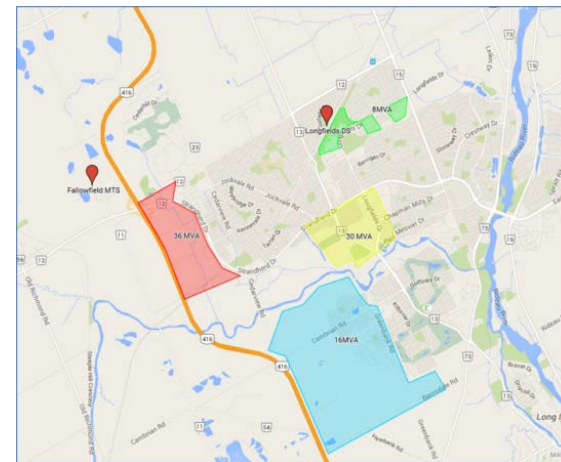
- Regional Planning process conducted every 5 years
- 18-24 months duration



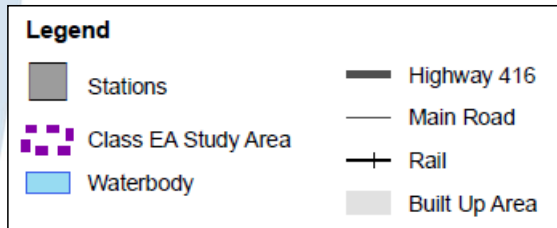
SYSTEM SERVICE



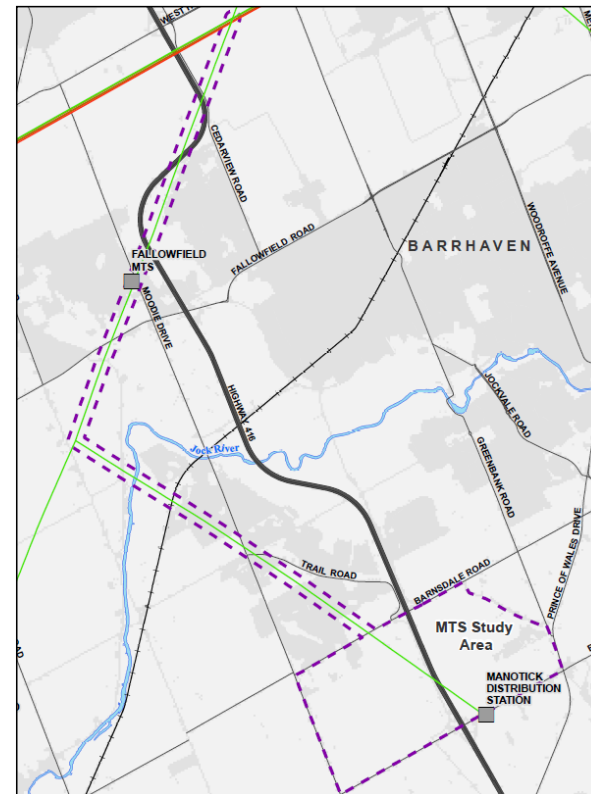
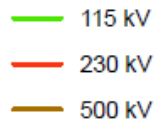
Growth Forecast



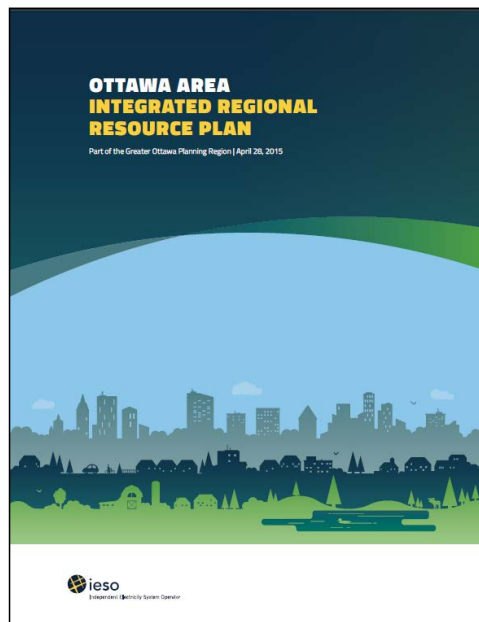
NEW SOUTH STATION & TRANSMISSION REBUILD



Existing Transmission Lines



NEW SOUTH STATION & TRANSMISSION REBUILD



7

Project Schedule		
July 2017	●	Notification of First Nations
September – October 2017	●	Pre-consultation with City of Ottawa, federal agencies and local elected officials.
November 2017	●	Notice of Commencement of Class Environmental Assessment (EA) and first series of Community Information Centres
January 2018 – March 2019	●	Access to proposed transmission corridor lands to facilitate EA and pre-construction studies and activities
September 2018	●	Notice of Completion of the Environmental Study Report (ESR) and second series of Community Information Centres
September – October 2018	●	Public Review and Comment Period for Draft ESR
November 2018	●	Submission of final ESR to the Ministry of the Environment and Climate Change
2019	●	Ontario Energy Board Review and Public Hearing
2020	●	Start of construction
2021	●	In-service date for new facilities

\$1 in
conservation
= \$2 in
infrastructure



2015 – 2020 CONSERVATION FIRST FRAMEWORK

- Hydro Ottawa is responsible for CFF programs and results in our territory
- Includes Residential and Commercial
- Encourage people to use less energy

BEHIND-THE-METER GENERATION COMBINED HEAT & POWER INCENTIVE PROGRAM

Current Applications & Focus of Activities

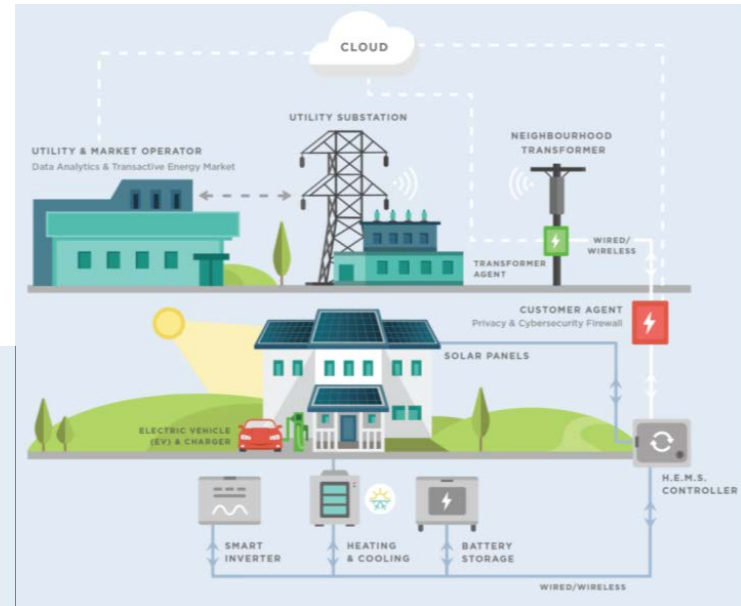
- 4 CHP under contract
 - BCC, ROH, Algonquin, Carleton U
- ~50GWh savings under contract
- ~\$10M of incentives
- All in service by end of 2020

Forecasted Applications

- City - ROPEC ~ 3MW CHP
- Health Care ~ 2MW CHP
- Total savings potential = ~80GWh
- Total incentive potential = ~\$18M
- Must be contracted in 2018



A LEADING PARTNER IN A SMART ENERGY FUTURE



Ottawa Area Integrated Regional Resource Plan

Presentation for the City of Ottawa

November 14, 2018



Objective

Purpose of today's meeting is to provide:

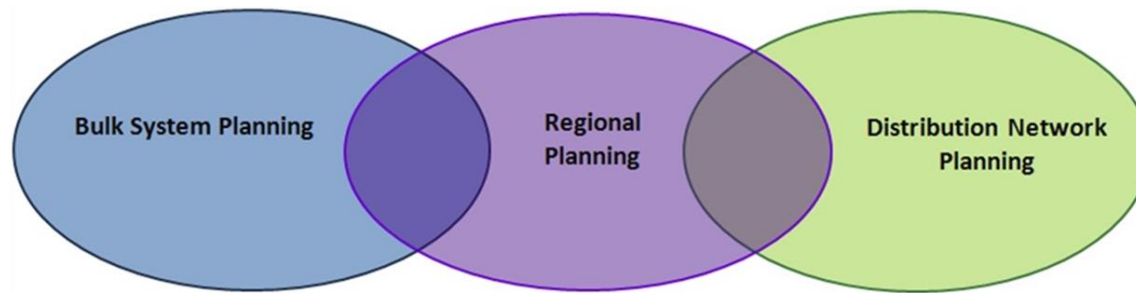
- Overview of the Regional Planning Process
- Update on the current Regional Planning cycle for Ottawa Region
 - Recap of recommendations from the last cycle of Regional Planning
 - Ottawa Area Sub-region growth, asset replacement needs and capacity needs
 - Power South Nepean Project Update
- Summary of the Ottawa Area Tornado Event



OVERVIEW OF REGIONAL PLANNING



Types of Electricity Planning



Addresses provincial electricity system needs and policy directions

Ministry of Energy

IESO

Asset Owners

(e.g. Transmitter, Large Generators)

Integrates local electricity priorities with provincial policy directions & system needs

IESO

Transmitters

Local Distribution Companies

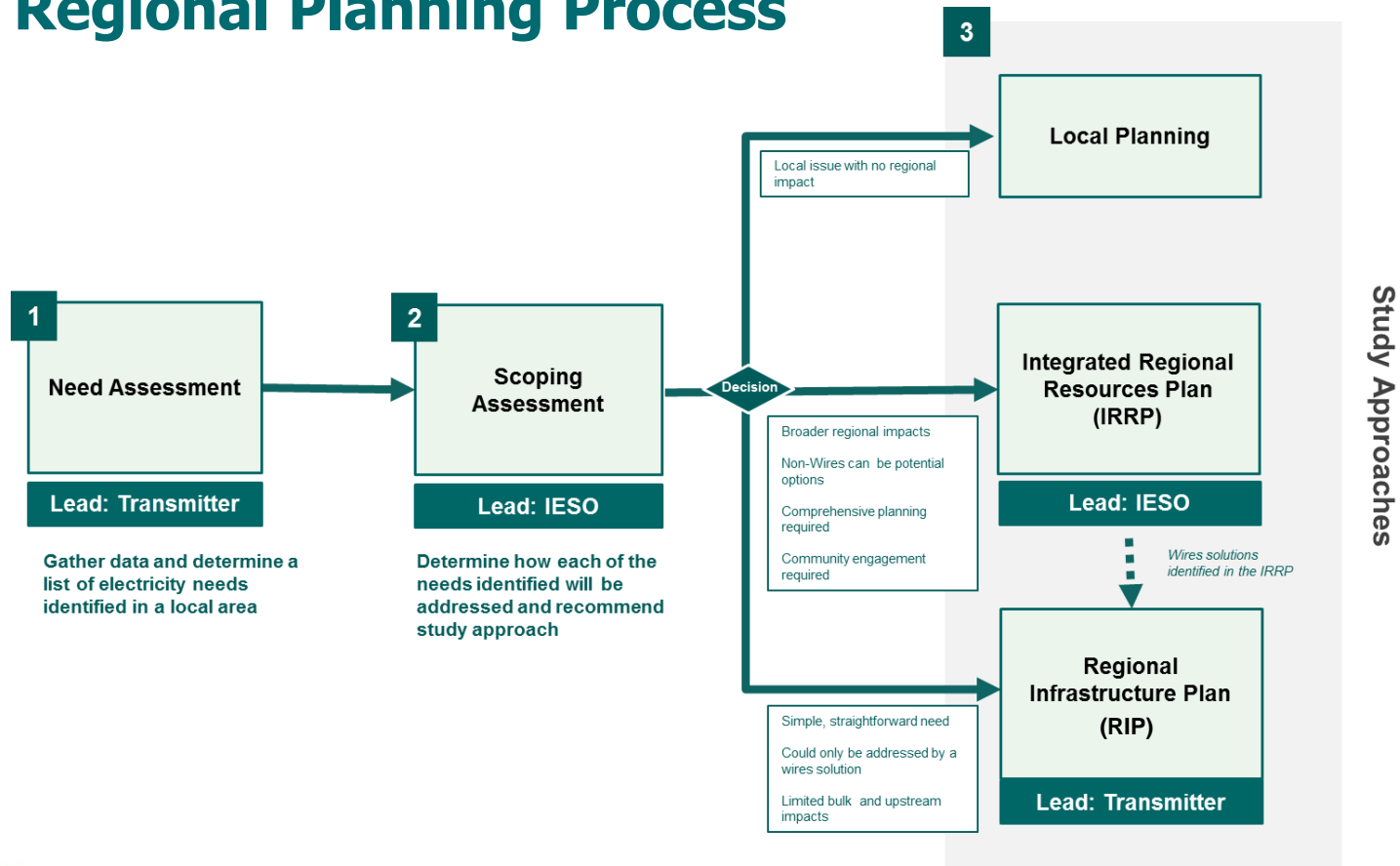
Examines local electricity needs and priorities at the community-level

Local Distribution Companies

First Nations, Métis, municipalities and industry stakeholders

Key Participants

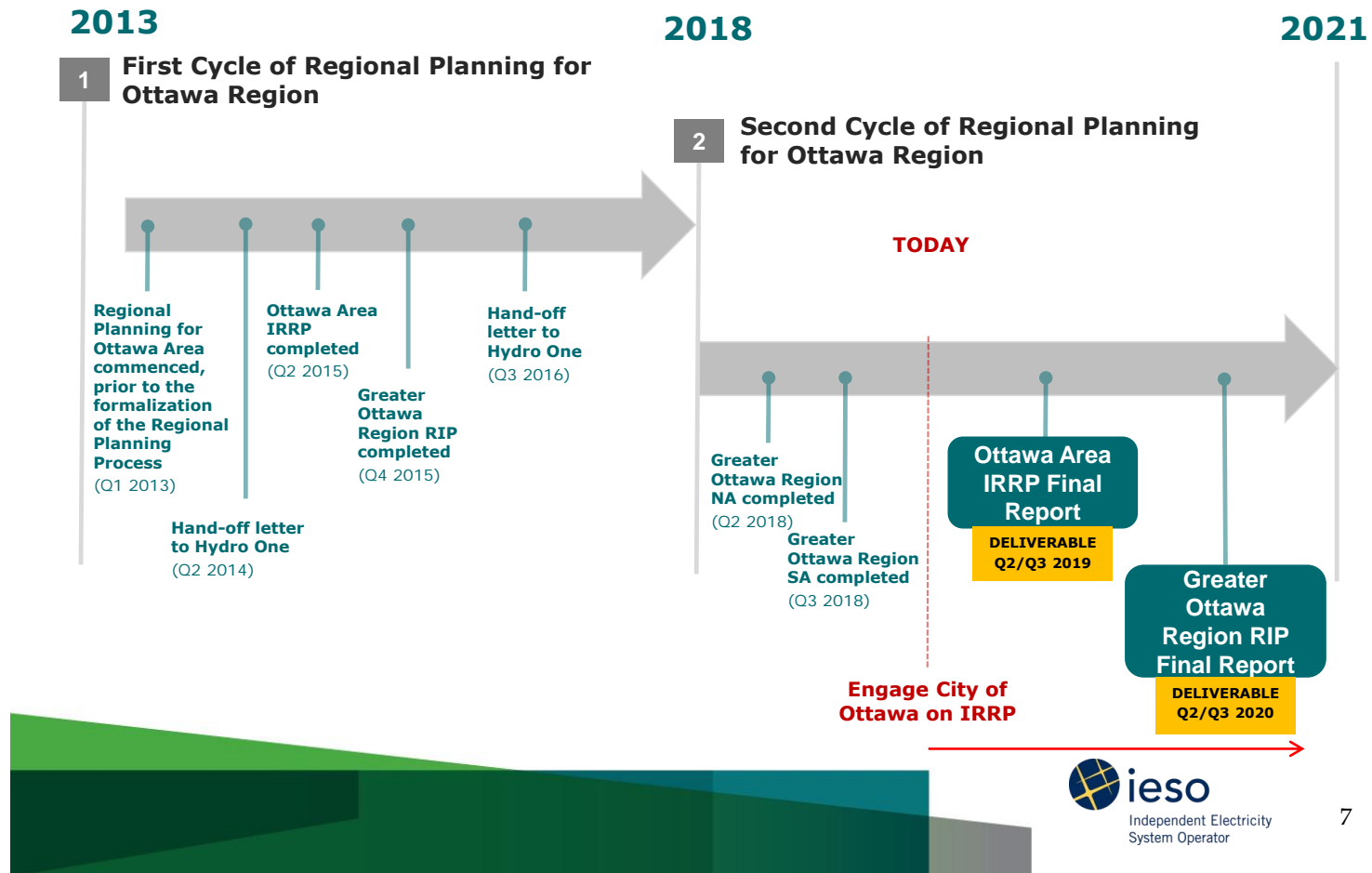
Regional Planning Process



REGIONAL PLANNING FOR GREATER OTTAWA REGION



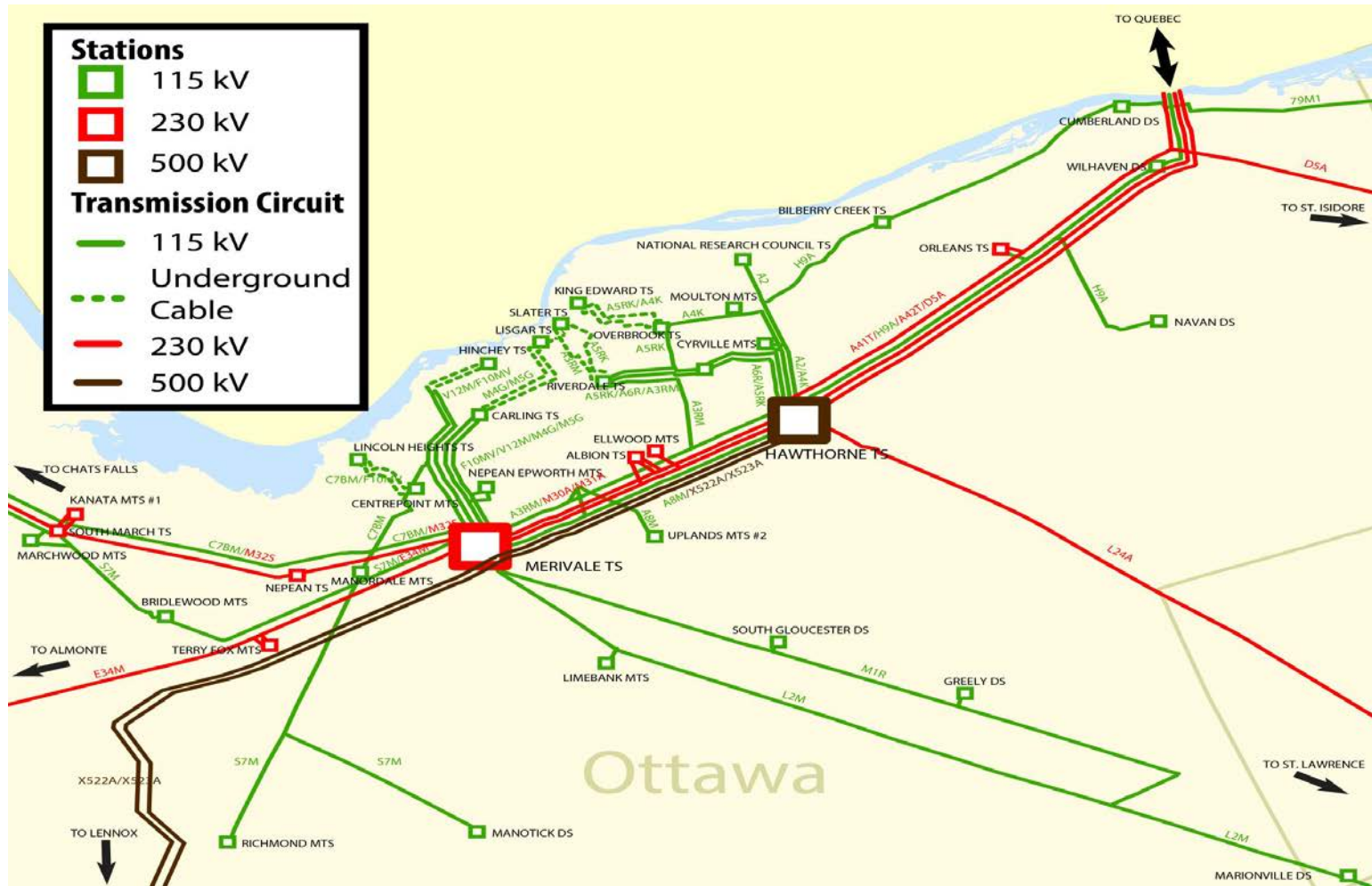
Timelines and Milestones



Greater Ottawa Region



Ottawa Area Sub-region



Summary of Needs and Recommendations from Last Regional Planning Cycle

Area	Need	Recommended Plan	Update
Overall Regional Supply	Additional 230/115 kV transformer capacity at Hawthorne TS	Replace two transformers approaching end-of-life with new higher capacity units at Hawthorne TS.	T6 has been replaced. Protection upgrade and T5 replacement to be completed by 2021 to allow for the replacement of Hawthorne T7 and T8 in 2019.
	Additional 230/115 kV transformer capacity at Merivale TS	Monitor demand growth on the Merivale 115 kV system in conjunction with the development of a supply plan for South Nepean.	South Nepean MTS project is expected to provide loading relief by transferring load to 230kV network. Need to be reassessed as part of this IRRP cycle



Summary of Needs and Recommendations from Last Regional Planning Cycle

Area	Need	Recommended Plan	Update
Nepean/Kanata	Improve reliability of supply to Terry Fox MTS	Install new in-line breaker on 230 kV circuit M29C at Almonte TS.	In-Line breaker installed in 2015.
	Additional supply capacity for a section of circuit S7M	Upgrade a section of S7M by lowering a Hydro Ottawa distribution feeder crossing under S7M.	Distribution feeders on Fallowfield Road were rebuilt and lowered in 2017 to accommodate S7M upgrade.
	Additional supply capacity in the South Nepean area	Identify the community's preferred alternative for meeting supply needs in this area through public engagement. Carry out preliminary development work on a new transformer station and 230 kV connection line in the South Nepean area.	Detailed estimate and EA are currently under way. Plan to apply for OEB's Section 92 in March 2019. Expected I/S date is mid-2021

Summary of Needs and Recommendations from Last Regional Planning Cycle

Area	Need	Recommended Plan	Update
Downtown	Additional transformer capacity in the downtown core	Increase load transfer capability between Russell TS and other near-by stations	Capacity needs to be reassessed as part of this IRRP cycle
		Increase load transfer capability between Riverdale TS and other near-by stations	New King Edward tie in progress and new Slater TS tie planned for 2020
		Increase the station capacity at King Edward TS.	T3 replacement to be completed by 2022.
		Increase the station capacity at Lisgar TS.	Transformer replacement's at Lisgar TS cancelled.
		Increase the station capacity at Overbrook TS.	T1/T2 replacement completed
	Additional supply capacity for circuit A4K	Rebuild a section of A5RK between Overbrook TS and the junction with A6R into a double-circuit line. Reconfigure Overbrook TS to be supplied by A5RK/A6R.	Riverdale JCT x Overbrook TS: Build New A6R Tap Project is currently under execution. The target I/S year is 2019.

Summary of Needs and Recommendations from Last Regional Planning Cycle

Area	Need	Recommended Plan	Update
East Ottawa	Additional transformer capacity in the downtown core	Increase station capacity at Hawthorne TS.	T7/T8 replacement with 125MVA capacity is currently under execution. The expected I/S year is 2019.
	End-of-life refurbishment at Bilberry TS	A decision on whether to maintain Bilberry Creek TS or retire the station and transfer the load to the 230 kV system will be required by 2020.	To be accessed as part of this cycle's IRRP.

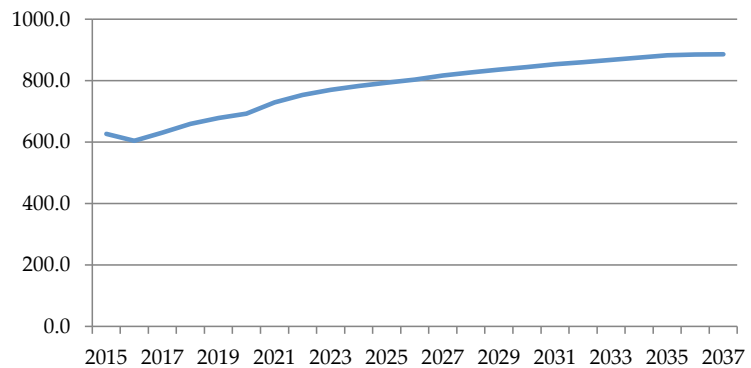


2019 OTTAWA AREA IRRP



West Ottawa

West Ottawa Load Forecast



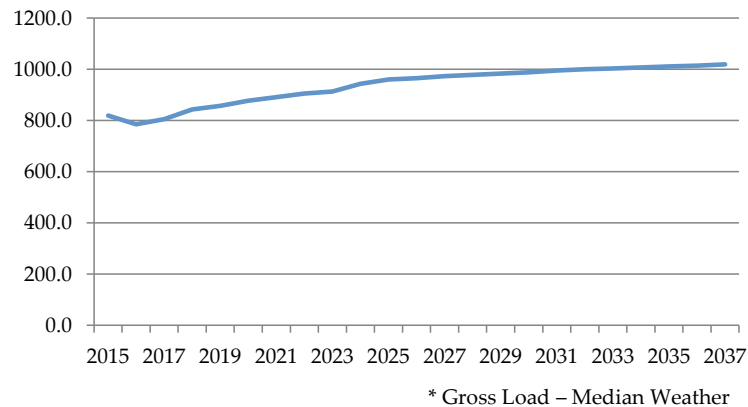
* Gross Load – Median Weather

- Assess transmission supply needs to Merivale TS to accommodate forecasted load growth west of Merivale.
- Assess auto transformation capacity needs at Merivale TS to accommodate forecasted load growth on the 115 kV system west of Merivale.
- Assess transmission supply needs towards Limebank station
- Assess transmission supply needs towards South Nepean station
- Assess transformer capacity needs at:
 - Marchwood MTS
 - Kanata MTS



Downtown Ottawa

Downtown Load Forecast

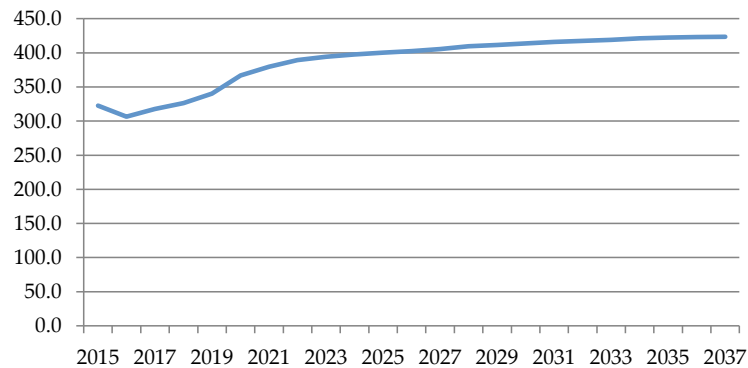


- Assess reliability of transmission cables supplying Ottawa center
- Assess transformer capacity needs at:
 - King Edward TS
 - Russell TS



East Ottawa

East Ottawa Load Forecast



* Gross Load – Median Weather

- Assess End-of-life refurbishment needs at Bilberry TS
- Assess transformer capacity needs in the Leitrim area



NEW SOUTH NEPEAN STATION





POWER SOUTH NEPEAN PROJECT UPDATE

- > South Nepean Region Overview
- > Current Proposed Solution (HOL and H1) and Timelines
- > Public Engagement to date

OTTAWA AREA TORNADO EVENT



Ottawa Area Tornado Event September 21, 2018

Ottawa Area IRRP Meeting

November 14, 2018

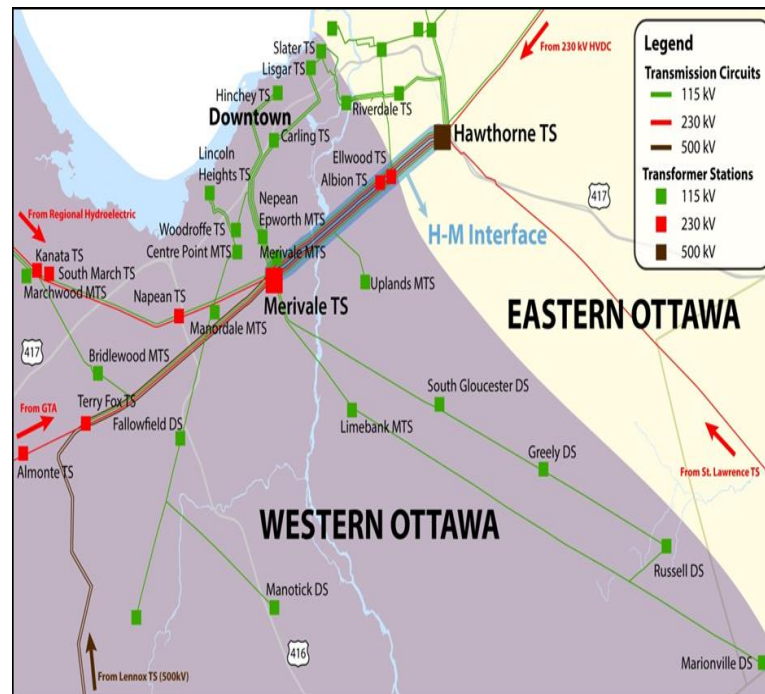
Objective

- Ottawa Area Overview
- Impact caused by the tornado
- Restoration Efforts



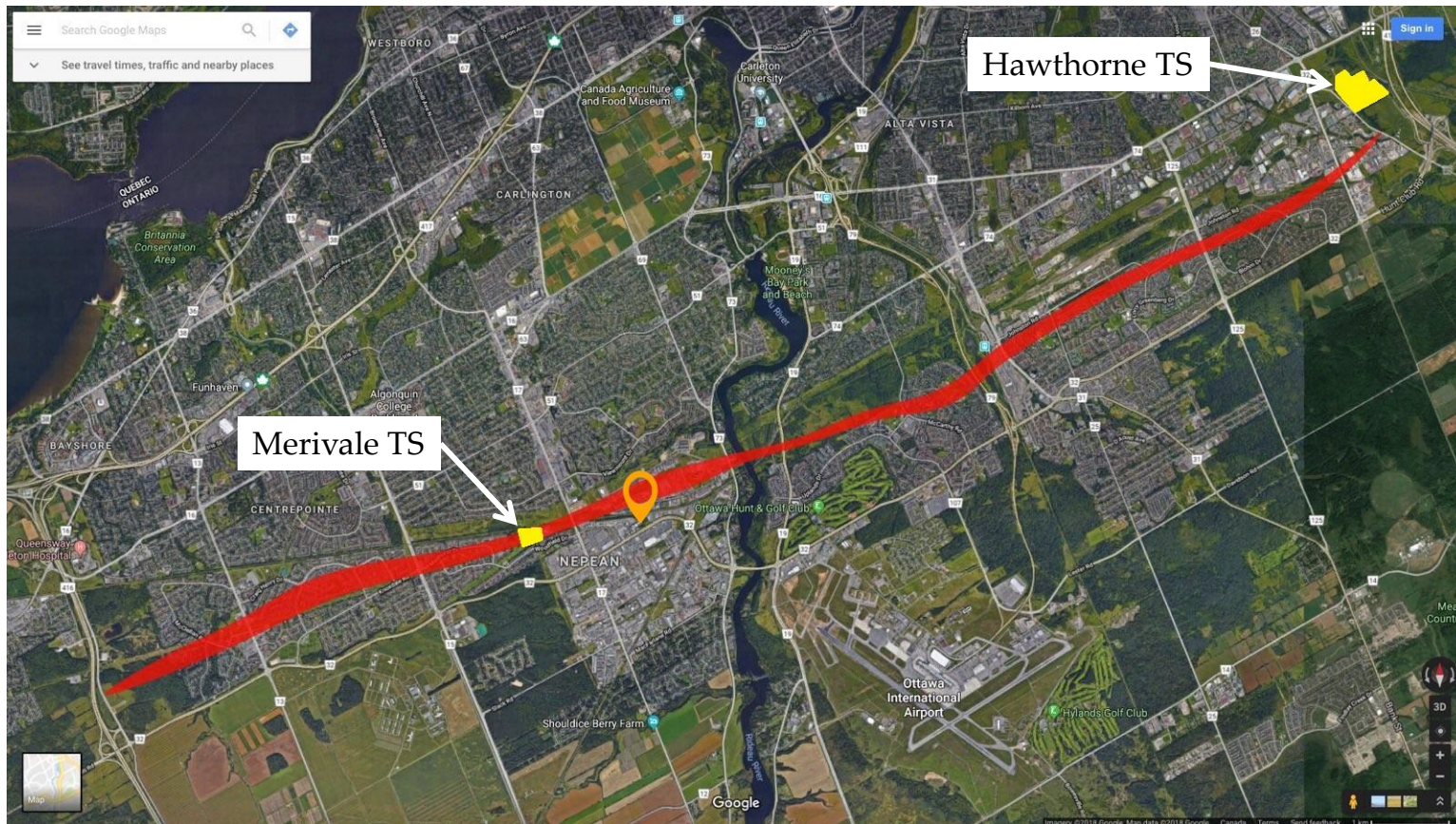
Ottawa Area Overview

- Merivale TS and Hawthorne TS are the two main transformer stations in the Ottawa area.
- Merivale TS supplies western Ottawa and Hawthorne TS supplies eastern Ottawa (including Parliament Hill).

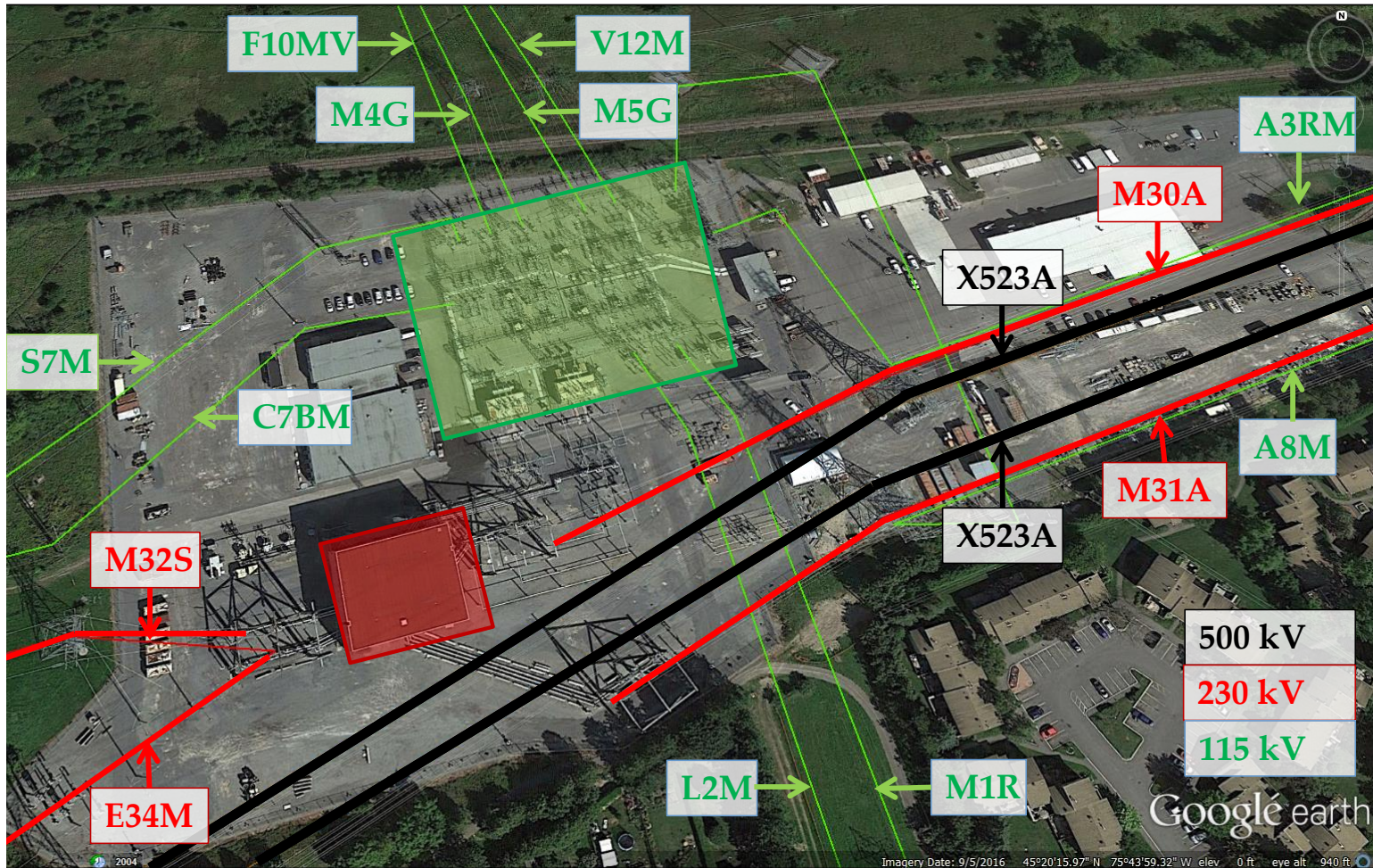




Path of Tornado



Merivale Transformer Station



Extreme Event Review – Cause and Effect

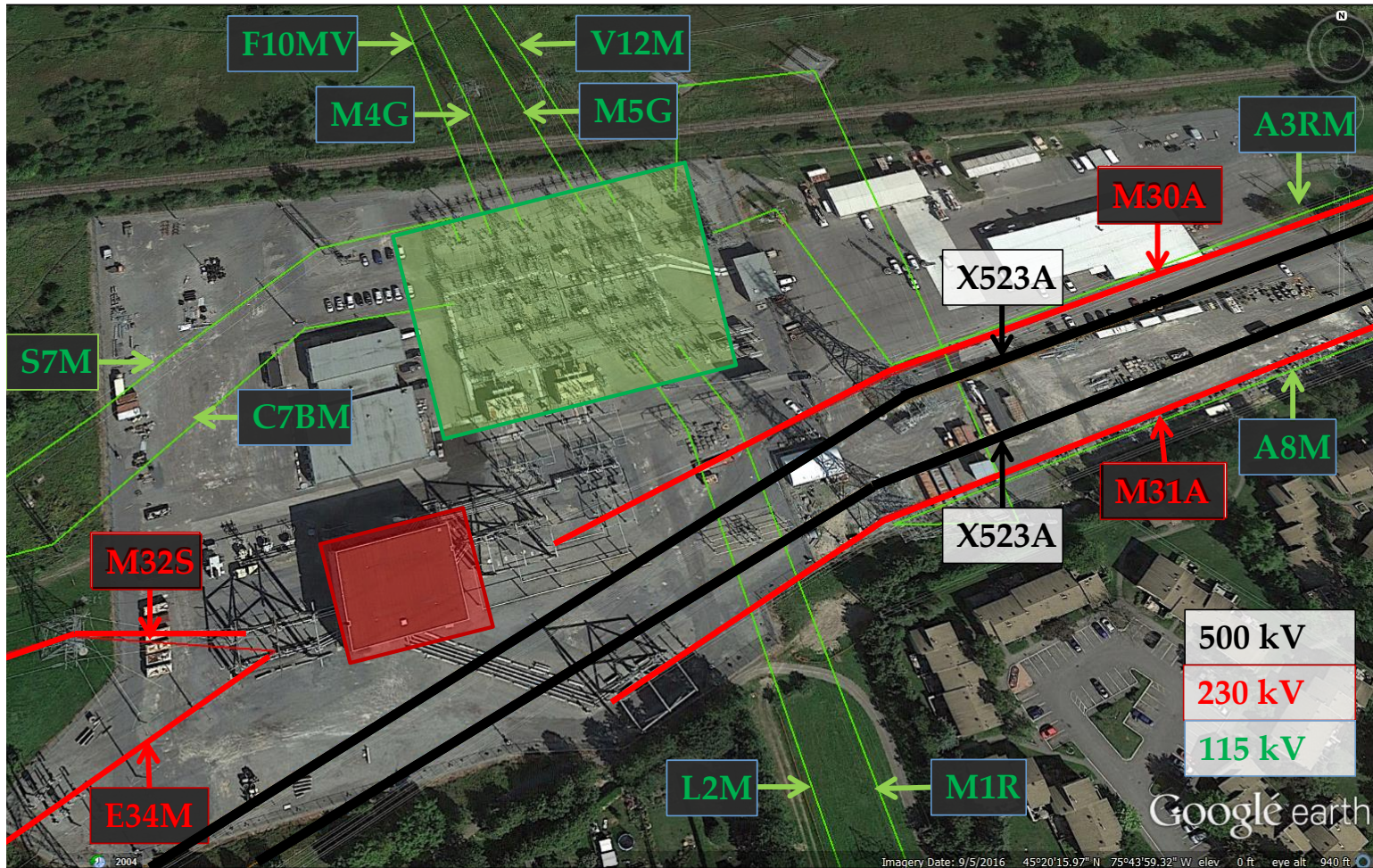
- Thunderstorms, hail, heavy rainfall, winds excess of 100 km/hr, and potential for isolated tornadoes were forecasted day-ahead for September 21, 2019.
- Minor circuit and generator trips began shortly after 5 PM (16:00 EST) on September 21.
- Shortly before 6 PM (17:00 EST), Merivale TS was directly hit by a tornado ('the event').



Merivale Transformer Station

17:53

EST



Images – Merivale TS



Images – Merivale TS



Images – Merivale TS



Event Review – “The Numbers”

- Merivale 115 kV and 230 kV were lost as a result of the tornado.
 - 5 busses
 - 2 autotransformers
 - 12 transmission circuits
 - 33 breakers
- A total of over 600 MW of load was lost, approximately 200,000 customers were without power.
- Within 48 hours, all of Hydro One’s transmission connected stations along with over 97% of affected customers were restored.
- Five days later, all customer power was restored.



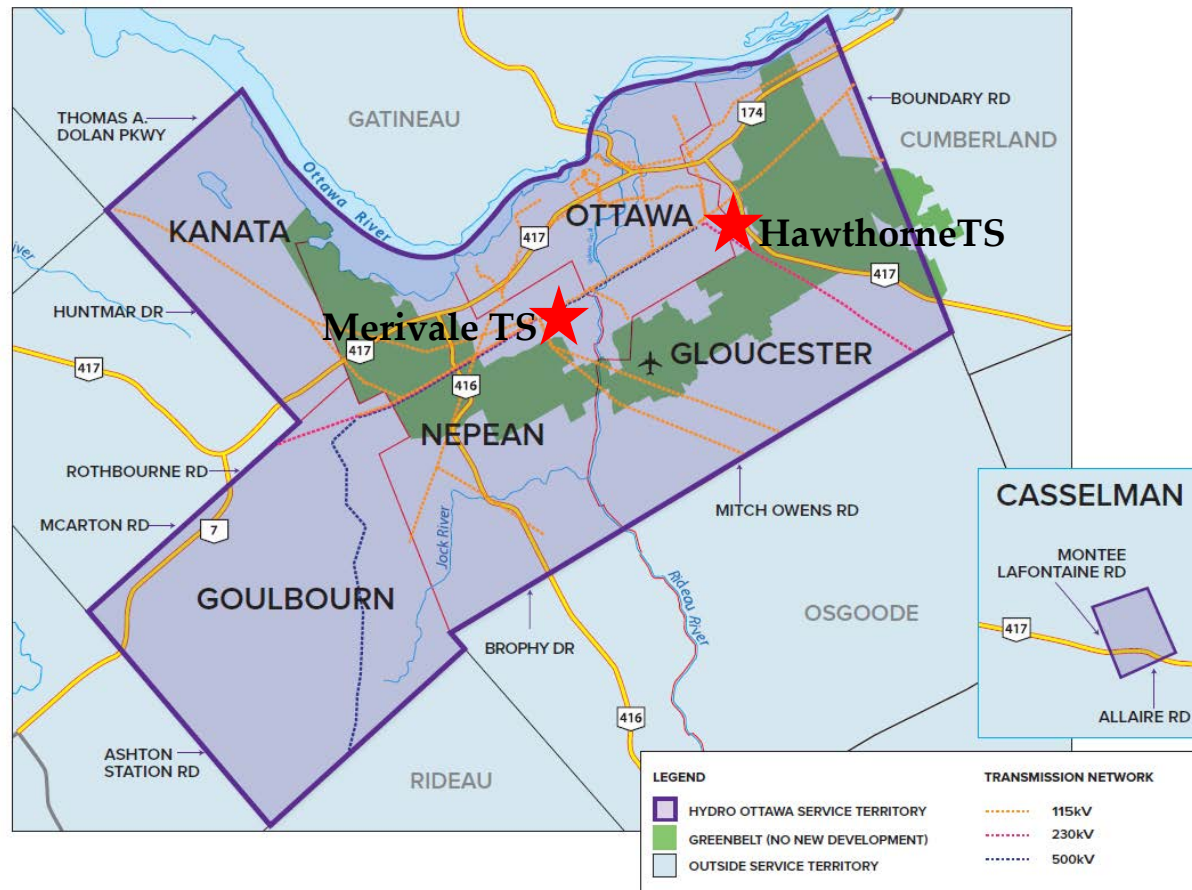
Actions Taken to Stabilize System

- Established a Forward Command Post and Incident Command Centre to streamline communication
- Recalled equipment from on-going planned outages to increase reliability
- Established temporary operating conditions to reduce risks in destabilizing the power system
- Cancelled approximately 29 upcoming planned outages to support recovery efforts

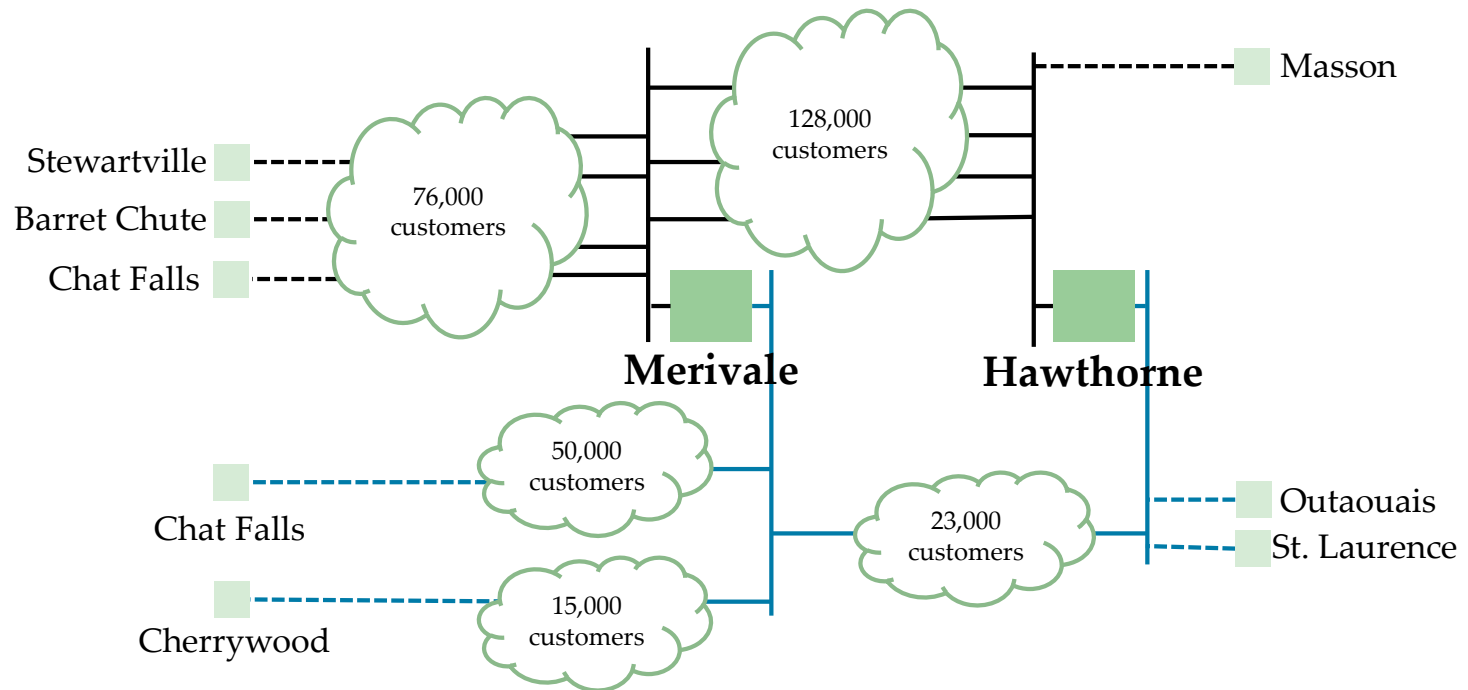




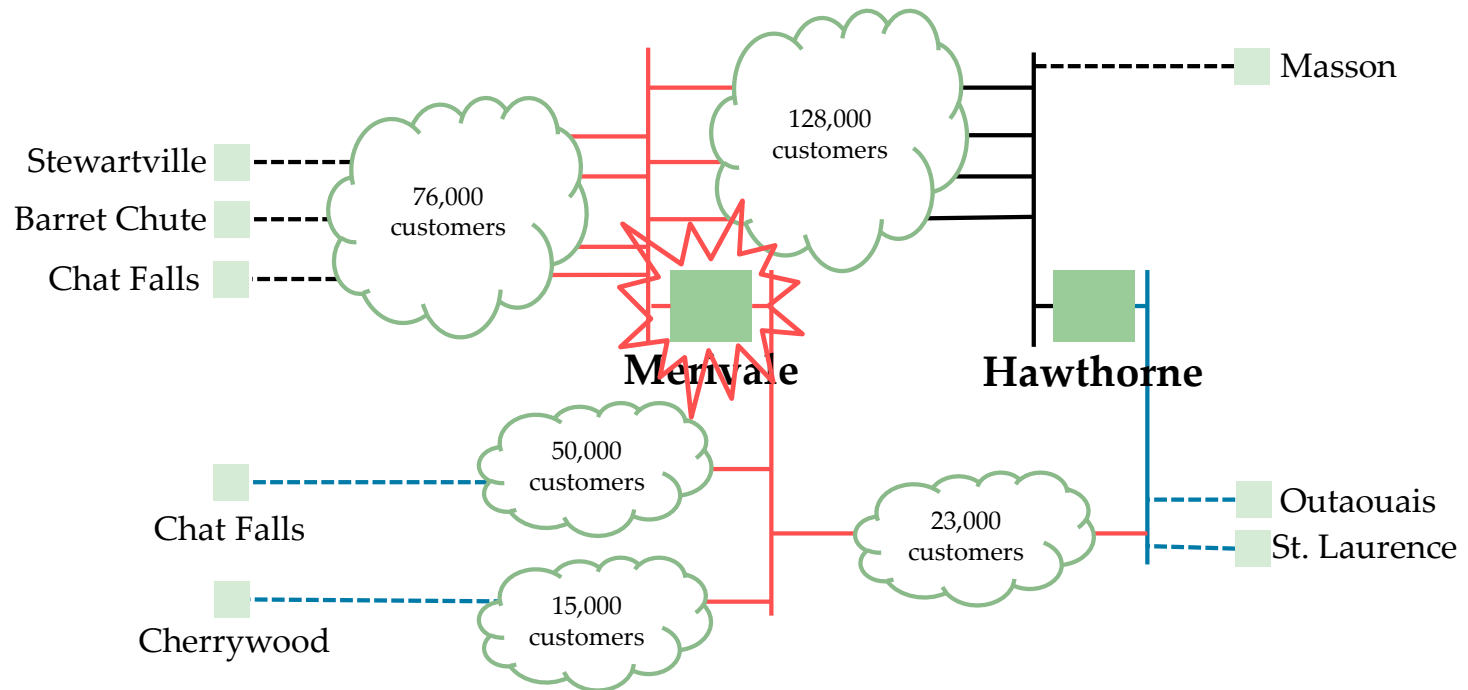
HOL Service Territory & Transmission Lines



Transmission connections to HOL



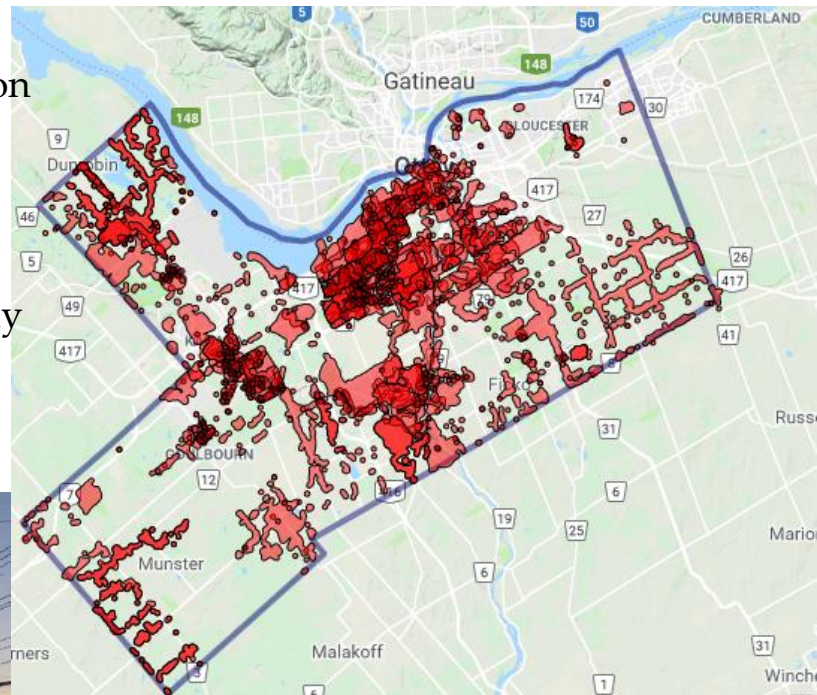
Transmission connections to HOL



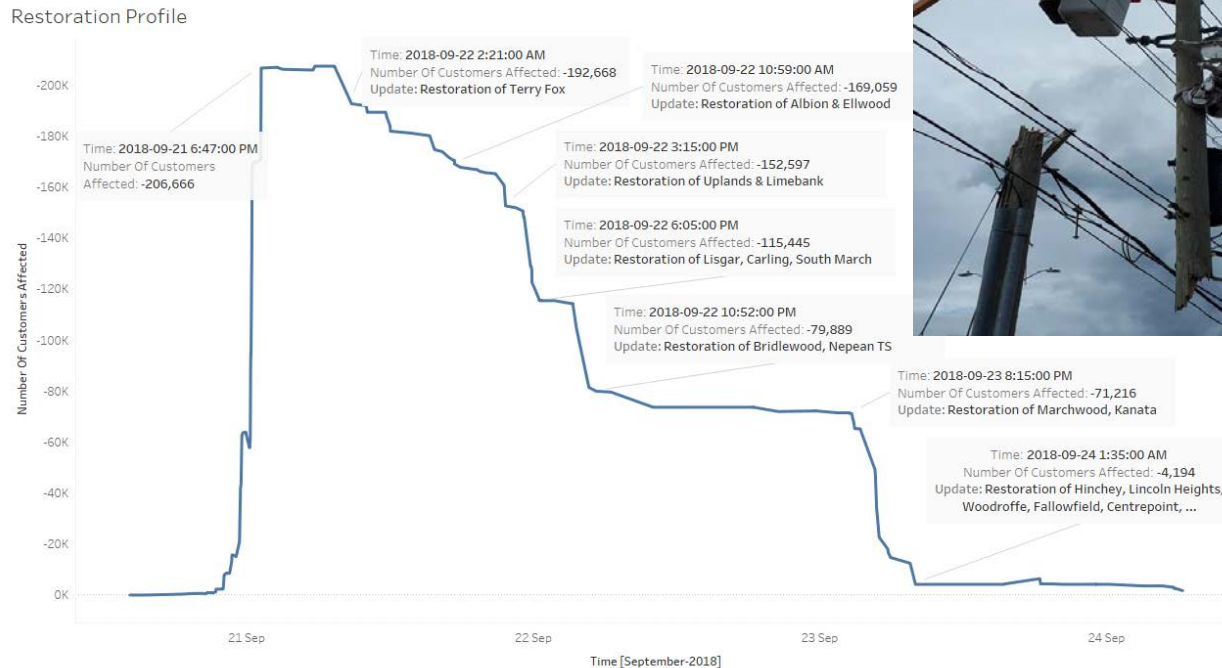
— 115 kV
— 230 kV

207,407 Customers without power

- 350MW load loss
- 17 Stations lost transmission supply
- 9 Substations and 10 Customer Substations lost from Nepean TS & Hawthorne TS 44kV supply
- Approximately 90MW of embedded generation tripped



Restoration Profile





ENGAGEMENT



Community Engagement

- Communities and stakeholders will be engaged throughout the regional planning process
 - When load forecasts are confirmed to discuss needs and next steps, to provide comments and input on draft documents, to continue to share information as it becomes available
- Once needs have been confirmed, the IESO will draft an engagement strategy for the Ottawa Area IRRP for input
 - Will include a webinar to provide an overview of the proposed strategy, and have an open comment period to follow
- More details to be developed as need unfolds



Engagement *continued*

Some examples of potential input from community & stakeholders:

- Local electricity needs and considerations
- Status and key assumptions from Community Energy Planning (e.g., energy intensity, electric vehicles and fuel switching scenarios)
- Status and key assumptions in Growth Plans and local economic developments (housing, population growth, commercial and industrial development)
- Long-term Land Use and Infrastructure Corridor Plans
- Local interests in community-based energy solutions



Next Steps and Discussion

Q & A



Ottawa Sub-Region: Integrated Regional Resource Plan - Appendices

Part of the Greater Ottawa Regional Planning Region

March 4, 2020

Appendix A: Overview of the Regional Planning Process

A.1 THE REGIONAL PLANNING PROCESS

In Ontario, meeting the electricity needs of customers at a regional level is achieved through regional planning. This comprehensive process starts with an assessment of the interrelated needs of a region—defined by common electricity supply infrastructure—over the near, medium, and long term and results in the development of a plan to ensure cost-effective, reliable electricity supply. A regional plan considers the existing electricity infrastructure in an area, forecasts growth and customer reliability, evaluates options for addressing needs, and recommends actions.

Regional planning has been conducted on an as-needed basis in Ontario for many years. In the fall of 2012, the Ontario Energy Board (OEB) convened a Planning Process Working Group (PPWG) to develop a more structured, transparent, and systematic regional planning process. This group was composed of electricity agencies, utilities, and other stakeholders. In May 2013, the PPWG released its report to the OEB¹, 21 electricity planning regions, a new regional planning process, and a schedule for completion of regional plans.

The regional planning process begins with a needs assessment performed by the transmitter, which determines whether there are needs requiring regional coordination. If regional planning is required, the IESO conducts a scoping assessment to determine what type of planning is required for a region. A scoping assessment explores the need for a comprehensive Integrated Regional Resource Plan (IRRP), which considers energy efficiency, generation, transmission, and distribution solutions, or whether a more limited “wires” solution is the preferable option, in which case a transmission- and distribution-focused Regional Infrastructure Plan (RIP) can be undertaken instead.

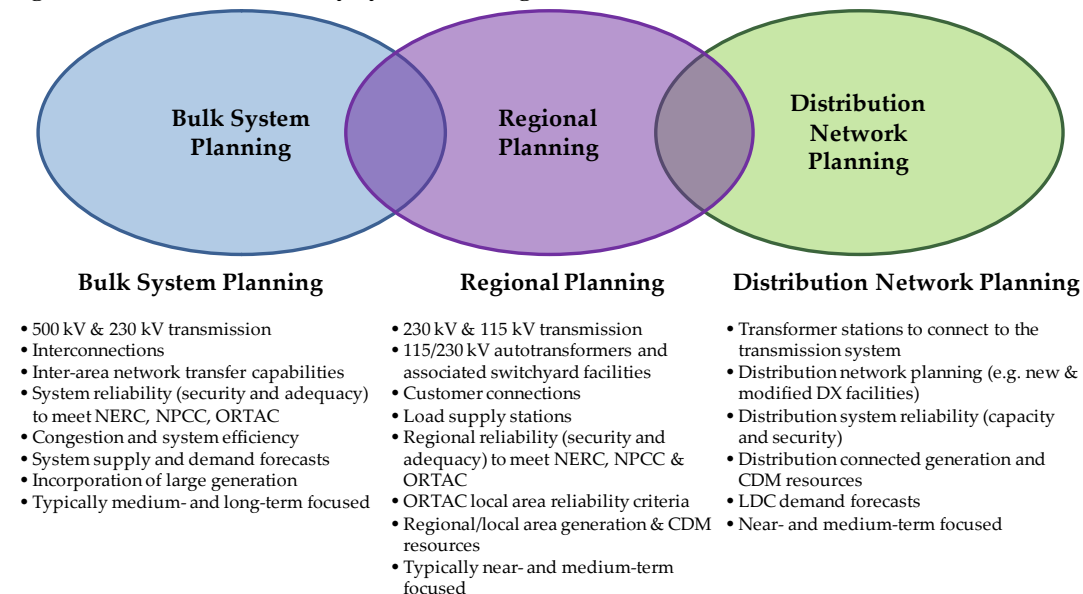
There may also be regions where infrastructure investments do not require regional coordination and can be planned directly by the distributor and transmitter outside of the regional planning process. At the conclusion of the scoping assessment, the IESO produces a report that includes the results of the needs assessment process and preliminary terms of reference. If an IRRP is the identified outcome, the IESO is required to complete the IRRP within

¹ http://www.ontarioenergyboard.ca/OEB/Documents/EB-2011-0043/PPWG_Regional_Planning_Report_to_the_Board_App.pdf

18 months. If an RIP is the identified outcome, the transmitter takes the lead and has six months to complete it. Draft scoping assessment outcome reports must be posted to the IESO's website for a two-week public comment period prior to finalization.

The final needs assessment report, scoping assessment report, IRRP and RIP, as applicable, are posted on the websites of the IESO and relevant transmitter(s), and may be referenced and submitted to the OEB as supporting evidence in rate or "Leave to Construct" applications for specific infrastructure investments. These documents are also useful for municipalities, First Nation communities and Métis community councils for planning, and for energy efficiency and energy management purposes. They are also a useful source of information for individual large customers that may be involved in the region, and for other parties seeking an understanding of local electricity growth, conservation and demand management (CDM) and infrastructure requirements. As shown in Figure A-1, regional planning is only one of three types of electricity system planning carried out in Ontario.

Figure A-1: Levels of Electricity System Planning



Planning at the bulk system level typically considers the 230 kV and 500 kV network and examines province-wide system issues. In addition to considering major transmission facilities or "wires," bulk system planning assesses the resources needed to adequately supply the province. This type of planning is typically carried out by the IESO pursuant to government policy. Distribution planning, which is carried out by local distribution companies (LDCs), considers specific investments in an LDC's territory at distribution-level voltages.

Regional planning can overlap with bulk system planning and with the distribution planning of LDCs. For example, overlaps can occur at interface points where there may be regional resource options to address a bulk system issue or when a distribution solution addresses the needs of the broader local area or region, making it important for regional planning to be coordinated with both bulk and distribution system planning.

By recognizing the linkages with bulk and distribution system planning, and coordinating the multiple needs identified within a region over the long term, the regional planning process provides a comprehensive assessment of a region's electricity needs. Regional planning aligns near- and long-term solutions and puts specific investments and recommendations coming out of the plan into perspective. Furthermore, in avoiding piecemeal planning and asset duplication, regional planning takes into account the interests of ratepayers and individual large customers. IRRPs evaluate the options available to meet the needs, including energy efficiency, generation, and "wires" solutions. Through both engagements, which are embedded into regional planning, and the subsequent publication of resulting plans, the IESO demonstrates its commitment to transparency throughout the process.

A.1.1 The IESO's Approach to Regional Planning

In assessing electricity system needs for a region over a 20-year period, IRRPs enable near-term actions to be developed in the context of a longer-term view of trends. This enables coordination and consistency with the long-term plan, rather than simply reacting to immediate needs.

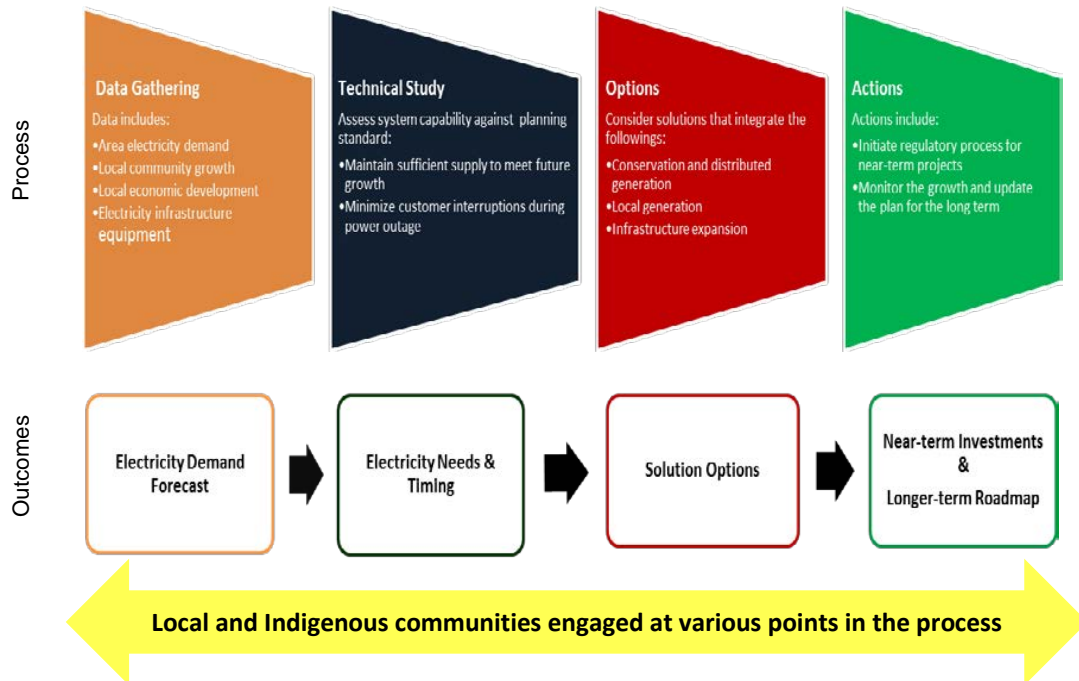
The IRRP describes the study team's recommendations for mitigating reliability and cost risks related to end-of-life asset replacement and demand forecast uncertainty associated with large load customers or due to changes in provincial energy efficiency targets. The IRRP helps ensure that recommendations to address near-term needs are implemented, while maintaining the flexibility to accommodate changing long-term conditions.

In developing an IRRP, the IESO and the study team a clearly defined series of steps (see Figure A-2), including:

- Developing electricity demand forecasts;
- Conducting technical studies to determine electricity needs and the timing of these needs;
- Considering potential options; and
- Creating a plan with recommended actions for the near and long term.

Throughout this process, engagement is carried out with stakeholders and Indigenous communities with an interest in the area.

Figure A-2: Steps in the IRRP Process



The IRRP report documents the inputs, findings and recommendations developed through this process, and outlines recommended actions for the various entities responsible for plan implementation. Where “wires” solutions are included in the recommendations, the completion of the IRRP triggers the initiation of the transmitter’s RIP process to develop those options. Other recommendations in the IRRP may include: development of energy efficiency, local generation, community engagement, or information gathering to support future iterations of the regional planning process in the region or sub-region.

Appendix B: Demand Outlook and Methodology

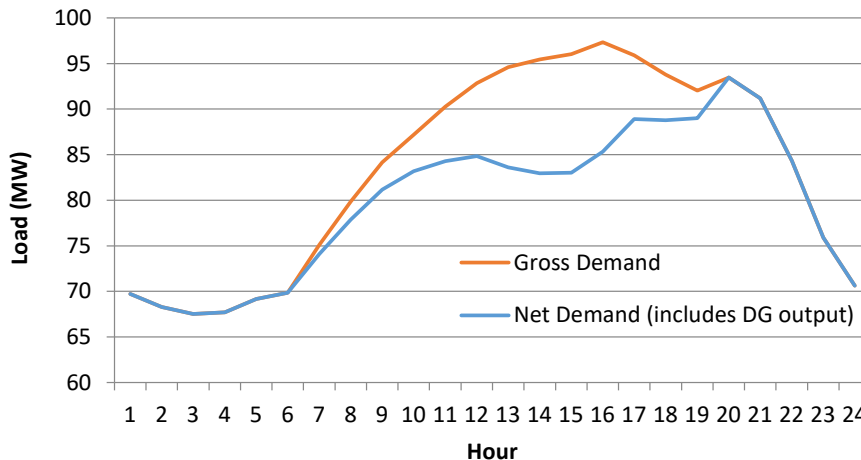
B.1 GROSS HISTORICAL LOAD

In this IRRP, the IESO determined the weather-corrected gross demand to act as a forecast starting point for the LDCs. As the metered historical data only represents net demand, the methodologies for adding the effects of distributed generation and estimating the impact of energy efficiency are described below.

B.1.1 Historical Distribution Generation Contribution

While the IESO collects hourly output data for renewable generation, this is typically for transmission-connected facilities – not distribution-connected. Therefore, to estimate the generation profile of these facilities, the output of select monitored facilities was scaled to represent *all* contracted facilities in the area. For the Ottawa Sub-Region IRRP in particular, this was done only for distribution-level solar resources, as data for hydroelectric facilities was unavailable. This assumes that within an area or region, the local weather conditions and output of the distributed generation resource are similar and comparable. As illustrated in Figure B-1, adding the estimated hourly distributed generation contribution can alter the demand profile and potentially change the time of the peak.

Figure B-1: Sample Profile Before and After Adjusting for Distributed Generation



B.1.2 Estimated Energy Efficiency Savings Impact

Historical conservation energy savings can be divided into three parts:

- a) Participation in the conservation programs delivered by the LDCs
- b) Estimated impact of historical codes and standard improvement
- c) Estimated impact of behavioral changes due to Time-of-Use rates

Note that demand reduction resulting from the Industrial Conservation Incentive program was not included in this step. For other energy efficiency measures, the impact on local hourly demand was estimated by scaling the provincial-level savings to the region/station. For instance, peak-demand reduction from conservation program participation was allocated to the region/station by postal code mapping. On the other hand, both codes and standards and time-of-use savings had *estimated* hourly savings and were allocated from the system level to the region/station.

B.2 WEATHER CORRECTION

Since peak demand is sensitive to weather conditions, weather correction or normalization aims to establish the peak demand at a defined weather condition (median or extreme). Weather correction can occur at the station level, but for this IRRP, it was assumed that stations located closely within a geographical area would experience similar weather and exhibit similar

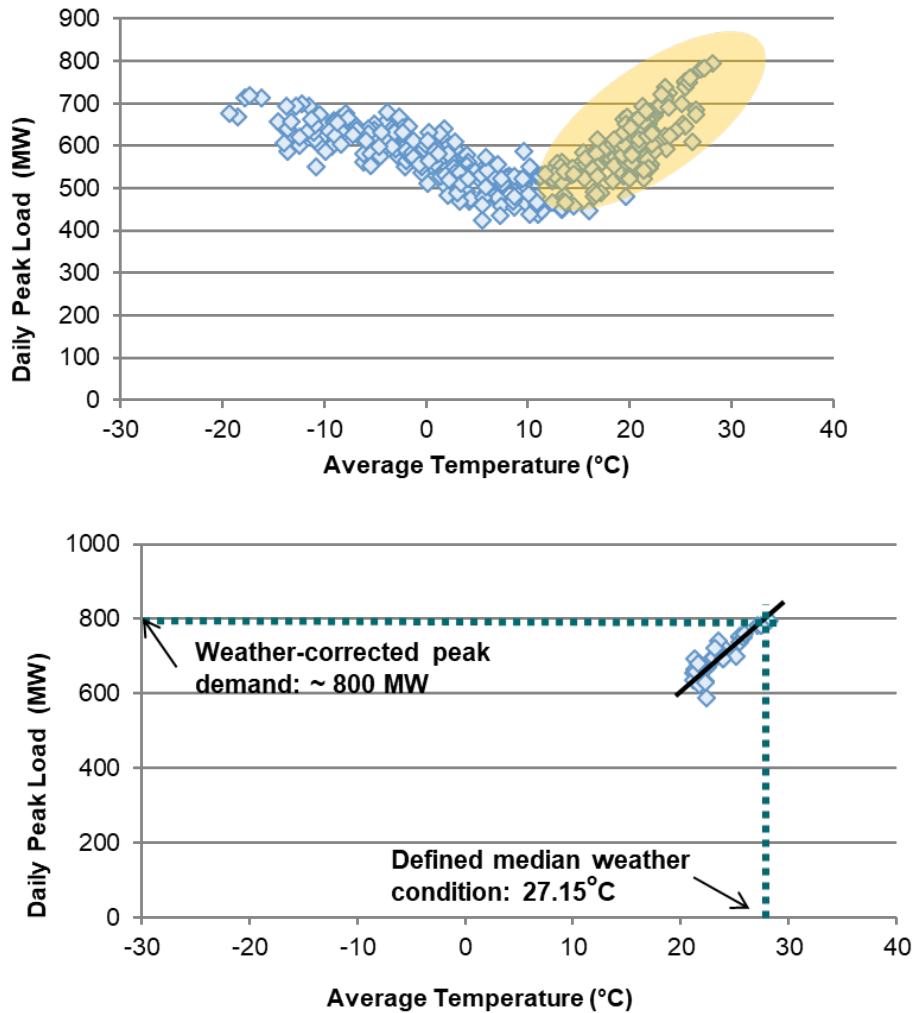
weather-load patterns. Hence, weather correction occurred according to three areas: West Ottawa, Central Ottawa, and East Ottawa. The stations in each area are first defined in Table B-3.

Median weather conditions for the Ottawa Sub-Region was defined to be 27.15 °C. This temperature was the median value of the maximum average daily temperatures for the past 31 years.

Extreme weather conditions for the Ottawa Sub-Region was defined to be 29.7 °C. This temperature was in the 97th percentile of the maximum average daily temperatures for the past 31 years.

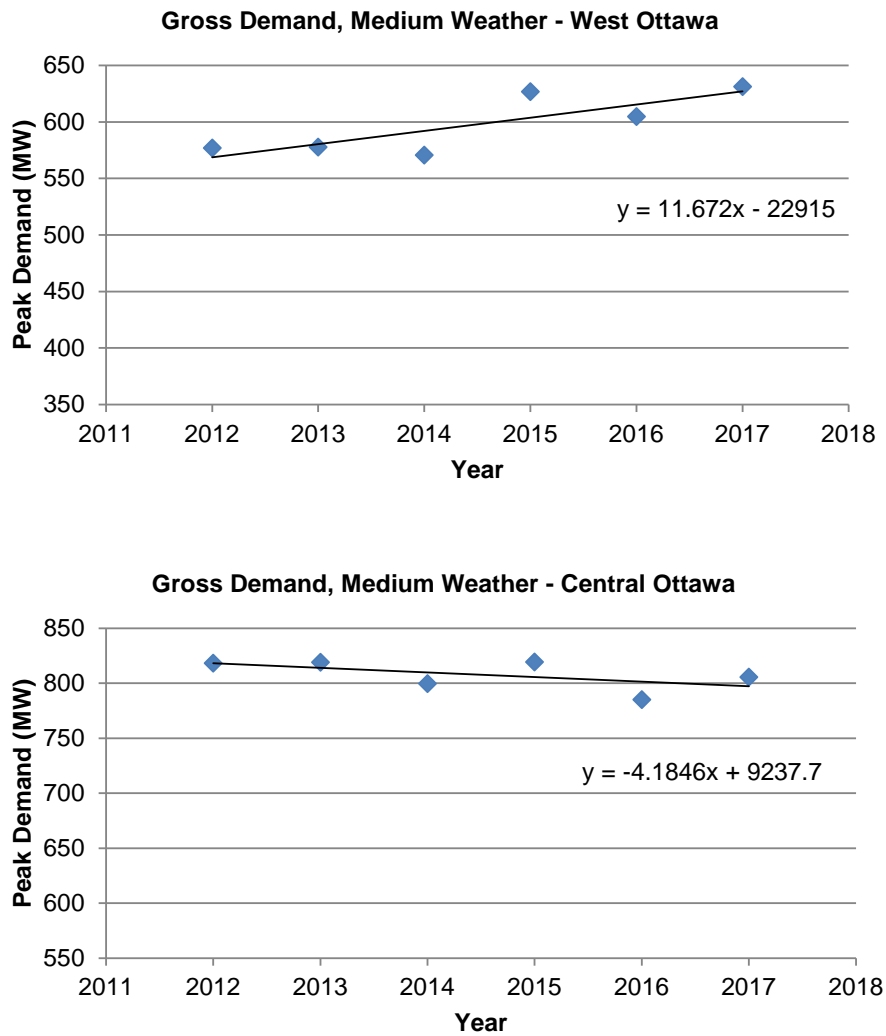
After defining median and extreme weather, a linear regression was performed, for each historical year of interest, between gross daily peak loads and daily peak temperatures. Weekends and holidays were not included in this data set. Because the Ottawa Sub-Region is summer-peaking, data corresponding to temperatures below 21 °C were also omitted. The median temperature was then used with the linear regression to establish the weather-corrected gross peak demand for that year. This process is summarized in Figure B-2.

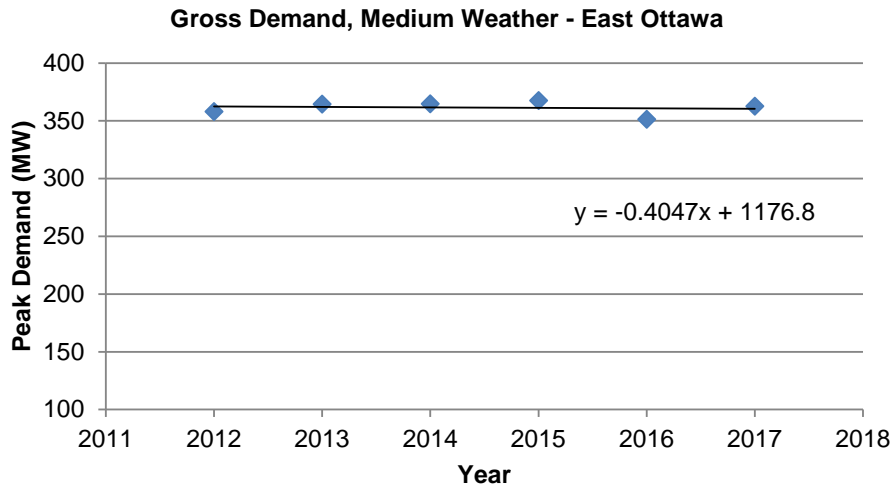
Figure B-2: Linear Regression to Weather-Correct Historical Peak Demand



Once the gross peak demands for the past five years were weather-corrected for each area to reflect median temperatures, another linear regression was performed to establish the forecast starting point. This is shown in Figure B-3 for West Ottawa, Central Ottawa, and East Ottawa.

Figure B-3: Linear Regression with Median Weather-Corrected Gross Peak Demand to Establish Forecast Starting Points





For the Ottawa Sub-Region IRRP (which began in 2018), the starting points were based upon the 2017 year. They are shown in the following table.

Table B-1: Forecast Starting Points (Base Year 2017) for Each Area in the Ottawa Sub-Region

West Ottawa	Central Ottawa	East Ottawa
627.4 MW	797.4 MW	360.5 MW

Extreme weather correction was not applied until *after* 20-year net-demand forecasts were determined. The average ratio (for each area) between the median and extreme weather-corrected peak demands from 2012-2017 was calculated (see Table B-3). This was then applied to the 20-year net-demand forecast.

Table B-2: Extreme Weather Correction Factor for Each Area in the Ottawa Sub-Region

West Ottawa	Central Ottawa	East Ottawa
1.09	1.07	1.08

B.3 HYDRO OTTAWA: GROSS FORECAST METHODOLOGY AND ASSUMPTIONS

Hydro Ottawa was formed in November 2000, following the amalgamation of five municipally-owned electric utilities (Gloucester Hydro, Goulbourn Hydro, Kanata Hydro, Nepean Hydro and Ottawa Hydro) from the former region of Ottawa-Carleton and the restructuring of the

Ontario electricity sector as a result of the Electricity Act, 1998. In 2002, Casselman Hydro was acquired by Hydro Ottawa and joined the amalgamated utility.

As of the end of 2019, Hydro Ottawa distributes electricity to approximately 340,000 metered customers within the City of Ottawa and the Village of Casselman. The service area covers 1,116 square kilometers and is supplied by an even mix of overhead and underground distribution lines. In 2018, Hydro Ottawa purchased a total of 7,446 gigawatt hours of electricity from the provincial grid to supply to customers. The Hydro Ottawa system peaks in the summer at a level that has remained relatively constant (maximum of 1,518 MW in 2010 and minimum of 1,308 MW in 2014) over the past decade. While population growth continues to increase, reductions from conservation programs, improvements in appliance efficiencies, and the installation of ERFs have offset the demand requirements of intensification. As the City grows, former rural areas fed by long distribution lines are becoming urban centres. This has created a new dynamic of customer requirements for higher reliability.

Overall, the City of Ottawa continues to grow in population and developed lands. The Ottawa-Gatineau population has consistently grown by 22,000 (1.5%) residents annually since 2015. On the Ottawa side, this development is primarily focused in five regions: the Downtown Core, Nepean & Riverside South, South Kanata & Stittsville, the Village of Richmond, and Orleans. This growth is being seen through the development of new mixed commercial/residential communities, intensification of existing communities, and major projects like the Ottawa LRT system.

Growth Identification

An important predecessor to load forecasting is the ability to identify areas of potential load growth. To ensure that Hydro Ottawa can continue to supply existing and new growth through its service territory, two primary processes are used to identify growth: the City of Ottawa's development application process and Hydro Ottawa's service request process.

City of Ottawa's Development Application Process

Hydro Ottawa is actively engaged in the City of Ottawa's development application process which allows for input and understanding of the City's land use policy through the Official Plan and supporting plans such as community design plans, transportation master plan, and infrastructure master plan. Changes to land use policy will typically have a long-term impact (i.e., greater than five years) on growth opportunities and be more wide reaching throughout the City of Ottawa. Hydro Ottawa is also actively engaged in the implementation of the land use policies by reviewing site plans, subdivision plans, and zoning amendments. Proposals from the implementation of the land use policies are typically short term (one to two years) to medium term (two to five years), and are localized to specific areas of the City.

Service Request Process

The service request process consists of developers requesting connection to Hydro Ottawa's system. These can range from general services and residential services to commercial service and large developments. These developments include connection requests for projects previously identified through the development application process.

Hydro Ottawa works closely with developers within its service territory to support early identification of required service size and timing of line additions or expansion within these growth areas. This engagement enables these developments and supports Hydro Ottawa load forecasting for capacity investment planning.

Load Forecasting

Load forecasting identifies how load will increase at the system level using information from identifying growth opportunities, historical growth and historical weather patterns. Forecasted load is established at the feeder level and aggregated by station on an annual basis to evaluate the loading impact with respect to equipment limitations and system constraints.

B.4 HYDRO ONE DISTRIBUTION: GROSS FORECAST METHODOLOGY AND ASSUMPTIONS

Hydro One Networks Distribution distributes electricity to customers at 69kV and below around the outer boundary of the City of Ottawa, except for, Stittsville/Carp, Pierces Corners, Osgoode, Manotick, Greely, Russell and Orleans/Queenswood. Hydro Ottawa Limited predominantly services the City of Ottawa.

Hydro One services about 44,000 customers in this region primarily through overhead lines with the exception of Orleans/Queenswood which is predominantly underground.

Factors that Affect Electricity Demand

In the last 5 years, the City of Ottawa and surrounding areas have experienced a high rate of growth as a result of residential, commercial and industrial load growth. Generation and conservation demand management has had impact on forecasting peak demand resulting in deferral of certain investments.

Notice of large customers beginning to adopt onsite battery storage or natural gas generation with the intent to fully operate as an island to minimize and/or shifting of hourly peak demand for financial benefits.

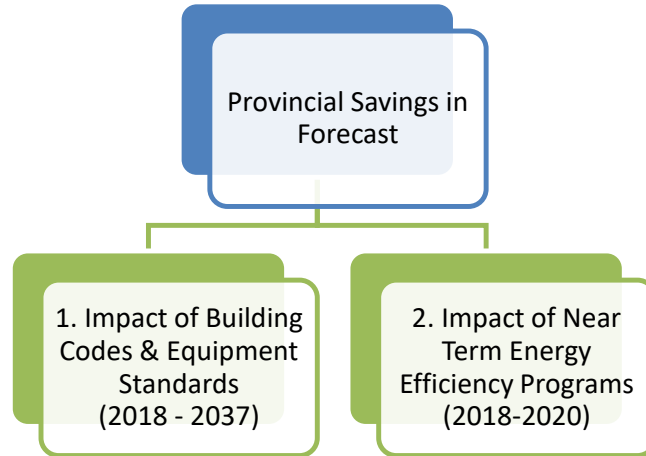
Forecast Methodology and Assumptions

Hydro One has a dedicated team that monitors the system load and provides updated load forecasts when required. Forecasts are provided for the next 20 years and factor in demand from recent connection requests and municipal plans. Additional considerations include economic forecasts, conservation demand management and historical weather patterns.

B.5 ENERGY EFFICIENCY FORECAST IN THE OTTAWA IRRP

As shown in Figure B-1, the impact of already existing or committed energy efficiency measures can be separated into the two main categories: Building Codes & Equipment Standards, and already committed (Near Term) Energy Efficiency Programs. The savings for each category are allocated according to the forecast residential, commercial, and industrial gross demand. This appendix section provides additional breakdowns of estimated energy efficiency savings for the Ottawa region and more detail on how the savings for the two categories were developed.

Figure B-4: Existing or Committed Energy Efficiency Savings Categories

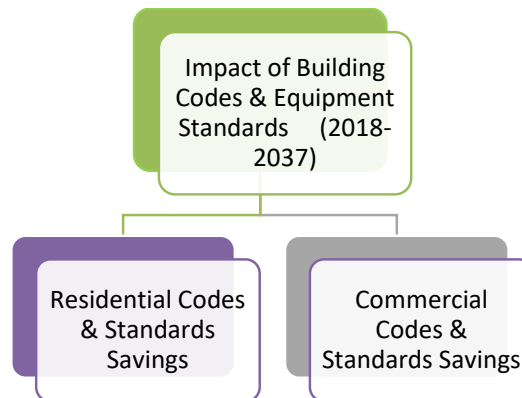


1. *Savings due to building codes and equipment standards*
2. *Savings due to the delivery of energy efficiency programs*

B.5.1 Estimating Savings from Building Codes and Equipment Standards

Ontario building codes and equipment standards set minimum efficiency levels through regulations. To estimate the impact on the region, the associated peak-demand savings for building codes and equipment standards are estimated and compared with the provincial gross peak-demand forecast. From this comparison, annual savings percentages are developed for the purpose of allocating the associated savings to each TS in the region by sector.

Figure B-5: Split of Building Codes & Equipment Standards Savings



**Savings are projected for residential and commercial sectors only*

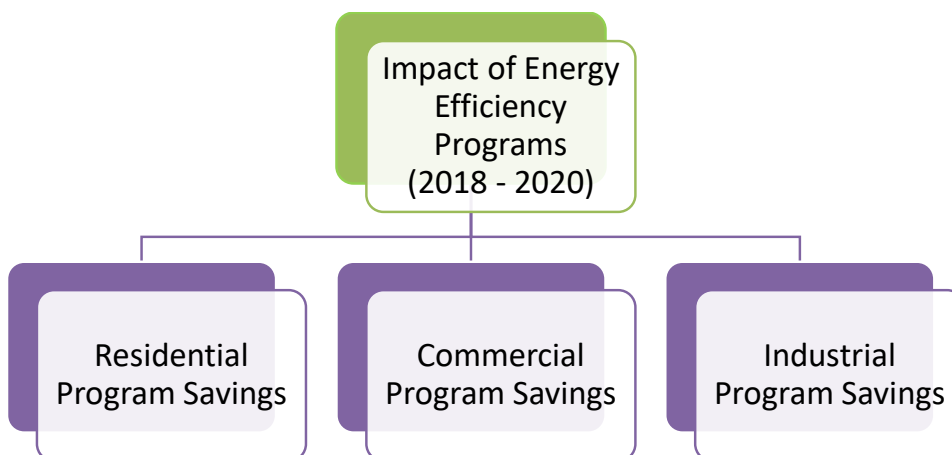
Annual savings percentages were applied to the forecast sector demand at each TS to develop an estimate of peak-demand impacts from codes and standards. By 2037, the residential sector in the region is expected to see about 7.2 per cent peak-demand savings through standards, while the commercial sector will see about 4.8 per cent peak-demand savings through codes.

B.5.2 Estimating Savings from the Delivery of Existing or Committed Energy Efficiency Programs (2018-2020)

Estimates of the peak-demand impacts of existing or committed energy efficiency programs across the province are included in the regional planning forecast. This differs from the evaluation of future Energy Efficiency Potential, which is presented in Appendix D.

Though the Conservation First Framework (CFF) has been transitioned to the Interim Framework, which runs from March 2019 until December 31, 2020, at the time the forecast for this IRRP was developed, CFF was still in place. To represent savings from energy efficiency measures that have been recently implemented but not yet captured in the reference forecast as well as programs for which funding has been committed but not yet spent, this IRRP uses the LDCs' CDM plans that were developed under CFF. Specifically, these plans were used to estimate the expected savings in the region from energy efficiency programs implemented for the short term (2018 -2020). Each CDM plan includes detailed savings projections from energy efficiency and funded behind-the-meter generation projects, and indicates how energy efficiency efforts will integrate with regional planning. The forecast savings were allocated to the region and TSs according to their respective load.

Figure B-6: Time Frames for Energy Efficiency Program Savings



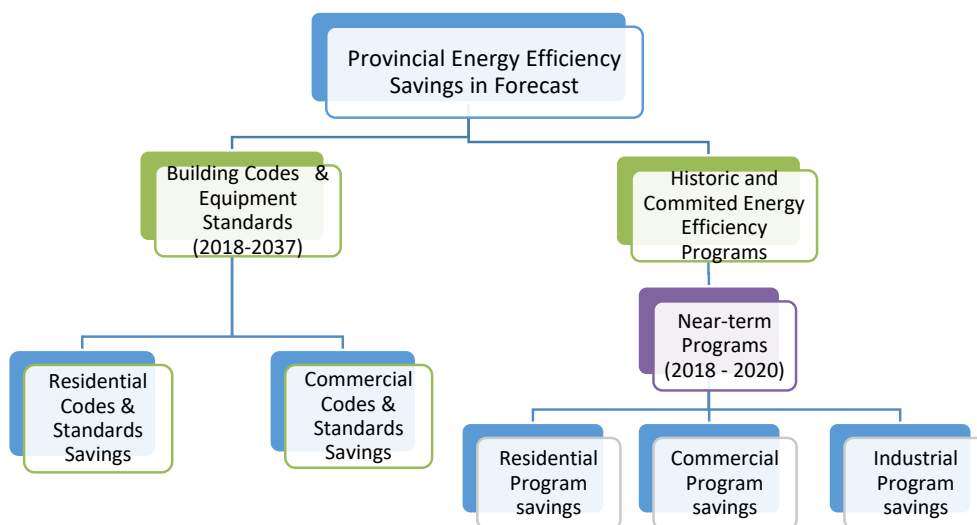
Persistence of these peak-demand savings from energy efficiency programs delivered between 2018-2020 are also considered over the forecast period. The peak-demand savings were estimated using the CDM plans projected summer-demand savings. On future IRRP studies, estimates developed through the Interim Framework will be used to approximate the conservation impact expected from short-term energy efficiency programs.

The portion of an LDC's service territory associated with this IRRP will directly relate to the savings estimated to occur in the region. In other words, the LDC's energy efficiency savings in the region are assumed to be proportional to the amount of its energy within the region (e.g., if 60 per cent of an LDC's energy is served in this region, then 60 per cent of the expected forecast savings for that LDC are estimated to occur within this sub-region). When the total peak-demand savings for the region has been estimated, it is allocated at each TS according to the relative share of residential, commercial, and industrial gross demand.

B.5.3 Energy Efficiency Savings assumed in the Planning Forecast

As described in the above sections, peak-demand savings were estimated by sector for each forecast category, and totaled for each TS in the region. The analyses were conducted under normal weather conditions and can be adjusted to reflect extreme weather conditions. The resulting forecast savings, along with the impact of distributed generation resources, were applied to gross demand to determine the net peak demand for further planning analyses.

Figure B-7: Map of Existing & Committed Energy Efficiency Savings



B.5.4 Forecast Savings from Existing and Committed Energy Efficiency

The forecast peak-demand savings from existing and committed energy efficiency is shown in Table B-3: Summer Peak-Demand Savings (MW) by TS. The savings are based on the LDC median gross forecast. Energy efficiency forecast estimates are based on the assumptions associated with the building codes and equipment standards impacts and near-term energy efficiency program delivery described in the previous sections.

Table B-3: Summer Peak Demand Savings (MW) by TS

Expected Summer Peak-Demand Contribution from Contracted Distributed Generation (MW)																					
	Station	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
West Ottawa	Bridlewood MTS	0.3	0.4	0.5	0.5	0.5	0.6	0.7	0.8	0.9	1.1	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.6	1.6	1.6
	Marchwood MTS	1.9	2.4	2.8	2.5	2.7	2.9	3.1	3.5	3.6	3.8	3.9	4.3	4.5	4.7	5.0	5.2	5.2	5.2	5.2	5.1
	Fallowfield DS	1.9	2.1	2.4	2.3	1.5	1.7	1.7	1.7	1.8	1.9	2.0	2.2	2.2	2.4	2.5	2.7	2.6	2.5	2.5	2.5
	Manotick DS	0.2	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8
	Richmond DS	0.2	0.4	0.6	0.6	0.8	1.0	1.2	1.3	1.4	1.5	1.5	1.6	1.7	1.8	1.9	2.0	2.0	2.1	2.1	2.0
	Manordale MTS	0.3	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Limebank MTS	2.0	2.5	3.2	2.9	3.2	3.3	3.7	3.8	4.1	4.5	5.0	5.6	6.3	7.1	7.8	8.2	8.5	8.7	8.8	8.9
	Marionville DS	0.5	0.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.0	0.9	0.9	1.0	1.0	1.0
	Uplands MTS	0.9	1.2	1.4	1.3	1.5	1.8	2.1	2.7	2.9	2.9	3.1	3.5	3.6	3.9	4.2	4.4	4.4	4.5	4.5	4.5
	South Gloucester DS	0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
	Greely DS	0.8	1.0	1.1	1.1	1.0	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.5	1.6	1.6	1.6	1.6	1.6	1.6
	Russell DS	0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Centerpoint MTS	0.6	0.7	0.8	0.7	0.8	0.7	0.8	0.9	0.9	1.0	0.9	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2
	Merivale TS	0.6	0.8	1.2	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.5	1.5	1.6	1.6	1.6
	National Aeronautical CTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Kanata MTS	2.3	2.8	3.3	3.0	3.1	3.3	3.5	3.6	3.9	4.0	4.1	4.5	4.7	4.9	5.2	5.3	5.3	5.2	5.2	5.2
	South March TS	3.7	4.7	5.5	5.1	5.3	5.6	5.7	6.0	6.2	6.3	6.2	6.4	6.7	6.9	7.2	7.4	7.4	7.3	7.3	7.3
	Nepean TS	5.9	7.2	7.8	7.2	6.9	7.2	7.5	7.8	8.0	8.3	8.4	8.8	9.1	9.4	9.9	10.0	10.0	9.8	9.8	9.7

Expected Summer Peak-Demand Contribution from Contracted Distributed Generation (MW)																					
	Station	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
	Terry Fox MTS	2.3	2.8	3.2	2.9	3.0	3.3	3.5	3.8	4.1	4.4	4.6	5.0	5.4	5.9	6.4	6.5	6.6	6.5	6.5	6.5
	South Nepean TS	0.0	0.0	0.0	0.0	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.5	3.9	4.4	4.8	5.1	5.4	5.7	5.7	5.7
Central Ottawa	Nepean Epworth TS	0.4	0.5	0.6	0.6	0.6	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.7	0.8	0.8	0.8	0.8	0.8	0.8
	Carling TS	3.6	4.4	5.1	4.6	4.6	4.9	5.3	5.5	5.7	5.9	6.1	6.5	6.7	7.0	7.4	7.6	7.6	7.5	7.5	7.4
	Lincoln Heights TS	1.7	2.1	2.3	2.2	2.2	2.3	2.4	3.0	3.0	3.2	3.2	3.4	3.7	3.8	4.0	4.1	4.1	4.1	4.1	4.0
	Woodroffe TS	1.2	1.4	1.7	1.5	1.5	1.7	2.4	2.6	2.7	2.8	2.9	3.0	3.2	3.4	3.5	3.7	3.8	3.7	3.7	3.7
	Hinchey TS	1.9	2.4	2.9	2.8	2.9	3.1	3.3	3.6	3.9	4.0	4.2	4.5	4.9	5.1	5.5	5.8	5.9	6.0	6.1	6.1
	Slater TS	5.0	6.5	7.7	7.1	6.9	7.2	7.3	7.5	7.6	7.8	7.8	8.0	8.2	8.6	9.0	9.0	9.0	8.9	8.9	8.8
	Lisgar TS	2.6	3.3	3.8	3.5	3.7	3.9	4.1	4.3	4.5	4.9	5.0	5.3	5.6	5.9	6.2	6.4	6.4	6.4	6.5	6.5
	King Edward TS	3.5	4.4	5.1	4.7	4.6	4.9	5.2	5.4	5.6	5.8	5.9	6.2	6.5	6.8	7.1	7.2	7.3	7.2	7.1	7.1
	Russell TS	3.2	4.1	5.0	4.6	4.5	4.8	4.8	5.0	5.2	5.2	5.3	5.5	5.7	5.9	6.2	6.3	6.2	6.2	6.2	6.1
	Overbrook TS	2.6	3.2	3.8	3.5	3.6	3.9	4.2	4.5	4.7	5.0	5.1	5.5	5.8	6.2	6.6	6.8	6.9	7.0	7.0	7.1
	Riverdale TS	3.3	4.0	4.6	4.2	4.2	4.5	4.8	5.0	5.2	5.4	5.5	5.9	6.2	6.7	7.0	7.2	7.2	7.3	7.3	7.3
	Albion TS	2.4	2.7	3.1	2.8	2.8	3.0	3.2	3.3	3.4	3.5	3.5	3.8	4.0	4.2	4.4	4.5	4.5	4.4	4.4	4.4
	Ellwood TS	1.5	1.8	2.1	1.9	2.0	2.1	2.2	2.3	2.4	2.4	2.6	2.7	2.7	2.9	3.1	3.1	3.2	3.1	3.1	3.1
East Ottawa	Bilberry Creek TS	1.8	2.1	2.4	2.2	2.4	2.5	2.7	2.8	2.9	3.0	3.0	3.3	3.4	3.5	3.7	3.8	3.8	3.8	3.7	3.7
	Orleans TS	4.4	5.9	7.2	6.8	6.7	6.9	7.1	7.4	7.8	8.0	7.9	8.2	8.4	8.7	9.1	9.3	9.3	9.3	9.3	9.3
	Cyrville MTS	1.0	1.2	1.4	1.4	1.5	1.8	2.0	2.2	2.3	2.5	2.7	2.9	3.2	3.4	3.7	3.9	4.0	4.0	4.1	4.2
	Moulton MTS	1.0	1.2	1.4	1.3	1.4	1.6	1.6	1.8	1.9	1.9	1.9	2.1	2.2	2.3	2.4	2.5	2.5	2.5	2.5	2.5
	Wilhaven DS	0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Navan DS	0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
	Cumberland DS	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Hawthorne TS	4.5	5.7	6.6	6.1	6.3	6.8	7.1	7.6	8.0	8.4	8.7	9.3	9.9	10.5	11.1	11.6	11.9	12.0	12.1	12.1
	National Research TS	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	73	91	108	100	102	109	115	122	127	131	134	142	150	158	167	172	174	174	174	173

B.6 EXPECTED PEAK DEMAND CONTRIBUTION OF CONTRACTED DISTRIBUTED GENERATION

The installed capacity of contracted distributed generation is adjusted to reflect the expected power output at the time of local area peak, based on resource-specific peak capacity contribution values. As of February 2019, distributed generation projects are expected to offset 64 MW of summer peak demand within the Ottawa Sub-Region by 2020. The distribution-connected contracted generators included in the forecast comprise a mix of solar and hydroelectric. The majority of these generators in the region are hydroelectric (75 per cent of contracted capacity), with solar accounting for 25 per cent of contracted capacity. Capacity contribution factors of 62 per cent and 30 per cent (hydroelectric and solar respectively) to the regional peak have been assumed to account for the expected output of the mix of local generation resources during summer peak conditions.

The expected peak-demand contribution of contracted distributed generation in the Ottawa Sub-Region is shown Table B-4.

Table B-4: Expected Summer Peak Demand Contribution from Contracted Distributed Generation²

Expected Summer Peak-Demand Contribution from Contracted Distributed Generation (MW)																					
	Station	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
West Ottawa	Bridlewood MTS	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.15	0.15	0.15	0	0	0
	Marchwood MTS	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0	0	0	0	0	0	0
	Fallowfield DS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Manotick DS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Richmond DS	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0	0	0	0	0	0
	Manordale MTS	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0
	Limebank MTS	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.04	0.01	0.01	0.01	0	0	0
	Marionville DS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Uplands MTS	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0	0	0	0	0	0
	South Gloucester DS	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0	0	0
	Greely DS	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.15	0.15	0
	Russell DS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Centerpoint MTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Merivale TS	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0	0	0	0	0	0
	National Aeronautical CTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Kanata MTS	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.01	0.01	0.01	0.01	0	0	0
	South March TS	0.58	0.58	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.49	0.38	0.38	0.38	0.13	0.13	0.08
	Nepean TS	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.35	0.11	0.11	0.11	0.03	0.03	0
	Terry Fox MTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	South Nepean TS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Central Ottawa	Nepean Epworth TS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Carling TS	18.29	18.29	18.29	18.29	18.29	18.29	18.29	18.29	18.29	18.29	18.29	18.29	18.29	18.22	18.20	18.20	18.20	18.20	18.20	18.20

² While the effective capacity of the total (both existing and new) installed distributed generation is shown in this table, note that peak savings from **existing** hydroelectric facilities were not subtracted from the gross forecast. Gross forecasts provided by LDCs in the Ottawa Sub-Region already included existing distributed hydroelectric output; the relevant generation output data was not available to create a gross starting point with existing hydroelectric peak demand savings added.

Expected Summer Peak-Demand Contribution from Contracted Distributed Generation (MW)																				
	Lincoln Hights TS	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	Woodroffe TS	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.08	0.08	0.08	0.08	0
	Hinchey TS	0	0	16.74	16.74	16.74	16.74	16.74	16.74	16.74	16.74	16.74	16.74	16.74	16.74	16.74	16.74	16.74	16.74	16.74
	Slater TS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lisgar TS	11.41	11.41	18.85	18.85	18.85	18.85	18.85	18.85	18.85	18.85	18.41	18.41	18.41	7.44	7.44	7.44	7.44	7.44	7.44
	King Edward TS	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	0.01	0	0	0	0	0
	Russell TS	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.53	0.07	0.07	0.07	0	0
	Overbrook TS	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.08	0	0	0	0	0
	Riverdale TS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Albion TS	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.24	0.15	0.15	0.15	0.08	0.08
	Ellwood TS	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.08	0.08	0.08	0	0
East Ottawa	Bilberry Creek TS	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.18	0	0	0	0	0
	Orleans TS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Cyrville MTS	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0	0	0	0	0
	Moulton MTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Wilhaven DS	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.23	0.16	0.16	0.16	0	0
	Navan DS	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.12	0.12	0.12	0.12	0.00	0.00
	Cumberland DS	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0	0	0	0	0
	Hawthorne TS	3.66	3.66	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	0.77	0.62	0.49	0.49	0.49	0.37	0.18	0.18
	National Research TS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	40	40	64	64	64	64	64	64	64	64	64	61	60	46	45	45	44	43	43

B.7 PLANNING PEAK DEMAND FORECAST

The planning forecast takes the gross median weather forecast data provided by the LDCs, accounts for the demand impacts of energy efficiency and DG, outlined in Appendix B.5 and B.4 respectively, considers regional peak coincidence, and adjusts for the impact of extreme weather conditions. Extreme weather correction was carried out according to the methodology previously described in Section B.2.

To evaluate the adequacy of the electric system, the forecasts consider demand observed at each station for the hour of the year when overall demand in the study area is its maximum. This is referred to as “coincident peak demand”. Typically, this represents the time when assets are most stressed and resources are most constrained. This differs from a non-coincident peak, which is measured by summing each station’s individual peak, regardless of whether each station’s peak occurs at a different time than the area’s overall peak. Within the Ottawa Sub-Region, the peak loading hour for each year typically occurs in mid-afternoon of the hottest weekday during summer, driven by the air conditioning loads of residential and commercial customers. The Working Group determined each station’s historical contribution to the area’s coincident peak to then predict future station loading during coincident peak times.

Table B-5 shows the summer planning demand forecast for each station in the Ottawa Sub-Region.

Table B-5: Summer Planning Peak-Demand Forecast for Station and Sub-Region

	Summer Planning Peak-Demand Forecast (MW) – Station and Sub-Region																						
	Station	LTR/ Planning Capacity (MW)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
West Ottawa	Bridlewood MTS	23	14.3	14.2	14.1	15.1	15.0	16.0	16.0	16.5	19.0	21.0	21.8	21.7	21.7	21.6	21.5	21.5	21.4	21.4	21.6	21.6	
	Marchwood MTS	30	58.1	63.6	65.6	67.4	68.7	69.4	70.1	70.8	71.4	71.1	71.0	70.6	70.4	70.1	69.9	69.7	69.7	69.7	69.8	69.8	
	Fallowfield DS	23	47.2	41.5	48.4	51.9	21.9	25.3	25.8	26.8	27.2	28.3	28.7	30.7	31.2	32.4	32.3	33.2	33.3	33.3	33.3	33.4	
	Manotick DS	8	6.7	7.5	8.4	9.3	10.2	11.0	11.9	11.9	11.9	11.8	12.0	11.9	12.2	12.0	12.1	12.1	12.2	12.2	12.3	12.2	
	Richmond DS	68	7.2	12.4	14.1	18.5	22.6	25.9	27.7	27.6	29.3	29.3	29.3	29.2	29.1	28.9	28.8	28.8	28.8	28.8	28.8	28.8	
	Manordale MTS	9	9.9	9.7	9.7	9.8	9.8	9.8	9.9	9.9	10.0	10.1	10.2	10.2	10.2	10.3	10.3	10.3	10.3	10.3	10.4	10.4	
	Limebank MTS	59	54.1	60.3	72.9	76.1	83.8	77.0	80.3	76.2	79.6	84.8	89.9	94.9	99.8	104.5	108.5	111.7	114.3	117.0	119.7	122.4	
	Marionville DS	14	12.3	12.3	12.4	12.7	12.8	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.6	13.7	13.7	13.8	13.9	14.0	14.1	14.1	
	Uplands MTS	30	23.8	26.9	29.1	30.8	37.5	42.6	47.8	57.4	57.7	58.1	58.8	59.5	59.7	59.9	60.2	60.5	60.9	61.3	61.8	61.8	
	South Gloucester DS	7	4.4	4.5	4.6	4.7	4.7	4.7	4.7	4.7	4.8	4.8	4.8	4.9	4.9	4.8	4.8	4.8	4.9	4.9	4.9	4.9	
	Greely DS	27	18.7	18.9	19.3	19.7	20.0	20.3	20.5	20.8	20.9	21.1	21.3	21.6	21.6	21.7	21.8	22.0	22.3	22.4	22.8	23.0	
	Russell DS	7	4.0	4.1	4.2	4.2	4.3	4.3	4.2	4.4	4.4	4.4	4.4	4.4	4.5	4.5	4.4	4.4	4.4	4.5	4.5	4.5	
	Centerpoint MTS	13	16.1	16.3	16.2	16.3	16.3	16.3	16.2	16.1	16.1	16.0	16.1	16.0	15.9	15.9	15.8	15.7	15.8	15.8	15.8	15.8	
	Merivale TS	23	16.8	16.6	19.4	19.7	19.7	19.8	20.4	20.8	21.0	21.6	22.1	22.1	22.0	21.9	21.9	22.0	22.0	22.9	22.9	22.9	
	National Aeronautical CTS	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
	Kanata MTS	49	62.9	65.2	67.0	70.9	70.9	70.7	70.4	70.3	70.1	70.9	71.2	70.9	70.6	70.4	70.4	70.3	70.3	70.3	70.4	70.4	
	South March TS	110	91.1	91.6	92.4	93.5	104.0	103.8	103.3	103.5	103.8	103.5	102.2	100.7	100.0	100.2	100.6	101.1	101.5	102.0	102.7	103.3	
	Nepean TS	145	153.1	152.5	137.7	142.7	134.3	133.9	134.5	134.3	134.1	133.8	133.6	133.2	132.9	132.5	132.2	132.3	132.3	132.5	132.6	132.7	
	Terry Fox MTS	81	61.7	66.6	68.2	70.4	72.3	73.9	75.6	77.3	79.0	80.6	82.3	83.8	85.3	86.7	88.2	88.0	88.0	88.0	88.0	88.1	
	South Nepean TS	TBD	0.0	0.0	0.0	0.0	39.4	43.4	47.5	50.4	54.4	58.0	61.0	63.8	67.1	69.8	71.6	73.4	76.3	79.8	79.8	79.8	
Central Ottawa	Nepean Epworth TS	13	11.7	11.6	11.5	11.6	11.5	11.6	11.6	11.5	11.5	11.4	11.4	11.4	11.3	11.4	11.3	11.3	11.3	11.3	11.3	11.3	
	Carling TS	95	91.7	92.7	94.3	95.9	96.5	96.2	101.1	101.3	101.1	101.1	101.4	101.5	101.4	101.1	100.7	100.6	100.6	100.7	100.7	100.8	
	Lincoln Hights TS	72	44.3	44.6	44.3	46.8	46.7	46.6	46.5	55.6	55.5	55.3	55.3	55.1	54.8	54.7	54.5	54.3	54.3	54.4	54.4	54.4	
	Woodroffe TS	91	32.2	31.8	32.3	33.3	34.0	34.3	51.1	50.9	50.7	50.6	50.5	50.4	50.1	50.0	49.8	49.7	49.6	49.7	49.7	49.7	

Summer Planning Peak-Demand Forecast (MW) – Station and Sub-Region																						
	Hinchey TS	86	48.4	50.2	54.5	39.9	42.0	43.7	46.6	49.4	50.9	52.6	54.3	55.7	57.2	58.2	60.1	61.1	62.3	63.6	64.9	66.2
	Slater TS	194	124.6	124.5	123.3	123.9	124.1	123.8	123.7	123.4	123.3	123.2	123.1	122.9	122.7	123.4	123.0	122.9	122.9	123.1	123.1	123.1
	Lisgar TS	75	70.6	69.9	70.2	63.3	70.0	70.2	71.5	71.8	72.3	75.5	76.0	76.3	76.5	77.8	78.0	78.3	78.9	79.4	80.0	80.6
	King Edward TS	82	91.0	90.2	91.4	92.7	93.5	93.9	94.4	95.0	95.5	96.1	96.7	97.1	97.6	97.3	96.9	96.8	96.7	96.9	96.9	96.9
	Russell TS	70	78.7	80.6	84.5	85.0	85.2	85.2	85.4	85.1	85.0	84.9	84.8	84.6	84.4	84.2	84.0	84.4	84.4	84.5	84.6	84.6
	Overbrook TS	95	67.0	71.2	74.4	77.1	78.8	81.0	83.2	85.1	85.8	86.8	87.6	88.6	89.1	90.1	90.7	92.0	92.7	94.0	95.0	96.2
	Riverdale TS	106	85.1	84.0	84.9	87.3	89.2	90.1	90.6	91.2	91.8	92.3	92.9	93.3	93.7	95.3	95.7	96.2	97.1	97.8	98.5	99.2
	Albion TS	89	58.2	57.8	57.5	58.0	58.2	58.1	58.1	58.0	58.1	58.2	58.2	58.1	58.1	58.0	58.1	58.2	58.3	58.6	58.8	58.8
	Ellwood TS	45	38.2	38.9	39.2	40.6	41.4	41.9	41.9	41.8	41.6	41.6	41.5	41.4	41.3	41.1	40.9	41.0	40.9	41.0	41.1	41.6
East Ottawa	Bilberry Creek TS	85	41.5	41.2	41.5	48.1	51.9	51.8	51.6	51.5	51.4	51.2	51.2	51.0	50.8	50.7	50.8	50.9	50.9	50.9	51.0	51.0
	Orleans TS	117	103.1	104.7	107.1	109.9	112.6	115.0	117.1	119.4	123.0	126.1	128.0	129.1	130.1	130.8	131.3	132.1	133.0	134.0	134.4	134.9
	Cyrville MTS	45	24.1	24.4	27.4	33.1	36.3	39.2	43.6	44.8	46.5	47.7	48.6	49.5	50.2	51.0	51.8	52.7	53.5	54.8	56.0	57.0
	Moulton MTS	30	27.5	27.3	29.0	31.1	33.0	34.7	34.7	34.5	34.4	34.4	34.3	34.1	34.1	33.9	33.8	33.7	33.7	33.7	33.7	33.7
	Wilhaven DS	18	3.3	3.3	3.4	3.5	3.5	3.5	3.6	3.6	3.6	3.6	3.6	3.7	3.7	3.7	4.0	4.1	4.1	4.2	4.3	4.3
	Navan DS	14	3.5	3.5	3.6	3.7	3.7	3.8	3.8	3.8	4.0	4.0	3.9	4.0	4.0	4.0	4.4	4.4	4.4	4.5	4.7	4.9
	Cumberland DS	7	5.4	5.5	5.5	5.6	5.7	5.7	5.8	5.8	6.0	6.1	6.3	6.4	6.5	6.5	6.6	6.6	6.8	6.8	6.9	6.9
	Hawthorne TS	137	123.1	121.5	120.5	123.5	130.3	133.7	134.4	136.2	138.0	141.8	146.0	148.3	153.8	155.6	157.3	159.7	162.8	165.4	168.1	169.6
	National Research TS	25	9.1	9.0	8.9	8.9	8.9	8.9	8.9	8.9	9.0	9.1	9.2	9.2	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
	Total		1846	1874	1914	1957	2026	2054	2109	2142	2168	2197	2220	2236	2254	2271	2282	2296	2312	2330	2344	2356

Appendix C: Planning Study Report

C.1 INTRODUCTION

This Planning Study Report documents the results of the power system studies used to determine the planned performance of the electricity system for the Ottawa Sub-Region. The results of this planning study were used to inform the development of planning recommendations in the 2019 Ottawa IRRP.

C.2 FACILITY RATINGS ASSUMPTIONS

Scenarios assumed a load consistent with summer conditions and therefore summer planning ratings are assumed. Winter planning scenarios were not assessed.

Facility rating assumptions are summarized in the sub-sections that follow.

C.2.1 Transformer Ratings

Transformer ratings are summer planning ratings as registered with the IESO by the facility owner.

The long-term emergency (LTE) ratings of transformers are 10-day limited time ratings. The short-term emergency (STE) ratings of transformers are 15-minute limited time ratings.

C.2.2 Overhead Conductor Ratings

Transmission circuit overhead conductor ratings are as registered with the IESO by the facility owner.

The continuous rating is calculated as the amperage that maintains conductor temperature at 93 °C for aluminum conductor steel-reinforced (ACSR) conductors or sag (if lower) when the wind speed is less than 4 km/h and ambient temperature is 35 °C.

The long-term emergency rating is calculated as the amperage that maintains conductor temperature at 127 °C for ACSR conductors or sag (if lower) under the same ambient conditions described for the continuous rating.

The short-term emergency rating is calculated as the amperage that keeps conductor temperature less than 150 °C for ACSR conductors or sag (if lower) for 15 minutes, assuming that the circuit was initially loaded at its continuous rating.

C.3 DEMAND ASSUMPTIONS (STUDY AREA LOAD)

The planning study used the IRRP planning forecast shown in Appendix B, Table B-3. A power factor of 0.9 lagging was assumed for most stations as a reasonable worst-case assumption based on direction given by the Working Group.

C.4 SUPPLY ASSUMPTIONS

C.4.1 Run-of-River Hydroelectric Generation

According to the ORTAC, a planning study shall assume a level of output for run-of-river hydroelectric generation that is available 98% of the time. This results in an output level for the of approximately 70MW for these generators.

C.5 TRANSMISSION ASSUMPTIONS

In addition to existing transmission facilities, transmission facilities that are currently being implemented, or under development or construction, are assumed to be in-service by their estimated completion date. These facilities are summarized in Table C-1.

Table C-1: New Facilities Assumed in the Assessment

Facility	Description	Assumed in-service date
South Nepean Transmission Reinforcement	12.2 km extension of circuit E34M	2021
South Nepean MTS	New South Nepean MTS station tapped onto S7M (115kV) and E34M (230kV)	2022
M30A/M31A Conductor Upgrade	Upgrade existing 230kV circuits between Merivale TS and Hawthorne TS	2020
Overbrook TS – New 11kV tap to circuit A6R	Reconnect 115/13.8 kV transformer T1 at Overbrook Transformer Station (TS) from 115 kV circuit A4K to 115 kV circuit A6R through a new 1.9 km 115 kV tap line	2019

C.6 CREDIBLE PLANNING EVENTS

C.6.1 Steady State Planning Events Studied

For the purpose of this planning study, planning events were studied based on their applicability to bulk power system (BPS) elements, bulk electric system (BES) elements, or non-bulk elements. The steady state planning events are summarized in Table C-2.

Table C-2: Steady State Planning Events Studied

Pre-Contingency State	Contingency
All elements in-service	None
	Single element contingencies (N-1)
	Common tower contingencies (N-2)

C.7 PLANNING PERFORMANCE CRITERIA

The study applied planning performance criteria in accordance with the following standards and criteria:

- North American Electric Reliability Corporation (NERC) Standard TPL-001 – “Transmission System Planning Performance Requirements” (TPL-001),
- Northeast Power Coordinating Council (NPCC) Regional Reliability Reference Directory #1 – “Design and Operation of the Bulk Power System,” and
- IESO Ontario Resource and Transmission Assessment Criteria (ORTAC).

C.7.1 Load Supply Capacity

To assess the need for additional step-down transformer station capacity, the demand outlook was compared to the 10-day limited time rating (LTR) on a station-by-station basis. To account for the possible loss of the companion step-down transformer, the LTR of each transformer station is defined by the most restrictive step-down transformer 10-day LTR rating. No station-to-station or intra-station (bus-to-bus) load transfers were assumed in this assessment.

Station load is equal to the sum of all bus loads supplied by the station. For the purposes of station capacity assessments, if low-voltage capacitor banks are installed at the particular station, a load power factor corrected to 0.95 lagging is assumed. If no low-voltage capacity banks are installed, a load power factor of 0.9 lagging is assumed.

C.7.2 Load Security

In accordance with Section 7.1 of ORTAC, following the loss of any element as a result of credible design contingencies, thermal loading must be reduced to within LTE ratings in the time afforded by STE ratings and the total amount of load allowed to be interrupted by configuration, load rejection, and/or curtailment must not exceed 150 MW. In addition to the post-contingency thermal loading, which is forecast to exceed STE, the following post-contingency thermal loading is forecast to exceed LTE. Loadings under the 2037 forecast year are reported.

C.7.3 Load Restoration

In accordance with Section 7.2 of ORTAC, following design criteria contingencies on the transmission system, all affected loads must be restored within eight hours, with loads in excess of 150 MW within four hours, and loads in excess of 250 MW within 30 minutes. Loadings under the 2037 forecast year are reported, with the collaboration of the Working Group.

C.8 STUDY RESULTS

C.8.1 Station Capacity Needs

The following table shows the capacity shortfall between the planning forecast and the station limited time rating (LTR) for the Ottawa Sub-Region stations where the planning forecast exceeds the LTR at some point in the forecast period.

Table C-3: Assessment of Station Capacity Over the Forecast Period

Station	LTR [MW]	Need Date	Station Load [MW]				Capacity Shortfall (MW)			
			2020	2025	2030	2037	2020	2025	2030	2037
Marchwood MTS	29.7	Near-Term	67.0	72.2	71.8	71.2	37.3	42.5	42.1	41.5
Fallowfield DS	22.5	Near-Term	49.9	28.3	32.6	34.8	27.4	5.8	10.1	12.3
Manotick DS	7.74	Near-Term	8.6	12.1	12.4	12.4	0.86	4.36	4.66	4.66
Manordale MTS	9	Near-Term	10.0	10.2	10.5	10.7	1	1.2	1.5	1.7
Limebank MTS	59.4	Near-Term	74.6	77.9	101.5	124.1	15.2	18.5	42.1	64.7
Uplands MTS	29.7	Near-Term	29.8	58.1	60.4	62.5	0.1	28.3	30.7	32.8
Centerpoint MTS	12.6	Near-Term	16.7	16.6	16.4	16.3	4.1	4	3.8	3.8
Kanata MTS	48.78	Near-Term	68.8	72.2	72.5	72.3	20.02	23.42	23.72	23.52
Terry Fox MTS	81	Medium-Term	69.9	79.0	87.1	89.9			6.1	8.9
Carling TS	95.4	Near-Term	97.0	104.0	104.1	103.5	1.6	8.6	8.7	6.1
Lisgar TS	74.7	Medium-Term	72.1	73.7	78.4	82.5			3.7	7.8
King Edward TS	82.35	Near-Term	94.0	97.6	100.2	99.5	11.65	15.25	17.85	17.15
Russell TS	70.02	Near-Term	86.9	87.5	86.7	87.0	16.88	17.48	16.68	16.98
Overbrook TS	95.04	Long-Term	76.4	87.0	91.1	98.2				3.16
Orleans TS	117.27	Near-Term	110.0	122.3	133.0	137.8		5.03	15.73	20.53
Cyrville MTS	45	Medium-Term	28.1	45.5	50.9	57.7		0.5	5.9	12.7
Moulton MTS	29.7	Near-Term	29.8	35.3	34.8	34.5	0.1	5.6	5.1	4.8
Cumberland DS	6.75	Long-Term	5.7	6.0	6.6	7.0				0.25
Hawthorne TS	136.8	Near-Term	123.5	139.1	156.8	172.5		2.3	20	35.7

The forecast for some of the above stations shows a very small level of overloading, well within the forecast uncertainty of the station, even in the near term. With the exception of

Manotick DS, Marionville DS, and Hawthorne TS the above stations are owned by Hydro Ottawa. Hydro Ottawa's distribution network has significant capability to transfer load between its stations. This enables the timely restoration of lost load in excess of an individual station's limited time rating if a station transformer were to experience an outage during a period when the station was heavily loaded. As a result, in many cases is reasonable for the planning forecast to exceed the station LTR without introducing significant reliability risk.

Based on this forecast there is a need to monitor demand trends at these stations over the next few years, however it would be premature to plan for additional station capacity for each of these stations during this IRRP. All of the stations identified above, with the exception of Hawthorne TS, are supplied by the regional 115 kV transmission system. Ongoing planning work following the release of this IRRP will consider the potential for non-wires alternatives to reduce demand at these stations, in order to reduce the flow through the 230/115 kV transformers.

Voltage Regulation at Terry Fox MTS

Terry Fox MTS is a dual element spot network (DESN) type station, a design which is typically supplied by two circuits, however the initial configuration of Terry Fox consists of two transformers, both connecting onto 230 kV circuit E34M/T33E, the only 230 kV supply in the vicinity. Circuit E34M/T33E is a 290 km circuit connecting Merivale TS in Ottawa to Clarington TS in the east Greater Toronto Area. Almonte TS, which for the purpose of regional planning is usually considered to be part of the Outer Ottawa Sub-Region, is located West of Terry Fox MTS, and is also solely supplied by this circuit.

The 2018 Needs Assessment identified that if the circuit were open at the Merivale TS end (a line end open, or LEO contingency), the long circuit from Clarington TS would not provide adequate support for Almonte TS and Terry Fox MTS during the peak loading period, resulting in voltages below the minimum level allowed by the ORTAC.³ As noted above, Hydro Ottawa

³ The System Impact Assessment (SIA) report that the IESO completed in June 2019 for the South Nepean MTS also examined this issue, since the new station will be supplied by this circuit under normal circumstances. The South Nepean TS connection includes an automatic fast load transfer scheme that will transfer the station to the alternate 115 kV supply circuit (S7M) if circuit E34M/T33E is open at the Merivale TS end, therefore the new South Nepean TS will not impact this issue.

is planning distribution system upgrades and transfers that may load Terry Fox TS above the station planning capacity over the next few years. Investigation during the IRRP, however, found that existing Hydro One E34M line protection schemes and settings at Merivale TS and Almonte TS isolate E34M between Almonte TS and Merivale TS when the LEO at Merivale TS contingency is detected.

C.8.2 Restoration of Post-Contingency Peak Load Loss

Table C-4: Load Loss and Restoration for Contingencies Affecting More Than 250 MW of Load

Affected Stations	Contingency	Load Lost by Configuration and Rejection/Curtailment [MW]				Load Restoration Requirement in 2025 [MW]			Recommended Actions
		2020	2025	2030	2037	30-min Restoration Requirement	4-hour Restoration Requirement	8-hour Restoration Requirement	
Kanata MTS, South March TS, and Nepean TS	Fault on M32S/C3S Followed by South March TS A1A2 Breaker Failure	306.5	317.5	312.9	315.8	67.5	167.5	317.5	Hydro One has confirmed that the affected load can be restored within the applicable timeframes.

Affected Stations	Contingency	Load Lost by Configuration and Rejection/Curtailment [MW]				Load Restoration Requirement in 2025 [MW]			Recommended Actions
		2020	2025	2030	2037	30-min Restoration Requirement	4-hour Restoration Requirement	8-hour Restoration Requirement	
Marchwood MTS, Bridlewood MTS, Fallowfield DS, Richmond DS, and Manotick DS	Fault on S7M/W6CS Followed by South March SS L6L7 Breaker Failure	154.2	157.1	168.1	169.3	0	7.1	157.1	Hydro One has confirmed that the affected load can be restored within the applicable timeframes.

Affected Stations	Contingency	Load Lost by Configuration and Rejection/Curtailment [MW]				Load Restoration Requirement in 2025 [MW]			Recommended Actions
		2020	2025	2030	2037	30-min Restoration Requirement	4-hour Restoration Requirement	8-hour Restoration Requirement	
Nepean Epworth TS, Carling TS, and Lisgar TS	M4G and M5G	180.9	189.6	194.2	197.6	0	39.6	189.6	Hydro One has confirmed that the affected load can be restored within the applicable timeframes.
Orleans TS, Navan DS, Wilhaven DS, Cumberland DS, and all stations on circuit 79M1	H9A and D5A	166.8	182.9	193.9	205.5	0	32.9	182.9	Hydro One has confirmed that the affected load can be restored within the applicable timeframes.

C.8.3 Supply to the Regional 115 kV Transmission System

Table C-5: Flow Through Most Limiting 230/115 kV Transformers at Merivale TS and Hawthorne TS

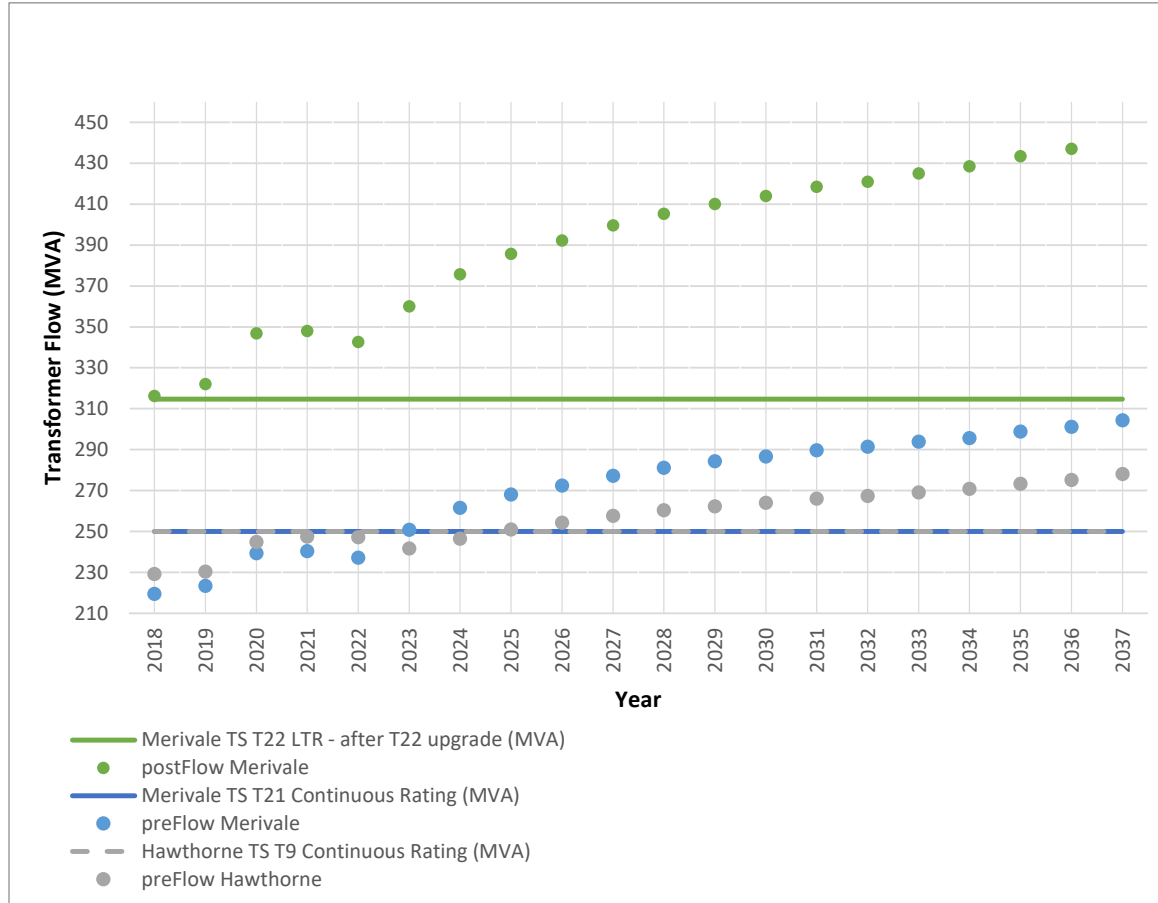


Table C-6: Thermal Need Dates for Most Limiting 230/115 kV Transformers at Merivale TS and Hawthorne TS

Transformer	Need Date
Merivale TS T22 Post-Contingency (loss of T21)	2018
Merivale TS T21 Pre-Contingency	2023*
Hawthorne TS T9 Pre-Contingency	2025*

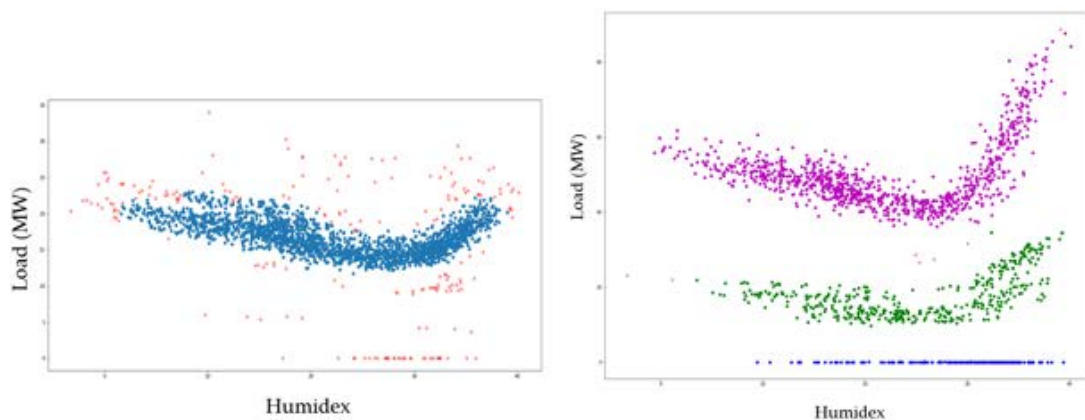
*Preliminary. Results are subject to sensitivity analysis and other impacts that require ongoing study.

Appendix D: Evaluation of Non-Wires Options

D.1 HOURLY LOAD FORECASTING

Hourly load forecasting was conducted on a station-level, using multiple linear regression with at least approximately four years' worth of historical hourly load data. To begin, a density-based clustering algorithm was used for filtering the historical data for outliers (including fluctuations possibly caused by load transfers, outages, or infrastructure changes). As depicted in Figure D-1, the clustering algorithm helped identify historical load trends when assessing the load vs. humidex⁴ relationship.

Figure D-1: Sample Results of Clustered Historical Data for Uplands TS (left) and Orleans TS (right)



Subsequent to the removal of outliers, the historical hourly data was combined with select predictor variables to perform a multiple linear regression and model the station's hourly load profile. For the Ottawa Sub-Region, the following predictor variables were used:

- Calendar factors (such as holidays and days of the week)
- Weather factors (including temperature, dew point, wind speed, cloud cover, and fraction of dark; both weekday and weekend heating, cooling, and dead band splines were modelled)
- Demographic factors (population data⁵)
- Economic factors (employment data⁶)

⁴ For the Ottawa Sub-Region, defined as a function of temperature and dew point.

⁵ Sourced from the Ministry of Finance and Statistics Canada

⁶ Sourced from the Centre for Spatial Economics, IHS Markit Ltd., and the Conference Board of Canada

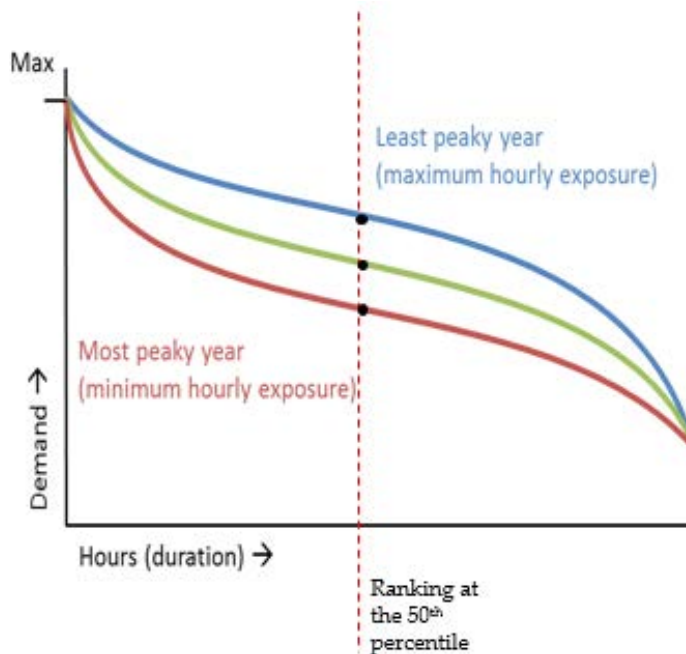
Model diagnostics (training mean absolute error, testing mean absolute error) were used to gauge the effectiveness of the selected predictor variables and to avoid an overfitted model.

After fitting the model to historical data, future hourly load was forecast by inputting projected values for all predictor variables. While future values for calendar, demographic, and economic variables were incorporated straightforwardly, predicting the impact of future weather on an hourly basis required a more complex approach. 31 years' worth of historical weather data (which is a blend of all the weather-related variables listed above) were obtained. Additionally, to fully assess the impact of different weather sequences against the other non-weather variables, the historical weather for each of the 31 previous years was shifted both ahead and behind up to seven days, resulting in 15 total variations. This approach ultimately led to 465 possible hourly load forecasts for *each* year being forecast:

$$\begin{aligned}
 &31 \text{ years of historical weather data} \times 15 \text{ weather sequence shifts} \\
 &= 465 \text{ weather scenarios for each year being forecast}
 \end{aligned}$$

To compare each weather scenario and the resultant hourly load forecasts, load duration curves were created for each scenario and ranked (illustratively shown in Figure D-2).

Figure D-2: Example of Ranking Load Duration Curves Created from Hourly Load Profiles



For the purposes of the Ottawa Sub-Region, the hourly forecast corresponding to the load duration curve with less energy (i.e., 97th percentile, nearing the red curve shown illustratively above in Figure D-2) was selected for scaling. The chosen load profiles were then uniformly scaled across all hours to ensure that the modelled peak demand aligned with the planning peak forecasts (defined in Appendix B.7) for each station being studied.

D.2 NEED CHARACTERIZATION USING HEAT MAPS

The hourly load forecasts were assessed against station load meeting capabilities to provide a more probabilistic definition of capacity needs. The following heat maps help visualize the magnitude (MW), duration (hours), and frequency of needs that may occur in a load pocket or at a specific station given the hour of the day and year.

Figure D-3: Heat Map for Kanata-Stittsville Area (Terry Fox MTS, Marchwood MTS, Kanata MTS) Needs in 2020

18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	1%	1%	0%	0%
6	0%	0%	0%	0%	0%	1%	2%	2%	3%	3%	3%	3%	3%	3%	3%	4%	4%	4%	4%	4%	4%	3%	2%	1%
0	4%	3%	3%	3%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
MW Hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

Figure D-4: Heat Map for Leitrim MS Needs in 2020

1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
MW Hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

Figure D-5: Heat Map for Leitrim MS Needs in 2037

20	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%
16	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	2%	2%	3%	3%	2%	2%	1%	1%	1%	0%	0%
12	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%	3%	3%	3%	4%	4%	4%	3%	3%	3%	2%	2%	2%	1%
8	3%	3%	3%	3%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	3%	3%	3%
4	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
0	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
MW Hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

A sample interpretation of these heat maps is as follows: of all hours during which a need is predicted in the Kanata-Stittsville area in 2020, ~1% is expected to occur at 6 AM *and* with at least 6 MW in magnitude. On the other hand, the heat map for Leitrim MS in 2020 suggests that no need events are anticipated.

D.3 POTENTIAL FOR ENERGY EFFICIENCY

The IESO and the Ontario Energy Board have recently completed the first [integrated electricity and natural gas achievable potential study in Ontario](#) (2019 APS). The main objective of the APS is to identify and quantify energy savings (electricity and natural gas), GHG emission reductions and associated costs from demand side resources for the period from 2019-2038. The study is used to inform future energy efficiency policy and/or frameworks, program delivery as well as long-term resource planning.

The 2019 APS determined that both fuels have significant cost-effective energy efficiency potential in the near and longer term. Depending on the type and level of customer incentives provided, summer peak demand savings potential ranges from 500 to 800 MW in 2023 and from 2,000 to 3,000 MW in 2038.⁷ Potential energy savings range from 4.8 to 6.9 TWh in 2023 and from 18 to 24 TWh in 2038.

Modeling undertaken for this study also produced considerable data that can be used to understand energy efficiency opportunities at a more local level. Specifically, the 2019 APS results are broken out by:

- IESO transmission zone - see map available on the IESO's website [here](#)
- Customer segment - e.g., single family dwellings, multi-unit residential buildings, large commercial office, restaurant, school, warehouse, etc.
- End use – e.g., lighting, space heating, space cooling, plug load, etc.
- Measure – e.g., high bay LED lighting, air source heat pumps, building recommissioning

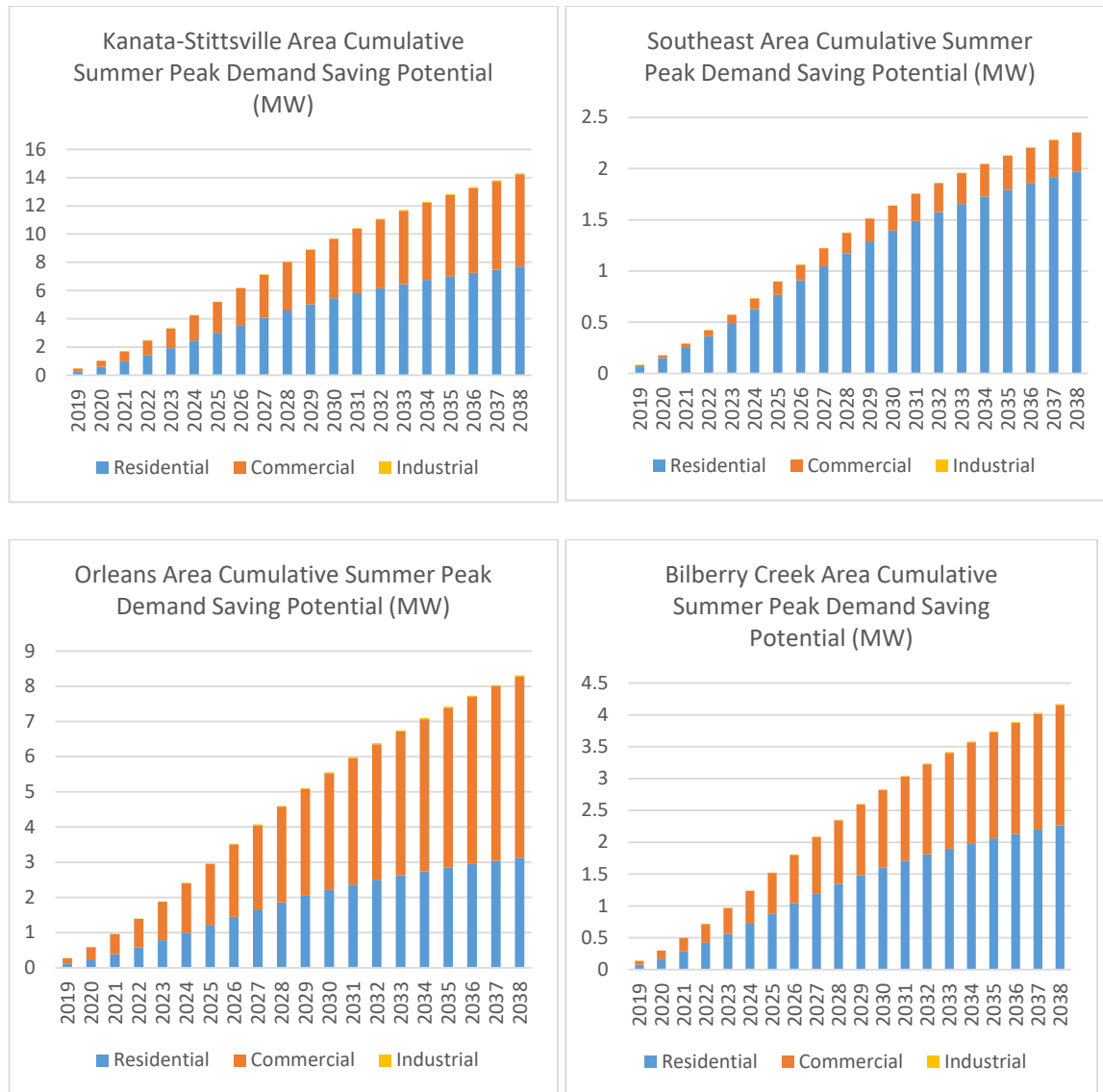
Using local data about composition of businesses, housing and industry these results can be translated into energy and summer peak demand savings potential estimates for the Ottawa IRRP study area. Local data sources used for this analysis include Municipal Properties Assessment Corporation building data, the Broader Public Sector [energy use data](#), and Dunn and Bradstreet employee counts.

Based on this analysis, energy efficiency opportunities are expected to be available in throughout this IRRP study area. Potential is predominantly concentrated in the residential and

⁷ All annual savings potentials reported in the study are based on the cumulative adoption of measures over time (e.g., savings in 2023 represent the potential savings in 2023 of measures adopted in 2019 through 2023).

commercial sectors given the composition of customers. Figure D-6 shows the total estimated potential for energy efficiency to reduce summer peak demand in the Ottawa Sub-Region.

Figure D-6: Cumulative System Cost-Effective Energy Efficiency Potential to Reduce Peak Summer Demand



Tables D-1 and D-2 below, summarize the summer peak demand savings opportunities and associated costs by sector in the West and South-East sub-regions of the study area. Here the West sub-region covers customers served by Terry Fox, Marchwood and Kanata MTSs and South East includes Leitrim, Uplands and Limebank MTSs.

This table and the analysis included in Section 7 of the report capture all energy efficiency potential that is cost effective from the provincial system perspective derived by scaling the maximum achievable potential scenario results from the 2019 APS for the Ottawa transmission zones down to the regional level. Energy efficiency measures that are cost effective from the system perspective are measures that have a total resource cost test ratio greater than one – i.e., they produce benefits from avoided energy and system capacity costs that are greater than the costs of the measures that are incremental to the cost of the baseline measures (e.g., the extra cost to install a smart thermostat over a standard thermostat).

Achievable potential in the APS also considers both technical considerations affecting energy efficiency potential, such as the number of customers with low-efficiency equipment or operations that can technically be upgraded as well as market considerations such customer responses to payback periods under different incentive rates. The energy efficiency potential estimates resulting from this analyses provide insight into the magnitude of energy efficiency savings that would be beneficial to the provincial electricity grid and can likely be achieved given customer behavior.

Table D-2: Summer Peak Demand Savings Potential

Annual Maximum Incremental Cost Effective Achievable Potential (kW)																			
Sub-Region	Sector	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
West	Residential	266	302	338	361	370	369	344	337	299	266	274	256	210	179	188	182	172	162
	Commercial	369	325	353	362	379	324	332	310	285	240	191	148	135	56	25	1	-	-
	Industrial	3	3	4	4	4	4	4	4	3	3	3	2	2	1	0	-	-	-
	Total	638	630	694	727	753	697	680	651	587	510	467	406	347	235	214	182	172	162
South-East	Residential	213	242	270	289	296	295	275	270	239	213	219	204	168	143	150	145	137	130
	Commercial	183	163	175	180	185	153	159	147	134	112	89	68	61	21	6	-	-	-
	Industrial	46	49	53	62	65	64	63	60	53	47	40	34	28	10	3	-	-	-
	Total	442	454	499	530	546	513	498	477	426	372	348	306	257	175	160	145	137	130

Table D-2: Costs to Achieve Summer Peak Demand Savings

Annual Cost for Maximum Cost Effective Achievable Potential (\$Million CAD)																			
Sub-Region	Sector	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
West	Residential	\$0.9	\$1.0	\$1.1	\$1.2	\$1.3	\$1.4	\$1.5	\$1.5	\$1.6	\$1.6	\$2.0	\$2.0	\$2.0	\$2.1	\$2.1	\$2.1	\$2.1	\$2.2
	Commercial	\$1.1	\$1.1	\$1.3	\$1.4	\$1.5	\$1.5	\$1.5	\$1.4	\$1.3	\$1.2	\$1.1	\$0.9	\$0.9	\$0.8	\$0.7	\$0.7	\$0.7	\$0.7
	Industrial	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
	Total	\$1.9	\$2.1	\$2.4	\$2.6	\$2.9	\$2.9	\$3.0	\$2.9	\$2.9	\$2.8	\$3.0	\$3.0	\$2.9	\$2.9	\$2.8	\$2.8	\$2.8	\$2.9
South-East	Residential	\$0.7	\$0.8	\$0.9	\$1.0	\$1.1	\$1.1	\$1.2	\$1.2	\$1.3	\$1.3	\$1.6	\$1.6	\$1.6	\$1.7	\$1.7	\$1.7	\$1.7	\$1.8
	Commercial	\$0.5	\$0.6	\$0.6	\$0.7	\$0.8	\$0.7	\$0.7	\$0.7	\$0.6	\$0.6	\$0.5	\$0.4	\$0.4	\$0.4	\$0.3	\$0.3	\$0.3	\$0.3
	Industrial	\$0.1	\$0.1	\$0.1	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
	Total	\$1.3	\$1.4	\$1.6	\$1.8	\$2.0	\$2.1	\$2.1	\$2.1	\$2.1	\$2.0	\$2.2	\$2.2	\$2.2	\$2.2	\$2.1	\$2.1	\$2.1	\$2.1

D.4 ECONOMIC ASSESSMENT OF OPTIONS

New transmission facilities, generation, and integrated solutions of demand response, energy efficiency, distributed energy resources, and/or energy storage were studied to alleviate needs identified in this IRRP. After developing a portfolio of feasible options to meet the different needs, each of the viable options are evaluated according to their consumer impact. An economic analysis of all options (including combination of resources) was conducted and their relative net present values (NPV) were compared.

The following is a list of the assumptions made in the economic evaluation for the different sub-regions in the Ottawa Sub-Region IRRP:

- The NPV of the cash flows is expressed in 2019 \$CAD.
- The NPV analysis was conducted using a 4% real social discount rate. An annual inflation rate of 2% is assumed.
- The life of the station upgrades was assumed to be 45 years; the life of the storage option was assumed to be 10 years; and the life of the generation assets was assumed to be 30 years.
- The new transmission station costs in Southeast Ottawa and Kanata-Stittsville were both assumed to be \$28 million (2019 \$CAD) each, plus \$5 million (2019 \$CAD) in 230 kV transmission connection costs
- Natural gas prices were assumed to be an average of \$4/MMBtu throughout the study period
- The USD/CAD exchange rate was assumed to be 0.78 for the study period

For many needs in the Ottawa area, only a natural gas-fired facility or energy storage was determined to be technically capable of meeting the full magnitude and timing required. A natural gas-fired simple cycle gas turbine (SCGT) was determined to be the lowest-cost resource alternative to transmission reinforcements. Its estimated overnight cost of capital assumed is about \$1,445/kW (2019 \$CAD), based on escalating values from a previous study independently conducted for the IESO.

Ottawa

2019 Integrated Regional Resource Plan (IRRP)

Engagement Webinar #1

May 29, 2019

Objectives of Today's Engagement Webinar

- To provide an overview of the regional planning activities in the Ottawa area, including the electricity demand forecast and needs and potential options
- To seek feedback on the information used to identify local needs and engagement plan for the development of an Integrated Regional Resource Plan (IRRP)
- To outline next steps



Agenda

- A. Overview of Regional Planning Activities
- B. Community Engagement
- C. Integrated Regional Resource Plan for Ottawa Area
- D. Next Steps



Seeking Input

- As information is presented during the webinar, feedback is welcome from participants on:
 - Information used to determine local needs
 - Potential options to address local needs that are being examined



We Want to Hear From You...

Are there any additional factors that should be considered in the following processes:

- Determining the forecast
- Identifying needs
- Examining potential options
- Engaging with communities and interested parties

*Please submit your written comments by email to
engagement@ieso.ca by **June 12***



A. OVERVIEW OF REGIONAL PLANNING ACTIVITIES



Meet the Team

Technical Working Group



Team Lead
System Operator and Planner

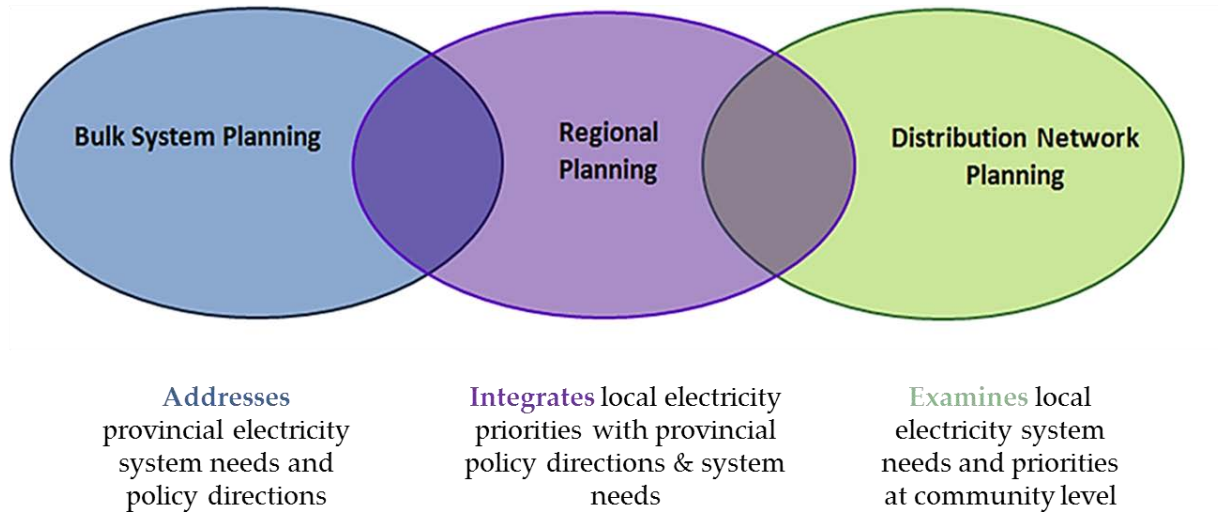


Local Distribution Company

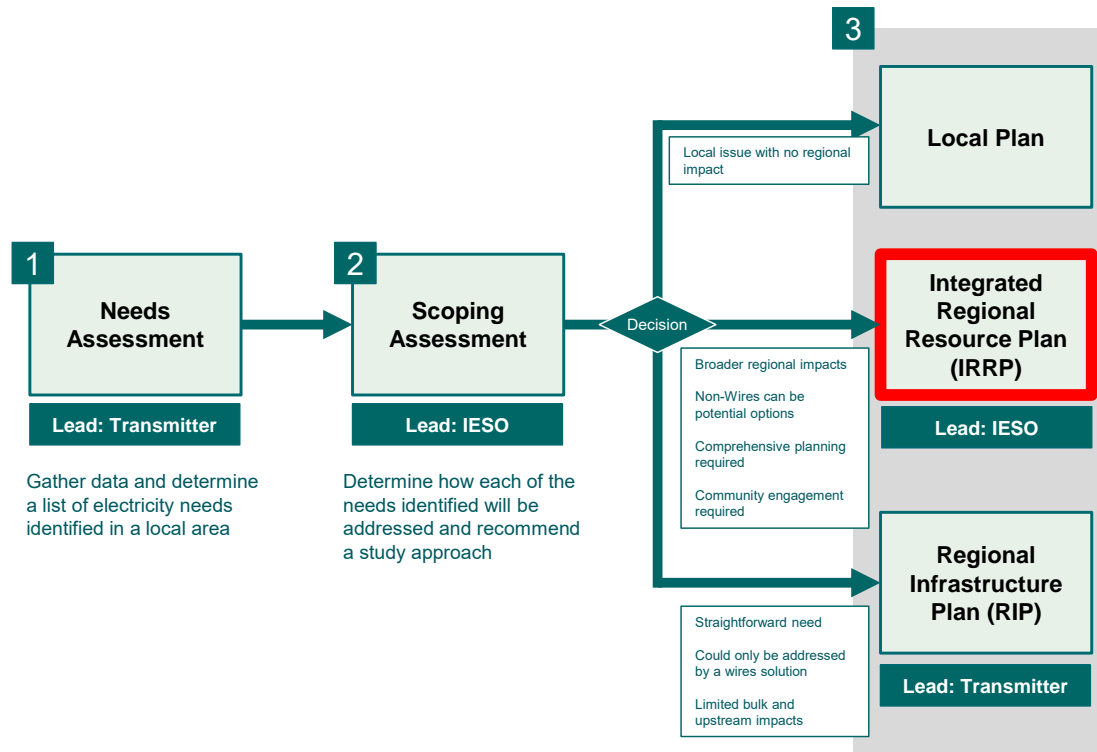


Transmitter and Local Distribution
Company

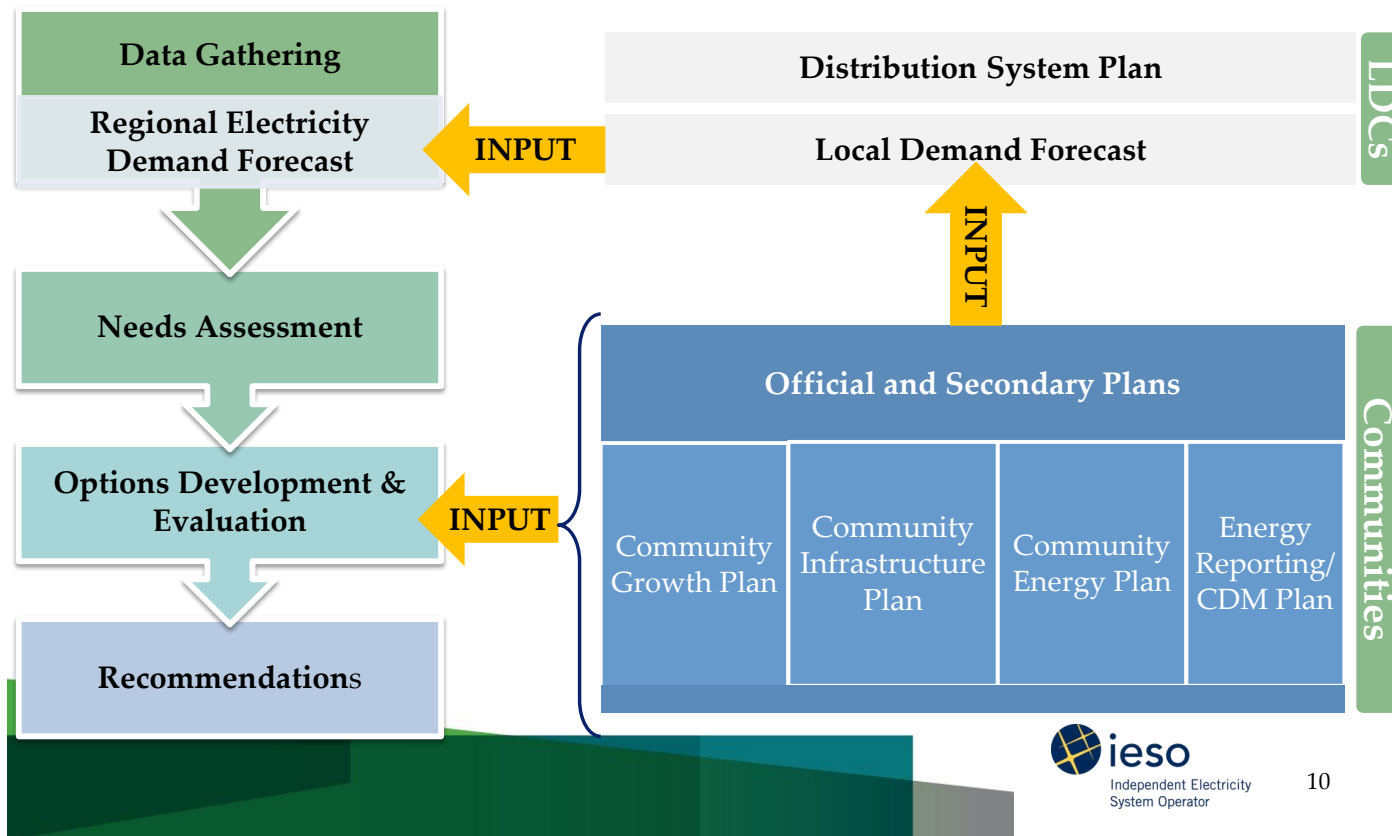
Planning Processes



Regional Planning Process Steps



Coordinating Local Planning Activities



Current Status

- IRRP study work, began in Q3 2018, is on track for completion at the end of Q3 2019
 - Currently in the needs definition and identification of solutions stage
 - Final recommendations, and implementation will be assessed in further detail in the next few months

Study Timeline

Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019
Needs Assessment	Scoping Assessment	IRRP Study and Engagement			IRRP Published



B. COMMUNITY ENGAGEMENT



Shaping Our Electricity Future Through Community Engagement



https://youtu.be/Nt8q8cBG_BI

Regional & Community Engagement

- Broaden community engagement efforts
- Increase communication channels
- Enhance engagement process for regional planning



Key Elements of the Engagement Plan

Engagement Initiative

- Draft Engagement Plan posted for public comment May 9
- To inform and seek input from the broader public at various junctures during IRRP development
- Includes webinars and targeted municipal outreach

Technical Working Group

- Comprises of IESO, LDC(s), and transmitter(s) in the region
- Members conduct the regional planning process to identify local electricity needs and options



Objectives for Community Engagement

Goal: To provide information to communities and interested parties on regional planning activities underway in the Ottawa area. Gather feedback on the information used to determine regional needs and options for the development of the Integrated Regional Resource Plan to be complete in Q3 2019.

Outcomes

Awareness and understanding of communities and interested parties of regional planning activities and regional needs
Effective dialogue on information used to determine needs and options

Outputs

Engagement Plan
Feedback on information used to determine regional need and options
Integrated Regional Resource Plan

Who Should Participate?

- Municipalities
- Chambers of Commerce/Boards of Trade
- Large energy users
- Community groups and associations (e.g. community/resident associations, Business Improvement Areas, home builders associations, etc.)
- Academia and research organizations
- Energy service providers



Engagement Plan – Scope

- Gather feedback on the information used to determine regional needs and options, including:
 - Population and growth rate forecasting
 - Local economic development
 - Projected growth and future plans (i.e. 10-year outlook)
 - Future options for addressing local needs in the medium to long-term (10-20 years)
 - Data from municipal plans and community energy plans
- Feedback will be collected throughout the engagement for consideration in IRRP development, and posted with IESO responses





City of Ottawa Engagement

- November 14, 2018: meeting to review the regional planning process, recap on the recommendations of the previous cycle, and provide an update on the current cycle
- April 3, 2019: meeting to discuss the load forecast, needs/issues identified, municipal plans, engagement and timelines



Engagement Plan – Timeline

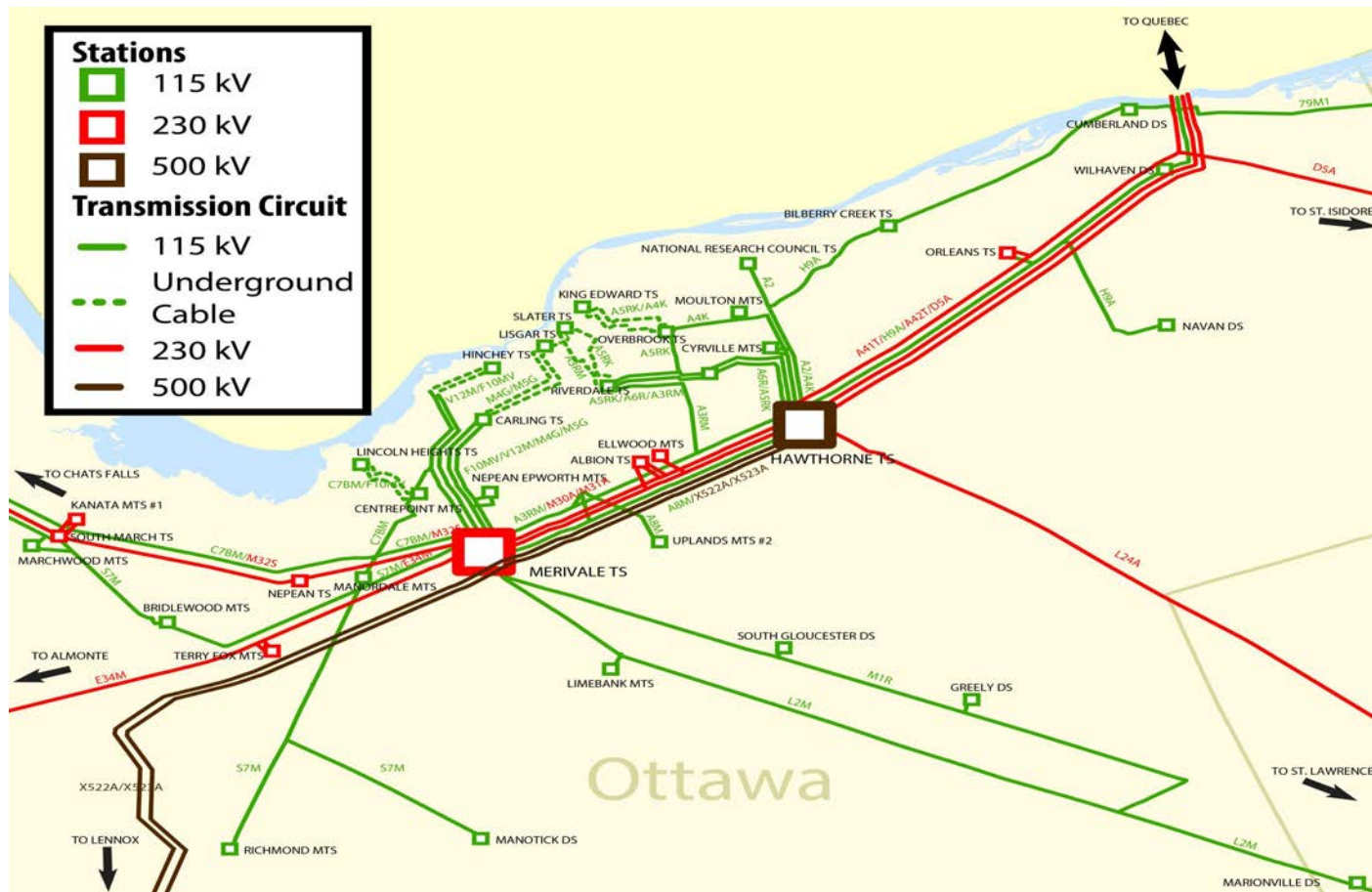
Date	Major Milestones
September 2018	Final Scoping Assessment Outcome Report posted following two-week public comment period
May 9, 2019	Launch engagement initiative and post draft engagement plan for public comment
May 29, 2019 ★	Engagement webinar #1
June 12, 2019	Deadline to submit feedback on draft engagement plan and materials reviewed during engagement webinar #1 
June 21, 2019	IESO response to feedback received, and posting of final engagement plan
Late June/early July 2019	Further community outreach and engagement as determined
Late July 2019	Engagement webinar #2
Early August 2019	Deadline to submit feedback on materials reviewed during engagement webinar #2 
Fall 2019	Final IRRP posted with IESO response to feedback received

C. INTEGRATED REGIONAL RESOURCE PLAN FOR OTTAWA AREA





Ottawa Area Sub-region



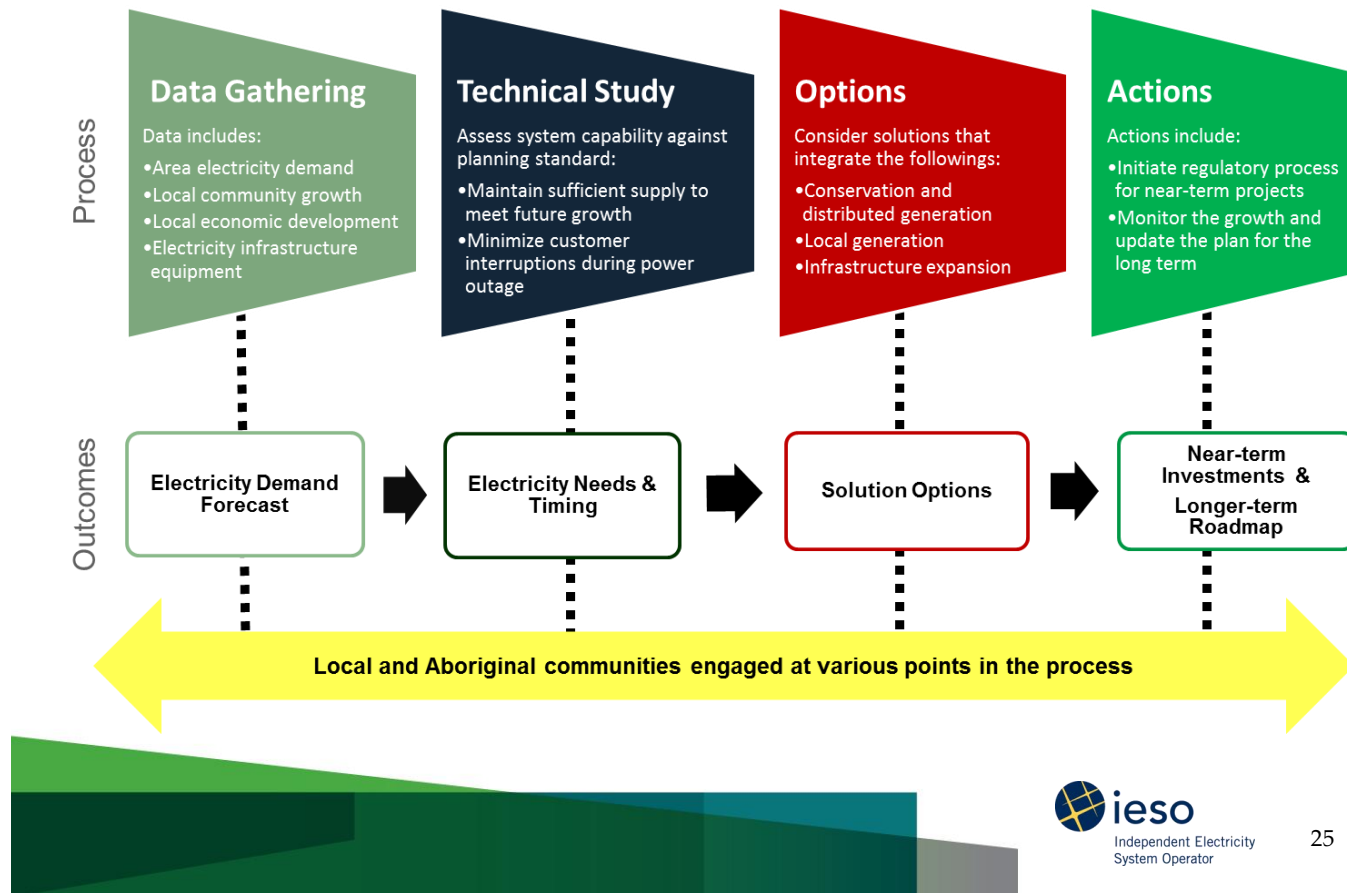
Previous Ottawa Area IRRP

The previous Ottawa Area IRRP completed in 2015 identified a number of recommendations focused on key areas that include:

- New station to accommodate load growth in South Nepean/Barrhaven
- Upgrading existing transformers at a number of stations throughout downtown Ottawa
- Upgrading existing transformers at Hawthorne TS to increase regional supply capacity serving east Ottawa



Regional Planning Process Overview

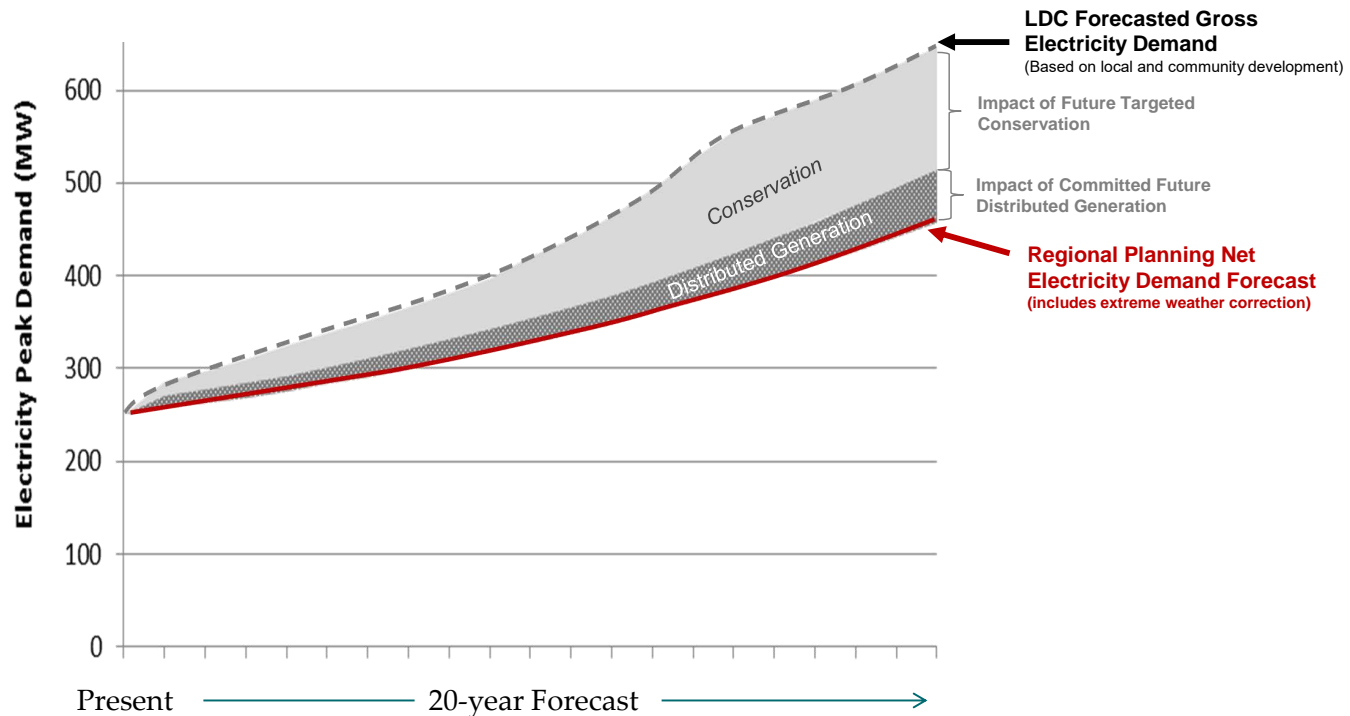


Data Gathering – Demand Forecast

- The IRRP assesses the electricity needs based on a 20-year forecast of peak electricity demand
- A peak demand forecast for the region is created by
 - Collecting electricity demand forecast information from each LDC in the region
 - Since electricity demand is weather sensitive, demand forecast information from LDCs are created assuming median weather conditions
 - Estimated impact of province-wide Conservation and Demand Management (“CDM”) targets on the region’s peak demand
 - Calculating the forecast peak demand contribution of contracted distributed generation (“DG”)
 - Adjusting the forecast to account for the impact of extreme weather conditions



Development of Demand Forecasts



Technical Study - Needs Identification

- Once the electricity demand forecast has been created, the IESO conducts an assessment of the system's capability to supply load
- Three types of needs can generally be identified based on the assessment of the system's capability:
 - Transformer station capacity needs
 - How much load can be supplied from the transformer station itself? This is typically determined by the size of the smallest transformer.
 - Supply capacity needs
 - How much electricity can the system continuously supply to a local area? The load meeting capability ("LMC") is assessed based on established planning criteria and is typically limited by voltage issues or thermal issues related to equipment ratings.
 - Load restoration or security needs
 - Are the impacts of transmission outages to connected customers sufficiently mitigated? Assessments are performed to determine how much load is lost for defined outage scenarios and to confirm that load can be restored within required timeframes.
- Technical Working Group members also identify non-capacity related needs, such as facilities requiring replacement at end-of-life



Options Identification

- Once the needs have been identified, the IESO will lead the development of options
 - Technical Working Group can identify and provide input on scope of wires options to be evaluated
 - Where applicable, LDCs may also provide information to help inform the development of non-wires alternatives
- Potential options:
 - Wires
 - Examples: switching station, transformer station, transmission line
 - Non-Wires/Demand-side Alternatives
 - Examples: distributed energy resources, energy efficiency measures, demand response
 - Generation
 - Examples: gas-fired peaking plant, utility scale storage



Key Areas of Needs

The data gathered and technical studies identified four distinct areas of need in the Ottawa area:

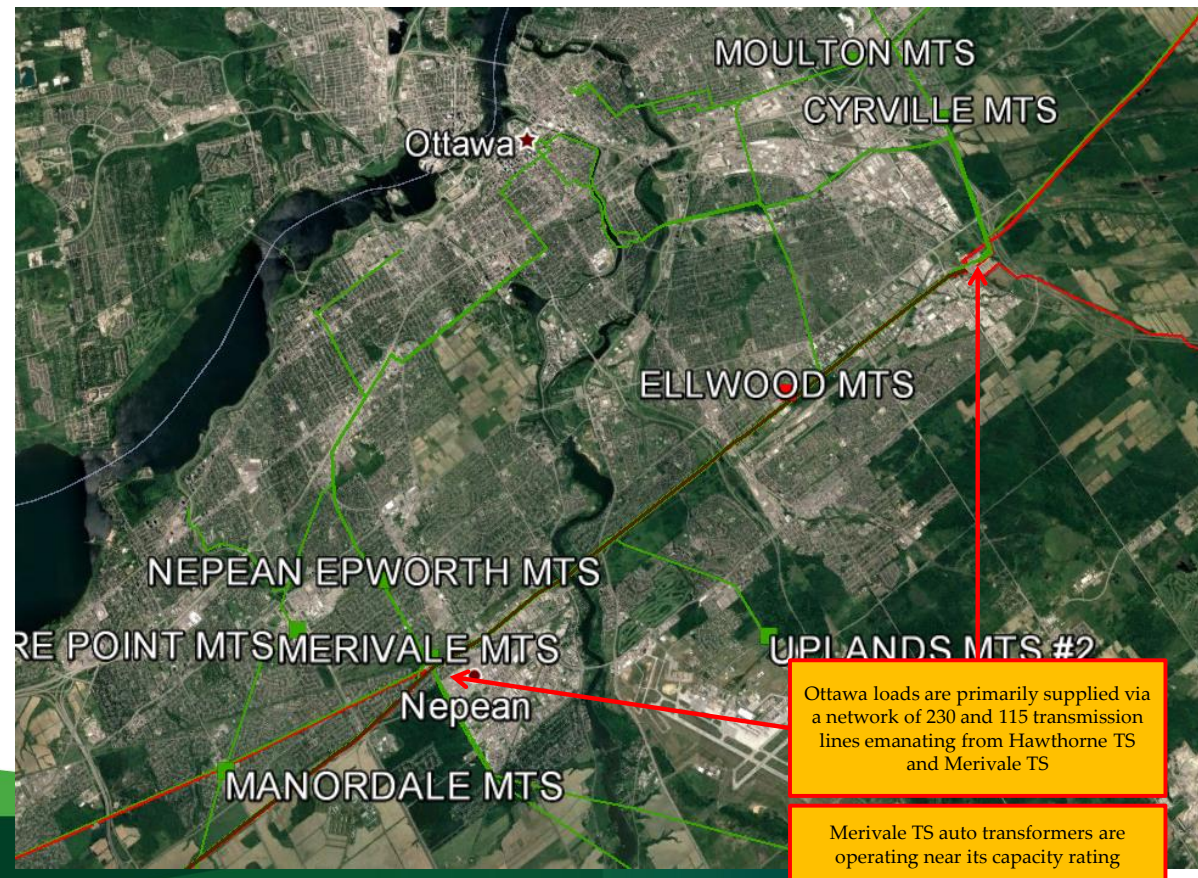
1. Regional Supply to west Ottawa
2. Kanata Area
3. South East Ottawa Area
4. Bilberry Creek/Orleans Area



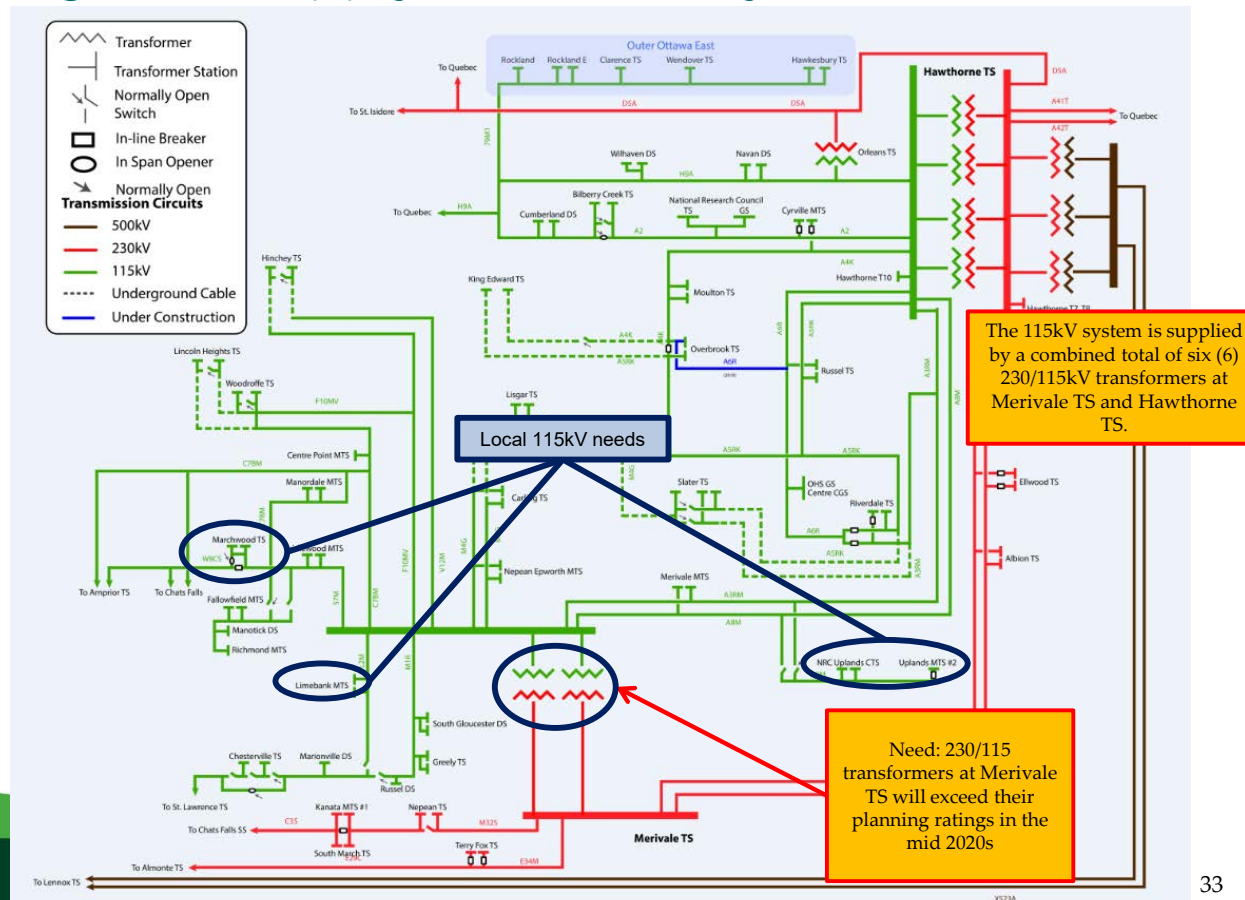
1. WEST OTTAWA REGIONAL SUPPLY



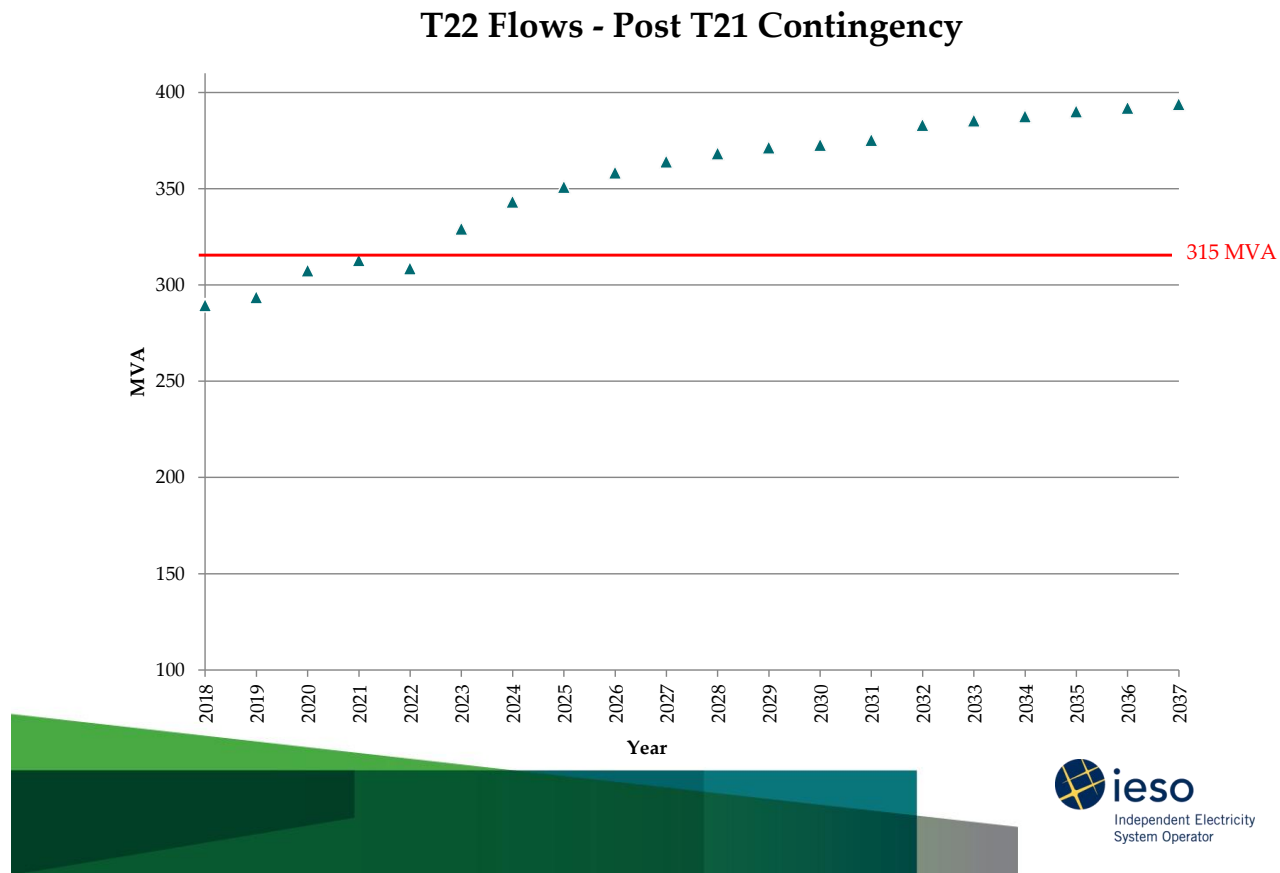
West Ottawa Regional Supply



Regional Supply – 115 kV System



Merivale Transformer Needs



Potential Options

- To defer or mitigate need for additional transformer(s) at Merivale TS:
 - Non wires options (CDM, DG, and/or DR)
 - Moving load to the 230 kV system
- Upgrade existing transformers at Merivale TS
- Install additional transformer(s) at Merivale TS



2. KANATA AREA

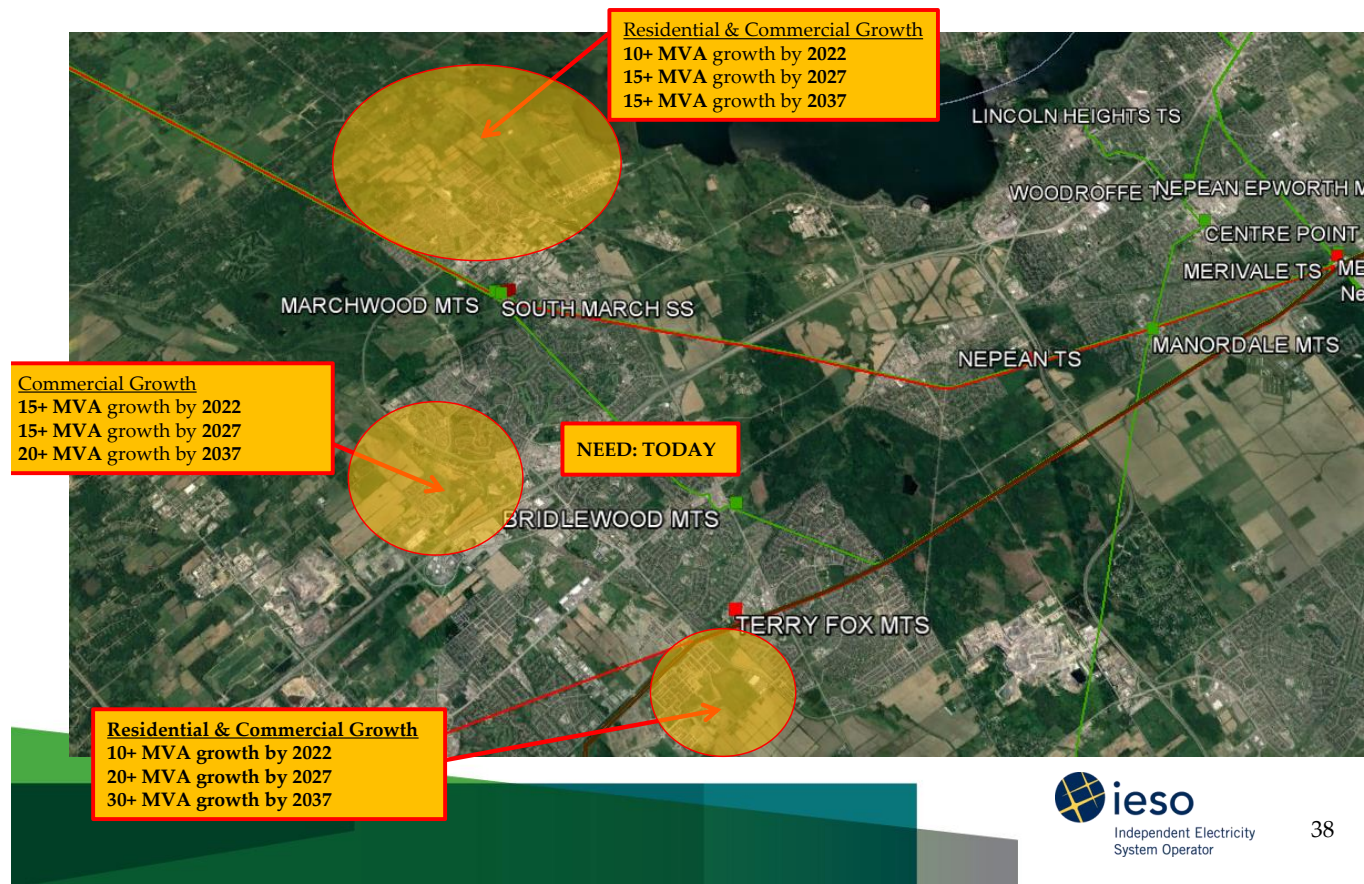


Kanata Area Overview

- West Ottawa is primarily supplied by 230 kV and 115 kV transmission lines emanating from Merivale TS
- Several stations in the area are operating at or near capacity



Kanata Area Load Growth

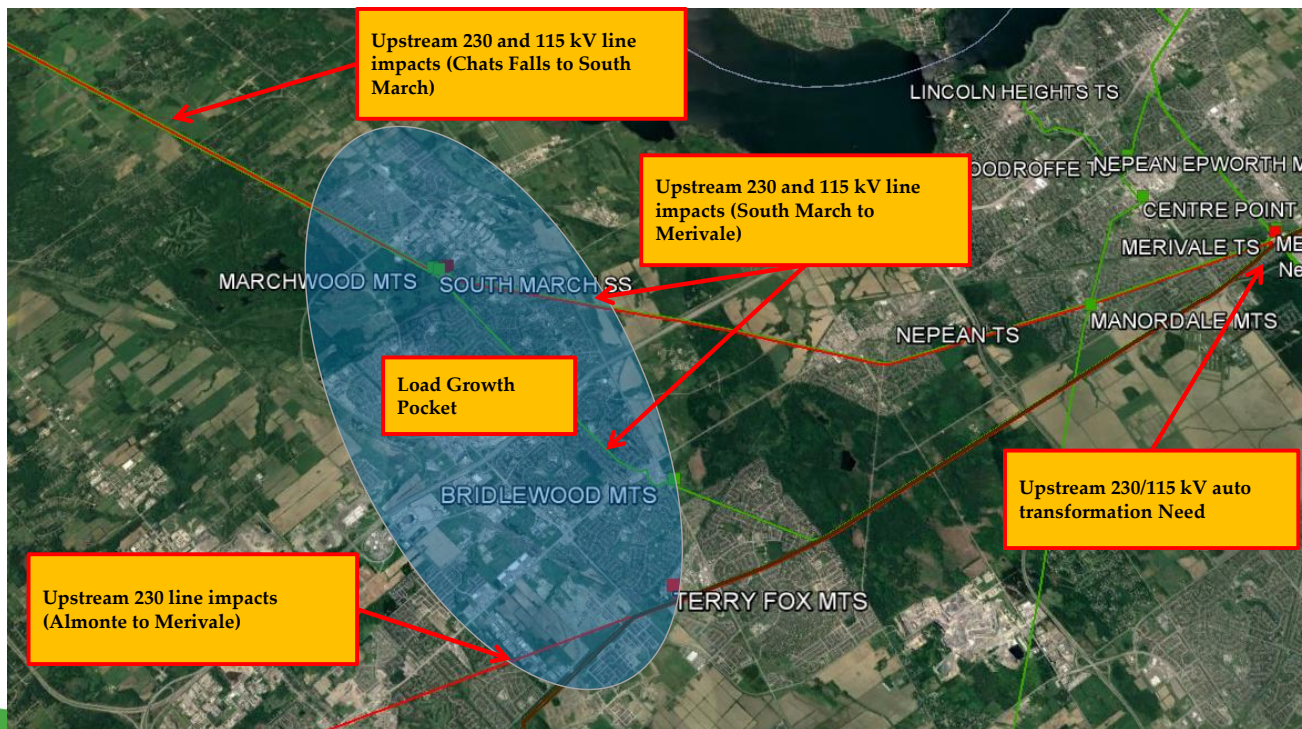


Kanata Area Needs

- Substantial amount of load growth is forecasted in West Ottawa
- Load growth is comprised of predominantly residential and mixed load
- Existing infrastructure does not provide sufficient capacity to accommodate the forecasted demand



Kanata Area Load Growth



Potential Options

- New transmission station in West Ottawa
- New transmission line into West Ottawa from Merivale TS following existing transmission corridors
- Non-wire solutions are being evaluated alongside transmission infrastructure:
 - Conservation Demand and Management (CDM) to defer needs
 - Selected non wire solutions could be undertaken directly or through partnerships. This may be an opportunity for the City of Ottawa.
- Coordination with related planning studies in the area



3. SOUTH EAST OTTAWA AREA

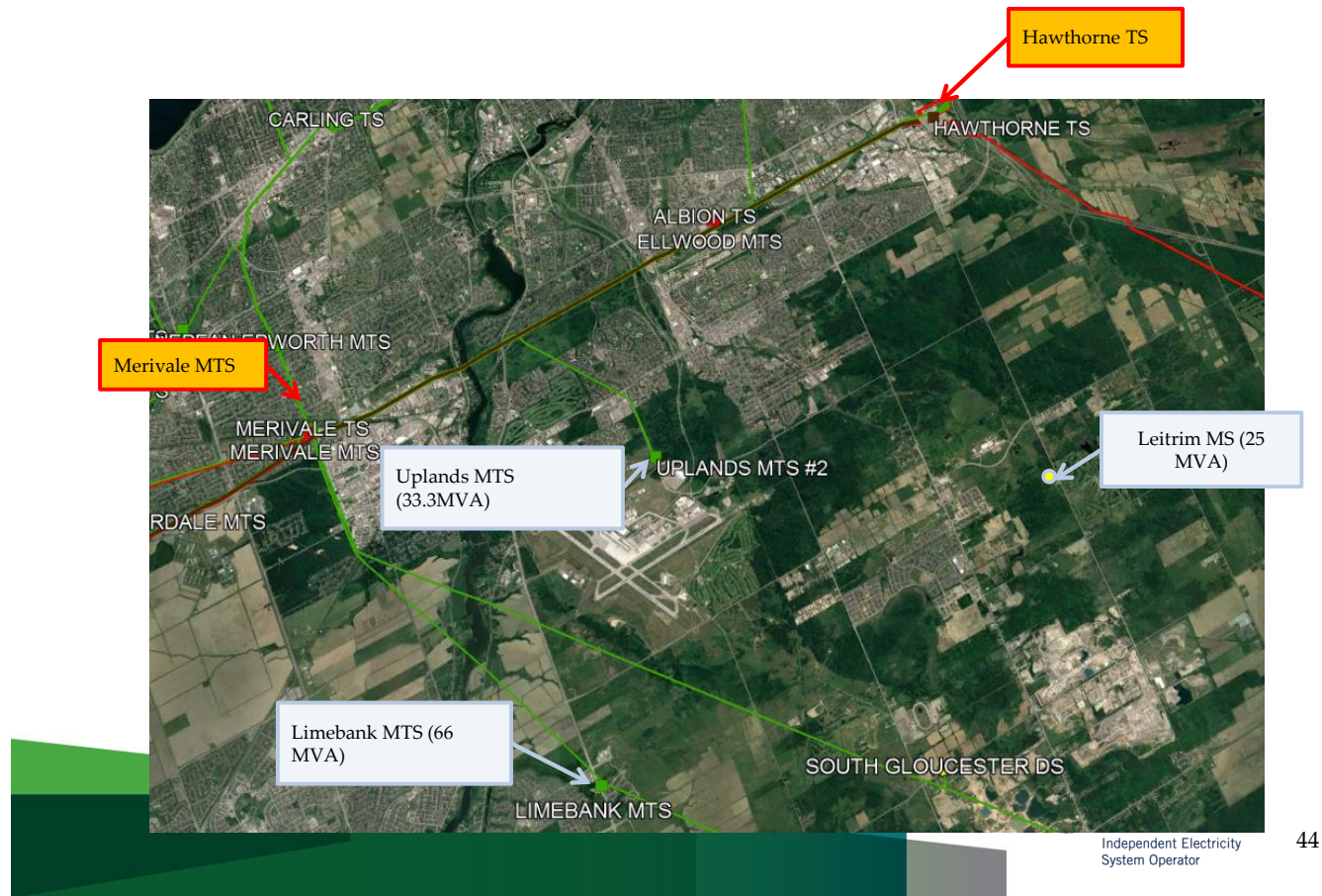


South East Ottawa Area Overview

- South East Ottawa is primarily supplied by 115 kV transmission lines emanating from Merivale TS and Hawthorne TS
- Several stations in the area are operating at or near capacity



South East Ottawa Area Overview

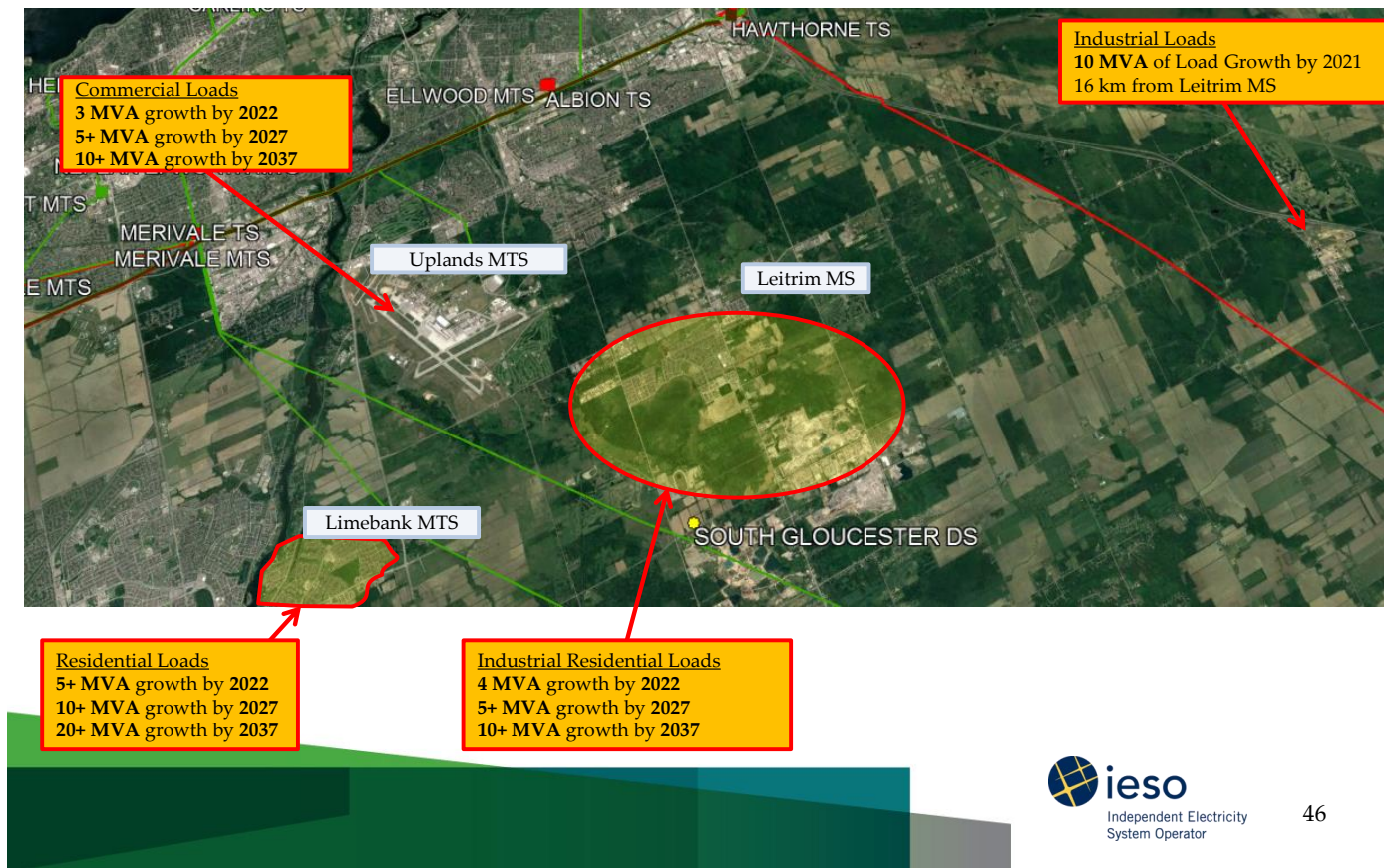


South East Ottawa Area Needs

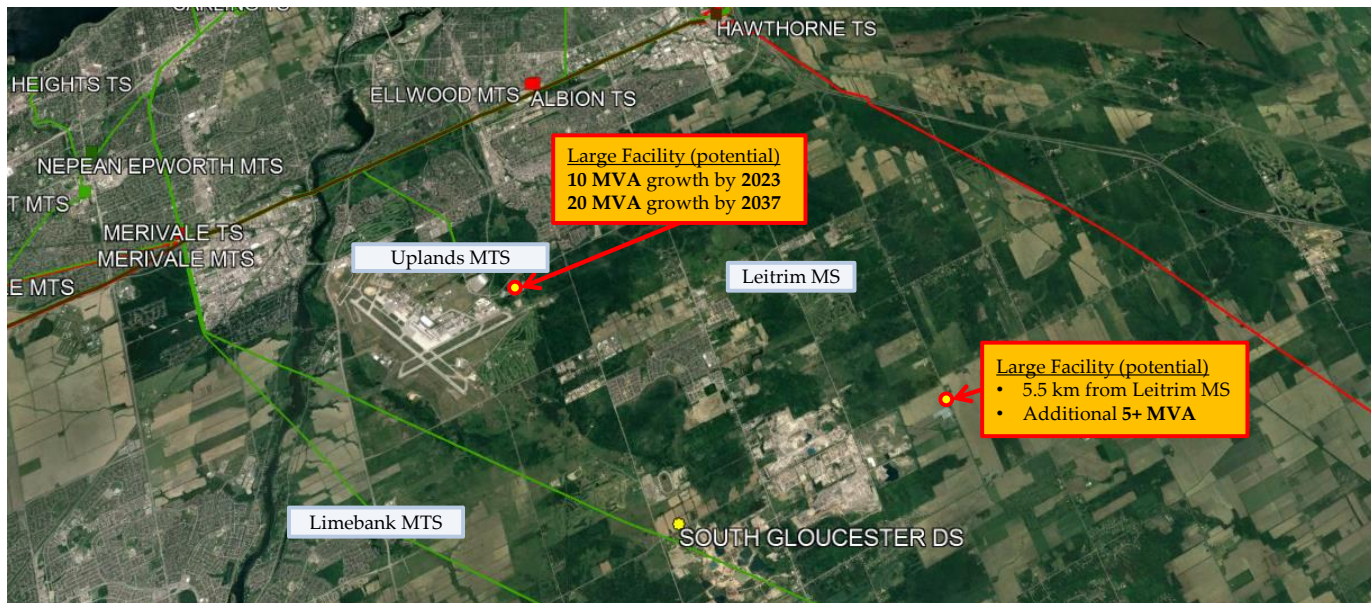
- Substantial amount of load growth is forecasted in South East Ottawa Area (approximately 75 MW)
- Load growth comprises of residential, mixed, and industrial loads
- Existing infrastructure does not provide sufficient capacity to accommodate the forecasted demand



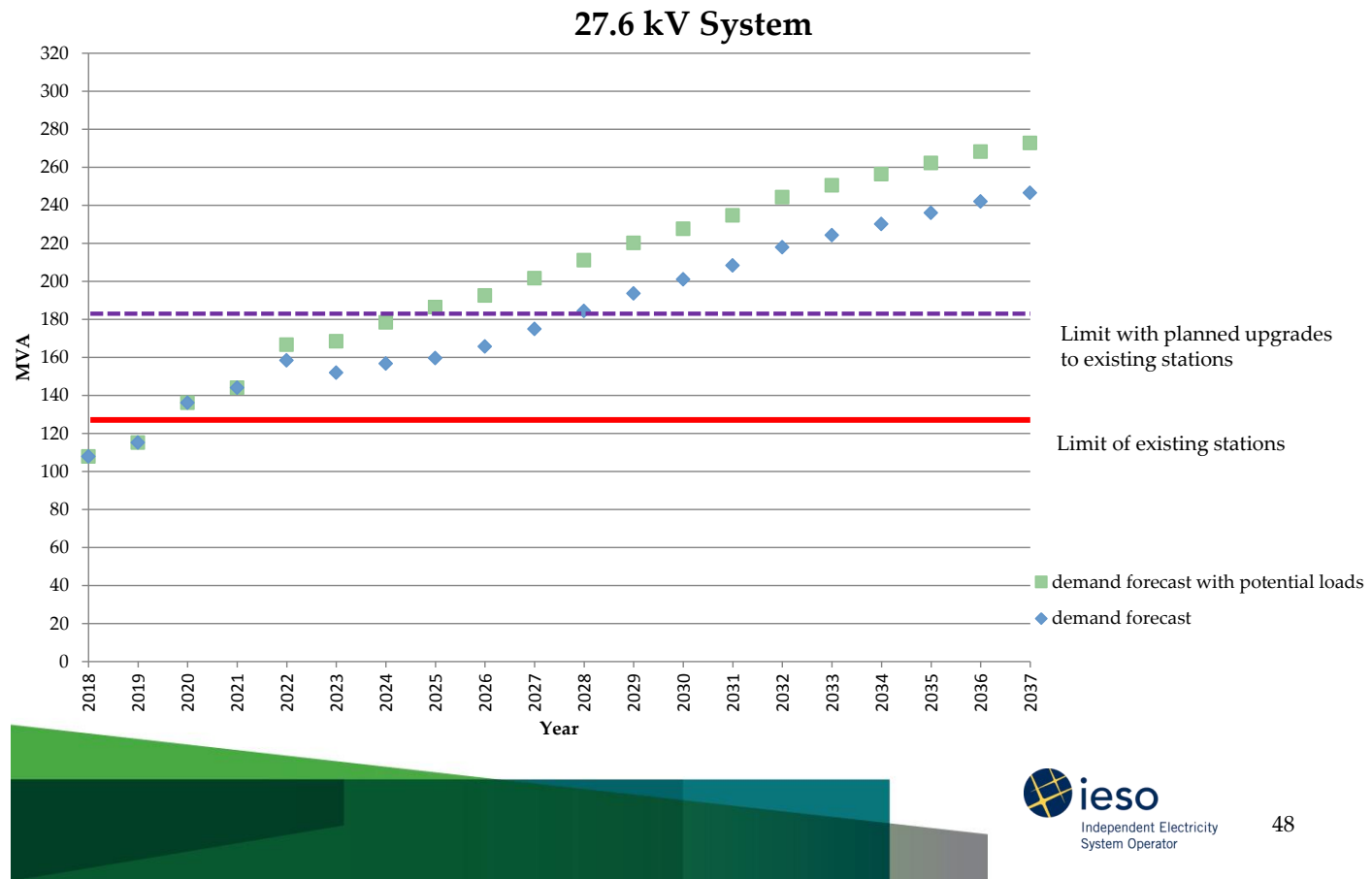
South East Ottawa Area Load Growth



Additional Potential Developments



Capacity Need



Potential Options

- Upgrading existing transmission station and transmission line upgrades
- New transmission station in East Ottawa
- Non-wire solutions are being evaluated alongside transmission infrastructure:
 - Conservation Demand and Management (CDM) to defer needs
 - DR at industrial facilities
 - Selected non wire solution could be undertaken directly or through partnerships. This may be an opportunity for the City.



Planned Upgrades to Existing Stations (early 2020s)



Potential Options – New Station (mid to late 2020s)

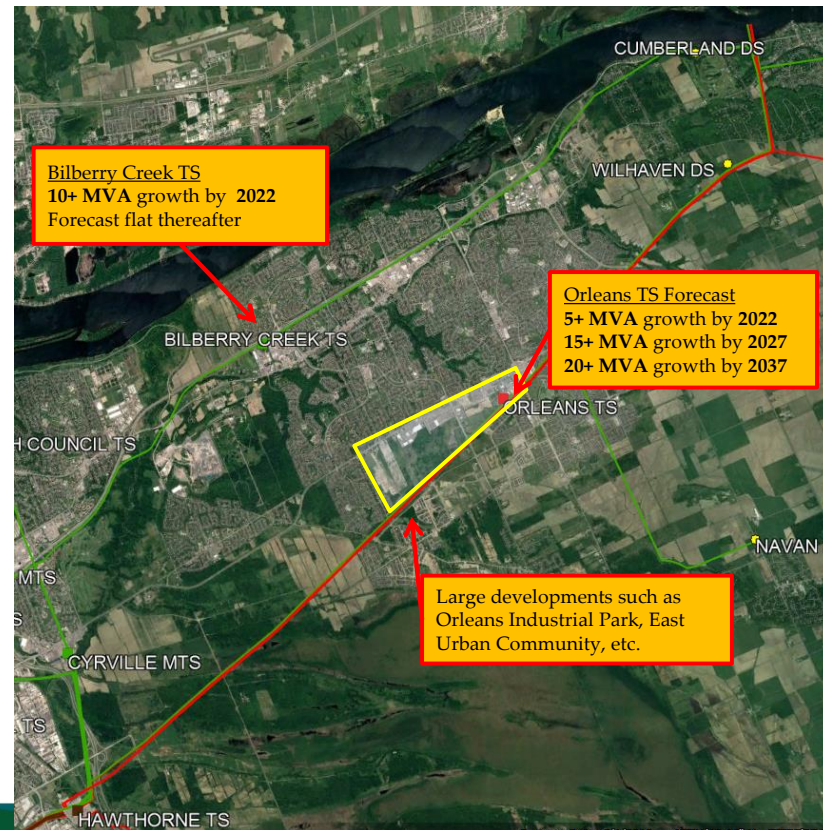


4. BILBERRY CREEK/ORLÉANS AREA



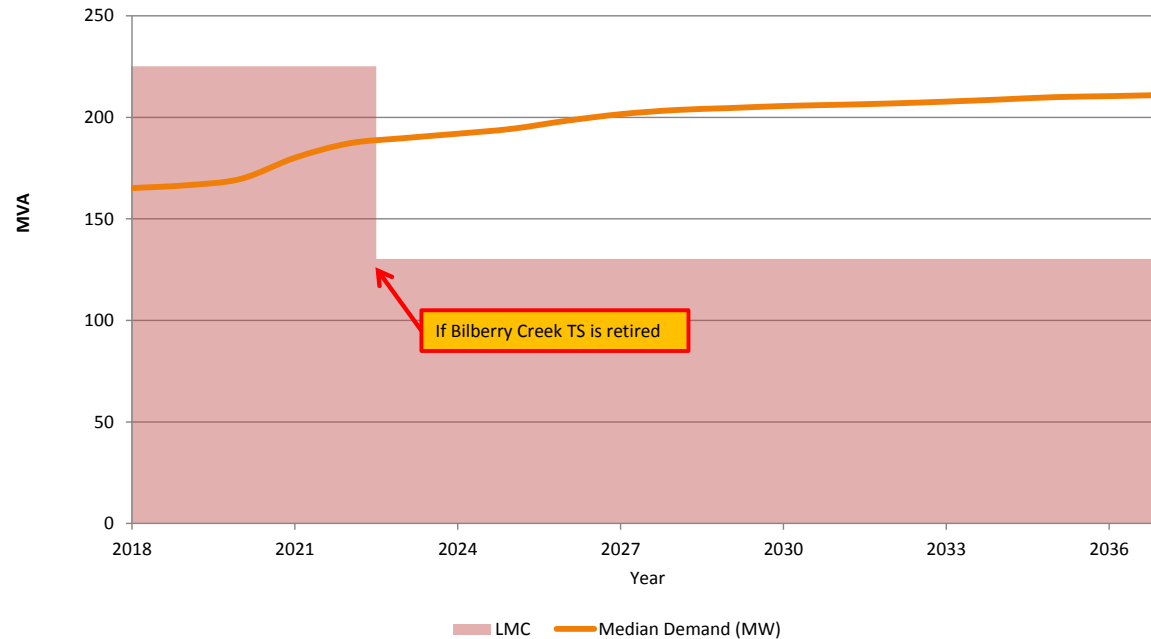
Bilberry/Orleans Area Overview

- Bilberry Creek/Orleans is primarily supplied by 230 kV and 115 kV transmission lines emanating from Hawthorne TS
- Orleans TS is operating near its capacity rating
- Bilberry Creek TS is nearing end of life



Bilberry/Orleans Area Overview

LMC (Load Meeting Capability) of Bilberry Creek TS and Orleans TS



Potential Options

- Refurbish Bilberry Creek TS
 - Additional work required to manage capacity needs at Orleans TS in the medium to long term
- Retire Bilberry Creek TS
 - Transfer Bilberry Creek TS loads to Orleans TS
 - Provide dual 230 kV supply to Orleans TS
 - Additional work required to manage capacity needs at Orleans TS in the medium to long term
- Considerations
 - Both options require additional solutions to completely meet the capacity need (non-wires, additional infrastructure such as station expansion)
 - Non wires options (CDM, DG, and/or DR) to defer needs
 - Performance and reliability of broader system



D. NEXT STEPS



We Want to Hear From You...

Are there any additional factors that should be considered in the following processes:

- Determining the forecast
- Identifying needs
- Examining potential options
- Engaging with communities and interested parties

*Please submit your written comments by email to
engagement@ieso.ca by **June 12***



Questions?

Do you have any questions for clarification on the material presented today?

Submit questions via the web portal on the webinar window, or by email to engagement@ieso.ca



Next Steps

- Feedback due to engagement@ieso.ca June 12
- IESO to post and respond to feedback – June 21
- IESO to post final engagement plan – June 21
- Subsequent Webinar #2 – Late July 2019



How you can stay involved:

- Subscribe to receive updates on the Greater Ottawa regional initiatives on the IESO website <http://www.ieso.ca/subscribe>
- Follow the IRRP Ottawa Sub-region engagement initiative on-line <http://www.ieso.ca/Sector-Participants/Engagement-Initiatives/Engagements/Integrated-Regional-Resource-Plan-Ottawa-Area-Sub-Region>
- Comments and questions on the draft engagement plan, regional forecast, needs and potential solutions can be submitted to engagement@ieso.ca by **June 12, 2019**





Ottawa Sub-Region

2019 Integrated Regional Resource Plan (IRRP)

Engagement Webinar #2

November 13, 2019

Today's Agenda

- Background on the Regional Planning Process
- Options Analysis
- Draft IRRP Recommendations
- Engagement and Next Steps



Purpose and Objective

- The purpose of this material is to:
 - Provide an update on the electricity planning and Integrated Regional Resource Plan (IRRP) development underway for Ottawa
 - Seek input on the analysis of options and draft IRRP recommendations for meeting local electricity needs over the 20-year plan period
- All interested parties are invited to review and provide comment on the proposed recommendations

Send feedback to engagement@ieso.ca by November 27, 2019

Seeking Input

As you listen today, please consider the following questions to guide feedback your feedback on the draft recommendations for the Ottawa Sub-region IRRP:

- What information needs to be considered in these recommendations?
- Is there community feedback to the proposed recommendations?
- How can the IRRP Working Group (including the IESO, Hydro Ottawa and Hydro One) continue to engage with the community as these recommendations are implemented, or to help prepare for the next planning cycle?

*Please submit your written comments by email to engagement@ieso.ca by **November 27***

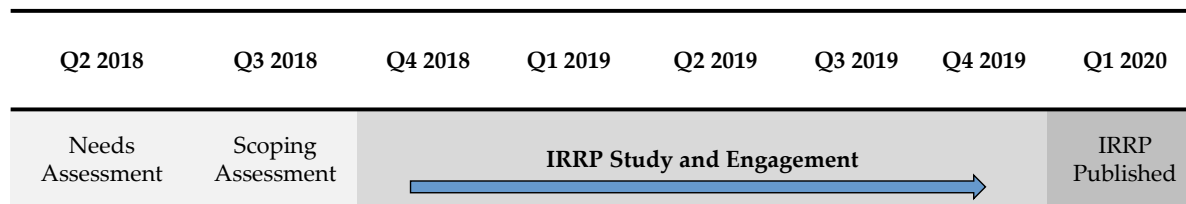


BACKGROUND ON THE REGIONAL PLANNING PROCESS



Current Status

- Current planning cycle began in Q3 2018, and an Integrated Regional Resource Plan (IRRP) is on track for completion this winter
- Currently in the recommendations and report drafting stages



2019 Engagement Activities

- Engagement initiative launched – May 9
- [Public webinar](#) and [comment period](#) on electricity demand forecast and preliminary needs – May 29 / June 12
- Potential solutions identified and studied based on feedback received and local needs; recommendations for IRRP developed – Q2 to present
- Meetings with City Councillors and municipal representatives – August 20 and October 17



How We Look at Local Reliability Needs

The “*Ontario Resource and Transmission Assessment Criteria*” establish typical long-term transmission planning levels

- Adequacy
 - The infrastructure must be capable of supplying the peak demand during extreme weather conditions (e.g., megawatts)
- Supply Security and Restoration
 - The system’s ability to withstand a disturbance, such as the loss of a transformer or line
 - A limited amount of load may be disrupted by a disturbance, and must be restored within a specific timeframe



Municipal Issues are Driving Electricity Demand Trends

- Significant growth and development is increasing electricity demand across the City
 - new residential developments in previously agricultural areas, infill and intensification in many established areas, as well as major projects like the Ottawa LRT system.
- The City has supported the Energy Evolution mandate
 - It is too early to forecast specific impacts of related policies and programs
- Hydro Ottawa through its Smart Grid projects such as MiGen is investing to explore tools and market models that support a transactive future marketplace, to support the system and customers needs.



Recap: Local Reliability Needs in Ottawa

Four groups of reliability needs were identified as the focus for the Ottawa IRRP:

- 1) Supply to Kanata-Stittsville
- 2) Supply to Southeast Ottawa
- 3) Supply to East Ottawa
- 4) Supply to the regional 115 kV system



1) Kanata-Stittsville

- Several stations in the area are operating at or near their planning capacity
- Large commercial and residential developments are driving significant growth in electricity demand in the near- and medium-term (approximately 60 MW by 2037)
 - Including the Kanata-Stittsville North Community, Minto Arcadia, the Broccolini Business Park, and the Fernbank Community
- Hydro Ottawa is planning to implement distribution system upgrades to distribute forecast growth between stations in the area



2) Southeast Ottawa

- Several stations in the area are operating at or near their planning capacity
- Substantial amount of electricity load growth is forecasted (approximately 75 MW by 2037) driven by large residential, mixed, and industrial developments
 - Including the Leitrim Community, Riverside South, the Airport Lands, Hawthorne Industrial Park
- By 2021, Hydro Ottawa is planning to upgrade Limebank MTS and Uplands MTS which are already reaching their planning capacity
 - Preliminary assessment shows the Limebank MTS upgrade will exceed the capacity of the existing 115 kV transmission line, and will trigger the need for a transmission line upgrade



3) East Ottawa

- Bilberry Creek TS came into service in 1976 and is nearing end-of-life
 - The upcoming need for an end-of-life plan was identified in the 2015 IRRP
- Other stations in the area are operating at or near their planning capacity
- Large industrial and residential mixed use developments are forecasted to increase demand over the near- and medium-term (approximately 30 MW by 2037)
 - Including Orléans Industrial Park and the East Urban Community



4) Supply to the Regional 115 kV System

- Two transmission voltage levels are used for supply to Ottawa: 230 kV and 115 kV
- The 115 kV level is primarily used to supply central Ottawa, including the downtown area
- The 115 kV level is supplied from the 230 kV level at two transformer stations: Merivale TS and Hawthorne TS
 - The 230 kV level is part of the 'superhighway' connecting Ottawa to the Ontario bulk transmission system
- Several of the 230/115 kV transformers at Merivale and Hawthorne are operating at or near their capacity



What We Heard

- Feedback received* from a number of interested parties and several key themes emerged:
 - Strong interest in examining non-wires alternatives and importance of outlining analysis of options
 - Optimizing land use
 - Maintaining cost effectiveness
 - Reducing GHG emissions
 - Importance of alignment with municipal energy plans and other local initiatives

* <http://www.ieso.ca/-/media/Files/IESO/Document-Library/engage/ottawa/Ottawa-IRRP-20190621-IESO-Responses.pdf?la=en>



OPTIONS ANALYSIS



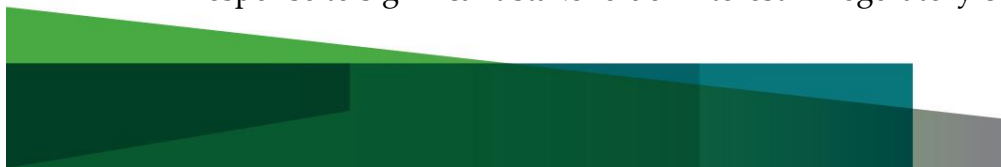
Identifying Options in the IRRP

- The Technical Working Group, led by the IESO, considers a range of options to address the identified needs:
 - Transmission expansion (e.g. a new or modified transformer station and transmission line)
 - Distribution solutions (e.g. transferring demand between transformer stations)
 - Distributed energy resources (e.g. distribution connected generation or storage)
 - Other demand-side options (e.g. energy efficiency measures, demand response, etc.)
- The appendix to these slides describes the non-wires resources considered in the Ottawa IRRP



Assessing Options

- Wires solutions are the traditional approach to supply planning, which didn't consider non-wires options
 - Proven, feasible means of achieving reliable electricity supply
 - 'Lumpy', as opposed to readily scalable
 - Providing a step change of capability, with a high up-front cost
 - Lock-in infrastructure that has a multi-decade useful life
- The IESO is developing methods for assessing the feasibility of non-wires options and their cost effectiveness relative to wires options
 - Non-wires resources can offer a more diverse set of services but usually cannot fully meet planning needs individually - must be combined into a package solution
- Current implementation of non-wires options through policy initiatives makes it challenging to target these resources to a location with a reliability need
 - The Ontario Energy Board is currently undertaking a policy consultation in response to significant stakeholder interest in regulatory changes



Assessing Options: Technical Ability to Address the Need

First and foremost, the Ottawa Sub-Region IRRP will prioritize options that can (either alone or in combination) provide the peak capacity (MW) needed and allow the transmission system to fulfill planning criteria.

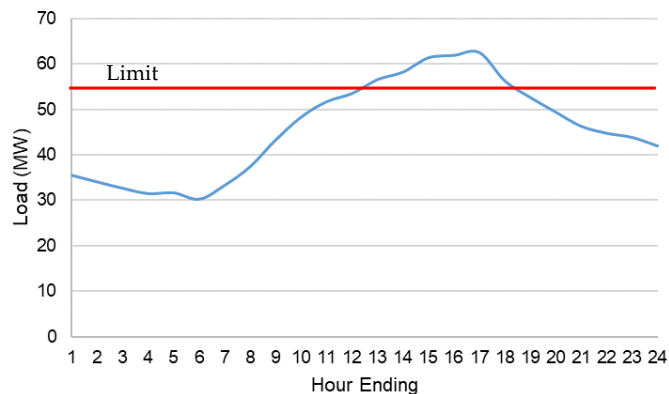
- Traditionally, needs are identified based upon reliability planning criteria, peak demand forecasts, and the existing system load supply capability
- Non-wires options evaluation involves assessment of technical potential and the technology's ability to meet capacity requirements rather than energy needs



Assessing Options: Technical Ability to Address the Need (Cont'd)

- Nonetheless, additional work (hourly forecasts for multiple stations) was done during this IRRP to better understand the probabilistic nature of needs and how non-wires options might be called upon to fulfill these needs

Sample Hourly Profile for a Summer Peak Day in 2037 at Uplands MTS



Hourly forecasts can help answer questions such as:

- How might energy efficient air conditioners translate to a local Ottawa peak demand reduction?
- If energy storage is installed, how should it be optimally sized?
- If demand response is recommended, how often would we call upon it? During what hours?



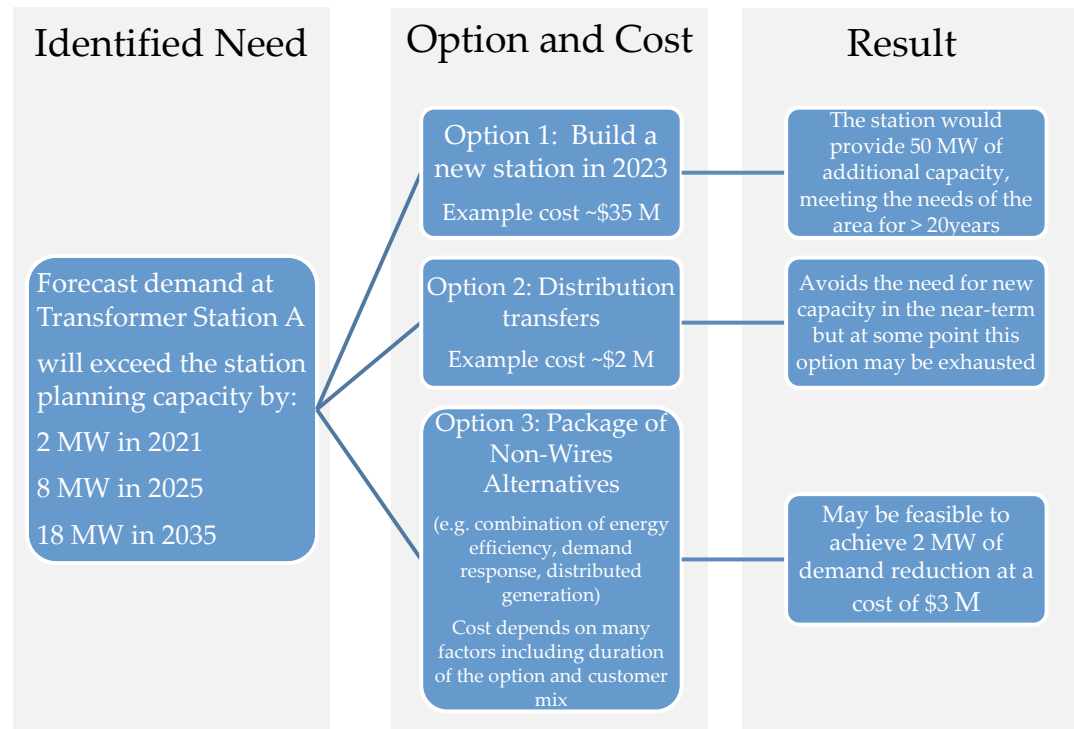
Assessing Options: Economic Considerations

Once a portfolio of feasible options is identified, cost is the main criteria used to select preferred option(s).

- Economic viability of an option is the cost-effective subset of its technical feasibility
- Discounted Cash Flow (DCF) analysis determines net present value (NPV) of annual net consumer costs
 - Options are “stacked” in order of cost-effectiveness and compared on an equivalent reliability basis until the MW need is solved
- Factors limiting economic potential can include: lack of benefits to the bulk or local system, customer response to payback, market barriers, and technological barriers
- Even as only preliminary estimates, this assessment approach considers different value streams to help more fairly compare, at a high level, the relative cost between all options



Example: Decision Tree



DRAFT IRRP RECOMMENDATIONS



Evaluating Options:

1) Kanata-Stittsville Area

- 1) There is insufficient station capacity to supply this area over the long-term – a plan for reliable long-term supply to the area is required
- 2) Non-wires alternatives have been evaluated as part of an integrated solution however the forecast supply gap is too large for non-wires solutions to entirely address
 - Demand growth in the area includes new customers who will require some amount of supply, notwithstanding efficiency



Evaluating Options:

1) Kanata-Stittsville Area (cont.)

3) Hydro Ottawa is planning to implement distribution system upgrades to distribute forecast growth between stations in the area

4) A new station will likely be required to provide reliable long-term supply in the area

- A high level screening has found that potential connection points on the existing transmission system are sub-optimal
- The IESO is currently developing a bulk transmission plan that may include transmission expansion in Kanata-Stittsville, resulting in a preferable connection option for a new supply station



IRRP Recommendations:

1) Kanata-Stittsville Area

- In the near-term, it would be beneficial to target system cost-effective energy efficiency and pursue other cost-effective non-wires alternatives to this area in order to reduce reliability the risk arising from heavily loaded stations
- The Working Group will monitor demand growth in the Kanata-Stittsville area and initiate the next regional planning cycle early, if required
- A plan for reliable long-term supply in the Kanata-Stittsville area will be confirmed in the next regional planning cycle
 - Will consider potential new supply options that may result from the IESO's ongoing bulk transmission planning study for the area that is expected to be completed in 2020



Evaluating Options:

2) Southeast Ottawa

- 1) There is insufficient station capacity to supply this area over the long-term – a plan for reliable long-term supply to the area is required
 - Existing supply infrastructure in this area is relatively sparse
- 2) Non-wires alternatives have been evaluated as part of an integrated solution however the forecast supply gap is too large for non-wires solutions to entirely address
 - Demand growth in the area includes new customers who will require some amount of supply, notwithstanding efficiency



Evaluating Options:

2) Southeast Ottawa (cont.)

3) Hydro Ottawa is planning to increase the supply capacity of two stations in the area: Uplands MTS and Limebank MTS

- In order to utilize the increased capacity at Limebank MTS the 115 kV supply circuit will likely need to be upgraded
 - The specific requirements for this line upgrade will be confirmed in subsequent planning and approval steps to implement this project

4) Planning must begin for a new supply station due to the timing and magnitude of growth

- Demand growth at Uplands MTS is forecast to exceed the expanded station planning capacity by 2025
- Demand growth at Limebank MTS is forecast to exceed the expanded station planning capacity by 2028



IRRP Recommendations:

2) Southeast Ottawa

- Hydro Ottawa will proceed with a plan to build a new 230 kV connected supply station in the southeast part of the City
 - In addition to capacity increases and transfers between existing stations
 - This will provide a new supply station in an area of the City that doesn't have a lot of station capacity, reducing distribution distances



Evaluating Options:

3) East Ottawa

- 1) With the station end-of-life approaching, the Working Group has been monitoring demand trends in the Bilberry Creek/Orléans area since the last IRRP
 - A decision on the future of the station must be made several years ahead of the end-of-life date in order to ensure continuous reliable supply
- 2) Several stations surrounding Bilberry Creek TS are at or near their planning capacity, leaving limited potential to transfer customers currently supplied by Bilberry Creek TS if the station were retired
 - In order to retire Bilberry Creek a new station would need to be built in the area



IRRP Recommendations:

3) East Ottawa

- Hydro One will refurbish Bilberry Creek TS, including like-for-like transformer replacement
 - Refurbishing Bilberry Creek TS is less impactful and less costly than building a new station to replace the capacity if Bilberry Creek TS were retired
- Hydro One will expand the station to provide two additional breaker positions to supply Hydro Ottawa customers
- Based on the IRRP forecast, this station will provide adequate capacity in East Ottawa until the early 2030s



Evaluating Options:

4) Supply to the Regional 115 kV System

- 1) One of the two existing 230/115 kV transformers at Merivale TS has a lower rating than the other
 - This imbalance is currently limiting the supply to the 115 kV system
 - Replacing the most limiting transformer will provide a small increase to supply capacity, but is not a long-term solution
- 2) The regional pressure on the 115 kV system has been factored into recent supply station planning decisions
 - New South Nepean station and planned southeast station will both be connected to the 230 kV system
- 3) More analysis is required before committing to a long-term solution, which may have a high cost



IRRP Recommendations:

4) Supply to the Regional 115 kV System

- Hydro One will replace the more limiting of the 230/115 kV transformers at Merivale TS in the near-term so that the two Merivale transformers have similar capacity
 - This transformer came into service in 1978
 - Once the above transformer is upgraded, demand on the 115 kV system is expected to exceed the supply capability of the six 230/115 kV transformers by the mid 2020s

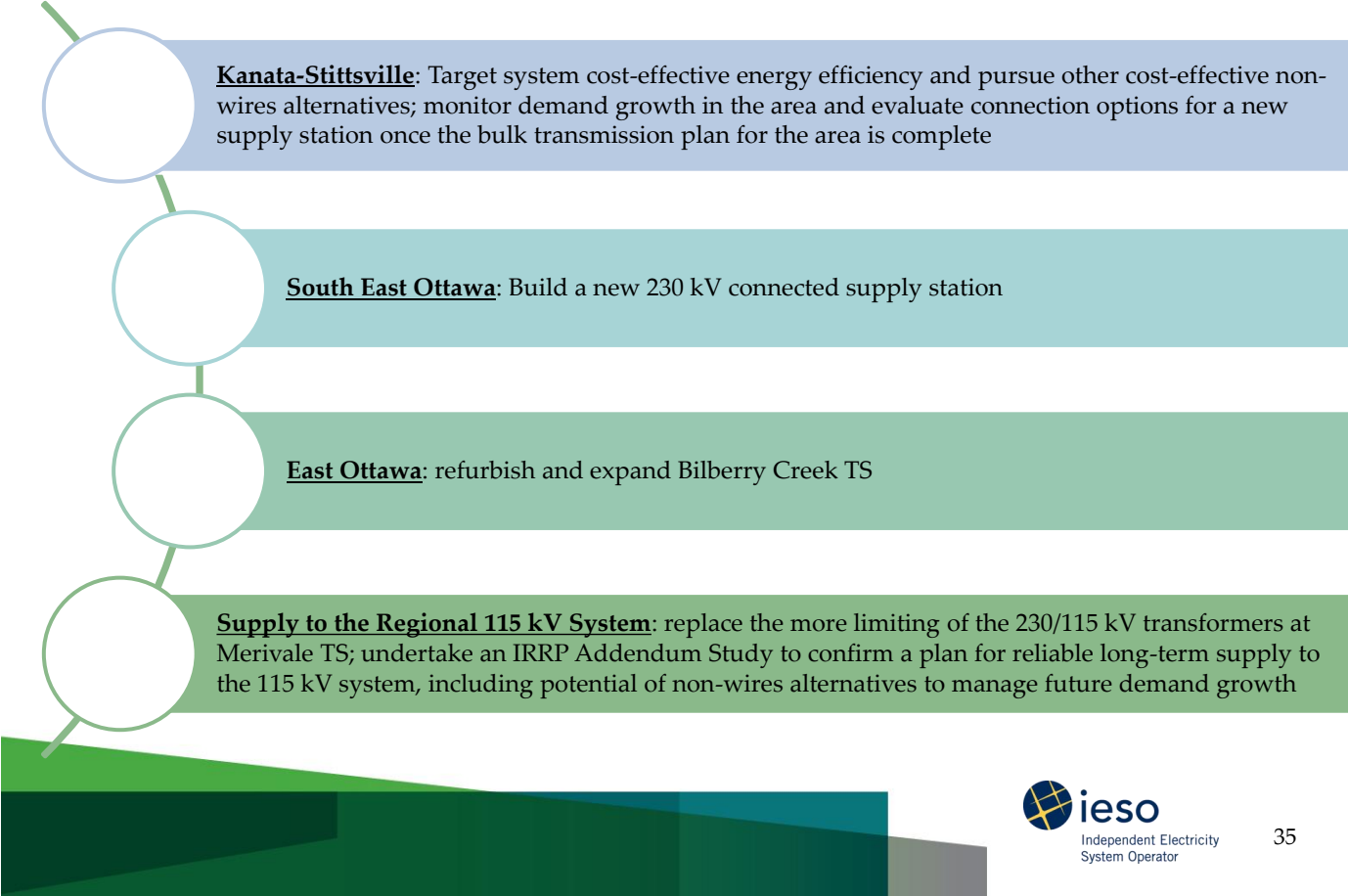


Supply to the Regional 115 kV Transmission System: IRRP Addendum Study

- Subsequent to the release of this IRRP, the Working Group will undertake an IRRP Addendum Study
 - The Addendum Study will be completed in mid-2020
 - Will be integrated with the IESO's ongoing bulk transmission planning study
 - Planning large and growing regions of the province is an ongoing activity
- The Addendum Study will include an evaluation of the potential benefit of non-wires options to manage future demand growth in central Ottawa



Summary of Key IRRP Recommendations



Kanata-Stittsville: Target system cost-effective energy efficiency and pursue other cost-effective non-wires alternatives; monitor demand growth in the area and evaluate connection options for a new supply station once the bulk transmission plan for the area is complete

South East Ottawa: Build a new 230 kV connected supply station

East Ottawa: refurbish and expand Bilberry Creek TS

Supply to the Regional 115 kV System: replace the more limiting of the 230/115 kV transformers at Merivale TS; undertake an IRRP Addendum Study to confirm a plan for reliable long-term supply to the 115 kV system, including potential of non-wires alternatives to manage future demand growth

ENGAGEMENT AND NEXT STEPS



Next Steps

- Feedback due on draft IRRP recommendations – November 27, 2019
- IESO responses to feedback received posted – December 6, 2019
- Final IRRP posted – January 2020



Seeking Input

As you listen today, please consider the following questions to guide feedback your feedback on the draft recommendations for the Ottawa Sub-region IRRP:

- What information needs to be considered in these recommendations?
- Is there community feedback to the proposed recommendations?
- How can the IRRP Working Group (including the IESO, Hydro Ottawa and Hydro One) continue to engage with the community as these recommendations are implemented, or to help prepare for the next planning cycle?

*Please submit your written comments by email to engagement@ieso.ca by **November 27***



Continuing the Dialogue

- A series of five Regional Electricity Networks will be launched this fall to enable ongoing dialogue with communities
 - Membership is open to all interested parties
 - Join discussions and provide input on key electricity matters affecting them and their community
- Participants who join can count on the IESO to provide information on a regular basis, and to host an annual regional electricity forum
- To learn more or join your network, please visit <http://www.ieso.ca/Get-Involved/Regional-Planning/Electricity-Networks/Overview>



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APPENDIX



Overview of All Options Considered

Resource Type	Description	Levelized Unit Energy Cost (\$/kW-yr)	Potential Implementation Lead or Host
Energy Efficiency	Technologies and operational measures that increase the efficiency of electricity usage at the end-use level. Examples include programs for high-efficiency HVAC equipment or LED lighting.	\$85 - \$240*	Varies; IESO, LDCs, customers, third-party service providers. Province-wide programs centrally delivered by IESO until end of 2020.
Lithium Battery Energy Storage	Energy is stored and then dispatched during times of need.	\$379 - \$555	Varies; LDCs, third-party service providers, customers.
Demand Response	Curtailment of electricity consumption targeting specific hours when a need occurs; considered to be a dispatchable resource that responds to price signals or is implemented through contractual obligations.	\$50 - \$60**	Varies; LDCs, customers, third-party service providers, IESO.

*Based upon the 2019 Achievable Potential Study

**Based upon 2019 demand response auction clearing prices

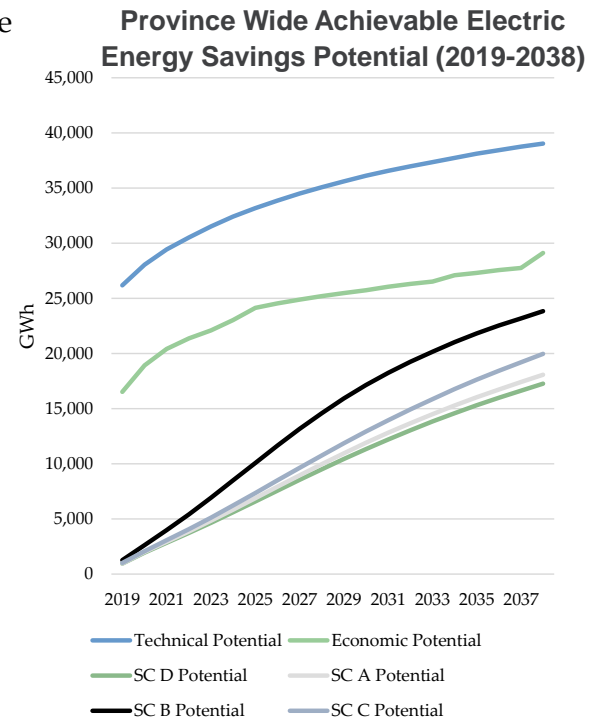
Overview of All Options Considered (Cont'd)

Resource Type	Description	Levelized Unit Energy Cost (\$/kW-yr)	Potential Implementation Lead or Host
Solar Generation	Solar panels (typically rooftop or ground-mounted) installed to provide electricity.	\$165	Varies
Distribution-Level Load Transfers	Distribution feeders that are built to redistribute the LDC's load supply in a local area and relieve station-specific capacity needs.	Varies*	LDC
Natural Gas Generation	Simple Cycle Gas Turbine (SCGT): natural gas power plant whose waste heat is not used; best for peak power needs on the electric grid. Combined Heat and Power (CHP): gas generation providing both electricity and heat (for end-use).	\$160 - \$235 \$290 - \$400	Varies
Transmission Facilities	"Wires" reinforcements (transformer stations, lines, etc) on the higher-voltage transmission system.	\$2 - \$6	Transmitter

*Likely more comparable to cost of transmission facilities

Calculating Energy Efficiency Potential

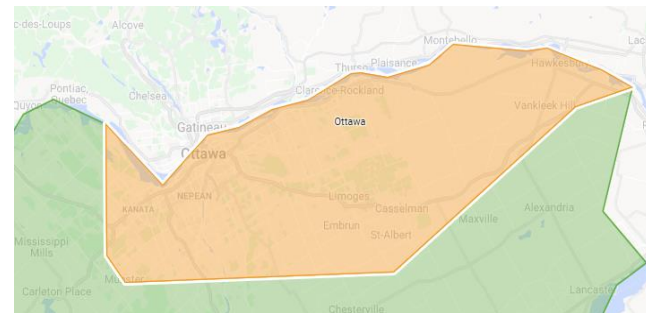
- The IESO and the Ontario Energy Board have recently completed the first integrated electricity and natural gas achievable potential study in Ontario (2019 APS)
- The main objective of the APS is to identify and quantify energy savings (electricity and natural gas), GHG emission reductions and associated costs from demand side resources for the period from 2019-2038.
- The study shows a significant and sustained potential for energy and efficiency across all sectors and is used to inform:
 - future energy efficiency policy and/or frameworks
 - program design and implementation
 - long-term resource planning



Calculating Energy Efficiency Potential

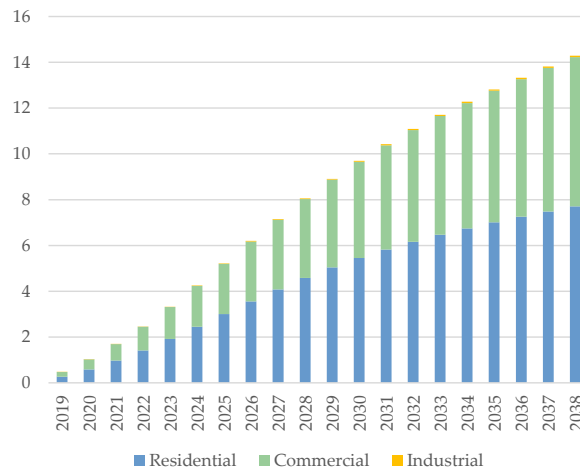
- 2019 APS results are broken out by IESO transmission zone, customer segment (e.g., single family dwellings, multi unit residential buildings, large commercial office, restaurant, school, warehouse, etc.) as well as by end use (e.g., lighting, space heating, space cooling, plug load, etc.).
- Using local data (i.e., MPAC, Broader Public Sector energy use database, Dunn and Bradstreet) energy and demand savings for the Ottawa transmission zone can be allocated to the IRRP study area to reflect the customer base located in the region.
- The analysis on subsequent slides shows the amount of energy efficiency potential that can likely be achieved in the area along with associated costs.
- A next step will be to identify the proportion of this savings that is cost effective considering province wide as well as local system benefits to inform future resource planning.

Ottawa Transmission Zone

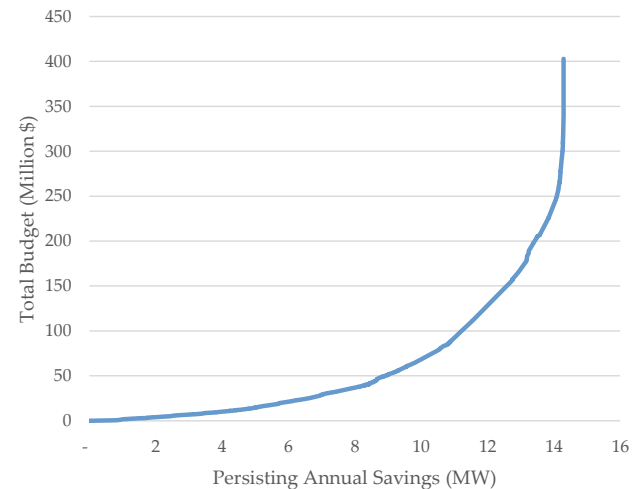


West Region Potential

West Cumulative Summer Peak
Demand Saving Potential (MW)

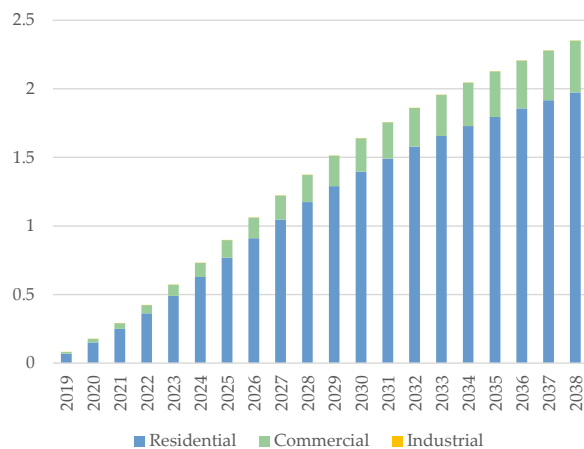


West Cost Curve in 2038
Summer Peak Demand Potential

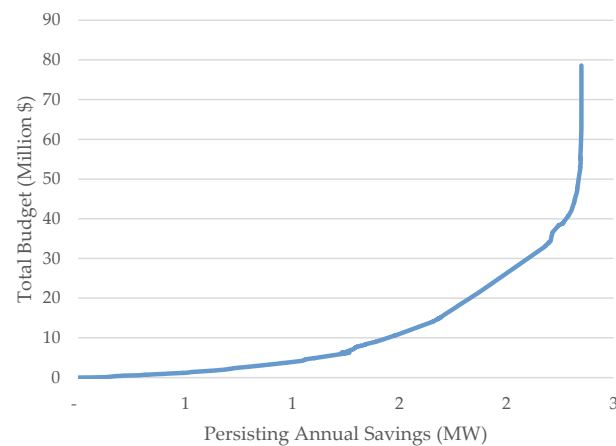


Uplands Potential

Uplands Cumulative Summer Peak
Demand Saving Potential (MW)

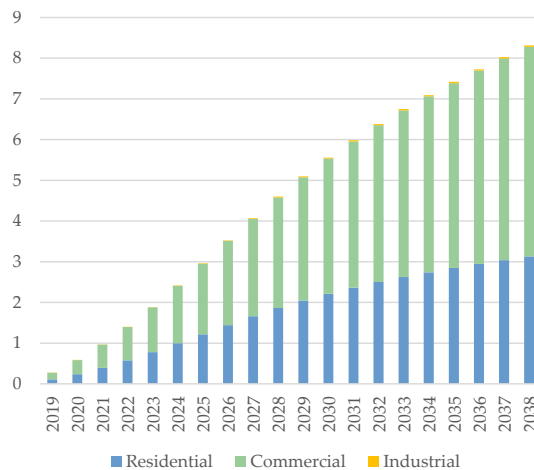


Uplands Cost Curve in 2038
Summer Peak Demand Potential

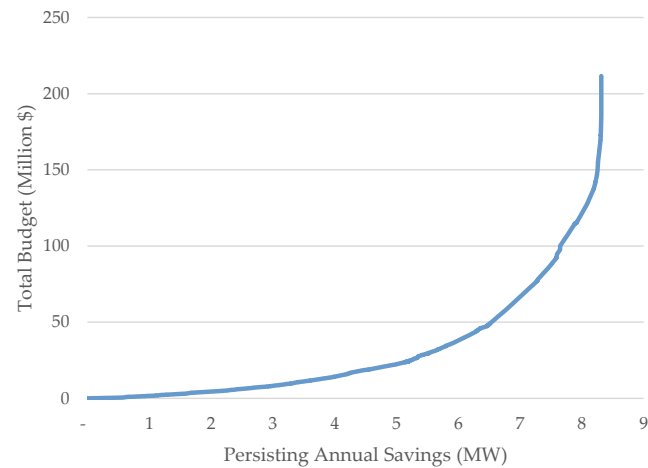


Orleans Potential

Orleans Cumulative Summer Peak
Demand Saving Potential (MW)

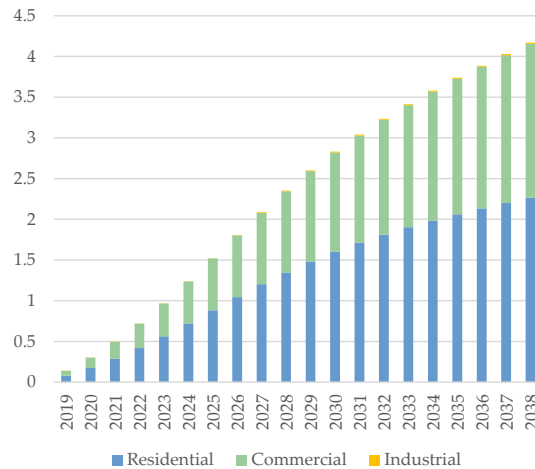


Orleans Cost Curve in 2038
Summer Peak Demand Potential

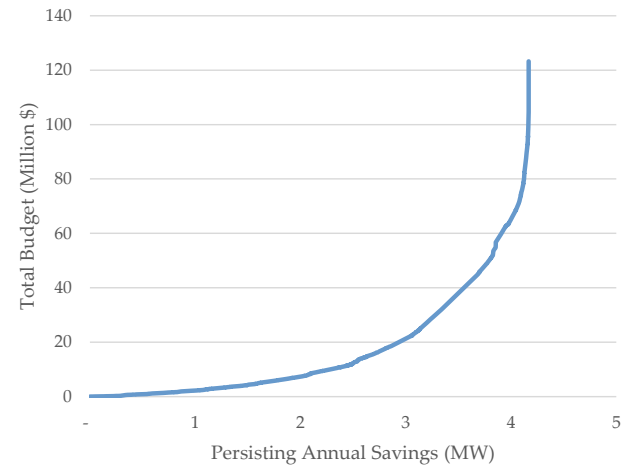


Bilberry Potential

Bilberry Cumulative Summer Peak
Demand Saving Potential (MW)



Bilberry Cost Curve in 2038
Summer Peak Demand Potential



Top Commercial Demand Reducing Measures in 2023 (Ottawa Zone)

Measure Name	Demand Reduction Potential (MW)	Energy Savings Potential (GWh)	Levelized Unit Energy Cost (\$/kWh)	Levelized Unit Demand Cost (\$/kW)
Com Building Recommissioning, Operations and Maintenance (O&M) Improvements	27.7	228	\$0.02	\$187
Com Education and Capacity Building/Energy Behavior	20.4	70	\$0.07	\$231
Com Variable Refrigerant Flow Heat Pump	18.5	64	\$0.08	\$272
Com LED Low/High Bay	16.3	113	\$0.03	\$231
Com LED Troffer/Surface/Suspended	10.8	82	\$0.02	\$141
Com Central Lighting Control System	10.0	71	\$0.53	\$3,934
Com ENERGY STAR LED LAMPS (REFLECTOR LAMPS/MR16/PAR 16)	9.6	73	\$0.02	\$175
Com Advanced BAS/Controllers	7.4	26	\$0.02	\$83
Com High Efficiency Air Source Heat Pump	6.2	21	\$0.00	\$13
Com Furnace Tune-Up	4.7	92	\$0.00	\$32
Com Unitary Air-Conditioning Unit	4.4	7	\$0.07	\$106
Com Smart Strip Plug Outlets	3.8	31	\$0.14	\$1,131
Com Adaptive Thermostats	3.2	11	\$0.04	\$131
Com Strip Curtains	2.5	20	\$0.00	\$21
Com Data Center Storage/Server Virtualization	2.2	18	-\$0.06	-\$485
Com Demand Control Ventilation	2.1	19	\$0.16	\$1,436
Com Adding reflective (White) roof treatment or a green roof	2.0	7	\$2.60	\$8,939
Com LED or Equivalent Sign Lighting	2.0	12	\$0.01	\$67
Com Refrigerated Display Case Doors	1.9	16	\$0.05	\$369
Com Refrigerated Display Case LED	1.8	8	\$0.04	\$207

Top Residential Demand Reducing Measures in 2023 (Ottawa Zone)

Measure Name	Demand Reduction Potential (MW)	Energy Savings Potential (GWh)	Levelized Unit Energy Cost (\$/kWh)	Levelized Unit Cost Savings (\$/kW)
Res Energy Star Central Air Conditioner	18	30	\$0.36	\$625
Res Adaptive Thermostat	12	42	\$0.10	\$331
Res Smart Power Bar	7	149	\$0.04	\$969
Res Variable Speed Pool Pump Motor	6	40	\$0.03	\$156
Res Ductless Mini-Split Heat Pump	6	20	\$0.01	\$26
Res Building Recommissioning, Operations and Maintenance (O&M) Improvements	4	14	\$0.01	\$19
Res Basement Wall Insulation	4	14	\$0.01	\$47
Res Smart Burners	4	21	\$0.05	\$289
Res Basement or Crawlpace Insulation	4	12	\$0.44	\$1,511
Res Attic Insulation	3	11	\$0.08	\$258
Res Energy Star Refrigerator	3	25	\$0.22	\$1,717
Res Energy Star Clothes Washer	3	22	\$0.03	\$266
Res Wall Insulation	3	9	\$0.44	\$1,522
Res Energy Star LED Bulbs General Purpose LEDs	2	44	\$0.01	\$183
Res Duct Insulation	2	7	\$0.17	\$586
Res Ductless Mini-Split Air Conditioner	2	3	\$0.22	\$369
Res Variable Refrigerant Flow Heat Pump	1	5	\$0.08	\$277
Res Lighting Motion Sensors, Timers, Dimmers	1	6	\$0.13	\$542
Res Central Air Conditioner Maintenance	1	2	\$2.55	\$4,370
Res Energy Star Ground Source Heat Pump	1	4	\$0.16	\$544

Top Industrial Demand Reducing Measures in 2023 (Ottawa Zone)

Measure Name	Demand Reduction Potential (MW)	Energy Savings Potential (GWh)	Levelized Unit Energy Cost (\$/kWh)	Levelized Unit Demand Cost (\$/kW)
Ind Pump System Optimization	1.3	12	\$0.04	\$360
Ind HE Lighting	1.2	9	\$0.05	\$398
Ind Air Leak Survey and Repair	1.1	9	\$0.02	\$134
Ind SEM	1.0	8	\$0.01	\$54
Ind Recommissioning	1.0	8	\$0.02	\$162
Ind Air Compressor Optimization	0.9	7	\$0.00	\$32
Ind Pump Equipment Upgrade	0.9	8	\$0.04	\$366
Ind Efficient Compressed Air Nozzles	0.6	5	\$0.00	\$22
Ind Process Optimization (Elec)	0.4	3	\$0.02	\$162
Ind Greenhouse Grow Lights	0.4	3	\$0.05	\$342
Ind Fan System Optimization	0.3	1	\$0.04	\$148
Ind Premium Efficient Motors	0.2	2	\$0.13	\$1,073
Ind High Efficiency HVAC Fans	0.2	2	\$0.01	\$126
Ind Improved Controls - Process Cooling	0.2	0	\$0.02	\$29
Ind HE HVAC Controls	0.2	1	\$0.17	\$1,525
Ind HVLS Fans	0.1	0	\$0.15	\$427
Ind Ventilation Optimization	0.1	0	\$0.08	\$264
Ind HE HVAC Units	0.1	1	\$0.68	\$6,151
Ind Free Cooling	0.1	0	\$0.07	\$111
Ind Material Handling Improvements	0.1	1	\$0.01	\$53

Ottawa Regional Electricity Planning

Kanata North Meeting

August 20, 2019

The players in Ontario's electricity sector

What the IESO does

The IESO works at the heart of Ontario's power system, balancing supply and demand for electricity on a second-by-second basis and directing its flow across Ontario's high-voltage transmission lines so it's available to you. Ensuring there is enough energy to meet Ontario's demand 24 hours a day, 7 days a week, is highly complex

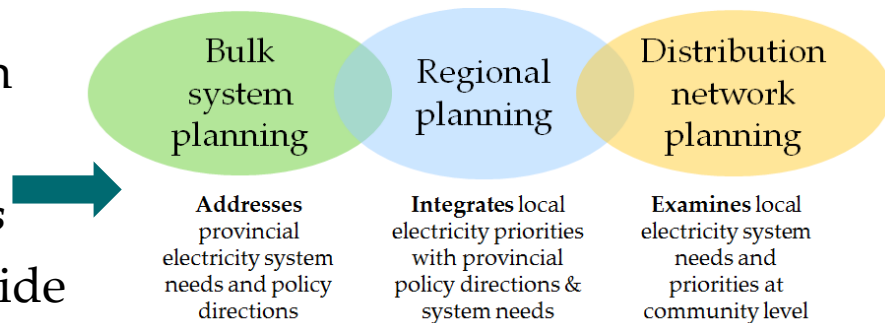
and requires close coordination of the many parts that make up the system. These include generators, transmitters and distributors that own and operate the lines through which electricity travels, as well as the large and residential consumers that help us respond to changing needs.



The Government of Ontario sets the overall policy for the energy sector and the Ontario Energy Board regulates it.

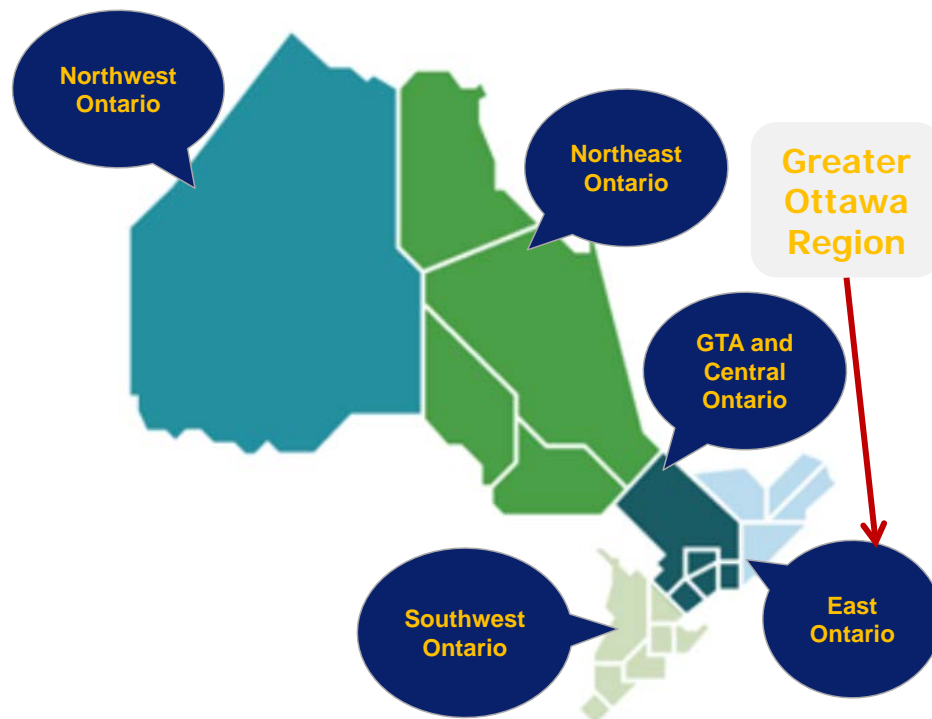
Who is the IESO?

- Operate the grid and electricity market
- Support innovation
- *Plan for Ontario's future energy needs*
- Enable province-wide energy conservation
- Engage stakeholders and communities



21 Electricity Regional Planning Regions

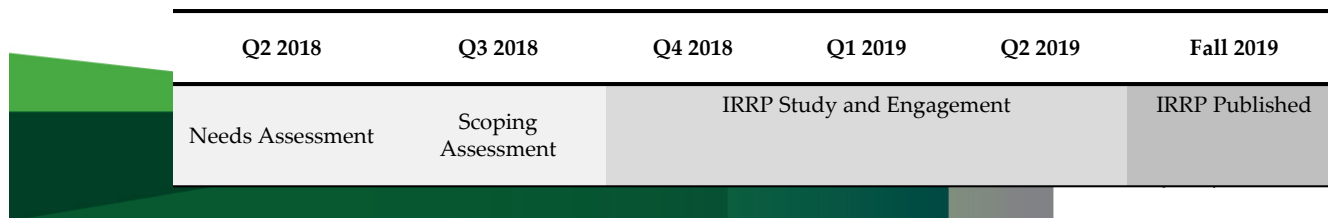
Based on
electricity
infrastructure
boundaries and
each region's
unique needs and
characteristics



Ottawa Regional Electricity Planning

- Previous planning cycle was completed in 2015, and recommended several actions to maintain supply adequacy and reliability:
 - New station to accommodate load growth in South Nepean/Barrhaven
 - Upgrading existing transformers at a number of stations throughout downtown Ottawa
 - Upgrading existing transformers at Hawthorne TS to increase regional supply capacity serving east Ottawa
- Current planning cycle began in Q3 2018, and an Integrated Regional Resource Plan (IRRP) is on track for completion this fall
 - Currently studying options to meet specific needs in four key areas to inform final recommendations and implementation

2019 Ottawa IRRP Timeline



Key Areas of Needs

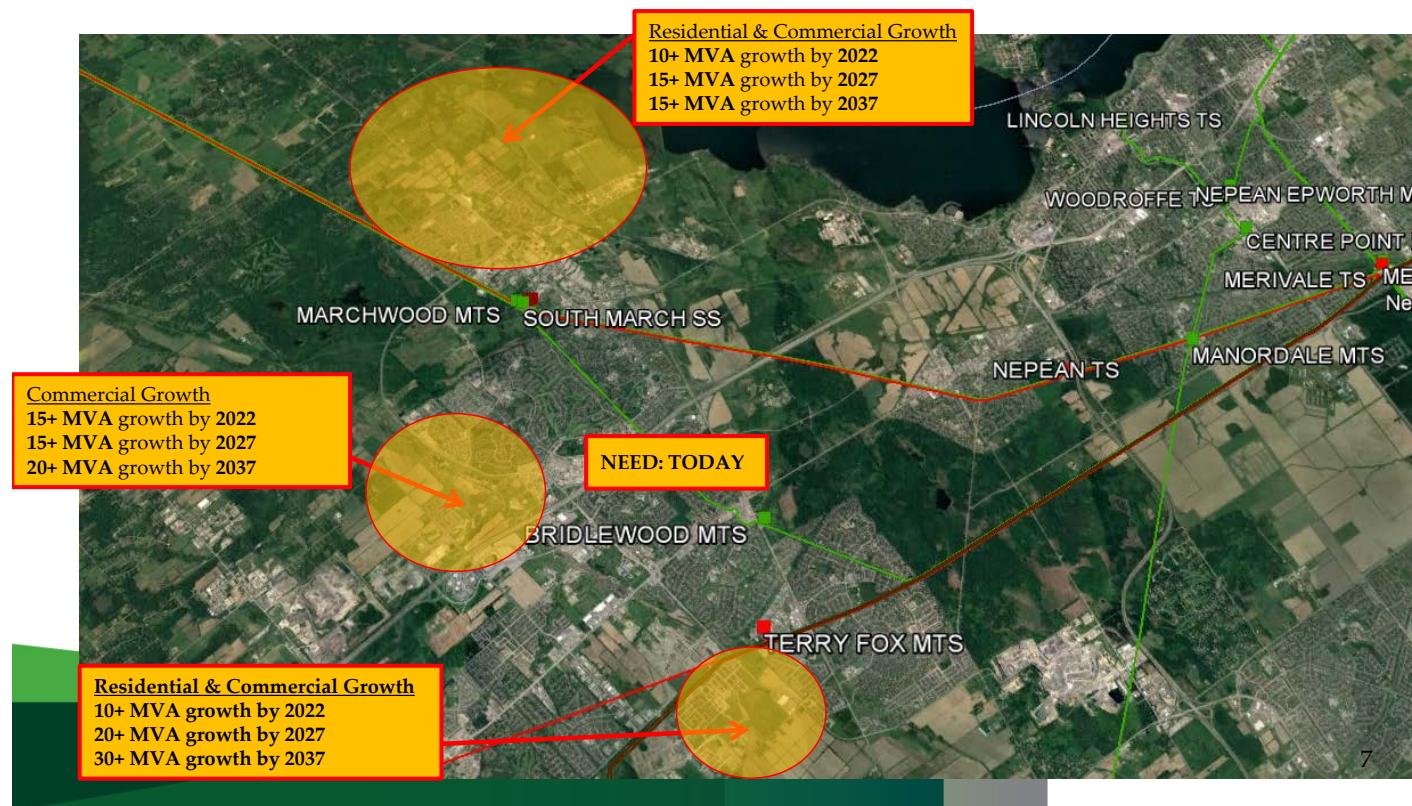
Four distinct areas of need identified for Ottawa IRRP:

1. Regional Supply to west Ottawa
2. **Kanata Area**
3. South East Ottawa Area
4. Bilberry Creek/Orléans Area



Kanata Area Needs

Several stations in the area are operating at, or near capacity



Potential Options

- New transmission station in West Ottawa
- New transmission line into West Ottawa from Merivale TS following existing transmission corridors
- Non-wires solutions such as EE, DG and DR are being evaluated alongside transmission infrastructure (needs to be undertaken directly or through locally-driven partnerships)
- Load management plan



Community Engagement

- November 14, 2018: meeting with City of Ottawa staff to review the regional planning process, recap on the recommendations of the previous cycle, and provide an update on the current cycle
 - April 3, 2019: meeting with City of Ottawa staff to discuss electricity demand forecast, needs/issues identified, municipal plans, engagement and timelines
 - May 29, 2019: public webinar on electricity demand forecast, identified needs, and potential solutions
 - June 21, 2019: responses to public feedback on May 29 public webinar posted
- Early Fall 2019: follow-up meeting with City of Ottawa staff to discuss IRRP recommendations
 - Mid- Fall 2019: public webinar to seek input on recommendations
 - Late Fall 2019: responses to public feedback and final IRRP posted

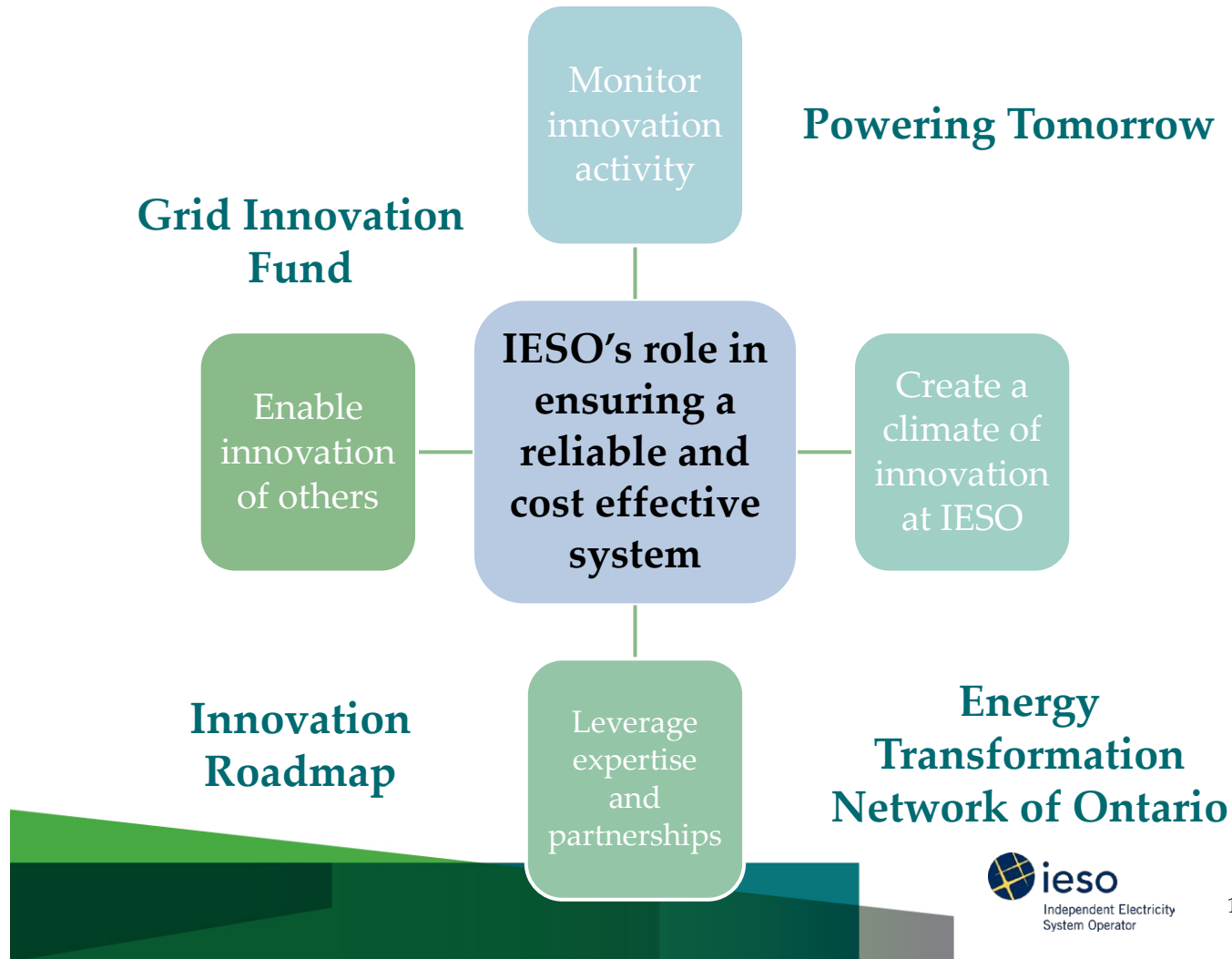
Energy Efficiency in Ontario

- Energy efficiency is the most cost-effective resource available to meet Ontario's energy needs
- Energy-efficiency programming has resulted in 15.6 TWh of energy savings since 2006
- Suite of Save on Energy programs available for businesses, low-income customers and Indigenous communities



Country Grocer
tackles energy
challenges, big and
small

After starting small, this Ottawa
supermarket's energy-saving steps are
paying off.



Next Steps

- Further engagement on IRRP this Fall
 - Meeting with City of Ottawa and public webinar on IRRP recommendations
 - Final Ottawa IRRP posted by late Fall
- Future meeting with Council on IRRP and other key initiatives
- Community meeting on recommendations and implementation



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Ottawa Regional Electricity Planning

Stittsville-Kanata West Meeting

October 17, 2019

The players in Ontario's electricity sector

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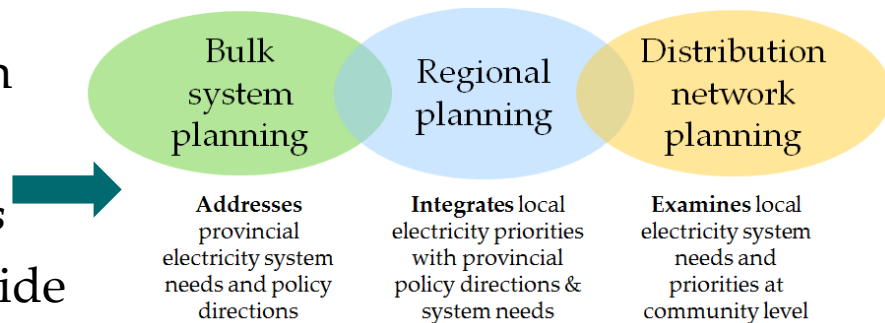
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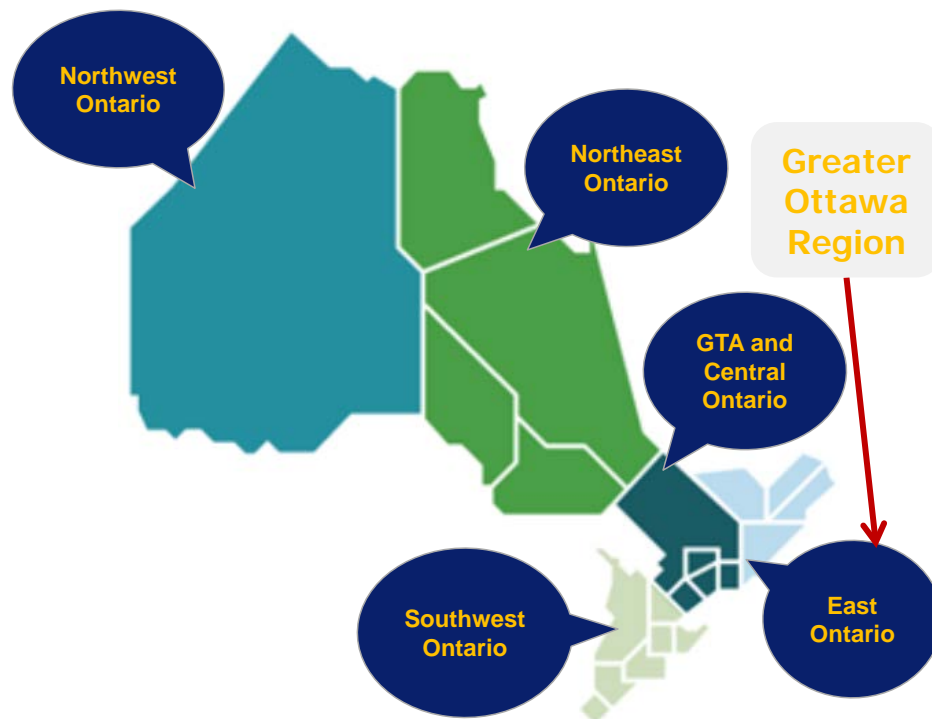
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21 Electricity Regional Planning Regions

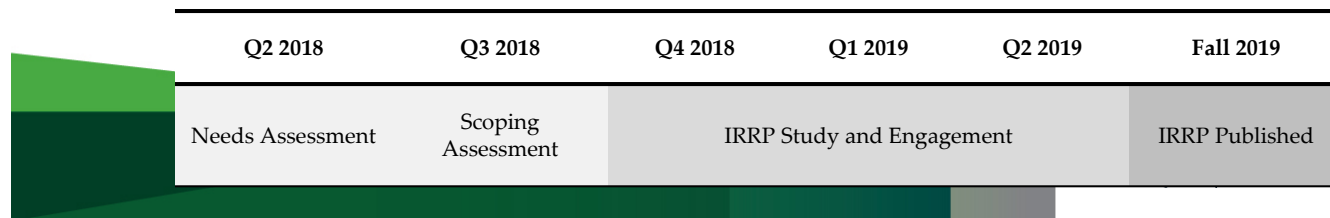
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Ottawa Regional Electricity Planning

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 - New station to accommodate load growth in South Nepean/Barrhaven
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2019 Ottawa IRRP Timeline



Key Areas of Needs

Four distinct areas of need identified for Ottawa IRRP:

1. Regional Supply to west Ottawa
2. **Kanata Area**
3. South East Ottawa Area
4. Bilberry Creek/Orléans Area



Kanata Planning Issues

- Several stations in the area are operating at or near their planning capacity
- Large commercial and residential developments are driving significant growth in electricity demand in the near- and medium-term (approximately 60 MW by 2037)
 - Including the Kanata North Community, Minto Arcadia, the Broccolini Business Park, and the Fernbank Community
- Hydro Ottawa is planning to implement distribution system upgrades to distribute forecast growth between stations in the area



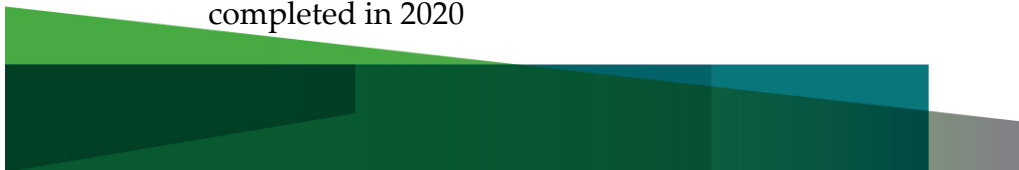
Evaluating Options

- 1) There is insufficient station capacity to supply this area over the long-term
 - Three key stations are forecast to exceed their planning ratings by a total of 75 MW by 2037
- 2) Non-wires alternatives have been evaluated as part of an integrated solution however the supply gap is too large for non-wires solutions to entirely address
- 3) Limitations on the existing transmission system in the area cannot accommodate expansion of the existing stations
- 4) A new station is likely required to provide reliable long-term supply in the area
 - A high level screening has found potential transmission connection points on the existing transmission system are sub-optimal
 - The IESO is currently developing a bulk transmission plan that may include transmission expansion in Kanata, resulting in a preferable connection option for a new supply station



IRRP Recommendations

- In the near-term, Hydro Ottawa will proceed with plans to implement distribution system upgrades that reduce reliability risk arising from heavily loaded stations
- In the near-term, it would be beneficial to target system cost-effective energy efficiency and pursue other cost-effective non-wires alternatives to this area in order to reduce reliability risk
- The Working Group will monitor demand growth in the Kanata North area and initiate the next regional planning cycle early, if required
- A plan for reliable long-term supply in the Kanata North area will be confirmed in the next regional planning cycle
 - Will consider potential new supply options that may result from the IESO's ongoing bulk transmission planning study for the area that is expected to be completed in 2020



Community Engagement

- November 14, 2018: meeting with City of Ottawa staff to review the regional planning process, recap on the recommendations of the previous cycle, and provide an update on the current cycle
- April 3, 2019: meeting with City of Ottawa staff to discuss electricity demand forecast, needs/issues identified, municipal plans, engagement and timelines
- May 29, 2019: public webinar on electricity demand forecast, identified needs, and potential solutions
- June 21, 2019: responses to public feedback on May 29 public webinar posted
- August 20, 2019: met with Kanata North Councillor Sudds
- October 17, 2019: follow-up meeting with City of Ottawa staff to discuss IRRP recommendations and municipal initiatives (i.e. Energy Evolution)
- Mid-Fall 2019: public webinar to seek input on recommendations
- Late Fall 2019: responses to public feedback and final IRRP posted

Energy Efficiency in Ontario

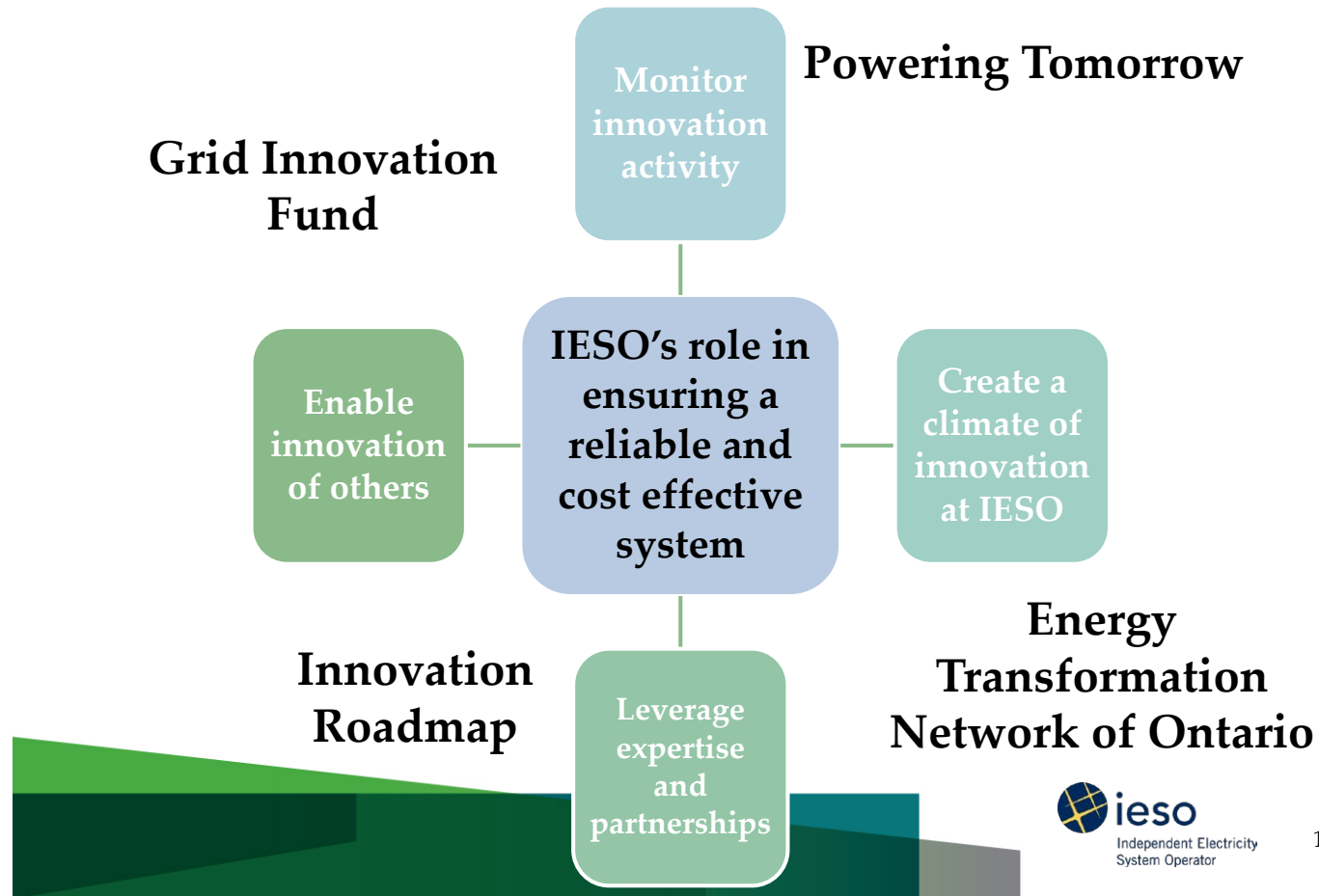
- Energy efficiency is the most cost-effective resource available to meet Ontario's energy needs
- Energy-efficiency programming has resulted in 15.6 TWh of energy savings since 2006
- Suite of Save on Energy programs available for businesses, low-income customers and Indigenous communities



Country Grocer
tackles energy
challenges, big and
small

After starting small, this Ottawa
supermarket's energy-saving steps are
paying off.

Driving Innovation



Next Steps

- Further engagement on IRRP will continue throughout the Fall
 - Meeting with City of Ottawa (October 17)
 - Public webinar on IRRP recommendations
 - Final Ottawa IRRP posted by late Fall
- Other meetings? (e.g. presentation to Council on IRRP and other key initiatives)



Continuing the Dialogue

- A series of five Regional Electricity Networks will be launched this fall to enable ongoing dialogue with communities
- Membership is open to all interested parties
- Join discussions and provide input on key electricity matters affecting them and their community
- Topics will range from community energy plans to reduced operating costs to economic development plans based on the unique needs and characteristics of communities in each region



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Ottawa Area Sub-Region Integrated Regional Resource Plan City of Ottawa Meeting

Date: October 17, 2019
Time: 1:00 pm – 3:00 pm
Location: Ottawa City Hall
 110 Laurier Avenue West, Planning GM Board Room 3113A (Third Floor)
 Ottawa, Ontario

AGENDA

ITEM	TIME	TOPIC	PRESENTER
1	1:00 pm	Roundtable and Introductions	All
2	1:05 pm	Opening Remarks <ul style="list-style-type: none"> Meeting purpose Agenda review 	IESO
3	1:10 pm	Ottawa Integrated Regional Resource Plan (IRRP) Status Update <ul style="list-style-type: none"> Activities since last meeting Recap of needs Review of engagement activities and summary of feedback received Municipal planning updates <i>Discussion: energy priorities, developments, projects and initiatives that should be considered in identifying potential solutions to meet local needs</i>	IESO All
4	1:30 pm	Options Analysis and Recommendations <ul style="list-style-type: none"> Approach to identifying and evaluating options Overview of options examined Recommended solutions for the IRRP <i>Discussion: considerations for examining and developing options; feedback on IRRP recommendations</i>	IESO All
-	2:15 pm	Break	-

Ottawa Area Sub-Region Integrated Regional Resource Plan

City of Ottawa Meeting

ITEM	TIME	TOPIC	PRESENTER
5	2:35 pm	Implementation Plan <ul style="list-style-type: none"> • Actions, deliverables and timing 	IESO
6	2:45 pm	Engagement and Next Steps <ul style="list-style-type: none"> • Upcoming engagement and opportunities for input • Other considerations for engagement • Timeline and next steps <i>Discussion: considerations for engagement with local communities and interested parties</i>	IESO
7	3:00 pm	Wrap-up and Adjournment	All

Ottawa Sub-region Integrated Regional Resource Plan

City of Ottawa Meeting

October 17, 2019

Scope of Meeting

The purpose of this meeting is to provide an update on the Ottawa Sub-Region Integrated Regional Resource Plan (IRRP) including a discussion of:

- Community and stakeholder engagement
- Municipal planning drivers and considerations
- Options analysis and evaluation of potential solutions to meet identified needs
- IRRP recommendations
- Timeline and next steps



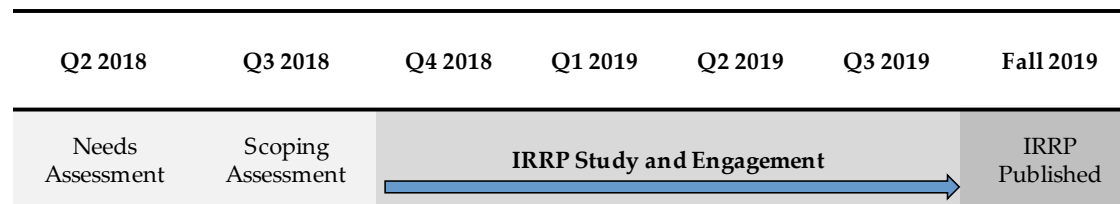
BACKGROUND ON THE REGIONAL PLANNING PROCESS



Current Status

- Current planning cycle began in Q3 2018, and an Integrated Regional Resource Plan (IRRP) is on track for completion this fall
- Currently in the recommendations and report drafting stages

2019 Ottawa IRRP Timeline



Activities Since April

- Engagement initiative launched – May 9
- Public webinar and comment period on electricity demand forecast and preliminary needs – May 29 / June 12
- Potential solutions identified and studied based on feedback received and local needs; recommendations for IRRP developed – Q2 to present
- Meetings with City Councillors – August 20 (Councillor Jenna Sudds, Kanata North) and October 17 (Councillor Glen Gower, Stittsville-Kanata West)



How We Look at Local Reliability Needs

The “*Ontario Resource and Transmission Assessment Criteria*” establish typical long-term transmission planning levels

- Adequacy
 - The infrastructure must be capable of supplying the peak demand during extreme weather conditions (e.g., megawatts)
- Supply Security and Restoration
 - The system’s ability to withstand a disturbance, such as the loss of a transformer or line
 - A limited amount of load may be disrupted by a disturbance, and must be restored within a specific timeframe



Municipal Issues are Driving Electricity Demand Trends

- Significant growth and development is increasing electricity demand across the City
 - new residential developments in previously rural areas, infill and intensification in many established areas, as well as major projects like the Ottawa LRT system.
- The City has supported the Energy Evolution mandate
 - It is too early to forecast specific impacts of related policies and programs
- Hydro Ottawa through its Smart Grid projects such as MiGen is investing to explore tools and market models that support a transactive future marketplace, to support the system and customers needs.



Recap: Local Reliability Needs in Ottawa

Four groups of reliability needs were identified for the Ottawa IRRP:

- 1) Supply to Kanata
- 2) Supply to South East Ottawa
- 3) Supply to East Ottawa
- 4) Supply to the regional 115 kV system



1) Kanata

- Several stations in the area are operating at or near their planning capacity
- Large commercial and residential developments are driving significant growth in electricity demand in the near- and medium-term (approximately 60 MW by 2037)
 - Including the Kanata North Community, Minto Arcadia, the Broccolini Business Park, and the Fernbank Community
- Hydro Ottawa is planning to implement distribution system upgrades to distribute forecast growth between stations in the area



2) South East Ottawa

- Several stations in the area are operating at or near their planning capacity
- Substantial amount of electricity load growth is forecasted (approximately 75 MW by 2037) driven by large residential, mixed, and industrial developments
 - Including the Leirtrim Community, Riverside South, the Airport Lands, Hawthorne Industrial Park
 - Other large potential developments in earlier stages could add 32.5 MW in the future
- By 2021, Hydro Ottawa is planning to upgrade Limebank MTS and Uplands MTS which are already reaching their planning capacity
 - The Limebank upgrade will exceed the capacity of the existing 115 kV transmission line, triggering the need for a transmission line upgrade



3) East Ottawa

- Bilberry Creek TS came into service in 1976 and is nearing end-of-life
- Other stations in the area are operating at or near their planning capacity
- Large industrial and residential mixed use developments are forecasted to increase demand over the near- and medium-term (approximately 30 MW by 2037)
 - Including Orléans Industrial Park and the East Urban Community



4) Supply to the Regional 115 kV System

- Two transmission voltage levels are used for supply to Ottawa: 230 kV and 115 kV
- The 115 kV level is primarily used to supply central Ottawa, including the downtown area
- The 115 kV level is supplied from the 230 kV level at two transformer stations: Merivale TS and Hawthorne TS
 - The 230 kV level is part of the 'superhighway' connecting Ottawa to the Ontario bulk transmission system
- Several of the 230/115 kV transformers at Merivale and Hawthorne are operating at or near their capability



What We Heard

- Feedback received* from a number of interested parties and several key themes emerged:
 - Strong interest in examining non-wires alternatives and importance of outlining analysis of options
 - Optimizing land use
 - Maintaining cost effectiveness
 - Reducing GHG emissions
 - Importance of alignment with municipal energy plans and other local initiatives

* <http://www.ieso.ca/-/media/Files/IESO/Document-Library/engage/ottawa/Ottawa-IRRP-20190621-IESO-Responses.pdf?la=en>



OPTIONS ANALYSIS



Identifying Options in the IRRP

- The Technical Working Group, led by the IESO, considers a range of options to address the identified needs:
 - Transmission expansion (e.g. a new or modified transformer station and transmission line)
 - Distribution solutions (e.g. transferring demand between transformer stations)
 - Distributed energy resources (e.g. distribution connected generation or storage)
 - Other demand-side options (e.g. energy efficiency measures, demand response, etc.)
- The appendix to these slides describes the non-wires resources considered in the Ottawa IRRP



Assessing Options

- Wires solutions are the traditional approach to supply planning, which didn't consider non-wires options
 - Proven, feasible means of achieving reliable electricity supply
 - 'Lumpy', as opposed to readily scalable
 - Providing a step change of capability, with a high up-front cost
 - Lock-in infrastructure that has a multi-decade useful life
- The IESO is developing methods for assessing the feasibility of non-wires options and their cost effectiveness relative to wires options
 - Non-wires resources can offer a more diverse set of services but usually cannot fully meet planning needs individually - must be combined into a package solution
- Current implementation of non-wires options through policy initiatives makes it challenging to target to a location with a reliability need
 - The Ontario Energy Board is currently undertaking a policy consultation in response to significant stakeholder interest in regulatory changes



Assessing Options: Technical Ability to Address the Need

First and foremost, the Ottawa Sub-Region IRRP will prioritize options that can (either alone or in combination) provide the peak capacity (MW) needed and allow the transmission system to fulfill planning criteria.

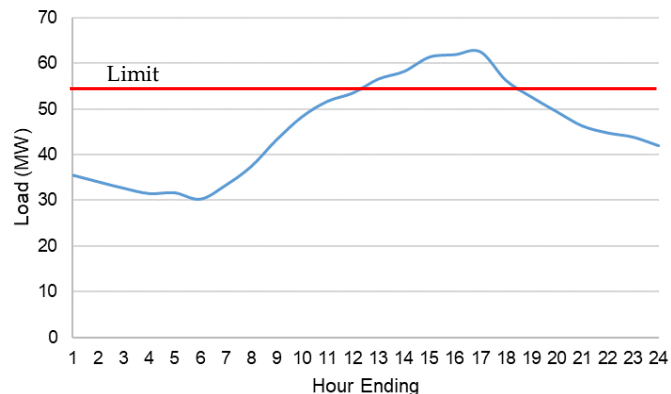
- Traditionally, needs are identified based upon reliability planning criteria, peak demand forecasts, and the existing system load supply capability
- Non-wires options evaluation involves assessment of technical potential and the technology's ability to meet capacity requirements rather than energy needs



Assessing Options: Technical Ability to Address the Need (Cont'd)

- Nonetheless, additional work (hourly forecasts for multiple stations) was done during this IRRP to better understand the probabilistic nature of needs and how non-wires options might be called upon to fulfill these needs

Sample Hourly Profile for a Summer Peak Day in 2037 at Uplands MTS



Hourly forecasts can help answer questions such as:

- How might energy efficient air conditioners translate to a local Ottawa peak demand reduction?
- If energy storage is installed, how should it be optimally sized?
- If demand response is recommended, how often would we call upon it? During what hours?

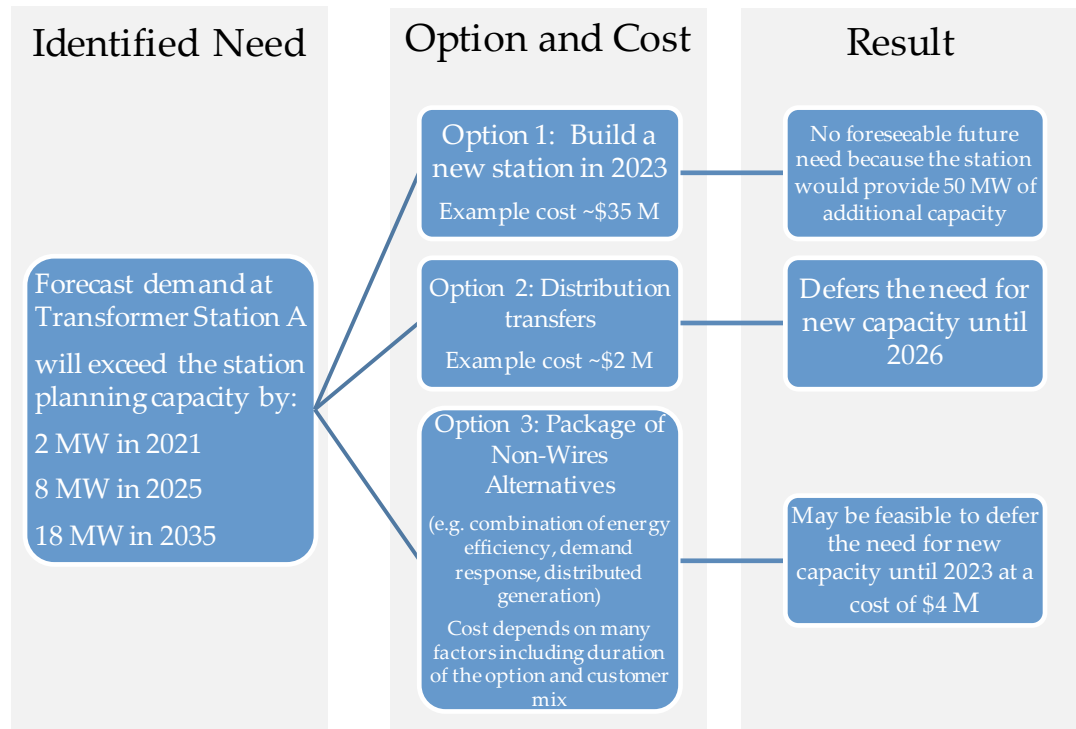
Assessing Options: Economic Considerations

Once a portfolio of feasible options is identified, cost is the main criteria used to select preferred option(s).

- Economic viability of an option is the cost-effective subset of its technical feasibility
- Discounted Cash Flow (DCF) analysis determines net present value (NPV) of annual net consumer costs
 - Options are “stacked” in order of cost-effectiveness and compared on an equivalent reliability basis until the MW need is solved
- Factors limiting economic potential can include: lack of benefits to the bulk or local system, customer response to payback, market barriers, and technological barriers
- Even as only preliminary estimates, this assessment approach considers different value streams to help more fairly compare, at a high level, the relative cost between all options



Example: Decision Tree



IRRP RECOMMENDATIONS



Evaluating Options:

1) Kanata Area

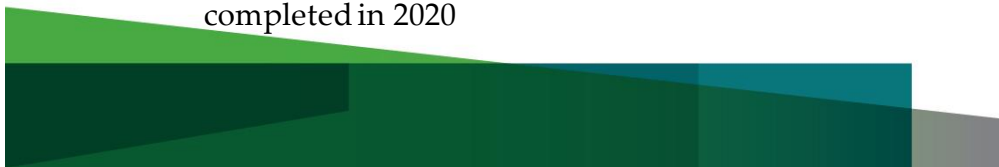
- 1) There is insufficient station capacity to supply this area over the long-term
 - Three key stations are forecast to exceed their planning ratings by a total of 75 MW by 2037
- 2) Non-wires alternatives have been evaluated as part of an integrated solution however the supply gap is too large for non-wires solutions to entirely address
- 3) Limitations on the existing transmission system in the area cannot accommodate expansion of the existing stations
- 4) A new station is likely required to provide reliable long-term supply in the area
 - A high level screening has found potential transmission connection points on the existing transmission system are sub-optimal
 - The IESO is currently developing a bulk transmission plan that may include transmission expansion in Kanata, resulting in a preferable connection option for a new supply station



IRRP Recommendations:

1) Kanata Area

- In the near-term, Hydro Ottawa will proceed with plans to implement distribution system upgrades that reduce reliability risk arising from heavily loaded stations
- In the near-term, it would be beneficial to target system cost-effective energy efficiency and pursue other cost-effective non-wires alternatives to this area in order to reduce reliability risk
- The Working Group will monitor demand growth in the Kanata North area and initiate the next regional planning cycle early, if required
- A plan for reliable long-term supply in the Kanata North area will be confirmed in the next regional planning cycle
 - Will consider potential new supply options that may result from the IESO's ongoing bulk transmission planning study for the area that is expected to be completed in 2020



Evaluating Options:

2) South East Ottawa

- 1) This area has the highest demand growth in the City, which indicates the need for a new supply station;
 - Impacting multiple supply stations
- 2) Hydro Ottawa is planning to increase the supply capacity of two stations in the area: Upland MTS and Limebank MTS
- 3) Non-wires alternatives have been evaluated as part of an integrated solution
- 4) A new supply station cannot be avoided or delayed by alternate supply means due to the timing and magnitude of growth



IRRP Recommendations:

2) South East Ottawa

- Hydro Ottawa will proceed with a plan to build a new 230 kV connected supply station in the south east part of the City
 - In addition to capacity increases and transfers between existing stations
- In order to utilize the increased capability at Limebank MTS the 115 kV supply circuit will need to be upgraded
 - Hydro One will evaluate the options for this upgrade in the Regional Infrastructure Plan (RIP)



Evaluating Options:

3) East Ottawa

- 1) The Working Group has been monitoring demand trends in the Bilberry Creek/Orléans area since the last IRRP
 - A decision on the future of the station must be made several years ahead of the end-of-life date in order to ensure continuous reliable supply
- 2) Several stations surrounding Bilberry Creek TS are at or near capacity, leaving very limited potential to transfer customers currently supplied by Bilberry Creek if the station were retired
 - In order to retire Bilberry Creek a new station would need to be built in the area
- 3) Refurbishing Bilberry Creek TS is less impactful and less costly than building a new station to replace the capacity
 - Will result in adequate station capacity in East Ottawa until the early 2030s



IRRP Recommendations:

3) East Ottawa

- Hydro One will refurbish Bilberry Creek TS, including like-for-like transformer replacement
- Hydro One will expand the station to provide two additional breaker positions to supply Hydro Ottawa customers



Evaluating Options:

4) Supply to the Regional 115 kV System

- 1) One of the two existing 230/115 kV transformers at Merivale TS has a lower rating than the other
 - This is currently limiting the supply to the 115 kV system
- 2) Once the above transformer is upgraded, by the mid 2020s, demand on the 115 kV system is expected to exceed the supply capability of the two 230/115 kV transformers at Merivale TS, and the four 230/115 kV transformers at Hawthorne TS
- 3) The regional pressure on the 115 kV system has been factored into recent supply station planning decisions
 - New South Nepean station and planned southeast station will both be connected to the 230 kV system
- 4) More analysis is required before committing to a long-term solution, which may have a high cost



IRRP Recommendations:

4) Supply to the Regional 115 kV System

- Hydro One will replace the more limiting of the 230/115 kV transformers at Merivale TS in the near-term so that the two Merivale transformers have similar capability
 - This transformer came into service in 1978
- Subsequent to the release of this IRRP, the Working Group will undertake an IRRP Addendum Study
 - The Addendum Study will be completed in mid-2020
 - Will be integrated with the IESO's ongoing bulk transmission planning study
 - Planning large and growing regions of the province is an ongoing activity
- The Addendum Study will include an evaluation of the potential benefit of non-wires options to manage future demand growth on the 115 kV system



ENGAGEMENT AND NEXT STEPS



Next Steps

- Public webinar #2 on options analysis and IRRP recommendations – late October or early November (date to be confirmed)
- Stakeholders will have two weeks to submit written comments after the webinar
- Final IRRP posted – December 2019



Discussion Questions

- What concerns do you have regarding any of the recommendations proposed?
- What kind of information would like to see included in the IRRP report regarding these recommendations?
- What follow-up communications, if any, is required following the posting of the final IRRP?
- What other information will be important to include for future meetings, and broader engagement with the public?
- Are there any specific local groups that we should ensure are included in our outreach? (e.g. business networks, environmental groups, local citizens' groups)



Continuing the Dialogue

- A series of five Regional Electricity Networks will be launched this fall to enable ongoing dialogue with communities
 - Membership is open to all interested parties
 - Join discussions and provide input on key electricity matters affecting them and their community
- Participants who join can count on the IESO to provide information on a regular basis, and to host an annual regional electricity forum
- To learn more or join your network, please visit <http://www.ieso.ca/Get-Involved/Regional-Planning/Electricity-Networks/Overview>



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APPENDIX



Overview of All Options Considered

Resource Type	Description	Levelized Unit Energy Cost (\$/kW-yr)	Potential Implementation Lead or Host
Energy Efficiency	Technologies and operational measures that increase the efficiency of electricity usage at the end-use level. Examples include programs for high-efficiency HVAC equipment or LED lighting.	\$85 - \$240*	Varies; IESO, LDCs, customers, third-party service providers. Province-wide programs centrally delivered by IESO until end of 2020.
Lithium Battery Energy Storage	Energy is stored and then dispatched during times of need.	\$379 - \$555	Varies; LDCs, third-party service providers, customers.
Demand Response	Curtailment of electricity consumption targeting specific hours when a need occurs; considered to be a dispatchable resource that responds to price signals or is implemented through contractual obligations.	\$50 - \$60**	Varies; LDCs, customers, third-party service providers, IESO.

*Based upon the 2019 Achievable Potential Study

**Based upon 2019 demand response auction clearing prices

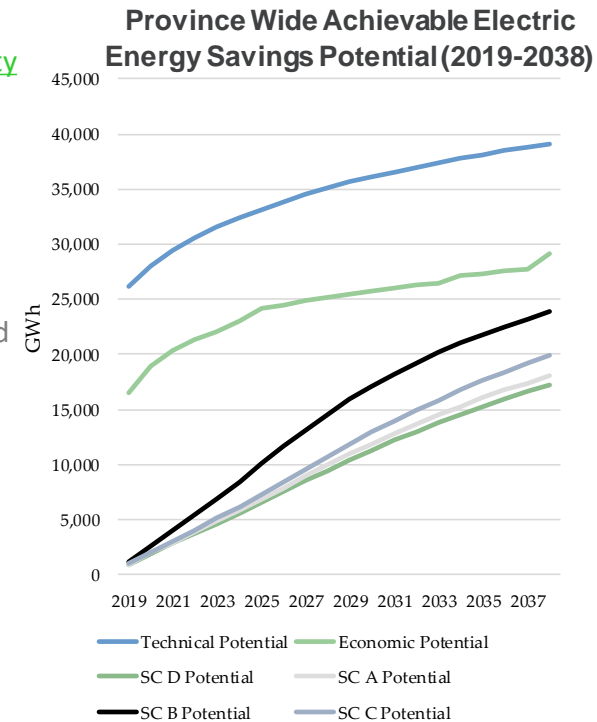
Overview of All Options Considered (Cont'd)

Resource Type	Description	Levelized Unit Energy Cost (\$/kW-yr)	Potential Implementation Lead or Host
Distribution-Level Load Transfers	Distribution feeders that are built to redistribute the LDC's load supply in a local area and relieve station-specific capacity needs.	Varies*	LDC
Natural Gas Generation	Simple Cycle Gas Turbine (SCGT): natural gas power plant whose waste heat is not used; best for peak power needs on the electric grid. Combined Heat and Power (CHP): gas generation providing both electricity and heat (for end-use).	\$160 - \$235 \$290 - \$400	Varies
Transmission Facilities	"Wires" reinforcements (transformer stations, lines, etc) on the higher-voltage transmission system.	\$2 - \$6	Transmitter

*Likely more comparable to cost of transmission facilities

Calculating Energy Efficiency Potential

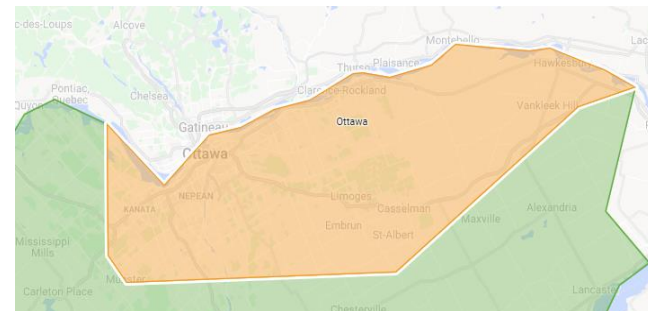
- The IESO and the Ontario Energy Board have recently completed the first [integrated electricity and natural gas achievable potential study in Ontario](#) (2019 APS)
- The main objective of the APS is to identify and quantify energy savings (electricity and natural gas), GHG emission reductions and associated costs from demand side resources for the period from 2019-2038.
- The study shows a significant and sustained potential for energy and efficiency across all sectors and is used to inform:
 - future energy efficiency policy and/or frameworks
 - program design and implementation
 - long-term resource planning



Calculating Energy Efficiency Potential

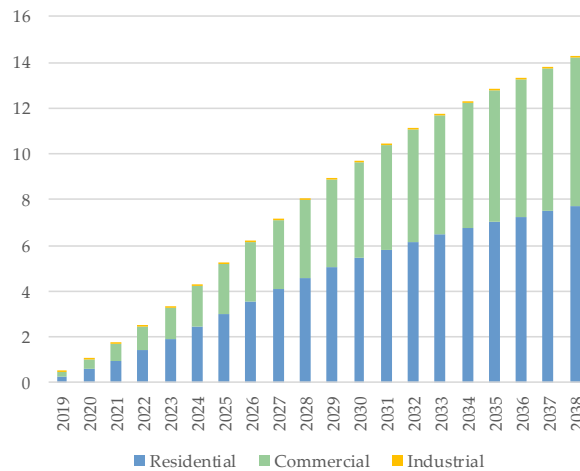
- 2019 APS results are broken out by IESO transmission zone, customer segment (e.g., single family dwellings, multi unit residential buildings, large commercial office, restaurant, school, warehouse, etc.) as well as by end use (e.g., lighting, space heating, space cooling, plug load, etc.).
- Using local data (i.e., MPAC, Broader Public Sector energy use database, Dunn and Bradstreet) energy and demand savings for the Ottawa transmission zone can be allocated to the IRRP study area to reflect the customer base located in the region.
- The analysis on subsequent slides shows the amount of energy efficiency potential that can likely be achieved in the area along with associated costs.
- A next step will be to identify the proportion of this savings that is cost effective considering province wide as well as local system benefits to inform future resource planning.

Ottawa Transmission Zone

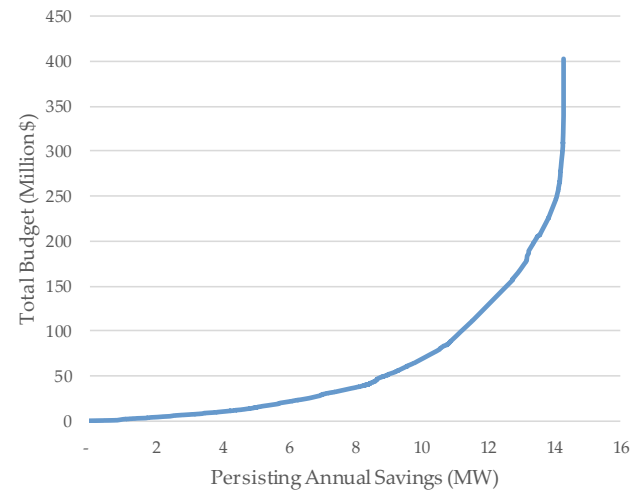


West Region Potential

West Cumulative Summer Peak
Demand and Saving Potential (MW)

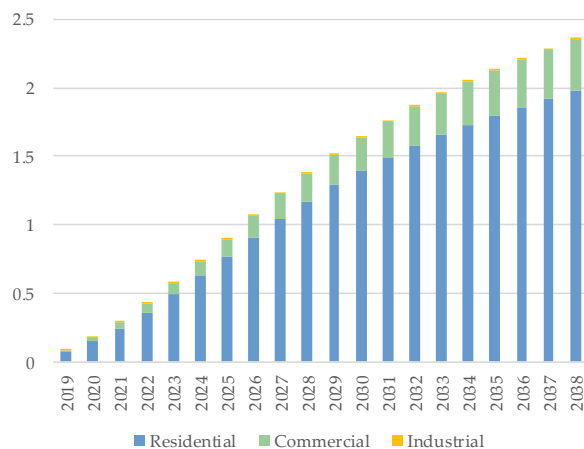


West Cost Curve in 2038
Summer Peak Demand and Potential

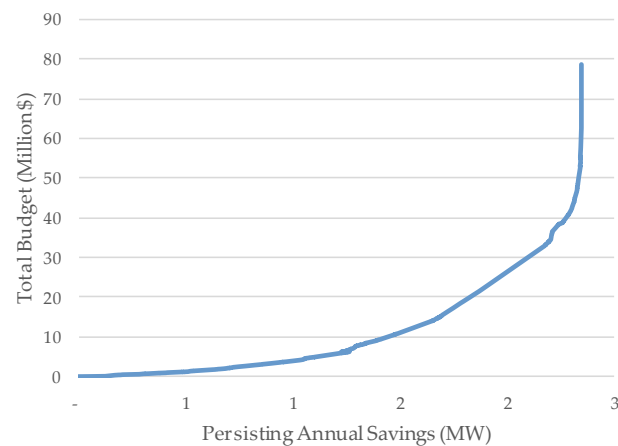


Uplands Potential

Uplands Cumulative Summer Peak
Demand Saving Potential (MW)

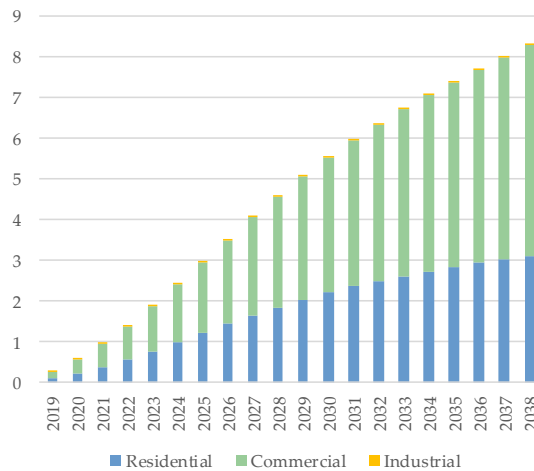


Uplands Cost Curve in 2038
Summer Peak Demand Potential

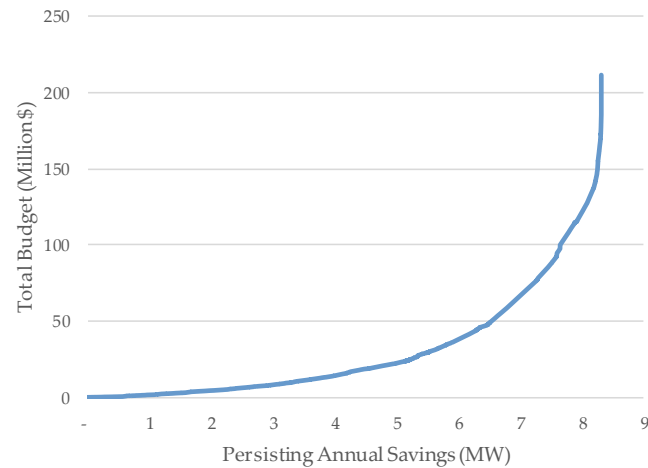


Orleans Potential

Orleans Cumulative Summer Peak
Demand Saving Potential (MW)

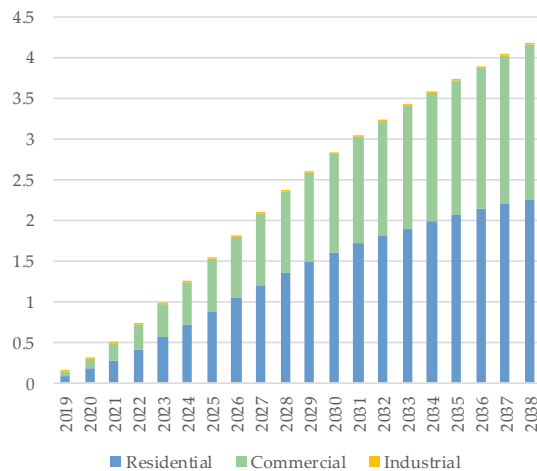


Orleans Cost Curve in 2038
Summer Peak Demand and Potential

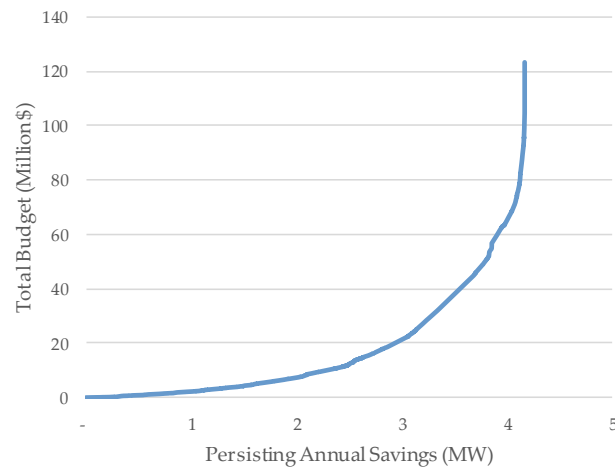


Bilberry Potential

Bilberry Cumulative Summer Peak
Demand Saving Potential (MW)



Bilberry Cost Curve in 2038
Summer Peak Dem and Potential



Top Commercial Demand Reducing Measures in 2023 (Ottawa Zone)

Measure Name	Demand Reduction Potential (MW)	Energy Savings Potential (GWh)	Levelized Unit Energy Cost (\$/kWh)	Levelized Unit Demand Cost (\$/kW)
Com Building Recommissioning, Operations and Maintenance (O&M) Improvements	27.7	228	\$0.02	\$187
Com Education and Capacity Building/Energy Behavior	20.4	70	\$0.07	\$231
Com Variable Refrigerant Flow Heat Pump	18.5	64	\$0.08	\$272
Com LED Low/High Bay	16.3	113	\$0.03	\$231
Com LED Troffer/Surface/Suspended	10.8	82	\$0.02	\$141
Com Central Lighting Control System	10.0	71	\$0.53	\$3,934
Com ENERGY STAR LED LAMPS (REFLECTOR LAMPS/MR16/PAR 16)	9.6	73	\$0.02	\$175
Com Advanced BAS/Controllers	7.4	26	\$0.02	\$83
Com High Efficiency Air Source Heat Pump	6.2	21	\$0.00	\$13
Com Furnace Tune-Up	4.7	92	\$0.00	\$32
Com Unitary Air-Conditioning Unit	4.4	7	\$0.07	\$106
Com Smart Strip Plug Outlets	3.8	31	\$0.14	\$1,131
Com Adaptive Thermostats	3.2	11	\$0.04	\$131
Com Strip Curtains	2.5	20	\$0.00	\$21
Com Data Center Storage/Server Virtualization	2.2	18	-\$0.06	-\$485
Com Demand Control Ventilation	2.1	19	\$0.16	\$1,436
Com Adding reflective (White) roof treatment or a green roof	2.0	7	\$2.60	\$8,939
Com LED or Equivalent Sign Lighting	2.0	12	\$0.01	\$67
Com Refrigerated Display Case Doors	1.9	16	\$0.05	\$369
Com Refrigerated Display Case LED	1.8	8	\$0.04	\$207

Top Residential Demand Reducing Measures in 2023 (Ottawa Zone)

Measure Name	Demand Reduction Potential (MW)	Energy Savings Potential (GW/h)	Levelized Unit Energy Cost (\$/kWh)	Levelized Unit Cost Savings (\$/kW)
Res Energy Star Central Air Conditioner	18	30	\$0.36	\$625
Res Adaptive Thermostat	12	42	\$0.10	\$331
Res Smart Power Bar	7	149	\$0.04	\$969
Res Variable Speed Pool Pump Motor	6	40	\$0.03	\$156
Res Ductless Mini-Split Heat Pump	6	20	\$0.01	\$26
Res Building Recommissioning, Operations and Maintenance (O&M) Improvements	4	14	\$0.01	\$19
Res Basement Wall Insulation	4	14	\$0.01	\$47
Res Smart Burners	4	21	\$0.05	\$289
Res Basement or Crawlspace Insulation	4	12	\$0.44	\$1,511
Res Attic Insulation	3	11	\$0.08	\$258
Res Energy Star Refrigerator	3	25	\$0.22	\$1,717
Res Energy Star Clothes Washer	3	22	\$0.03	\$266
Res Wall Insulation	3	9	\$0.44	\$1,522
Res Energy Star LED Bulbs General Purpose LEDs	2	44	\$0.01	\$183
Res Duct Insulation	2	7	\$0.17	\$586
Res Ductless Mini-Split Air Conditioner	2	3	\$0.22	\$369
Res Variable Refrigerant Flow Heat Pump	1	5	\$0.08	\$277
Res Lighting Motion Sensors, Timers, Dimmers	1	6	\$0.13	\$542
Res Central Air Conditioner Maintenance	1	2	\$2.55	\$4,370
Res Energy Star Ground Source Heat Pump	1	4	\$0.16	\$544

Top Industrial Demand Reducing Measures in 2023 (Ottawa Zone)

Measure Name	Demand Reduction Potential (MW)	Energy Savings Potential (GWh)	Levelized Unit Energy Cost (\$/kWh)	Levelized Unit Demand Cost (\$/kW)
Ind Pump System Optimization	1.3	12	\$0.04	\$360
Ind HE Lighting	1.2	9	\$0.05	\$398
Ind Air Leak Survey and Repair	1.1	9	\$0.02	\$134
Ind SEM	1.0	8	\$0.01	\$54
Ind Recommissioning	1.0	8	\$0.02	\$162
Ind Air Compressor Optimization	0.9	7	\$0.00	\$32
Ind Pump Equipment Upgrade	0.9	8	\$0.04	\$366
Ind Efficient Compressed Air Nozzles	0.6	5	\$0.00	\$22
Ind Process Optimization (Elec)	0.4	3	\$0.02	\$162
Ind Greenhouse Grow Lights	0.4	3	\$0.05	\$342
Ind Fan System Optimization	0.3	1	\$0.04	\$148
Ind Premium Efficient Motors	0.2	2	\$0.13	\$1,073
Ind High Efficiency HVAC Fans	0.2	2	\$0.01	\$126
Ind Improved Controls - Process Cooling	0.2	0	\$0.02	\$29
Ind HE HVAC Controls	0.2	1	\$0.17	\$1,525
Ind HVLS Fans	0.1	0	\$0.15	\$427
Ind Ventilation Optimization	0.1	0	\$0.08	\$264
Ind HE HVAC Units	0.1	1	\$0.68	\$6,151
Ind Free Cooling	0.1	0	\$0.07	\$111
Ind Material Handling Improvements	0.1	1	\$0.01	\$53

TECHNICAL CONFERENCE UNDERTAKING - JT 2.5

JT 2.5

To provide an updated version of SEC 34 Table 4.11 excluding MEDs.

RESPONSE:

Please see Table A below which shows Defective Equipment SAIFI per 100 customers, with Major Event Days ("MEDs") excluded.

In preparing the response to this undertaking, Hydro Ottawa noted an error in the original values provided in Table 4.11 of Exhibit 2-4-3: Distribution System Plan, as well as in response to part (d) of interrogatory SEC-34, which made use of Table 4.11. Please see part (d) of UPDATED interrogatory response SEC-34 for a revised version of Table 4.11 (which was labelled as Table C for purposes of the interrogatory response). For ease of reference and comparison, the original and revised versions of this table are included below as Tables B and C. In addition, an UPDATED version of the complete response to interrogatory SEC-34 has been appended herein as Attachment JT 2.5(A).

Hydro Ottawa follows the OEB's Reporting and Record Keeping Requirements ("RRRs") for reporting on MEDs. Through the OEB's outlined requirements, outages caused by Defective Equipment should rarely be the driving contributor to a MED. In general, there are minor variances between the table values that are inclusive and exclusive of MEDs, seeing as only Defective Equipment outages that occurred on a MED are excluded as per the method that Hydro Ottawa follows (IEEE 1366 2.5 Beta method).

Table A – Defective Equipment SAIFI per 100 Customers Excluding Major Event Days

Asset – SAIFI x 100	Target	2014	2015	2016	2017	2018	2019
Overhead System Assets	9.91	12.73	7.88	6.70	13.01	9.24	5.24
Station System Assets	1.67	0.33	2.28	1.88	0.20	3.65	0.36
Underground System Assets	10.80	13.27	13.53	9.26	5.09	12.86	13.49

1 **Table B – AS ORIGINALLY SUBMITTED IN IRR SEC-34 AS TABLE C –**
2 **Defective Equipment SAIFI per 100 Customers¹**

Asset – SAIFI x 100	Target	2014	2015	2016	2017	2018	2019
Overhead System Assets	10.13	12.73	7.89	6.70	13.69	9.58	5.32
Station System Assets	1.77	0.33	2.28	1.88	0.20	3.65	0.35
Underground System Assets	11.17	13.28	14.89	9.26	5.09	13.26	13.50

3
4 **Table C – AS REVISED – Defective Equipment SAIFI per 100 Customers²**

Asset – SAIFI x 100	Target	2014	2015	2016	2017	2018	2019
Overhead System Assets	10.12	12.73	7.89	6.70	13.69	9.59	5.27
Station System Assets	1.67	0.33	2.28	1.88	0.20	3.65	0.36
Underground System Assets	11.16	13.28	14.90	9.26	5.09	13.25	13.53

5

6 ¹ To confirm, as per the original description of Table 4.11 in Exhibit 2-4-3: Distribution System Plan (page 67), this
7 table is inclusive of MEDs.

8 ² *Ibid.*

UPDATED INTERROGATORY RESPONSE - SEC-34

2-SEC-34

EXHIBIT REFERENCE:

[Ex.2-4-3]

SUBJECT AREA: Distribution System Plan

Please update the following tables and figures to include 2019 actuals:

- a) Reliability Tables: 4.4, 4.5, 4.6, 4.23 (*Note:* Please also provide the updated version of Table 4.23 in excel)
- b) Reliability Figures: 4.1, 4.2, 4.3
- c) Productivity Tables: 4.9, 4.10
- d) Asset Performance Tables: 4.11, 4.13
- e) Unit Cost Tables: 4.22

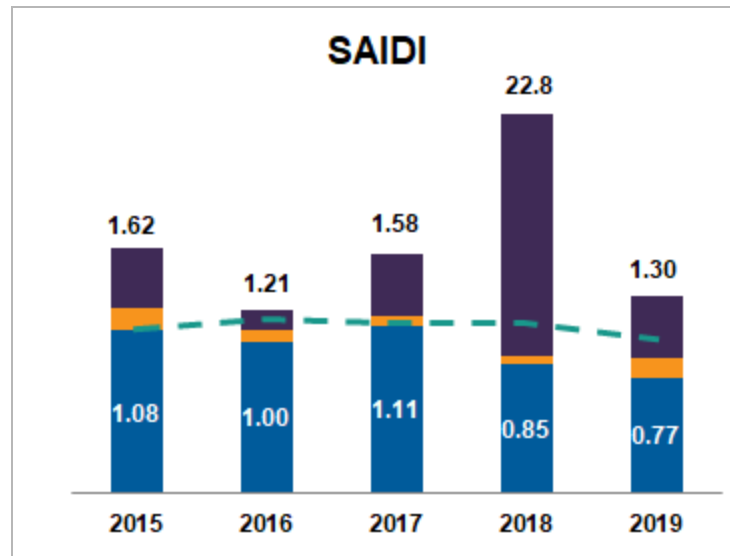
RESPONSE:

- a) Please see the response to interrogatory CCC-38 for Tables 4.4, 4.5, and 4.6

For Table 4.23, see Attachment SEC-34(A): Reliability Performance by Cause Code.

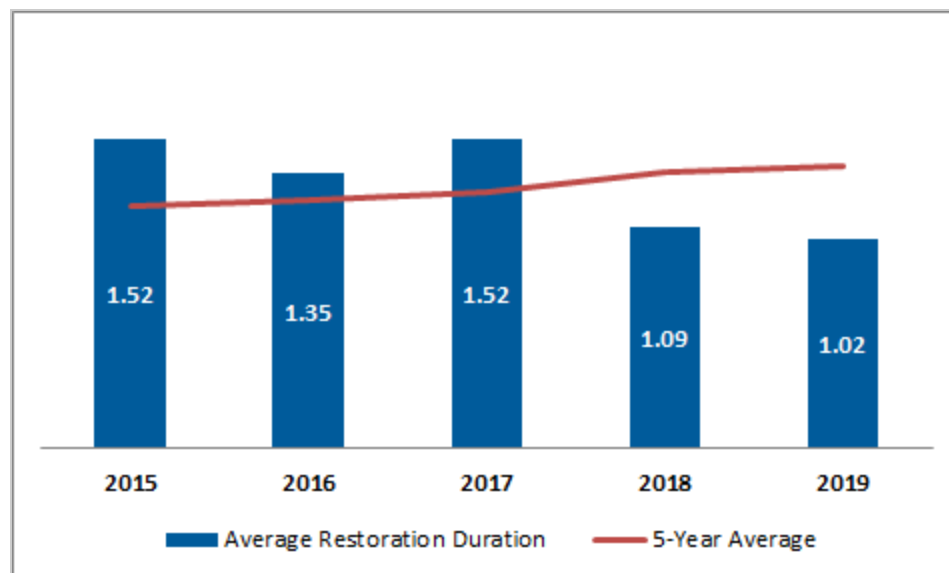
- b) Please see the response to interrogatory OEB-75 for the updated Table 4.1. See Figure A below for SAIDI Reliability Performance and Figure B below for CAIDI Reliability Performance.

Figure A – SAIDI Reliability Performance



■ Customer Outages/Duration Excl MED & LOS ■ Due to Loss of Supply Excl MED ■ 5 Year Average Excl LoS & MED
■ MED Customer Outage/Duration Excl LOS ■ MED Due to Loss of Supply

Figure B – CAIDI Reliability Performance



c) Please see Tables A and B for updates to Tables 4.9 and 4.10.

Table A – Productive Time

KPI	Target	2015	2016	2017	2018	2019
ProductiveTime	74%	74%	74%	73%	72%	72%

Table B – Labour Allocation

KPI	Target	2015	2016	2017	2018	2019
Labour Allocation	61%	61%	62%	60%	58%	58%

d) Please see Tables C and D for updates to Tables 4.11 and 4.13.

Table C – AS ORIGINALLY SUBMITTED – Defective Equipment SAIFI per 100 Customers

Asset – SAIFI x 100	Target	2014	2015	2016	2017	2018	2019
Overhead System Assets	10.13	12.73	7.89	6.70	13.69	9.58	5.32
Station System Assets	1.77	0.33	2.28	1.88	0.20	3.65	0.35
Underground System Assets	11.17	13.28	14.89	9.26	5.09	13.26	13.50

Table C – AS REVISED – Defective Equipment SAIFI per 100 Customers

Asset – SAIFI x 100	Target	2014	2015	2016	2017	2018	2019
Overhead System Assets	10.12	12.73	7.89	6.70	13.69	9.59	5.27
Station System Assets	1.67	0.33	2.28	1.88	0.20	3.65	0.36
Underground System Assets	11.16	13.28	14.90	9.26	5.09	13.25	13.53

Table D – Annual Oil Spills

KPI	Target	2014	2015	2016	2017	2018	2019
Oil Spilled (litres)	0	958	1,133	824	1,119	1,475	1,131*
Oil Remediation (\$'000s)	\$0	\$695	\$609	\$799	\$733	\$1,083	\$948*

*Not all spills occurring in 2019 have been closed out and invoiced.

e) Please see Table E below for an update to Table 4.22.

1

Table E – Unit Metric (as per Appendix 5-A)

Metric Category	Metric	1-Year Cost (2019)	5-Year Average (2015-2019)
Cost	Total Cost per Customer	\$659	\$677
	Total Cost per km of Line	\$38,349	\$39,396
	Total Cost per MW	\$171,374	\$163,335
CAPEX	Total CAPEX per Customer	\$414	\$427
	Total CAPEX per km of Line	\$24,106	\$24,823
O&M	Total O&M per Customer	\$245	\$250
	Total O&M per km of Line	\$14,243	\$14,573

2

TECHNICAL CONFERENCE UNDERTAKING - JT 2.6

1

2

3 JT 2.6

4 To complete and file exhibit KT2.2.

5

6 RESPONSE:

7

8 Exhibit KT2.2 has been completed and submitted as excel Attachment JT 2.6(A):

9 SEC-49_KT2.2 In-Service Additions.

TECHNICAL CONFERENCE UNDERTAKING - JT 2.7

JT 2.7

To file a revised version of appendix 2AA showing yearly totals for work-in-progress historicals and estimates.

RESPONSE:

Table A provides the yearly Work-in-Progress (“WIP”) balance for Historical, Bridge, and Test Years.

Table A – Annual Work-in-Progress Balances ('000s)

Year		WIP Balance
2016	Historical Year	\$51,179
2017	Historical Year	\$69,285
2018	Historical Year	\$135,472
2019	Historical Year	\$40,469
2020	Bridge Year	\$80,610
2021	Test Year	\$53,693
2022	Test Year	\$30,560
2023	Test Year	\$41,481
2024	Test Year	\$55,314
2025	Test Year	\$28,787

TECHNICAL CONFERENCE UNDERTAKING - JT 2.8

1

2

3 JT 2.8

4 To provide a table that matches up with CCC number 36.

5

6 RESPONSE:

7

8 Table A in UPDATED interrogatory response CCC-36 provides a summary of the number of
9 projects planned vs. the number of projects completed, for projects included in the Material
10 Investment Plan ("MIP") for the 2016-2020 period. The UPDATED response to CCC-36 has
11 been included as Attachment JT2.8(A) for ease of reference. Attachment SEC-36(A):
12 2016-2020 Budget vs Actuals - Project Level includes the same list of projects and a completion
13 date for projects completed in the 2016-2020 period, in addition to known dates for projects that
14 have been deferred outside of that period.

15

16 Table A below provides an explanation for the 12 projects that were planned as per the MIP, but
17 were not completed in the 2016-2020 period. Also included in Table A is an explanation of one
18 additional project under the Line Extension Program that was completed in the 2016-2020
19 period. This project was deferred from 2015. In addition, there was one project under Pole
20 Renewal which was originally planned for 2016 that was moved forward to 2015, thereby
21 decreasing the number of planned pole renewal projects completed in the 2016-2020 period.

1 **Table A – Explanations for Projects Not Completed (Per IRR CCC-36 Table A, as Revised)**

Budget Program	2016-2020 Number of Projects Planned	2016-2020 Number of Projects Completed	% Completed	Comments
Stations Transformer Renewal	4	4	100%	All planned projects were completed (Merivale, Bronson, Longfield, Albion)
Stations Switchgear Renewal	2	2	100%	All planned projects were completed (Woodroffe and Overbrook)
Pole Renewal	6	5	83%	One of the six planned projects was completed in 2015; therefore, it is not included in the count for completed projects
OH Transformer Renewal	1	1	100%	Completed
OH Switch/Recloser Renewal	2	2	100%	Two projects both completed in 2016 (Fernbank and Huntmar Recloser)
Civil Renewal	2	1	50%	One project completed. Second project (Civil on Carling) was deferred due to the need for coordination with City work. It will be completed under System Access.
Cable Replacement	4	3	75%	Blackburn 4F8 not completed; deferred to 2021 due to budget reprioritization
UG Switchgear Renewal	7	6	86%	S98 deferred due to budget reprioritization
UG Transformer Renewal	1	1	100%	Completed
Stations Capacity Upgrades	5	3	60%	Lisgar cancelled and Cambrian MTS delayed to 2022
Line Extensions	4	5	125%	Four projects were planned for 2016-2020. One project (Alta Vista Tie) was originally planned for 2015, but was completed in 2016, thereby increasing the number of completed projects.
System Voltage Conversion	12	9	75%	Richmond South (King), Ottawa, and Eagleson have been deferred
SCADA Upgrades	1	1	100%	Completed
Communications Infrastructure	1	1	100%	Completed
Remote Disconnected Smart Meter	1	1	100%	Completed
Facilities Implementation Plan	1	1	100%	Completed
Customer Service	3	1	33%	One CC&B upgrade cancelled; one Outage Communication system project deferred
ERP System	1	1	100%	Completed
Fleet Replacement	1	1	100%	Completed
IT New Initiatives	1	0	0%	Enterprise Architecture Program cancelled after piloting ESB software, due to software complexity

UPDATED INTERROGATORY RESPONSE - CCC-36

CCC-36

EXHIBIT REFERENCE:

Ex. 2-4-3, p. 1 and p. 266

SUBJECT AREA: Distribution System Plan

p. 1 Hydro Ottawa indicates it is on track to successfully complete its plan for 2016-2020, with adjustments for typical changes and evolving circumstances.

p. 266 Through the course of the 2016-2020 period, Hydro Ottawa has reprioritized projects and adjusted program pacing as necessary.

a) Please provide the original number of projects forecast to be completed for the years 2016-2020 compared to the actual number of projects completed.

b) Please provide the percentage of original projects completed.

c) Please provide the actual dollar value of the original projects completed compared to budget.

RESPONSE:

a) Hydro Ottawa's 2016-2020 expenditures were prepared at a program level and only included project-level details for certain programs in the Material Investment Plan ("MIP").¹ The number of projects included in the MIP for the 2016-2020 period by program is listed in Table A below.

¹ See Exhibit B, Tab 1, Schedule 2 in Hydro Ottawa's *2016-2020 Custom Incentive Rate-Setting Electricity Distribution Rate Application* (EB-2015-0004).

1 **Table A – AS ORIGINALLY SUBMITTED - Projects in 2016-2020 Material Investment Plan**

Investment Category	Budget Program	2016-2020 Number of Projects Planned	2016-2020 Number of Projects Completed	% Completed
System Renewal	Stations Transformer Renewal	4	4	100%
System Renewal	Stations Switchgear Renewal	2	2	100%
System Renewal	Pole Renewal	6	5	83%
System Renewal	OH Transformer Renewal	2	2	100%
System Renewal	OH Switch/Recloser Renewal	2	2	100%
System Renewal	Civil Renewal	2	1	50%
System Renewal	Cable Replacement	4	3	75%
System Renewal	UG Switchgear Renewal	7	6	86%
System Renewal	UG Transformer Renewal	1	1	100%
System Service	Stations Capacity Upgrades	5	3	60%
System Service	Line Extensions	4	5	125%
System Service	System Voltage Conversion	12	9	75%
System Service	SCADA Upgrades	1	1	100%
System Service	Communications Infrastructure	1	1	100%
System Service	Remote Disconnected Smart Meter	1	1	100%
General Plant	Facilities Implementation Plan	1	1	100%
General Plant	Customer Service	3	1	33%
General Plant	ERP System	1	1	100%
General Plant	Fleet Replacement	1	1	100%
General Plant	IT New Initiatives	1	0	0%

2

1 **Table A – AS REVISED - Projects in 2016-2020 Material Investment Plan**

Investment Category	Budget Program	2016-2020 Number of Projects Planned	2016-2020 Number of Projects Completed	% Completed
System Renewal	Stations Transformer Renewal	4	4	100%
System Renewal	Stations Switchgear Renewal	2	2	100%
System Renewal	Pole Renewal	6	5	83%
System Renewal	OH Transformer Renewal	1	1	100%
System Renewal	OH Switch/Recloser Renewal	2	2	100%
System Renewal	Civil Renewal	2	1	50%
System Renewal	Cable Replacement	4	3	75%
System Renewal	UG Switchgear Renewal	7	6	86%
System Renewal	UG Transformer Renewal	1	1	100%
System Service	Stations Capacity Upgrades	5	3	60%
System Service	Line Extensions	4	5	125%
System Service	System Voltage Conversion	12	9	75%
System Service	SCADA Upgrades	1	1	100%
System Service	Communications Infrastructure	1	1	100%
System Service	Remote Disconnected Smart Meter	1	1	100%
General Plant	Facilities Implementation Plan	1	1	100%
General Plant	Customer Service	3	1	33%
General Plant	ERP System	1	1	100%
General Plant	Fleet Replacement	1	1	100%
General Plant	IT New Initiatives	1	0	0%

2

3 b) Please see part (a) above.

4

5 c) Please see Attachment SEC-36(A): 2016-2020 Budget vs. Actuals Project Level for the
6 cost comparison between the original budget and the actual cost. Note that the
7 estimates for the projects which were included in the 2016-2020 MIP were preliminary
8 (Level A), meaning that they carry a potential variation of +100%/-50%.

TECHNICAL CONFERENCE UNDERTAKING - JT 2.9

JT 2.9

To provide the data by year for 2020 to 2025 in terms of target asset replacements.

RESPONSE:

Table A provides the target number of asset replacements over the 2020-2025 period.

Table A – 2020-2025 Target Number of Asset Replacements

Asset Class	2020	2021	2022	2023	2024	2025
Station Transformer	0	2	0	3	2	1
Station Switchgear	0	0	0	1	2	0
Poles	362	400	400	400	400	400
OH Switches	0	0	375	375	398	0
Vault Transformer	0	25	25	25	25	25
Cable (km)	14.7	26	26	26	26	26
UG Switchgear	5	4	4	4	4	4
TOTAL	381.7	457	830	834	857	456

TECHNICAL CONFERENCE UNDERTAKING - JT 2.10

JT 2.10

To provide the total number of assets by asset type.

RESPONSE:

Please see Tables A through H below for the corresponding asset count related to the demographic percentages presented in Hydro Ottawa's 2016 Custom IR distribution rate application.¹

Table A – Station Transformer and Switchgear Age Demographics as per 2016 Rate Application

		Age Demographic						TOTAL
		0-9	10-19	20-29	30-39	40-49	>50	
Station Transformer	Percentage	12%	4%	14%	9%	57%	4%	100%
	Asset Count	20	7	24	15	97	7	170
Station Switchgear	Percentage	9%	1%	12%	13%	29%	36%	100%
	Asset Count	16	2	21	22	50	62	173

¹ Exhibit B-1-2: Distribution System Plan of Hydro Ottawa Limited, 2016-2020 Custom Incentive Rate-Setting Distribution Rate Application, EB-2015-0004 (April 29, 2015).

1 **Table B – Station Battery Bank Age Demographics as per 2016 Rate Application**

		Age Demographic					TOTAL
		0-5	6-10	11-15	16-20	>20	
Station Battery Bank	Percentage	57%	26%	6%	11%	0%	100%
	Asset Count	30	14	3	6	0	53

2

3 **Table C – Distribution Pole Age Demographics as per 2016 Rate Application**

		Age Demographic								TOTAL
		1930s	1940s	1950s	1960s	1970s	1980s	1990s	Since 2000	
Pole	Percentage	3%	2%	10%	22%	22%	26%	8%	7%	100%
	Asset Count	1,451	967	4,835	10,637	10,637	12,572	3,868	3,385	48,352 ²

4

5 **Table D – Polemounted Transformer Age Demographics as per 2016 Rate Application**

		Age Demographic							TOTAL
		0-9	10-19	20-29	30-39	40-49	≥50	Unknown	
Polemounted Transformer	Percentage	10%	12%	13%	15%	14%	33%	3%	100%
	Asset Count	1,566	1,880	2,036	2,349	2,193	5,169	470	15,663

6

7 ² The total represents the sum of 47,815 Wood poles and 537 non-Wood poles (as per Hydro Ottawa Limited,
8 2016-2020 Custom Incentive Rate-Setting Distribution Rate Application, EB-2015-0004 [April 29, 2015]).

1 **Table E – PILC and XLPE Cable Age Demographics as per 2016 Rate Application**

		Age Demographic						TOTAL
		0-10	10-20	20-30	30-40	>40	Unknown	
PILC Cable	Percentage	8%	12%	14%	18%	34%	14%	100%
	Asset Count	28 km	43 km	50 km	64 km	121 km	50 km	356 km
XLPE Cable	Percentage	15%	14%	18%	20%	11%	22%	100%
	Asset Count	619 km	578 km	743 km	826 km	454 km	908 km	4,128 km

2
3 **Table F – Kiosk and Padmounted Transformer Age Demographics as per 2016 Rate**
4 **Application**

		Age Demographic						TOTAL
		0-9	10-19	20-29	30-39	≥40	Unknown	
Kiosk and Padmounted Transformer	Percentage	13%	16%	25%	24%	20%	2%	100%
	Asset Count	2,096	2,580	4,031	3,870	3,225	323	15,633

5
6 **Table G – Underground Switchgear Age Demographics as per 2016 Rate Application**

		Age Demographic					TOTAL
		0-9	10-19	20-29	>30	Unknown	
Underground Switchgear	Percentage	45%	17%	34%	3%	1%	100%
	Asset Count	285	107	215	19	6	632

7

1 **Table H – Vault Transformer Age Demographics as per 2016 Rate Application**

		Age Demographic						TOTAL
		0-9	10-19	20-29	30-39	40-49	≥50	
Vault Transformer	Percentage	16%	13%	17%	22%	23%	9%	100%
	Asset Count	556	452	591	764	798	313	3,474

2

TECHNICAL CONFERENCE UNDERTAKING - JT 2.11

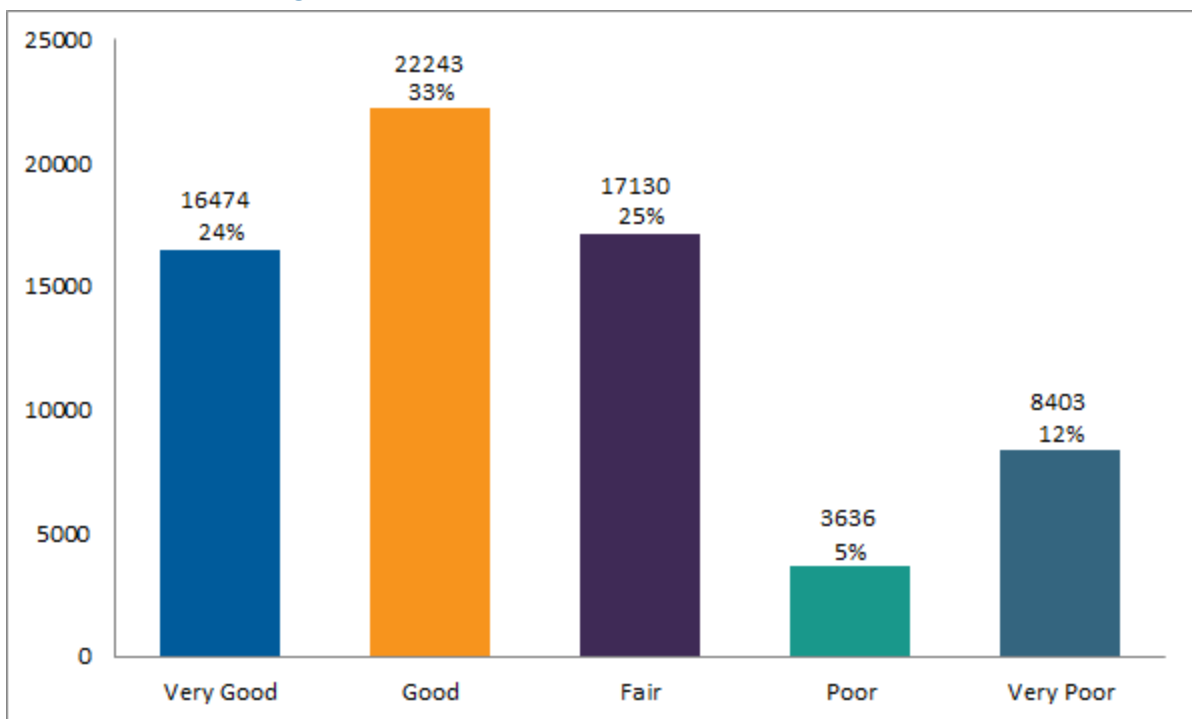
JT 2.11

To provide the quantities that correspond to the percentages in figure 6.2 of CCC 47.

RESPONSE:

Please refer to Figure 6.2 below, which has been updated to include the asset quantities in each health index category. The total number of assets included in the updated version of Figure 6.2 is 67,886, as these represent only the assets where health index data is available. Note that this total is five assets greater than the value provided in excel Attachment CCC-48(A): Asset Condition Demographics, column I (assets with data), as it includes five high-voltage circuit switchers with valid health index data that were not requested as part of the scope of interrogatory CCC-48.

Figure 6.2 – UPDATED – Overall Asset Condition



TECHNICAL CONFERENCE UNDERTAKING - JT 2.12

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2

3 JT 2.12

4 For the table in CCC 54A, to provide the raw data on the number of failures by asset type
5 2015-2019.

6

7 RESPONSE:

8

9 Please see excel Attachment JT 2.12(A): Number of Failures by Asset Type (2015-2019) for the
10 number of failures by asset type that have caused an outage during the defined period.

TECHNICAL CONFERENCE UNDERTAKING - JT 2.13

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3 JT 2.13

4 To provide information showing quantified productivity savings as it relates to capital embedded
5 in the plan or the capital budget over the 2021-2025 period.

6

7 RESPONSE:

8

9 A response to this undertaking will be provided in full as soon as possible.

TECHNICAL CONFERENCE UNDERTAKING - JT 2.14

JT 2.14

RE SEC 32, performance metrics, to provide the work product or documents with metrics from the consultant.

RESPONSE:

Please see the following excel files that have been submitted as separate files:

- Attachment JT 2.14(A): 2015 Performance Matrix Development Project - Vegetation Metrics
- Attachment JT 2.14(B): 2015 Performance Matrix Development Project - OH Lines Metrics
- Attachment JT 2.14(C): 2015 Performance Matrix Development Project - Stations Maintenance Metrics
- Attachment JT 2.14(D): 2015 Performance Matrix Development Project - UG Systems Metrics

1 **TECHNICAL CONFERENCE UNDERTAKING - JT 2.15**

2

3 **JT 2.15**

4 RE SEC 38 part d, to provide asset condition metrics data.

5 _____

6 **RESPONSE:**

7

8 As per the exchange captured in the Technical Conference transcript dated July 16, 2020,
9 beginning on line 24 of page 195 and continuing through line 11 of page 196, this information
10 was already submitted in this proceeding as part of the response to interrogatory CCC-48.

TECHNICAL CONFERENCE UNDERTAKING - JT 2.16

1

2

3 JT 2.16

4 To provide the 2020 versions of the project list and then whatever is available for 2021.

5

6 RESPONSE:

7

8 Please see the following attachments appended to this undertaking response:

9

- 10
- Attachment JT 2.16(A): 2020 Level 'A' Project List + Value
 - 11 • Attachment JT 2.16(B): 2020 Level 'D' Project List + Value
 - 12 • Attachment JT 2.16(C): 2020 Board-Approved Project List + Value
 - 13 • Attachment JT 2.16(D): 2021 Level 'A' Project List + Value
 - 14 • Attachment JT 2.16(E): 2021 Unoptimized Project List

*Project values provided are based on present-day forecasts, as Hydro Ottawa does not maintain records for historical project values.

**Projects without values have business cases outside of C55 value framework or are placeholders for future work with unknown value (eg. Distribution Plant Failure)

ORIGINAL
Page 1 of 2

2020 Level 'A' Project List			
SR - System Renewal	\$	36,833,862	Value (\$K)
92099901 - Station Assets Renewal	\$	13,405,672	
92002614 - Station Transformer Renewal	\$	1,803,000	
9202013592 - Bayswater Transformer Replacement	\$	1,803,000	6,596
92003371 - Station Switchgear Renewal	\$	1,108,176	
9202014088 - Overbrook TO Switchgear Replacement	\$	1,108,176	40,225
92012234 - Station Major Assets Renewal	\$	10,494,496	
9202012741 - Fisher AK Station Rebuild	\$	1,515,000	6,904
9202013474 - Urbandale AE Station Rebuild	\$	1,883,124	860
9202013576 - Dagmar AC Station Rebuild	\$	2,417,910	-145
9202013600 - Bells Corners Station Rebuild	\$	4,678,461	16,801
92099926 - OH Distribution Assets Renewal	\$	7,282,870	
92000021 - Pole Renewal	\$	6,262,870	
9202014064 - Britannia Bay Phase 2	\$	612,000	912
9202013608 - Scott/Athlone Pole Repl.	\$	765,000	2,049
9202014115 - Westhaven Pole Replacement	\$	535,500	205
9202014113 - Britannia Bay Phase 3	\$	990,425	912
9202013638 - Edwin Phase 1	\$	1,326,000	730
9202014114 - Gervin-Pineglen Pole Renewal	\$	1,137,257	775
9202011920 - Grenfell Glen Pole Renewal	\$	896,687	627
92000022 - Insulator Renewal	\$	1,020,000	
9202014116 - Porcelain Insulator Replacement	\$	1,020,000	22,195
92099958 - UG Distribution Assets Renewal	\$	8,645,321	
92001856 - Cable Renewal	\$	7,340,180	
9202014104 - 77M6 - Phase 3 Cable Replacement	\$	1,601,500	6,231
9202013590 - Cahill Drive Cable Replacement	\$	821,566	-875
9202014123 - Beaver Brook Cable Renewal - Ph.2 Civil	\$	1,200,000	4,835
9202014122 - Beaver Brook Cable Renewal - Ph.1 Civil	\$	1,857,114	4,283
9202012771 - Glen Cairn Voltage Conversion - Ph. 4	\$	1,860,000	5,589
92001859 - UG Switchgear Renewal	\$	1,305,141	
9202013636 - SC76/SC81 PMH to VISTA	\$	210,000	268
9202014105 - SW117 Replacement	\$	150,000	909
9202014106 - SE1 Switch Replacement	\$	230,000	1,052
9202012797 - SC14 Switchgear Replacement East	\$	100,607	202
9202013614 - S642 SG Replacement	\$	103,530	506
9202014124 - S39 SG Replacement	\$	218,111	781
9202012032 - S58 SG Replacement	\$	292,893	1,613
92099959 - Plant Failure	\$	7,500,000	
92002191 - Distribution Plant Failure	\$	7,393,000	
92002191 - Distribution Plant Failure	\$	7,393,000	-
92003580 - Station Plant Failure	\$	107,000	
92004361 - Stations Plant Failure	\$	107,000	-
SS - System Service	\$	31,474,597	
92099902 - Capacity Upgrades	\$	19,311,338	
92003519 - Stations Capacity Upgrades	\$	14,753,538	
9202013598 - Riverdale New Switchgear	\$	4,329,666	24,830
9202011956 - Uplands MS Second Transformer (Island)	\$	2,212,817	13,603
9202008537 - New South 28kV Substation	\$	8,211,055	213,716
92014015 - Distribution Capacity Upgrades	\$	4,557,800	
9202014107 - UPLF2 Capacity Upgrade	\$	590,000	5,540
9202014111 - 7F4/LTM01 Conductor Upgrade	\$	712,800	1,169
9202014108 - Trail Road Capacity Upg.	\$	420,000	8,594
9202014109 - Borrisokane Cap. Upg. - Phase 1	\$	1,185,000	8,316
9202014110 - New South Station - Cambrian Egress	\$	1,350,000	5,821
9202012490 - BDFF6 Ph3 Comm Cut-overs	\$	300,000	594
92099903 - Stations Enhancements	\$	520,000	
92000044 - Stations Enhancements	\$	520,000	
9202001012 - Station Replacement	\$	500,000	-
9202013996 - ION Communications Upgrade	\$	20,000	-
92099927 - Distribution Enhancement	\$	10,623,259	
92002622 - System Voltage Conversion	\$	6,712,392	
9202013596 - Clifton UL Voltage Conversion	\$	4,835,158	8,283
9202014119 - Glen Cairn Trunk Civil - Castle Frank Phase 3	\$	387,341	590
9202014118 - Glen Cairn Trunk Civil - Castle Frank Phase 2	\$	169,793	800
9202014117 - Glen Cairn Trunk Civil - Castle Frank Phase 1	\$	175,099	277
9202013584 - Stittsville Main (Abbott/Fernbank Tie)	\$	1,145,000	4,856
92002626 - Distribution System Reliability	\$	3,010,868	
9202009223 - Worst Feeder Betterment	\$	150,000	93,144
9202014120 - TR1UX Circuit Split	\$	500,000	617
9202014111 - Grenfell Glen Redundancy Upgrade	\$	150,000	627

9202013586 - Eagleson TFX/FAL Ties	\$	966,071	299
9202014121 - TFXF2 Extension - Maple Grove to Hazeldean	\$	1,244,797	1,297
92003370 - Distribution Enhancements	\$	900,000	
9202014021 - Ion Interval - Customer Upgrade	\$	250,000	-
9202009227 - Level C Design Time	\$	200,000	-
9202001781 - CANBAN - Low Value Truck Stock	\$	450,000	4,629
92099941 - Grid Technologies	\$	20,000	
92000046 - RTU Upgrades	\$	20,000	
9202005506 - Minor Enhancements Year 1-5 (Comm Upgrades)	\$	20,000	174
92099991 - Metering	\$	1,000,000	
92003564 - Remote Disconnected Smrt Meter	\$	1,000,000	
9202003564 - Remote Disconnected Smrt Meter	\$	1,000,000	
Grand Total	\$	68,308,460	522,816

*Project values provided are based on present-day forecasts, as Hydro Ottawa does not maintain records for historical project values.

**Projects without values have business cases outside of C55 value framework or are placeholders for future work with unknown value (eg. Correct Renewal)

Scenario: 2020 Level 'D' Project List

In Dollars

Parent/Program/Project	Budget	Value (\$K)
92099959 - Corrective Renewal	8,748,318	
9202002191 - Emergency Renewal	4,455,874	
All		
9202014034 Emergency STA P&C	113,537	-
9202014032 Emergency STA Switchgear	29,120	-
9202014031 Emergency STA Transformer	86,230	-
9202004314 Emergency Poles	257,638	-
9202004309 Emergency U/G Civil	50,823	-
9202004308 Emergency O/H Sec. Service	345,613	-
9202004307 Emergency U/G Sec. Service	482,462	-
9202004306 Emergency O/H Pri. Cond & Insulators	497,984	-
9202004304 Emergency PILC Cable	708,182	-
9202004303 Emergency Polymer Cable	455,207	-
9202004302 Emergency U/G TFRMS	672,424	-
9202004301 Emergency O/H TFRMS	298,592	-
9202004300 Emergency U/G Switches	93,097	-
9202004299 Emergency O/H Switches	364,965	-
9202014035 - Critical Renewal	4,292,444	
All		
9202014043 Critical Poles	2,618,165	-
9202014046 Critical STA DC System	30,445	-
9202014042 Critical U/G Civil	248,445	-
9202014041 Critical PILC Cable	75,807	-
9202014039 Critical U/G TFRMS	1,319,582	-
92099901 - Station Assets Renewal	6,152,291	
92002614 - Station Transformer Renewal	900,000	
Central		
9202013592 Bayswater UJ XFMR Renewal	900,000	6,596
92003371 - Stations Switchgear Renewal	439,000	
East		
9202010241 Overbrook SO SWG Renewal	439,000	20,561
92003405 - Station P&C Renewal	706,459	
Central		
9202011894 Slater TS P&C Renewal	706,459	5,249
92012234 - Station Major Assets Renewal	4,106,832	
All		
9202014166 Station Renewal - Level 'C'	100,000	-
South		
9202013600 Bells Corners DS Stn. Renewal	3,980,000	16,801
9202008485 Merivale MTS Station Renewal	26,832	63,343
92099902 - Capacity Upgrades	21,292,621	
92003519 - Stations Capacity Upgrades	15,323,827	
East		
9202011956 Uplands MTS Capacity Upgrade	4,708,521	13,603
9202014085 Limebank MTS T4 Cap. Upgrade	328,526	6,301
South		
9202008537 New South Station Cap. Upg.	10,286,780	213,716
9202014015 - Distribution Capacity Upgrades	5,968,794	
East		
9202014202 CAS-F3 Feeder Capacity	57,784	5,932
9202014107 UPLF2 Capacity Upgrade	1,055,150	5,540
9202014078 LTM02/03 Capacity Upg.	1,500,000	24,871
9202013606 Casselman New Feeder Egress	530,601	5,305
South		
9202014108 Trail Road Capacity Upg.	200,751	9,594
9202014109 Borrisokane Cap. Upg - P1	1,372,087	8,316
9202014110 New South Stn - Cambrian Egress	1,252,421	5,821
92099903 - Stations Enhancements	520,000	
92000044 - Stations Enhancements	520,000	
All		
9202001012 Station Replacement	500,000	-
9202013996 ION Communications Upgrade	20,000	-
92099926 - OH Distribution Assets Renewal	6,413,150	
92000021 - Pole Renewal	6,194,989	

Central				
9202014371	Bay Street Pole Renewal-P2	1,055,733	-	452
9202014024	Britannia Bay Pole Renewal-P4	342,200		912
9202014061	Percy St Pole Renewal	906,501	-	345
9202013608	Scott/Athlone Pole Repl.	-		
9202014115	Westhaven Pole Renewal	555,926		205
9202013638	Edwin Pole Renewal-P1	1,480,000		2,594
South				
9202014114	Gervin-Pineglen Pole Renewal	1,137,257		775
9202011924	Carling Ave 44kV loop	105,372		18,434
92001860 - OH Switch/Recloser Renewal		218,160		
Central				
9202013632	TD01 Porcelain Repl & Re-fuse	218,160		324
92099927 - Distribution Enhancement		5,498,965		
92002622 - System Voltage Conversion		2,041,038		
West				
9202010956	Richmond 8-28kV Conv-Fortune	889,068		231
9202013584	Stittsville Main (Abbott/Fernbank Tie)	1,151,970		4,856
92002626 - Distribution System Reliability		1,693,129		
All				
9202009223	Worst Feeder Betterment	1,000,000		93,144
East				
9202011992	East 44kV Loop Automation	516,739		6,226
South				
9202014111	Grenfell Glen Redundancy Upgrade	176,390		627
92003370 - Distribution Enhancements		1,764,798		
All				
9202014021	Ion Interval - Customer Upgrade	250,000		-
9202009227	Level C Design Time	400,000		-
9202001781	CANBAN - Low Value Truck Stock	450,000		4,629
Central				
9202011914	Motorize Vector Switches	143,351		2,023
South				
9202012307	72F1 Reconfiguration	521,447		-
92099941 - Grid Technologies		2,036,877		
92000045 - SCADA Upgrades		461,250		
All				
9202010422	GT SCADA Repl. Project	461,250		-
92000046 - RTU Upgrades		20,000		
All				
9202005506	Minor Enhancements Year 1-5 (Comm upgrades)	20,000		174
92012240 - Communication Infrastructure		1,555,627		
All				
9202010414	GT Telecom Master Plan (OTN)	1,555,627		-
92099958 - UG Distribution Assets Renewal		10,355,796		
92001856 - Cable Renewal		7,925,784		
East				
9202014223	Beausejour Cable Renewal - Ph1	3,253,171		3,970
9202014104	77M6 - Ph3 Cable Repl.	1,601,500		6,231
9202013590	Cahill Drive Cable Renewal	1,104,468	-	875
West				
9202012771	Glen Carn Cable Renewal-P4	916,145		5,589
9202012028	Kakulu Cable Renewal	1,050,500		1,941
92001859 - UG Switchgear Renewal		1,773,063		
Central				
9202013636	SC76/SC81 PMH to VISTA	210,000		268
East				
9202014105	SW117 UG SWG Renewal	138,910		909
9202014106	SE1 UG SWG Renewal	209,251		1,052
9202012797	SC14 UG SWG Renewal	100,607		202
West				
9202013614	S642 UG SWG Renewal	209,564		506
9202013616	S340 SG Replacement	219,791		1,364
9202014124	S39 SG Replacement	208,800		781
9202013618	S292 SG Replacement	217,940		1,576
92012230 - UG Transformer Renewal		656,950		
South				
9202013620	Banner Rd UG XFMR Renewal	213,187		775
9202011930	Malvern UG XFMR Renewal	443,763		1,075
92099991 - Metering		1,000,000		

92003564 - Remote Disconnected Smrt Meter		1,000,000	
All			
9202003564	Remote Disconnected Smrt Meter	1,000,000	-
Grand Total		62,018,019	572,182

*Project values provided are based on present-day forecasts, as Hydro Ottawa does not maintain records for historical project values.

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Scenario: 2020 Board Approved Project List

In Dollars

Parent/Program/Project	Budget	Value (\$K)
9209959 - Corrective Renewal	8,739,080	
9202002191 - Emergency Renewal	4,461,326	
All		
9202014034 Emergency STA P&C	113,678	-
9202014032 Emergency STA Switchgear	29,095	-
9202014031 Emergency STA Transformer	86,337	-
9202004314 Emergency Poles	257,958	-
9202004309 Emergency U/G Civil	50,861	-
9202004308 Emergency O/H Sec. Service	346,042	-
9202004307 Emergency U/G Sec. Service	483,062	-
9202004306 Emergency O/H Pri. Cond & Insulators	498,603	-
9202004304 Emergency PILC Cable	709,062	-
9202004303 Emergency Polymer Cable	455,773	-
9202004302 Emergency U/G TFRMS	673,260	-
9202004301 Emergency O/H TFRMS	298,963	-
9202004300 Emergency U/G Switches	93,213	-
9202004299 Emergency O/H Switches	365,419	-
9202014035 - Critical Renewal	4,277,754	
All		
9202014043 Critical Poles	2,609,244	-
9202014046 Critical STA DC System	30,304	-
9202014042 Critical U/G Civil	247,598	-
9202014041 Critical PILC Cable	75,522	-
9202014039 Critical U/G TFRMS	1,315,086	-
92099901 - Station Assets Renewal	6,471,384	
92002614 - Station Transformer Renewal	969,442	
Central		
9202013592 Bayswater UJ XFMR Renewal	969,442	6,596
92003371 - Stations Switchgear Renewal	402,198	
East		
9202010241 Overbrook SO SWG Renewal	402,198	20,561
92003405 - Station P&C Renewal	920,171	
Central		
9202011894 Slater TS P&C Renewal	920,171	5,249
92012234 - Station Major Assets Renewal	4,179,573	
All		
9202014166 Station Renewal - Level 'C'	99,070	-
South		
9202013600 Bells Corners DS Stn. Renewal	4,053,953	16,801
9202008485 Merivale MTS Station Renewal	26,550	63,343
92099902 - Capacity Upgrades	22,139,954	
92003519 - Stations Capacity Upgrades	15,519,565	
East		
9202011956 Uplands MTS Capacity Upgrade	4,963,919	13,603
9202014085 Limebank MTS T4 Cap. Upgrade	332,843	6,301
South		
9202008537 New South Station Cap. Upg.	10,222,803	213,716
9202014015 - Distribution Capacity Upgrades	6,620,389	
East		
9202014078 LTM02/03 Capacity Upg.	1,498,305	
9202014107 UPLF2 Capacity Upgrade	1,643,291	5,540
9202013606 Casselman New Feeder Egress	12,716	5,305
South		
9202014108 Trail Road Capacity Upg.	199,774	9,594
9202014109 Borrisokane Cap. Upg - P1	1,368,452	8,316
9202014110 New South Stn - Cambrian Egress	1,897,853	5,821
92099903 - Stations Enhancements	519,626	
92000044 - Stations Enhancements	519,626	
All		
9202001012 Station Replacement	499,037	
9202013996 ION Communications Upgrade	20,589	-
92099926 - OH Distribution Assets Renewal	8,011,280	
92000021 - Pole Renewal	5,765,946	
Central		
9202014064 Britannia Bay Pole Renewal PH2	612,427	3,646

9202014113	Britannia Bay Pole Renewal PH3	971,683	3,646
9202014115	Westhaven Pole Renewal	535,874	205
9202011904	Centretown Pole Ren. 1.8-Percy	906,800	5,176
9202013638	Edwin Pole Renewal-P1	1,300,908	730
East			
9202012779	Casselman Pole Replacement	300,203	114
South			
9202014114	Pole Repl. South of Slack Ph.2	1,138,051	775
92000021 - Insulator Replacement Program		2,245,334	
Central			
9202014116	Porcelain Ins. Replacement	2,245,334	20,008
92099927 - Distribution Enhancement		6,165,850	
92002622 - System Voltage Conversion		2,047,871	
West			
9202010956	Richmond 8-28kV Conv-Fortune	895,097	231
9202013584	Stittsville Abbott/Fernbank Tie	1,152,774	4,856
92002626 - Distribution System Reliability		1,722,614	
All			
9202009223	Worst Feeder Betterment	997,903	93,144
East			
9202011992	East 44kV Loop Automation	548,716	6,226
South			
9202014111	Grenfell Glen 170F3 Reliability	175,995	627
92003370 - Distribution Enhancements		2,395,365	
All			
9202014021	Ion Interval - Customer Upgrade	250,349	-
9202009227	Level C Design Time	400,558	-
9202001781	CANBAN - Low Value Truck Stock	450,628	4,629
Central			
9202011914	Motorize Vector Switches	143,550	3,023
South			
9202012307	72F1 Reconfiguration	1,150,280	-
92099941 - Grid Technologies		2,021,444	
92000045 - SCADA Upgrades		461,690	
All			
9202010422	GT SCADA Repl. Project	461,690	-
92000046 - RTU Upgrades		20,250	
All			
9202005506	Minor Enhancements Year 1-5 (Comm upgrades)	20,250	174
92012240 - Communication Infrastructure		1,539,504	
All			
9202010414	GT Telecom Master Plan (OTN)	1,539,504	-
92099958 - UG Distribution Assets Renewal		8,326,659	
92001856 - Cable Renewal		7,126,908	
East			
9202014264	Beausejour Cable Renewal - Ph2	1,758,984	3,970
9202014104	77M6 - Ph3 Cable Repl.	2,296,941	6,231
9202013590	Cahill Drive Cable Renewal	1,106,452	875
West			
9202012771	Glen Carn Cable Renewal-P4	912,143	5,589
9202012028	Kakulu Cable Renewal	1,052,387	1,941
92001859 - UG Switchgear Renewal		763,863	
East			
9202014105	SW117 UG SWG Renewal	139,415	909
9202014106	SE1 UG SWG Renewal	210,010	1,052
9202012797	SC14 UG SWG Renewal	100,972	202
West			
9202013614	S642 UG SWG Renewal	103,906	506
9202014124	S39 SG Replacement	209,559	781
92012230 - UG Transformer Renewal		435,888	
South			
9202011930	Malvern UG XFMR Renewal	435,888	1,075
92099991 - Metering		1,030,985	
92003564 - Remote Disconnected Smrt Meter		1,030,985	
All			
9202003564	Remote Disconnected Smrt Meter	1,030,985	-
Grand Total		63,426,262	544,916

*Project values provided are based on present-day forecasts, as Hydro Ottawa does not maintain records for historical project values.

**Projects without values have business cases outside of C55 value framework or are placeholders for future work with unknown value (eg. Corrective Renewal)

***Variances between original budget levels for programs, specifically Pole Renewal and UG Switchgear Renewal, may differ due to project deferrals and/or updated project forecasts.

****Projects listed under the 'Grid Technology' program, and others under 'Distribution Enhancements, are run outside of C55 through Hydro Ottawa's CITO group

2021 Level 'A' Project List			
SR - System Renewal	\$	42,873,520	Value (\$K)
92099901 - Station Assets Renewal	\$	9,438,662	
92002614 - Station Transformer Renewal	\$	2,364,783	
9202013592 - Bayswater Transformer Replacement	\$	2,364,783	6,596
92003371 - Station Switchgear Renewal	\$	1,571,760	
9202014088 - Overbrook TO Switchgear Replacement	\$	1,571,760	40,225
92012234 - Station Major Assets Renewal	\$	4,724,778	
9202014166 - Station Renewal - Level 'C'	\$	99,458	-
9202012741 - Fisher AK Station Rebuild	\$	2,024,750	6,904
9202013600 - Bells Corners Station Rebuild	\$	2,600,569	16,301
92003405 - Station P&C Renewal	\$	575,718	
9202014280 - Lincoln Heights P&C Renewal	\$	533,903	1,161
9202011894 - Slater TS P&C Renewal	\$	41,814	5,249
92012236 - Station Minor Assets Renewal	\$	117,455	
9202012815 - Kanata MTS - RTU Replacement	\$	117,455	84
92012238 - Station Battery Renewal	\$	84,169	
9202014281 - Station Battery Renewal	\$	84,169	-
92099926 - OH Distribution Assets Renewal	\$	8,125,369	
92000021 - Pole Renewal	\$	8,125,369	
9202014217 - Clifton/McRae/Tweedsmuir Pole Repl.	\$	765,000	-850
9202014024 - Britannia Bay Pole Renewal-P4	\$	367,200	912
9202014291 - Gregg St Pole Renewal	\$	1,640,000	-1,043
9202014292 - UZ06 Pole Renewal	\$	208,080	745
9202014293 - 47F3 Trunk Renewal (Harwick-Evergreen)	\$	416,160	1,157
9202011920 - Grenfell Glen Pole Renewal	\$	1,618,657	-178
9202011926 - Carleton Heights Pole Renewal	\$	1,086,415	-671
9202014290 - Links-Sawgrass Pole Renewal	\$	353,736	-356
9202014114 - Gervin-Pineglen Pole renewal	\$	1,160,121	775
9202014632 - Walkley Road Pole Renewal	\$	510,000	10,076
92099958 - UG Distribution Assets Renewal	\$	11,032,385	
92000027 - Vault Renewal	\$	495,980	
9202014295 - Vault Renewal 2021-2025	\$	495,980	-
92001363 - Civil Renewal	\$	1,010,070	
9202014296 - Civil Renewal 2021-2025	\$	1,010,070	-
92001856 - Cable Renewal	\$	8,971,565	
9202014297 - Bilberry Cable Renewal - P3.3	\$	704,765	-629
9202014322 - Bilberry Cable Renewal - P2.1	\$	906,126	-768
9202014323 - Sunview Cable Renewal - P1	\$	1,308,849	-284
9202014264 - Beausejour Cable Renewal - P2	\$	886,666	7,069
9202014084 - Bilberry Cable Renewal-P2	\$	1,224,169	-712
9202013588 - McCarthy Cable Replacement	\$	800,014	-456
9202014324 - Fallowfield Vlg. Cable Renewal	\$	623,959	696
9202014123 - Beaver Brook Cable Renew-P2.1	\$	1,258,509	4,835
9202014122 - Beaver Brook Cable Renew-P1.1	\$	1,258,509	4,283
92001859 - UG Switchgear Renewal	\$	554,770	
9202014671 - UG SWG Renewal SC73	\$	133,272	268
9202014673 - UG SWG Renewal SW133	\$	199,089	-69
9202014106 - SE1 Switch Replacement	\$	222,409	1,052
92099959 -Corrective Renewal	\$	9,822,178	
9202001904 - Damage to Plant	\$	1,042,849	
9202001906 - Damage to Plant	\$	1,042,849	-
9202002191 - Emergency Renewal	\$	4,481,857	
9202014034 - Emergency STA P&C	\$	114,201	-
9202014032 - Emergency STA Switchgear	\$	29,229	-
9202014031 - Emergency STA Transformer	\$	86,734	-
9202004314 - Emergency Poles	\$	259,145	-
9202004309 - Emergency U/G Civil	\$	51,095	-
9202004308 - Emergency O/H Sec. Service	\$	347,635	-
9202004307 - Emergency U/G Sec. Service	\$	485,285	-
9202004306 - Emergency O/H Pri. Cond & Insulators	\$	500,898	-
9202004304 - Emergency PILC Cable	\$	712,325	-
9202004303 - Emergency Polymer Cable	\$	457,870	-
9202004302 - Emergency U/G TFRMS	\$	676,358	-
9202004301 - Emergency O/H TFRMS	\$	300,339	-
9202004300 - Emergency U/G Switches	\$	93,642	-
9202004299 - Emergency O/H Switches	\$	367,100	-

9202014035 - Critical Renewal	\$	4,297,473	
9202014043 - Critical Poles	\$	2,621,272	-
9202014046 - Critical STA DC System	\$	30,443	-
9202014042 - Critical U/G Civil	\$	248,740	-
9202014041 - Critical PILC Cable	\$	75,870	-
9202014039 - Critical U/G TFRMS	\$	1,321,148	-
92099992 - Metering Renewal	\$	4,454,925	
9202014420 - Metering Upgrades	\$	4,454,925	
9202014422 - 1 EL to 1.5 EL	\$	22,114	
9202014424 - 2.5EL to 3EL	\$	137,029	
9202014425 - TR Communications Update	\$	1,125,821	
9202014426 - SC Communications Update	\$	1,816,516	
9202014429 - TR Service to 200A SC	\$	226,039	
9202014430 - REX 1 Upgrade	\$	1,002,145	
9202014435 - ION Meter Upgrades	\$	125,261	-
SS - System Service	\$	22,911,568	
92099902 - Capacity Upgrades	\$	19,791,278	
92003519 - Stations Capacity Upgrades	\$	16,931,176	
9202014282 - New East Station Capacity Upg.	\$	508,785	76,359
9202011956 - Uplands MTS Capacity Upgrade	\$	1,863,135	13,601
9202014085 - Limebank MTS T4 Cap. Upgrade	\$	2,646,944	6,301
9202008537 - New South 28kV Substation	\$	11,912,312	213,716
92014015 - Distribution Capacity Upgrades	\$	2,860,102	
9202014283 - AB02 Capacity Upgrade	\$	451,211	2,487
9202014111 - 7F4/LTM01 Conductor Upgrade	\$	852,288	1,278
9202014202 - CAS-F3 Feeder Capacity	\$	62,592	5,932
9202014284 - New South Stn - Cambrian Upg.	\$	401,077	6,281
9202014285 - Borrisokane Cap. Upg - P2	\$	300,808	6,313
9202014320 - New South Stn-Barnsdale New OH	\$	792,126	4,915
92099903 - Stations Enhancements	\$	309,958	
92000044 - Stations Enhancements	\$	309,958	
9202014288 - Station Temp. Sensors 2021-2025	\$	309,958	-
92099927 - Distribution Enhancement	\$	2,309,254	
92002626 - Distribution System Reliability	\$	1,002,490	
9202009223 - Worst Feeder Betterment	\$	1,002,490	93,144
92003370 - Distribution Enhancements	\$	1,306,764	
9202014021 - Ion Interval - Customer Upgrade	\$	251,301	-
9202009227 - Level C Design Time	\$	402,081	-
9202001781 - CANBAN - Low Value Truck Stock	\$	452,341	-
9202014294 - AB05 & AB07 Reconfig (SA22 LT)	\$	201,041	2,041
92099991 - Metering	\$	501,078	
92003564 - Remote Disconnect	\$	501,078	
9202003564 - Remote Disconnect Smrt Meter	\$	501,078	
Grand Total	\$	65,785,088	534,740

*Project costs and values provided are based on present-day forecasts, as Hydro Ottawa does not maintain records for historical project values. Variances may exist between 2021 Level 'A' forecasts due to budget refinements, project deferrals or availability of Level 'D' estimates

**Projects without values have business cases outside of C55 value framework or are placeholders for future work with unknown value (eg. Corrective Renewal)

***Projects are assigned a business unit number (BU) upon inclusion in a Level 'A' project list, therefore some projects may be missing a BU

2021 Project List (Pre-optimization)*			
SR - System Renewal	\$	55,195,296	Value (\$K)
92099901 - Station Assets Renewal	\$	14,176,471	
92002614 - Station Transformer Renewal	\$	2,364,783	
9202013592 - Bayswater Transformer Replacement	\$	2,364,783	6,596
92003371 - Station Switchgear Renewal	\$	1,571,760	
9202014088 - Overbrook TO Switchgear Replacement	\$	1,571,760	40,225
92012234 - Station Major Assets Renewal	\$	9,025,812	
9202014166 - Station Renewal - Level 'C'***	\$	99,458	-
9202012741 - Fisher AK Station Rebuild	\$	2,024,750	4,005
9202013474 - Urbandale AE Station Rebuild	\$	1,883,124	860
9202013576 - Dagmar AC Station Rebuild	\$	2,417,910	-145
9202013600 - Bells Corners Station Rebuild	\$	2,600,569	16,801
92003405 - Station P&C Renewal	\$	1,012,492	
9202014280 - Lincoln Heights P&C Renewal	\$	1,006,892	1,161
9202011894 - Slater TS P&C Renewal	\$	5,600	5,249
92012236 - Station Minor Assets Renewal	\$	117,455	
9202012815 - Kanata MTS - RTU Replacement	\$	117,455	152
92012238 - Station Battery Renewal	\$	84,169	
9202014281 - Station Battery Renewal	\$	84,169	929
92099926 - OH Distribution Assets Renewal	\$	9,522,586	
92000021 - Pole Renewal	\$	9,522,586	
9202014217 - Clifton/McRae/Tweedsmuir Pole Repl.	\$	1,358,740	-850
9202014024 - Britannia Bay Pole Renewal-P4	\$	342,200	912
9202014291 - Gregg St Pole Renewal	\$	1,393,973	-1,043
9202014292 - UZ06 Pole Renewal	\$	216,000	745
9202014293 - 47F3 Trunk Renewal (Harwick-Evergreen)	\$	384,000	1,157
9202011920 - Grenfell Glen Pole Renewal	\$	1,627,561	-178
9202011926 - Carleton Heights Pole Renewal	\$	1,086,415	-671
9202014290 - Links-Sawgrass Pole Renewal	\$	560,760	-356
9202014114 - Gervin-Pineglenn Pole renewal	\$	1,160,121	775
9202014061 - Centretown Pole Ren. 1.8 Percy	\$	882,816	4,019
9202014632 - Walkley Road Pole Renewal	\$	510,000	10,076
92099958 - UG Distribution Assets Renewal	\$	17,219,135	
92000027 - Vault Renewal	\$	495,980	
9202014295 - Vault Renewal 2021-2025	\$	495,980	-
92001363 - Civil Renewal	\$	1,010,070	
9202014296 - Civil Renewal 2021-2025	\$	1,010,070	-
92001856 - Cable Renewal	\$	13,385,112	
9202014297 - Bilberry Cable Renewal - P3.3	\$	704,765	-629
9202014322 - Bilberry Cable Renewal - P2.1	\$	906,126	-768
9202014323 - Sunview Cable Renewal - P1	\$	1,308,849	-284
9202013590 - Cahill Drive Cable Renewal	\$	1,293,100	-875
9202008609 - Blackburn 4F8 - Phase 4A	\$	1,680,672	1,625
9202014264 - Beausejour Cable Renewal - P2	\$	886,666	7,069
9202014084 - Bilberry Cable Renewal-P2	\$	1,224,169	-712
9202013588 - McCarthy Cable Replacement	\$	800,014	-456
9202014324 - Fallowfield Vlg. Cable Renewal	\$	1,008,174	696
9202014123 - Beaver Brook Cable Renew-P2.1	\$	1,258,509	4,835
9202014122 - Beaver Brook Cable Renew-P1.1	\$	1,258,509	4,283
9202012771 - Glen Cairn Cable Renewal-P4	\$	1,055,560	5,589
92001859 - UG Switchgear Renewal	\$	1,671,023	
9202014671 - UG SWG Renewal SC73	\$	133,272	268
9202013636 - SC76/SC81 PMH to VISTA	\$	210,000	909
9202014673 - UG SWG Renewal SW133	\$	199,089	-69
9202014105 - SW117 UG SWG Renewal	\$	132,828	1,052
9202012797 - SC14 UG SWG Renewal	\$	100,607	202
SE41 Switchgear Replacement East	\$	108,243	506
9202014672 - UG SWG Renewal S55	\$	222,409	781
9202013614 - S642 UG SWG Renewal	\$	209,564	1,613
9202013616 - S340 SG Replacement	\$	147,734	1,364
9202014124 - S39 SG Replacement	\$	207,277	781
9202014106 - SE1 Switch Replacement	\$	222,409	1,052
92012230 - UG Transformer Renewal	\$	656,950	
9202011930 - Malvern UG XFRM Renewal	\$	443,763	775
9202013620 - Banner Rd UG XFRM Renewal	\$	213,187	1,075
92099959 -Corrective Renewal	\$	9,822,179	

9202001904 - Damage to Plant	\$	1,042,849	
9202001906 - Damage to Plant	\$	1,042,849	
9202002191 - Emergency Renewal	\$	4,481,857	
9202014034 - Emergency STA P&C	\$	114,201	-
9202014032 - Emergency STA Switchgear	\$	29,229	-
9202014031 - Emergency STA Transformer	\$	86,734	-
9202004314 - Emergency Poles	\$	259,145	-
9202004309 - Emergency U/G Civil	\$	51,095	-
9202004308 - Emergency O/H Sec. Service	\$	347,635	-
9202004307 - Emergency U/G Sec. Service	\$	485,285	-
9202004306 - Emergency O/H Pri. Cond & Insulators	\$	500,898	-
9202004304 - Emergency PILC Cable	\$	712,325	-
9202004303 - Emergency Polymer Cable	\$	457,870	-
9202004302 - Emergency U/G TFRMS	\$	676,358	-
9202004301 - Emergency O/H TFRMS	\$	300,339	-
9202004300 - Emergency U/G Switches	\$	93,642	-
9202004299 - Emergency O/H Switches	\$	367,100	-
9202014035 - Critical Renewal	\$	4,297,473	
9202014043 - Critical Poles	\$	2,621,272	-
9202014046 - Critical STA DC System	\$	30,443	-
9202014042 - Critical U/G Civil	\$	248,740	-
9202014041 - Critical PILC Cable	\$	75,870	-
9202014039 - Critical U/G TFRMS	\$	1,321,148	-
92099992 - Metering Renewal	\$	4,454,925	
9202014420 - Metering Upgrades	\$	4,454,925	
9202014435 - ION Meter Upgrades	\$	125,261	-
9202014430 - REX 1 Upgrade	\$	1,002,145	-
9202014429 - TR Services to 200A SC	\$	226,039	-
9202014426 - SC Comms Update	\$	1,816,516	-
9202014425 - TR Comms Update	\$	1,125,821	-
9202014424 - 2.5 EL to 3EL	\$	137,029	-
9202014422 - 1 EL to 1.5 EL	\$	22,114	-
SS - System Service	\$	36,829,197	
92099902 - Capacity Upgrades	\$	25,748,129	
92003519 - Stations Capacity Upgrades	\$	18,147,404	
9202014282 - New East Station Capacity Upg.	\$	508,785	76,359
9202011956 - Uplands MTS Capacity Upgrade	\$	1,863,135	13,603
9202014085 - Limebank MTS T4 Cap. Upgrade	\$	2,646,944	6,301
9202008537 - New South 28kV Substation	\$	11,912,312	213,716
9202013598 - Riverdale Switchgear Upgrade	\$	1,216,228	24,830
92014015 - Distribution Capacity Upgrades	\$	7,600,725	
9202014283 - AB02 Capacity Upgrade	\$	451,211	2,487
9202014111 - 7F4/LTM01 Conductor Upgrade	\$	852,288	1,278
9202014202 - CAS-F3 Feeder Capacity	\$	62,424	5,932
9202014284 - New South Stn - Cambrian Upg.	\$	401,077	6,281
9202014285 - Borrisokane Cap. Upg - P2	\$	300,808	6,313
9202014320 - New South Stn-Barnsdale New OH	\$	792,126	4,915
9202014303 - Albion TA 2206 Capacity	\$	1,123,678	4,680
9202014304 - RHS-New South Ties (Barnsdale)	\$	2,375,000	9,685
9202014356 - RHS-New South Ties (Cambrian)	\$	1,242,113	725
92099903 - Stations Enhancements	\$	309,958	
92000044 - Stations Enhancements	\$	309,958	
9202014288 - Station Temp. Sensors 2021-2025	\$	309,958	-
92099927 - Distribution Enhancement	\$	10,270,032	
92002622 - System Voltage Conversion	\$	4,007,534	
9202014357 - Navan Rd 8-28kV Conversion	\$	1,084,152	2,591
9202014702 - Richmond Volt. Conv. - Martin	\$	450,000	522
9202014119 - Glen Cairn Trunk Civil-CF PH3	\$	407,698	590
9202014118 - Glen Cairn Trunk Civil-CF PH2	\$	178,712	800
9202014117 - Glen Cairn Trunk Civil-CF PH1	\$	747,328	277
9202013584 - Stittsville Abbot/Fernbank Tie	\$	1,139,644	4,856
92002626 - Distribution System Reliability	\$	3,940,043	
9202009223 - Worst Feeder Betterment	\$	1,002,490	93,144
9202014120 - TR-TS Reliability (Ties)-TR1UX	\$	387,553	617
9202014306 - TK-TS Reliability (Ties)-P1	\$	1,050,000	4,778
9202014307 - TK-TS Reliability (Ties)-P2	\$	1,500,000	4,416
92003370 - Distribution Enhancements	\$	2,322,455	
9202014021 - Ion Interval - Customer Upgrades	\$	251,301	-
9202009227 - Level C Design Time	\$	402,081	-
9202001781 - CANBAN - Low Value Truck Stock	\$	452,341	-
9202014294 - AB05 & AB07 Reconfig (SA22 LT)	\$	201,041	2,041
9202011914 - Motorize Vector Switches	\$	134,351	3,023
9202014318 - New South Stn - N/O SCADA	\$	402,081	
9202012490 - BDFF6 Ph3 Comm Cut-overs	\$	479,259	594

92099991 - Metering	\$	501,078	
92003564 - Remote Disconnect	\$	501,078	
9202003564 - Remote Disconnect Smrt Meter	\$	501,078	
Grand Total	\$	92,024,493	616,455

TECHNICAL CONFERENCE UNDERTAKING - JT 2.17

JT 2.17

To provide a report from city staff indicating the expected timeline for finalizing their energy and emissions model associated with energy evolution.

RESPONSE:

Appended to this response are the following documents:

- Attachment JT 2.17(A): City of Ottawa Environmental Protection Committee - December 17, 2019 Meeting Minutes
- Attachment JT 2.17(B): City of Ottawa Council - January 29, 2020 Meeting Minutes
- Attachment JT 2.17(C): Invitation to Energy Evolution Sounding Board Meeting - August 12, 2020

Pages 2-3 of Attachment JT 2.17(A) list a series of recommendations that were carried by the City of Ottawa's Standing Committee on Environmental Protection, Water and Waste Management at a meeting held on December 17, 2019. Recommendation #4 was worded as follows (emphasis added):

- "Receive a project status update on Energy Evolution including the **draft energy and emissions model** and a draft list of proposed projects to be more fully developed as part of the Energy Evolution Final Report..."

In addition, recommendation #5 was the following (emphasis added):

- "Direct staff to bring forward the final report for Energy Evolution: Ottawa's Community Energy Transition Strategy in **Q2 2020**..."

1 Recommendation #5 also stipulated that the final report for Energy Evolution must include a
2 finalized energy and emissions model; a financial and affordability analysis of the model; and
3 detailed descriptions of the proposed Energy Evolution projects.

4

5 On January 29, 2020, Ottawa City Council convened for a meeting during which the
6 recommendations from the December 17, 2019 meeting of the Standing Committee on
7 Environmental Protection, Water and Waste Management in relation to Energy Evolution were
8 likewise carried, with no modifications. (Please see pages 7-8 of Attachment JT 2.17(B): City of
9 Ottawa Council - January 29, 2020 Meeting Minutes).

10

11 Notwithstanding the establishment of Q2 2020 as the window for finalizing Energy Evolution's
12 energy and emissions model, the onset of the COVID-19 pandemic resulted in a delay to this
13 timeline. Through informal discussions with City of Ottawa staff, Hydro Ottawa has understood
14 that Fall 2020 is the revised targeted timeframe for submission of both the final Energy
15 Evolution report and model to City Council for approval.

16

17 In recent correspondence to stakeholders engaged in the Energy Evolution initiative (including
18 Hydro Ottawa), City staff confirmed their plans to submit the final Energy Evolution strategy to
19 the Standing Committee on Environmental Protection, Water and Waste Management in
20 October 2020. For reference, please see Attachment JT 2.17(C): Invitation to Energy Evolution
21 Sounding Board Meeting - August 12, 2020.¹

22 ¹ The original email invitation from City of Ottawa staff included a hyperlink enabling recipients to register for the
23 August 12, 2020 meeting. This link was embedded in the words "please sign up here." Hydro Ottawa has removed
24 that link from Attachment JT 2.17(C), as the link was only intended to be made available to members of the Energy
25 Evolution Sounding Board forum.



**Standing Committee on Environmental Protection,
Water and Waste Management**

Minutes 8

Tuesday, 17 December 2019

9:30 a.m.

Champlain Room, 110 Laurier Avenue W.

-
- Notes:**
1. *Underlining indicates a new or amended recommendation approved by Committee.*
 2. *Except where otherwise indicated, reports requiring Council consideration will be presented to Council on Wednesday, 29 January 2020 in Standing Committee on Environmental Protection, Water and Waste Management Report 8.*

Present:

Chair: Councillor S. Moffatt
Vice-Chair: Councillor S. Menard
Councillors: R. Brockington, J. Cloutier, K. Egli, and C. McKenney

Absent:

Councillors G. Darouze, A. Hubley and R. King (as advised)

DECLARATIONS OF INTEREST

No Declarations of Interest were filed.

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CONFIRMATION OF MINUTES

[Minutes 7, of the Standing Committee on Environmental Protection, Water and Waste Management meeting of Tuesday, 19 November 2019](#), were confirmed.

PLANNING, INFRASTRUCTURE AND ECONOMIC DEVELOPMENT

ECONOMIC DEVELOPMENT AND LONG RANGE PLANNING

1. [CLIMATE CHANGE MASTER PLAN AND THE ENERGY EVOLUTION MODEL](#)

ACS2019-PIE-EDP-0053

CITY WIDE

REPORT RECOMMENDATIONS:

That the Standing Committee on Environmental Protection, Water, and Waste Management recommend that Council:

1. Receive the 2017 and 2018 Greenhouse Gas (GHG) Inventories attached as Document 3 and as outlined in this report;
2. Approve:
 - a. New 2025, 2030 and 2040 corporate targets to reduce GHG emissions 100% by 2040 below 2012 levels;
 - b. New 2025, 2030, 2040 and 2050 community targets to reduce GHG emissions 100% by 2050 below 2012 levels;
3. Approve the Climate Change Master Plan attached as Document 4 and as outlined in this report;
4. Receive a project status update on Energy Evolution including the draft energy and emissions model and a draft list of proposed

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projects to be more fully developed as part of the Energy Evolution Final Report attached, as Documents 5, 6 and 7 and as outlined in this report;

- 5. Direct staff to bring forward the final report for Energy Evolution: Ottawa's Community Energy Transition Strategy in Q2 2020 that includes:**
 - a. Finalized energy and emissions model;**
 - b. A financial and affordability analysis of the model to identify the investment required, the net present value, the return on investment, marginal abatement costs, and employment impacts;**
 - c. Detailed descriptions of the proposed Energy Evolution projects listed in this report including roles and responsibilities, timelines, municipal authorities and barriers to implementation, equity and inclusion considerations, and resourcing needs;**
 - d. A proposed spending plan for the 2019 Hydro Ottawa Dividend Surplus once the value of the dividend surplus is known;**
- 6. Delegate authority to the Council Sponsors Group on Climate Change to provide the Mayor with a list of priority areas and activities, which are consistent with the Council-approved Climate Change Master Plan, to allow the Mayor to advocate with the provincial and federal governments on program funding, co-delivery opportunities and related policy and regulatory supports necessary to implement the Climate Change Master Plan priority projects, as appropriate; and**
- 7. Approve the spending plan in Document 13 and summarized in this report for \$210,000 of unspent 2017 and 2018 Hydro Ottawa Dividend Surplus funds.**

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The Committee received a detailed slide presentation overview of the report from Mr. Don Herweyer, Director, Economic Development and Long-Range Planning, Planning, Infrastructure and Economic Development (PIED) Department, Ms Jennifer Brown, Project Manager, Environmental Programs, Resiliency and Climate Change Unit, Economic Development Services, PIED (speaking to the Climate Change Master Plan) and Ms Andrea Flowers, Senior Project Manager, Engineering Systems, Resiliency and Climate Change Unit, Economic Development Services, PIED (addressing the Energy Evolution Model). A copy of this presentation is held on file with the City Clerk.

Messrs. Mike Fletcher, Project Manager, Environmental Programs, Resiliency and Climate Change Unit, Economic Development Services, PIED, Stephen Willis, General Manager, PIED, Kevin Wylie, General Manager, Public Works and Environmental Services (PWES) Department and Will McDonald, Chief Procurement Officer, Supply Services, Innovative Client Services (ICS) Department, were also present to respond to questions.

Also present were Councillors S. Blais, J. Harder, J. Leiper, J. Suds [Standing Committee Chair Members of the Council Climate Change Sponsors' Group (CCCSG)], and Councillor L. Dudas, also a member of the CCCSG. Councillor M. Fleury was also in attendance at the outset.

The Committee then heard from the following delegations, largely in support, but also offering caveats, suggesting improvements, or expressing doubts:

- Ms Joan Haysom, J.L. Richards & Associates
- Ms Sharon Coward, Executive Director, EnviroCentre
- Mr. Robb Barnes*, Executive Director, Ecology Ottawa (slide presentation)
- Mr. Raymond Leury*, President, Electric Vehicle Council of Ottawa (slide presentation)
- Mr. Dick Bakker*, President, CoEnergy Ontario Cooperative and Ottawa Renewable Energy Cooperative (slide presentation)
- Ms Angela Keller-Herzog*, Community Associations for Environmental Sustainability (CAFES – slide presentation)
- Mr. Charles Hodgson

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- Mr. Duncan Bury, Waste Watch Ottawa
- Mr. David McNicoll*
- Ms Ella Mar, P2Peak Consulting
- Dr. Michelle Meyer*, Prevent Cancer Now
- Mr. Rob Dixon
- Mr. Brian Tansey

Correspondence was also received from Mr. Doug Meyers*. Ms Sonia Fazari*, on behalf of Enbridge Gas, submitted a document entitled "*A Market-Ready Solution to Control Costs and Fight Climate Change*".

[* Individuals / groups marked with an asterisk above either provided comments in writing or by e-mail; all submissions are held on file with the City Clerk.]

The Committee's questions to staff and subsequent discussions included, but were not necessarily limited to: requirements at the political level to implement and achieve the report's stated goals; questions of funding requirements for same; liaising with other levels of government to leverage funding opportunities and to take advantage of available grants; whether existing electrical infrastructure will be able to cope with expected future demands; financial and technical hurdles to be overcome; opportunities to incentivize sustainability for new builds; the ability to apply a climate lens to the City's procurement strategy and throughout all Standing Committees; ongoing efforts to reduce greenhouse gases (GHGs) at the corporate and community levels; and, the need for greater education on what needs to be done to achieve the City's goals and targets.

Discussions having concluded, the report recommendations were put before the Committee and were 'CARRIED' as presented, along with the following Direction to Staff, after having consulted with the Chief Procurement Officer.

DIRECTION TO STAFF:

That staff immediately accelerate a climate lens with regard to City procurement decisions.

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PLANNING, INFRASTRUCTURE AND ECONOMIC DEVELOPMENT

- **ECONOMIC DEVELOPMENT AND LONG RANGE PLANNING**

PUBLIC WORKS AND ENVIRONMENTAL SERVICES

- **PARKS, FORESTRY AND STORMWATER SERVICES**

2. [TREE BY-LAW REVIEW PROJECT](#)

ACS2019-PIE-EDP-0052

CITY WIDE

REPORT RECOMMENDATIONS:

That the Standing Committee on Environmental Protection, Water and Waste Management recommend that Council:

1. **Approve the proposed Tree Protection By-law, in the form attached as Documents 1 and 2, and as described in this report;**
2. **Approve the proposed Application Fees, attached in Document 2 as Schedule “D” of the proposed Tree Protection By-law, and summarized in Document 5 – Fee Schedule;**
3. **Approve the phased approach to the implementation of the Tree By-law Review, as described in this report;**
4. **Direct staff to report back with Phase 2 amendments to the Tree Protection By-law, as described in this report in Q3 2020;**
5. **Approve the establishment of two new permanent full-time Forestry Inspector positions in Public Works and Environmental Services in 2020 for the implementation of Phase 1 of the Tree Protection By-law, the cost of which will be offset by increased revenues from the new fees for a net zero impact on the 2020 budget; and**

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- 6. Delegate the authority to the General Manager, Planning, Infrastructure and Economic Development and the City Solicitor to finalize and make any necessary adjustments to the proposed Tree Protection By-law to give effect to the intent of Council.**

The Committee received a detailed slide presentation overview of the report from Ms Martha Copestake, Forester – Planning, Natural Systems and Rural Affairs, Economic Development Services, PIED. A copy of this presentation is held on file with the City Clerk.

Following the staff presentation, Councillor Cloutier read the following Motion:

MOTION N^o EPWWM 2019 08/01

Introduced by Councillor J. Cloutier:

WHEREAS report ACS2019-PIE-EDP-0052 proposes a new Tree Protection By-law to support the protection and enhancement of the City's urban tree canopy; and

WHEREAS the proposed By-law includes permit fees (on a per tree basis) for the removal of distinctive trees; and

WHEREAS the permit fee for removing a tree that is not associated with infill development is \$150 per tree, up to a maximum of \$750 (or five trees); and

WHEREAS the permit fee for removing a tree that is associated with infill development is \$500, but with no maximum indicated; and

WHEREAS staff recommend implementing a maximum permit fee for infill development for consistency;

THEREFORE, BE IT RESOLVED that the Standing Committee on Environmental Protection, Water and Waste Management recommend to Council that the By-law be amended to set the maximum permit fee for infill development at \$2500 (or five trees), to correspond with the limit set for non-infill tree removals.

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Responding to Committee questions, Ms. Copestake explained that the purpose of the staff-drafted Motion was to amend the By-law to set maximum permit fees, as a fee structure had not yet been established at the time of stakeholder consultations.

The Committee then heard from the following delegations, who provided comment on, or recommended amendments to, the By-law:

- Mr. Brian Beaven*, Co-Chair, Trees & Greenspace Committee, Centretown Community Association
- Mr. Robb Barnes*, Executive Director, Ecology Ottawa (slide presentation)
- Mr. Daniel Buckles*, PhD, Community Associations for Environmental Sustainability (CAFES – slide presentation)
- Mr. Paul Johanis*, Greenspace Alliance of Canada's Capital
- Ms Heather Pearl*, Federation of Citizens' Associations (slide presentation)
- Mr. John Dickie*, Chair, Eastern Ontario Landlord Organization
- Mr. Jason Burggraaf*, Executive Director, Greater Ottawa Home Builders Association

[* Individuals / groups marked with an asterisk above either provided comments in writing or by e-mail; all submissions are held on file with the City Clerk.]

The Committee's questions to staff and subsequent discussions included, but were not necessarily limited to: concerns with a phased-in approach versus full, immediate implementation of the By-law recommendations; related costing and cost recovery; tree loss due to LRT Phase II construction; ensuring that Forestry staff are included at the start of projects to allow for their input; ensuring that best practices are studied and followed; tree replacement due to tornado damage; explanations of private and developer tree replacement ratios; and, striking a balance between competing intensification objectives to ensure that trees remain a priority.

Discussions having concluded, Councillor Menard recommended against supporting the Motion, as he felt the recommended caps would disincentivize the protection of trees. He asked that the Motion be voted upon. Chair Moffatt

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suggested that the Motion be referred to Council without a recommendation, so that additional information might be provided by the time this matter rises to Council. Ms Caitlin Salter MacDonald, Program Manager, Council and Committee Services, Office of the City Clerk, clarified procedure matters, after which Councillor Cloutier withdrew the Motion, on the basis that more information was required, with respect to costs and cost recovery aspects as mandated under the *Municipal Act*. The report recommendations were then put before the Committee and were 'CARRIED' as presented, along with the following Direction to Staff:

DIRECTION TO STAFF:

That staff determine, and report back to Committee in the Phase 2 Report, on how best to consider canopy cover targets, at the neighbourhood level, as a part of the tree permitting process under the new Tree Protection By-law, once the targets have been identified and included in the City's new Official Plan.

NOTICES OF MOTIONS
(FOR CONSIDERATION AT A SUBSEQUENT MEETING)

MOTION N^O EPWWM 2019 08/02

Moved by Councillor S. Menard:

WHEREAS The City of Ottawa has declared a Climate Emergency for the purposes of naming, framing, and deepening our commitment to protecting our economy, our eco systems, and our community from climate change. As part of this commitment, Council has recognized climate change as a strategic priority in the City's strategic plan and accompanying budget directions for the remaining Term of Council.

WHEREAS City of Ottawa investments are limited by the Municipal Act to mostly short-term money market instruments and other fixed income holdings. However, the City invests in equities in its Endowment Fund that was established in 2005 with the privatization of Ottawa Hydro. As of December 31, 2017, fossil fuel investments represented about 3.7 percent

STANDING COMMITTEE ON ENVIRONMENTAL PROTECTION,
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(or \$7.4 million) of the City's approximately \$200 million endowment fund. This is already down from 8.5% at the end of 2013. Divesting the remaining funds and re-investing in sustainable energy opportunities would be an important signal of Ottawa's commitment to climate change mitigation. Further, directing those investments locally would help stimulate a local economic development opportunity and fulfill greenhouse gas reduction targets.

WHEREAS Divestment can also reduce risk and improve performance of investment portfolios by removing volatile fossil fuel stocks and reducing exposure to carbon pricing, climate, and litigation risk. Demonstrably, Shell's 2018 Annual Report acknowledged that "Rising climate change concerns have led and could lead to additional legal and/or regulatory measures which could result in project delays or cancellations, a decrease in demand for fossil fuels, potential litigation and additional compliance obligations." The media, research, and information company Corporate Knights released a study in October estimating the New York state retirement fund would be \$22 billion US richer had it divested from fossil fuel stocks 10 years ago. Some might argue that it is disingenuous to pass policies aimed at reducing GHG emissions while simultaneously profiting from companies that spend millions lobbying for preferential subsidies, blocking carbon policies, cutting support for clean energy, and funding climate change denial.

WHEREAS The divestment movement has mainstreamed into a potent tool for ethical investing, as major institutions with almost \$8 trillion in US in assets have committed to divest from fossil fuel companies. So far, over 130 cities around the world have committed to divestment, including San Francisco - California, Seattle - Washington, Portland - Oregon, Oxford - United Kingdom, Boxtel - Netherlands, Moreland - Australia and Dunedin - New Zealand. Within Canada, Victoria City Council passed a responsible investing motion emphasizing fossil fuel divestment and the mayor of Montreal invited managers of city pension funds to divest from fossil fuels.

WHEREAS A motion dealing with the Endowment Fund is within the jurisdiction of the Finance and Economic Development Committee (FEDC).

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It also overlaps with the stated terms of reference for SCEPWWM: “Ensure co-ordination and consultation with other Standing Committees and departments where responsibilities overlap on issues of environmental protection and on issues relevant to the mandate of more than one Committee.”

THEREFORE MAY IT BE RESOLVED that the Standing Committee on Environmental Protection, Water and Waste Management (SCEPWWM) recommend to Finance and Economic Development Committee (FEDC) that the City of Ottawa:

- **Commit to no new purchases of stocks or mutual funds with coal, oil, and gas companies, specifically excluding any new investment in the 200 largest publicly traded fossil fuel corporations;**
- **Sell off all fossil fuel holdings from these same companies over the next five years;**
- **Reinvest the proceeds into clean energy and sustainable companies**

*[Per direction from the Councillor’s Office, the above
Notice of Motion was subsequently withdrawn.]*

ADJOURNMENT

The meeting was adjourned at 3:05 p.m.

Committee Coordinator

Chair



OTTAWA CITY COUNCIL

Wednesday, 29 January 2020

10:00 AM

Andrew Haydon Hall, 110 Laurier Avenue W.

MINUTES 26

The Council of the City of Ottawa met at Andrew S. Haydon Hall, 110 Laurier Avenue West, Ottawa, on Wednesday, 29 January 2020 beginning at 10:00 a.m.

The Mayor, Jim Watson, presided and invited Algonquin Elder Claudette Commanda of Kitigan Zibi Anishinabeg First Nation to deliver an opening blessing for the first City Council meeting of 2020.

NATIONAL ANTHEM

The national anthem was performed by students from Ecole Notre Place.

ANNOUNCEMENTS/CEREMONIAL ACTIVITIES

RECOGNITION - MAYOR'S CITY BUILDER AWARD

Mayor Watson and Councillor Egli presented the Mayor's City Builder Award to Susan Ingram, Executive Director, Big Brothers Big Sisters of Ottawa at the start of the City Council meeting today, in recognition of the organization's commitment to making our city a better place through volunteerism and exemplary action.

Big Brothers Big Sisters of Ottawa is celebrating their 50th anniversary in 2020 and the organization has had a positive impact on the lives of many Ottawa children and

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their big brothers and sisters. Annually, more than 1,000 big brothers and big sisters help 1,100 children who need a special friend.

Big Brothers Big Sisters of Ottawa offers safe, quality programs that help children realize their potential, gain confidence and become future leaders. The organization brings people together through strong one-on-one relationships and uses mentoring to enrich the lives of everyone involved.

ROLL CALL

All Members were present at the meeting, except Councillor D. Deans (See Motion No. 20/1 of September 25, 2019), and Councillor R. Chiarelli.

STATE OF THE CITY ADDRESS – MAYOR WATSON

MOTION NO 26/1

Moved by Councillor G. Darouze

Seconded by Councillor M. Luloff

BE IT RESOLVED that the Mayor's remarks given at the City Council meeting on January 29, 2020 be appended to the Minutes of today's Council meeting.

CARRIED

VERBAL UPDATE

Council received a verbal update from Dr. Vera Etches, Medical Officer of Health, provided an update on the current situation with respect to Novel Coronavirus and Ottawa Public Health's ongoing response. Anthony DiMonte, General Manager of Emergency and Protective Services provided an update on activities of the Office of Emergency Management and Ottawa Paramedic Services in relation to this virus.

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CONFIRMATION OF MINUTES

Confirmation of the Minutes of the regular Council meeting of December 11, 2019.

CONFIRMED

DECLARATIONS OF INTEREST INCLUDING THOSE ORIGINALLY ARISING FROM PRIOR MEETINGS

No declarations of interest were filed.

COMMUNICATIONS

The following communications were received.

Association of Municipalities of Ontario (AMO):

- AMO's 2020 Pre-Budget Submission
- Infrastructure and Court Security Funding News
- Government announces consultation on re-composition of OPP Detachment Boards
- Queen's Park Update

Response to Inquiries:

- OCC 19-19 - Maintenance Records Related to O-Train Door Issues

Petitions:

- Petition received containing the signatures of 882 individuals calling on Ottawa City Council to adopt Councillor McKenney's Housing Emergency Motion.

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Other Communications Received:

- Additional electronic submission received containing the names of 6698 individuals calling on Ottawa City Council to adopt Councillor McKenney's Housing Emergency motion

REGRETS

Councillor D. Deans advised she would be absent from the City Council meeting of 29 January 2019 (See Motion No. 20/1 of September 25, 2019).

MOTION TO INTRODUCE REPORTS

MOTION NO 26/2

Moved by Councillor G. Gower

Seconded by Councillor M. Luloff

That Built Heritage Sub-Committee Reports 9 and 10; Standing Committee on Environmental Protection, Water and Waste Management Report 8; Planning Committee Reports 18 and 19; and the reports from the City Clerk entitled "Status Update – Council Inquiries and Motions for the Period Ending November January 24, 2020" and "Summary of Oral and Written Public Submissions for Items Subject to the *Planning Act* 'Explanation Requirements' at the City Council Meeting of December 11, 2019"; be received and considered; and

That the Petition with respect to Councillor McKenney's Housing Emergency Motion, listed on the Agenda, be received.

CARRIED

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REPORTS

CITY CLERK

1. [STATUS UPDATE – COUNCIL INQUIRIES AND MOTIONS FOR THE PERIOD ENDING JANUARY 24, 2020](#)

REPORT RECOMMENDATION

That Council receive this report for information.

RECEIVED

COMMITTEE REPORTS

BUILT HERITAGE SUB-COMMITTEE REPORT 9

2. [DESIGNATION OF THE FORMER TRADERS BANK OF CANADA, 1824 FARWEL STREET, UNDER PART IV OF THE ONTARIO HERITAGE ACT](#)

SUB-COMMITTEE RECOMMENDATION

That Council issue a Notice of Intention to Designate the property located at 1824 Farwel Street as a property of cultural heritage value and interest under Part IV of the *Ontario Heritage Act* according to the Statement of Cultural Heritage Value attached as Document 4.

CARRIED

[BUILT HERITAGE SUB-COMMITTEE REPORT 10](#)

- | |
|--|
| 3. <u>PHASE II CLEMOW ESTATE HERITAGE CONSERVATION DISTRICT STUDY: DESIGNATION OF THE CLEMOW-MONKLAND DRIVEWAY AND LINDEN TERRACE HERITAGE CONSERVATION DISTRICT</u> |
|--|

SUB-COMMITTEE RECOMMENDATIONS

That Council:

1. **Receive the Phase II Clemow Estate Heritage Study, attached as Document 3 for information;**
2. **Approve the designation of the Clemow-Monkland Driveway and Linden Terrace Heritage Conservation District as identified in Document 1 by by law under Section 41 of the *Ontario Heritage Act*;**
3. **Adopt the proposed Clemow-Monkland Driveway and Linden Terrace Heritage Conservation District Plan by by-law as shown in Document 2 (see amended Document 2 distributed with this Report, as amended by Motion No. BHSC 10/1);**
4. **Direct Heritage staff to include a preliminary heritage conservation district study of Bank Street between the Queensway and the Bank Street Bridge, with its prioritization to be identified in the 2020 Planning, Infrastructure and Economic Development Department workplan for the remainder of the Term of Council.**

CARRIED

STANDING COMMITTEE ON ENVIRONMENTAL PROTECTION,
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4. [CLIMATE CHANGE MASTER PLAN AND THE ENERGY
EVOLUTION MODEL](#)

COMMITTEE RECOMMENDATIONS:

That Council:

1. **Receive the 2017 and 2018 Greenhouse Gas (GHG) Inventories attached as Document 3 and as outlined in this report;**
2. **Approve:**
 - a. **New 2025, 2030 and 2040 corporate targets to reduce GHG emissions 100% by 2040 below 2012 levels;**
 - b. **New 2025, 2030, 2040 and 2050 community targets to reduce GHG emissions 100% by 2050 below 2012 levels;**
3. **Approve the Climate Change Master Plan attached as Document 4 and as outlined in this report;**
4. **Receive a project status update on Energy Evolution including the draft energy and emissions model and a draft list of proposed projects to be more fully developed as part of the Energy Evolution Final Report attached, as Documents 5, 6 and 7 and as outlined in this report;**
5. **Direct staff to bring forward the final report for Energy Evolution: Ottawa's Community Energy Transition Strategy in Q2 2020 that includes:**
 - a. **Finalized energy and emissions model;**
 - b. **A financial and affordability analysis of the model to**

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- identify the investment required, the net present value, the return on investment, marginal abatement costs, and employment impacts;
 - c. Detailed descriptions of the proposed Energy Evolution projects listed in this report including roles and responsibilities, timelines, municipal authorities and barriers to implementation, equity and inclusion considerations, and resourcing needs;
 - d. A proposed spending plan for the 2019 Hydro Ottawa Dividend Surplus once the value of the dividend surplus is known;
6. Delegate authority to the Council Sponsors Group on Climate Change to provide the Mayor with a list of priority areas and activities, which are consistent with the Council-approved Climate Change Master Plan, to allow the Mayor to advocate with the provincial and federal governments on program funding, co-delivery opportunities and related policy and regulatory supports necessary to implement the Climate Change Master Plan priority projects, as appropriate; and
7. Approve the spending plan in Document 13 and summarized in this report for \$210,000 of unspent 2017 and 2018 Hydro Ottawa Dividend Surplus funds.

CARRIED

5. [TREE BY-LAW REVIEW PROJECT](#)

COMMITTEE RECOMMENDATIONS

That Council:

1. **Approve the proposed Tree Protection By-law, in the form attached as Documents 1 and 2, and as described in this report;**
2. **Approve the proposed Application Fees, attached in Document 2 as Schedule “D” of the proposed Tree Protection By-law, and summarized in Document 5 – Fee Schedule;**
3. **Approve the phased approach to the implementation of the Tree By-law Review, as described in this report;**
4. **Direct staff to report back with Phase 2 amendments to the Tree Protection By-law, as described in this report in Q3 2020;**
5. **Approve the establishment of two new permanent full-time Forestry Inspector positions in Public Works and Environmental Services in 2020 for the implementation of Phase 1 of the Tree Protection By-law, the cost of which will be offset by increased revenues from the new fees for a net zero impact on the 2020 budget; and**
6. **Delegate the authority to the General Manager, Planning, Infrastructure and Economic Development and the City Solicitor to finalize and make any necessary adjustments to the proposed Tree Protection By-law to give effect to the intent of Council.**

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MOTION NO 26/3

Moved by Councillor S. Moffatt

Seconded by Councillor J. Cloutier

WHEREAS report ACS2019-PIE-EDP-0052 proposes a new Tree Protection By-law to support the protection and enhancement of the City's urban tree canopy; and

WHEREAS the proposed By-law includes permit fees (on a per tree basis) for the removal of distinctive trees; and

WHEREAS the permit fee for removing a tree that is not associated with infill development is \$150 per tree, up to a maximum of \$750 (or five trees); and

WHEREAS the permit fee for removing a tree that is associated with infill development is \$500 per tree, with no maximum limit set; and

WHEREAS after discussing with stakeholders and for consistency reasons, staff now recommend implementing a maximum permit fee for infill development to avoid overcharging applicants for the cost of processing a permit; and

WHEREAS application fees for permits under the *Municipal Act* are to be established with the goal of cost recovery (not for profit); and

WHEREAS there is no maximum limit on the tree compensation requirements;

THEREFORE, BE IT RESOLVED that the By-law be amended to set the maximum permit fee for infill development at \$2500 (or five trees), to correspond with the limit set for non-infill tree removals.

CARRIED on a division of 15 YEAS and 7 NAYS, as follows:

YEAS (15): Councillors S. Moffatt, M. Luloff, A. Hubley, G. Darouze, J. Sudds, G. Gower, L. Dudas, T. Tierney, J. Cloutier, J. Harder, K. Egli, S. Blais, E. El-Chantiry, M. Fleury, Mayor J. Watson

NAYS (7): Councillors R. King, C. A. Meehan, J. Leiper, T. Kavanagh, R. Brockington, S. Menard, C. McKenney,

The item, as amended by Motion 26/3 was put to Council and CARRIED.

PLANNING COMMITTEE REPORT 18

6. <u>ZONING BY-LAW AMENDMENT - 1375 CLYDE AVENUE</u>

COMMITTEE RECOMMENDATIONS, AS AMENDED

That Council:

1. **approve an amendment to Zoning By-law 2008-250 for 1375 Clyde Avenue to permit a self-storage building and restaurant, as detailed in Document 2;**
2. **add the completion of an urban design analysis of the Merivale Triangle to the Planning, Infrastructure and Economic Development Department's multi-year workplan, and direct staff to undertake this analysis as soon as feasible;**
3. **approve that there be no further notice pursuant to Subsection 34 (17) of the *Planning Act*.**

Recommendation 1 LOST on a division of 5 YEAS and 17 NAYS, as follows:

YEAS (5): Councillors S. Moffatt, G. Darouze, T. Tierney, J. Harder,
E. El-Chantiry

NAYS (17): Councillors M. Luloff, A. Hubley, J. Sudds, G. Gower, L. Dudas,
R. King, C. A. Meehan, J. Leiper, T. Kavanagh, R. Brockington,
J. Cloutier, S. Menard, C. McKenney, K. Egli, S. Blais, M. Fleury,
Mayor J. Watson

The following motion was then put to Council:

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MOTION NO 26/4

Moved by Councillor K. Egli

Seconded by Councillor G. Gower

Whereas 1375 Clyde Avenue is located on the last large developable parcel within the Fisher Heights Community; and

Whereas it is important that the development on this site takes place in conformity with the Merivale Road Secondary Plan; and

Whereas a warehouse limited to self-storage does not conform to nor implement the vision of the Merivale Road Secondary Plan; and

Whereas a restaurant is already a permitted use in the AM10 subzone and thus will continue to be permitted if the requested rezoning for 1375 Clyde Avenue is refused;

Therefore Be It Resolved that Recommendations 2 and 3 be renumbered as 3 and 4 respectively

Be It Further Resolved that Recommendation 1 be deleted and replaced with the following:

- “1. Approve that the requested amendment to Zoning By-law 2008-250 for 1375 Clyde Avenue to permit a self-storage building and restaurant be refused;**
- 2. Approve that the reasons for refusal are the following:**
 - a. The site is a gateway to the Fisher Heights community and the proposed self-storage use is not consistent with this site’s role as a gateway.**
 - b. The majority of the site is subject to the Merivale Road Secondary Plan and the proposed self-storage use is not in conformity with this Secondary Plan in that:**
 - i. The rezoning does not promote a stronger movement to a mixed use that includes a residential use;**

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- ii. **The rezoning does not encourage the provision of additional housing opportunities;**
- iii. **The rezoning for a warehouse limited to a self-storage use does not promote a use that is pedestrian oriented and fosters community and human interaction and is therefore contrary to the vision of the Merivale Secondary Official Plan.”**

CARRIED on a division of 14 YEAS and 8 NAYS, as follows:

YEAS (14): Councillors G. Gower, L. Dudas, R. King, C. A. Meehan, J. Leiper, T. Kavanagh, R. Brockington, J. Cloutier, S. Menard, C. McKenney, K. Egli, S. Blais, M. Fleury, Mayor J. Watson

NAYS (8): Councillors S. Moffatt, M. Luloff, A. Hubley, G. Darouze, J. Sudds, T. Tierney, J. Harder, E. El-Chantiry,

The item, as amended by Motion 26/4, was put to Council and CARRIED with Councillor J. Harder dissenting.

7. <u>ZONING BY-LAW AMENDMENT – 966, 968 AND 974 FISHER AVENUE</u>
--

COMMITTEE RECOMMENDATION

That Council approve an amendment to Zoning By-law 2008-250 for 966, 968 and 974 Fisher Avenue to rezone the properties from the R2F zone to an R4N zone with exceptions and an associated schedule (R4N [XXXX] SXXX) to permit two, three-storey low-rise apartment buildings, as detailed in Document 2.

MOTION NO 26/5

Moved by Councillor R. Brockington
Seconded by Councillor J. Harder

WHEREAS Report ACS2019-PIE-PS-0128 recommends approval and adoption of Zoning By-law Amendment – 966, 968 and 974 Fisher Avenue; and

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WHEREAS staff has identified a minor change to the proposed Zoning By-law Schedule;

THEREFORE BE IT RESOLVED that Council approve that the Zoning By-law Schedule (Document 3) be amended by removing the reference to elevation above sea level.

BE IT FURTHER RESOLVED THAT pursuant to the *Planning Act*, subsection 34(17) no further notice be given.

CARRIED

The item, as amended by Motion 26/5, was put to Council and CARRIED.

8. <u>ZONING BY-LAW AMENDMENT - 2175 CARLING AVENUE</u>

COMMITTEE RECOMMENDATIONS, AS AMENDED

That Council:

1. approve an amendment to Zoning By-law 2008-250 for 2175 Carling Avenue to permit a 22-storey and a four-storey mixed-use building, as detailed in Document 2;
2. approve that the Zoning By-law Schedule be amended, as detailed in attachment 1 of motion No PLC 2019-18/3 and as follows:
 - a. remove reference to elevation above sea, which was erroneously used; and
 - b. change a rounding error modifying the minimum setback between Area C to Carling Avenue from 4.8m to 4.7m;
3. approve that pursuant to the *Planning Act*, subsection 34(17), no further notice be given.

CARRIED

9. [FEEDMILL CREEK STORMWATER MANAGEMENT CRITERIA STUDY, STREAM REHABILITATION CLASS ENVIRONMENTAL ASSESSMENT, AND AREA-SPECIFIC BACKGROUND STUDY FOR FEEDMILL CREEK IN-STREAM MEASURES](#)

COMMITTEE RECOMMENDATIONS, AS AMENDED

That Council:

1. approve the filing of the Class Environmental Assessment for the Feedmill Creek Stream Rehabilitation Measures, listed as Document 1, for the 30-day public review period in accordance with the *Ontario Environmental Assessment Act*;
2. approve the City of Ottawa Area-specific Development Charge Background Study for Feedmill Creek In-stream Measures, listed as Document 2, and authorize the enactment of the implementing Feedmill Creek In-stream Measures Development Charges By-law, 2020, as amended by the following:
 - a. that the following amendments be made to subsection 8(4) of the draft By-law:
 - in clause 8(4), add the words 'plus applicable H.S.T', such that the revised clause reads "(4) An amount of \$566,000.00, plus applicable H.S.T., shall be due from the Kanata West Owners Group Inc. in accordance with the following:"
 - in clause 8(4), subsection (b), add the words 'plus applicable H.S.T', such that the revised subsection reads "8(4)(b) The agreement shall provide for two payments, one for \$200,000.00, plus applicable H.S.T, and one for \$356,000.00, plus applicable H.S.T."

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- in clause 8(4), subsection (c), add the words ‘subsection (2) and’, such that the revised subsection reads “8(4)(c) The amounts set in subsection (2) and clause (b) may be adjusted upon certification by the Treasurer and the General Manager, Planning, Infrastructure and Economic Development Department that such is appropriate based upon the principles in the background study.”
3. approve that no further notice be given, pursuant to the *Development Charges Act*, subsection 12(3).

MOTION NO 26/6

Moved by Councillor G. Gower
Seconded by Councillor J. Harder

WHEREAS the amount due for the development charges from Kanata West for the Feedmill Creek In-Stream Measures is to be paid in two lump sums; and

WHEREAS these amounts (\$200,000 and \$356,000, each plus applicable H.S.T.) have been finalized and agreed to; and

WHEREAS it is therefore appropriate to modify the development charges by-law to delete the reference to these amounts being subject to adjustment and to reference the lands in Kanata West in the text of the by-law and Schedule “A” as to not being subject to any charges under the by-law other than the two lump sums referenced above;

THEREFORE BE IT RESOLVED that the Feedmill Creek In-Stream Measures Development Charges by-law, 2000 be modified:

- (a) in clause 8(4)(c) to delete the provision related to Kanata West;
- (b) in subsection 8(3) and Schedule “A”, to reference the lands within Kanata West; and
- (c) to clarify that two payments of \$200,000 and \$356,000, each plus applicable H.S.T., are to be made

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BE IT FURTHER RESOLVED That, pursuant to the *Development Charges Act*, Subsection 12(3), no further notice be given.

CARRIED

The item, as amended by Motion 26/6, was put to Council and CARRIED.

[PLANNING COMMITTEE REPORT 19](#)

10. <u>ZONING BY-LAW AMENDMENT – 1426 SCOTT STREET</u>
--

COMMITTEE RECOMMENDATION

No Committee recommendation

MOTION NO 26/7

Moved by Councillor J. Leiper

Seconded by Councillor J. Harder

WHEREAS the recommendation to approve the extension of the temporary zoning for a parking lot was lost at the Planning Committee meeting of January 23, 2020; and

WHEREAS the *Planning Act* process provides for the formal refusal of a item together with the reasons for refusal;

THEREFORE BE IT RESOLVED that Council approve that:

1. The application for an amendment to Zoning By-law 2008-250 for 1426 Scott Street to permit the continuance of a non-conforming parking lot for the period of two years be refused.
2. The reasons for the refusal of the zoning amendment are:
 - a. The site is in proximity to the LRT line and therefore a transit supportive use rather than a surface parking lot is appropriate for this location;

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- b. **The Scott Street Secondary Plan encourages the redevelopment of parking lots; and**
- c. **While a short-term presence of a surface parking lot was acceptable in the past as a mediated solution, this continuing presence of a non-conforming surface parking lot is not consistent with the vision for the community.**

CARRIED

The item, as amended by Motion 26/7, was put to Council and CARRIED.

11. <u>ZONING BY-LAW AMENDMENT – 116 YORK STREET</u>
--

COMMITTEE RECOMMENDATION

That Council refuse an amendment to Zoning By-law 2008-250 for 116 York Street to permit a 17-storey hotel, as detailed in Document 2.

CARRIED with Councillors R. Brockington and M. Luloff dissenting.

12. <u>ZONING BY-LAW AMENDMENT AND SITE PLAN CONTROL – 19, 29 AND 134 ROBINSON AVENUE</u>

COMMITTEE RECOMMENDATIONS, AS AMENDED

That Council approve:

- a. **an amendment to the Zoning By-law 2008-250 for 17, 19 and 23 Robinson Avenue to permit the development of a mid-rise apartment building, as detailed in Document 2;**
- b. **an amendment to the Zoning By-law 2008-250 for 27, 29 and**

31 Robinson Avenue to permit the development of a mid-rise apartment building, as detailed in Document 4;

- c. an amendment to the Zoning By-law 2008-250 for 130, 134 and 138 Robinson Avenue to permit the development of a mid-rise apartment building, as detailed in Document 6;**
- d. Site Plan Control application D07-12-18-0174, concerning 17, 19 and 23 Robinson Avenue, for the construction of a new six-storey building containing 46 units, as provided in Documents 7 and 8;**
- e. Site Plan Control application D07-12-18-0164, concerning 27, 29 and 31 Robinson Avenue, for the construction of a new six-storey building containing 46 units, as provided in Documents 9 and 10;**
- f. Site Plan Control application D07-12-18-0172, concerning 130, 134 and 138 Robinson Avenue, for the construction of a new six-storey building containing 46 units, as provided in Documents 11 and 12;**
- g. the Site Plan approvals of recommendations 3(a), (b) and (c) to only come into effect when the zoning, Recommendations 1 (a), (b) and (c), comes into full force and effect.**

MOTION NO 26/8

Moved by Councillor M. Fleury
Seconded by Councillor J. Harder

WHEREAS Report ACS2020-PIE-PS-0001, Zoning By-law Amendment and Site Plan Control recommends approval for zoning by-law amendments and site plan control for three separate six-storey apartment buildings at each of the following municipal addresses:

- a) 17, 19 and 23 Robinson,**
- b) 27, 29 and 31 Robinson, and**
- c) 130, 134 and 138 Robinson;**

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WHEREAS the plans recommended for approval include a rooftop amenity area on each building; and

WHEREAS Sandy Hill has experienced negative impacts with rooftop amenity areas associated with noise complaints and privacy concerns and it is desirable to prohibit this use in the circumstances;

THEREFORE BE IT RESOLVED that a zoning provision be added to the Details of Recommended Zoning in Documents 2, 4 and 6 similar in effect to the following:

“Outdoor rooftop amenity areas are prohibited”

AND BE IT FURTHER RESOLVED that pursuant to the *Planning Act*, Subsection 34(17) no further notice be given.

CARRIED

MOTION NO 26/9

Moved by Councillor M. Fleury
Seconded by Councillor J. Harder

WHEREAS Report ACS2020-PIE-PS-0001, Zoning By-law Amendment and Site Plan Control, recommends site plan approval for three proposed six-storey buildings at each of the following municipal addresses:

- d) 17, 19 and 23 Robinson,**
- e) 27, 29 and 31 Robinson, and**
- f) 130, 134 and 138 Robinson;**

WHEREAS delegated authority for staff to grant site plan approval for the said applications has not been removed by the Ward Councillor at this time;

WHEREAS the plans recommended for approval include an outdoor rooftop amenity area on each building;

WHEREAS Sandy Hill has experienced negative impacts with outdoor rooftop amenity areas associated with noise complaints and privacy concerns;

WHEREAS Council has now approved amended zoning provisions which require the developer to remove the outdoor rooftop amenity areas;

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AND WHEREAS as of Tuesday January 28, 2020 the developer had proposed a revision to the plans and reports to remove the outdoor rooftop amenity areas and to make adjustments to engineering plans, site lighting, fencing, and indoor amenity areas, which require further review by Staff;

THEREFORE BE IT RESOLVED that the site plan applications for

- a) 17, 19 and 23 Robinson,
- b) 27, 29 and 31 Robinson, and
- c) 130, 134 and 138 Robinson;

be referred back to staff for approval in accordance with the recitals of this motion.

CARRIED

The Item, as amended by Motions 26/8 and 26/9, was put to Council and CARRIED, with Councillors M. Fleury and R. Brockington dissenting.

13. <u>ZONING BY-LAW AMENDMENT AND SITE PLAN CONTROL – 36 ROBINSON AVENUE</u>

COMMITTEE RECOMMENDATION

That Council approve or an amendment to Zoning By-law 2008-250 for 36 Robinson Avenue to permit a nine-storey apartment building, as detailed in Document 2.

MOTION NO 26/10

Moved by Councillor M. Fleury
Seconded by Councillor J. Harder

WHEREAS Report ACS2020-PIE-PS-0002, Zoning By-law Amendment and Site Plan Control – 36 Robinson Avenue recommends approval for Zoning By-law Amendments and Site Plan Control to permit a nine-storey apartment building; and

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WHEREAS the Ward Councillor raised concerns about the building and site design as it relates to resident safety; and

WHEREAS the Site Plan and Landscape Plan have been revised to show side yard gates and exterior lighting to ensure the safety and security of building residents;

THEREFORE BE IT RESOLVED that Document 4, the list of approved plans and studies for the Site Plan Control application be amended to add updated plans and studies as follows:

- 1. Site Plan, drawing no. SP-1, prepared by Hobin Architecture, dated January 10, 2019, project no. 1834, Revision 15, dated 20/01/28.**
- 2. Tree Conservation Report and Landscape Plan, project no. 19MIS1936, dated March 2019, prepared by James B. Lennox and Associates Inc., Revision 5, dated 01/28/2020.**

CARRIED

The item, as amended by Motion 26/10, was put to Council and CARRIED, with Councillor M. Fleury dissenting.

CITY CLERK

- | |
|--|
| 14. <u>SUMMARY OF ORAL AND WRITTEN PUBLIC SUBMISSIONS FOR ITEMS SUBJECT TO THE <i>PLANNING ACT</i> 'EXPLANATION REQUIREMENTS' AT THE CITY COUNCIL MEETING OF DECEMBER 11, 2019</u> |
|--|

REPORT RECOMMENDATION

That Council approve the Summaries of Oral and Written Public Submissions for items considered at the City Council Meeting of December 11, 2019 that are subject to the 'Explanation Requirements' being the *Planning Act*, subsections 17(23.1), 22(6.7), 34(10.10) and 34(18.1), as applicable, as described in this report and attached as Documents 1 to 8.

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MOTION NO 26/11

Moved by Councillor E. El-Chantiry
Seconded by Councillor S. Moffatt

WHEREAS, in accordance with the process approved by Council as part of the 2014-2018 Mid-term Governance Review, the Clerk's Office prepared a report summarizing the Oral and Written public submissions received with respect to Planning Applications considered at the City Council meeting of December 11, 2019 that were subject to the relevant *Planning Act* provisions; and

WHEREAS Document 1 of the report includes the oral and written submissions were heard and received by the Agriculture and Rural Affairs Committee (ARAC) on 5 December 2019 regarding Official Plan and Zoning By-law Amendments – 1966 Roger Stevens Drive (Report ACS2019-PIE-PS-0132); and

WHEREAS additional written comments were received by the City Clerk's office following the ARAC meeting and circulated to Council in advance of the before Council of 11 December; and

WHEREAS the latter submissions were omitted from noted on the Summary of Oral and Written Submissions report in error;

THEREFORE BE IT RESOLVED that Council replace Document 1 with the attached Revised Document 1 - Summary of Oral and Written Submissions for 1966 Roger Stevens Drive (*Revised Document 1 on file with the City Clerk*).

CARRIED

The item, as amended by Motion 26/11, was put to Council and CARRIED.

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BULK CONSENT AGENDA

[BUILT HERITAGE SUB-COMMITTEE REPORT 10](#)

- | |
|--|
| A. <u>EXTENSION OF HERITAGE PERMIT FOR 255 MACKAY STREET,
A PROPERTY LOCATED IN NEW EDINBURGH HERITAGE
CONSERVATION DISTRICT, DESIGNATED UNDER PART V OF
THE <i>ONTARIO HERITAGE ACT</i></u> |
|--|

SUB-COMMITTEE RECOMMENDATION

That Council approve the request to extend the heritage permit, issued to Robertson Martin Architects and dated June 27, 2018, to January 29, 2022.

CARRIED

PLANNING COMMITTEE REPORT 18

- | |
|--|
| B. <u>ZONING BY-LAW AMENDMENT - 2190 HALIFAX DRIVE</u> |
|--|

COMMITTEE RECOMMENDATION

That Council approve an amendment to Zoning By-law 2008-250 for 2190 Halifax Drive to permit a 56.5-metre-high (17 storey) apartment building, as detailed in Document 2.

CARRIED

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PLANNING COMMITTEE REPORT 19

- C. [DESIGNATION OF THE STANDARD BREAD COMPANY BAKERY,
951 GLADSTONE AVENUE UNDER PART IV OF THE ONTARIO
HERITAGE ACT](#)

COMMITTEE RECOMMENDATION

That Council issue a Notice of Intention to Designate the Standard Bread Company Bakery, 951 Gladstone Avenue under Part IV of the *Ontario Heritage Act*.

CARRIED

- D. [ZONING BY-LAW AMENDMENT – 4800 AND 4836 BANK STREET](#)

COMMITTEE RECOMMENDATION

That Council approve an amendment to Zoning By-law 2008-250 for 4836 Bank Street to rezone the site from Rural Commercial, Subzone 4 (RC4) and General Mixed-Use (GM) to General Mixed-Use with an exception (GM[XXXX]) to permit a hotel and other commercial uses with exceptions; and to rezone a portion from Rural Commercial (RC) to Residential, Third Density, Subzone Z (R3Z); and to rezone a small portion of 4800 Bank Street from Residential, Third Density, Subzone Z (R3Z) to General Mixed-Use with an exception (GM[XXXX]), to permit a hotel and other commercial uses as detailed in Document 2.

CARRIED

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E. [IMPLEMENTATION OF INTEREST RATE ON DEVELOPMENT
CHARGE DEFERRALS REQUIRED PURSUANT TO BILL 108](#)

COMMITTEE RECOMMENDATION

That Council resolve as follows:

- 1. for any development charges which became or become payable on or after January 1, 2020, and for which the applicant elects to defer payment in accordance with s. 26.1 of the *Development Charges Act, 1997* (as amended), an annual interest rate equal to the greater of (a) the Infrastructure Construction Price Index plus 0.5%, OR (b) the average annual rate at which the City issues debentures to fund development charge projects plus 0.5%, shall apply to the principal amount of the said charge outstanding; and,**
- 2. for any development charges which, pursuant to s. 26.2 of the *Development Charges Act, 1997* are calculated as of the date on which either a site plan approval application is deemed complete or a zoning by-law amendment application in respect of the development is deemed complete, an annual interest rate equal to the greater of (a) the Infrastructure Construction Price Index plus 0.5%, OR (b) the average annual rate at which the City issues debentures to fund development charge projects plus 0.5%, shall apply to the amount of the development charge from the date of the said complete application to the date the development charge is payable, as permitted by subsection 26.2 (3) of the said *Act*.**

CARRIED

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DISPOSITION OF ITEMS APPROVED BY COMMITTEES UNDER DELEGATED AUTHORITY

That Council receive the list of items approved by its Committees under Delegated Authority, attached as Document 1.

RECEIVED

MOTION TO ADOPT REPORTS

MOTION NO 26/12

Moved by Councillor G. Gower
Seconded by Councillor M. Luloff

That Built Heritage Sub-Committee Reports 9 and 10; Standing Committee on Environmental Protection, Water and Waste Management Report 8; Planning Committee Reports 18 and 19; and the reports from the City Clerk entitled “Status Update – Council Inquiries and Motions for the Period Ending November January 24, 2020” and “Summary of Oral and Written Public Submissions for Items Subject to the Planning Act ‘Explanation Requirements’ at the City Council Meeting of December 11, 2019”; be received and adopted as amended.

CARRIED

MOTIONS OF WHICH NOTICE HAS BEEN PREVIOUSLY GIVEN

MOTION NO 26/13

Moved by Councillor M. Fleury
Seconded by Councillor S. Blais

WHEREAS Ottawa’s Francophone community is deeply concerned with the fate of the daily newspaper *Le Droit*; and

WHEREAS *Le Droit* is Ontario’s only French-language daily newspaper; and

WHEREAS, since it was founded in 1913, *Le Droit* has defended the rights of Franco-Ontarians and provided our community with valuable media coverage; and

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WHEREAS the media presence and media coverage of Francophone Ontario form a pillar of support for democracy in our city and our community; and

WHEREAS the newsroom and head office of *Le Droit* have been located in Ottawa for the past 106 years; and

WHEREAS we consider it essential that a newsroom remain in the National Capital and that the successful proposal protect the jobs of journalists assigned to covering the city of Ottawa and the province of Ontario, as well as those of correspondents based in Eastern Ontario;

THEREFORE BE IT RESOLVED that Ottawa City Council acknowledge the importance of the daily newspaper *Le Droit* for Ottawa;

BE IT FURTHER RESOLVED THAT Ottawa City Council encourages the daily *Le Droit* to collaborate with the community and the business community to find strategies and solutions so that *Le Droit* maintains its presence in Ottawa and its coverage of the Francophone community in Ontario.

CARRIED

Pursuant to Subsection 59(5) of the Procedure By-law, the following revised Motion was substituted by the mover and seconder for the original one contained in the Notice of Motion:

MOTION NO 26/14

Moved by Councillor C. McKenney
Seconded by Councillor R. King

WHEREAS the City of Ottawa prides itself as being a caring and compassionate city and continually strives to be a place where people want to live, work and play; and

WHEREAS providing access to safe, adequate, and affordable housing for everyone is fundamental to achieving that goal; and

WHEREAS in 1976 Canada signed onto the International Covenant on Economic, Social and Cultural Rights which included labour, health care, and education rights, as well as rights to an adequate standard of living; and

WHEREAS on June 21, 2019, the Federal government enshrined housing as a right as part of the National Housing Strategy; and

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WHEREAS the City of Ottawa has made investments in an effort to reduce chronic homelessness and increase the affordable housing supply; and

WHEREAS in 2019, these investments included \$15 million in capital funding for new affordable housing and \$111 million for operating and repair funding for community housing, housing subsidies, support services, and various housing and homelessness initiatives; and

WHEREAS despite these investments:

- **42% of renters spend more than 30% or more of their pre-tax income to pay the median rent for local housing that is adequate, affordable and suitable**
- **at an average of \$1,281 for all bedroom apartment types (Canada Mortgage and Housing Corporation rental Market reports, 2018), Ottawa has the third highest rents for a major urban centre in Ontario**
- **the number of households on the Centralized Waiting list for affordable housing has increased by a staggering 14.8% from 2017 and is now over 12,000 households**
- **the overall rate of emergency shelter use has increased by 6.5% from 2017 to 2018 to a total of 7,937 individuals accessing emergency shelters in the city with the increase driven by a significant rise in the numbers of women (5.5%) and families (10.6%) using shelters**
- **in terms of chronic and episodic homelessness, significant increases were recorded amongst single men (10.8% and 5.6%), and amongst families (13.7% for chronic homelessness)**

WHEREAS according to census data Indigenous people account for 2.5% of Ottawa's population yet 25% of people experiencing homelessness in Ottawa identified as indigenous; and

WHEREAS people living in shelters are part of the crisis and not the solution; and

WHEREAS it is estimated that approximately 92 people are sleeping outside in Ottawa; and

WHEREAS since April 1, 2019, 698 women and their children who fled domestic violence were turned away from VAW shelters with few options for safe shelter often returning to unsafe circumstances; and

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WHEREAS these statistics clearly indicate that our current plan and Federal and Provincial funding levels are not sufficient to provide adequate housing for all or to eliminate chronic homelessness in our city; and

WHEREAS the Province through the Housing Services Act requires the City to submit an updated 10 Year Housing and Homelessness Plan by January 31, 2020 that reflects the needs and priorities of the community; and

WHEREAS the success of the Plan is dependent on a commitment of sustained and increased funding from all levels of government to address the issues of housing insecurity and homelessness in Ottawa; and

WHEREAS the needs of the community far outweigh the City's available resources and funding required to effectively address this issue and desperately needs the support of both the Provincial and Federal governments; and

WHEREAS the federal government mandates that the City of Ottawa collect information on homeless veterans on our point in time survey and, at last count, 65 homeless veterans were counted in the City of Ottawa;

THEREFORE BE IT RESOLVED THAT the City of Ottawa officially declare an Affordable Housing and Homelessness Emergency, acknowledging that the City of Ottawa does not possess the resources to manage this crisis alone and that Council must call on the Provincial and Federal governments to assist us by providing the City with an immediate increase in emergency funding for housing, housing supports, and housing allowances, as well as a long-term financial plan to meet the needs of the community; and

BE IT FURTHER RESOLVED THAT through the update to our 10 Year Housing and Homelessness Plan, staff provide City Council with what it will take to implement more aggressive targets and a framework for action, in order to:

- Preserve and increase the affordable housing supply
- Increase access to housing affordability
- Prevent the occurrence of homelessness and eliminate by 100% chronic homelessness by 2024 with a special emphasis on Indigenous homelessness
- Ensure people are supported to achieve housing stability and long-term housing retention; and

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BE IT FURTHER RESOLVED THAT staff be directed to develop a long range financial plan to meet the targets as set out in the 10 Year Housing and Homelessness Plan; and

BE IT FURTHER RESOLVED THAT staff be directed to consider the feasibility of the conversion of buildings left unused and vacant to mixed income housing and/or supportive housing as part of the Empty Building Bylaw Review; and

BE IT FURTHER RESOLVED THAT staff review and report back to the appropriate Standing Committee and Council on the feasibility of establishing a formal structure or mechanism i.e. Land Trust to protect publicly-owned lands, including those identified by staff as appropriate for the development of affordable housing near rapid transit.

The following amending motion was introduced:

MOTION NO 26/15

Moved by Councillor J. Harder

Seconded by Mayor J Watson

BE IT RESOLVED THAT the first resolution of the McKenney/ King Motion be amended to read as follows:

THEREFORE BE IT RESOLVED that the City of Ottawa officially recognize that Affordable Housing and Homelessness is an ongoing critical and urgent crisis that requires all levels of governments to commit, on an expedited basis, to adequate and permanent funding to implement initiatives outlined in the 10 Year Housing and Homelessness Plan.

Amending motion 26/15 was subsequently WITHDRAWN following debate, and the Mover and Seconder of Motion 26/14, with the will of Council, agreed to a revise the first resolution of their Motion to read as follows:

THEREFORE BE IT RESOLVED THAT the City of Ottawa declare an Affordable Housing and Homelessness Crisis and Emergency, acknowledging that the City of Ottawa does not possess the resources to manage this crisis alone and that Council must call on the Provincial and Federal governments to assist us by providing the City with an immediate increase in emergency funding for housing, housing supports, and housing allowances, as well as a long-term financial plan to meet the needs of the community; and

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The revised Motion 26/14, as set out in full below, was then put to Council:

MOTION NO 26/14

Moved by Councillor C. McKenney

Seconded by Councillor R. King

WHEREAS the City of Ottawa prides itself as being a caring and compassionate city and continually strives to be a place where people want to live, work and play; and

WHEREAS providing access to safe, adequate, and affordable housing for everyone is fundamental to achieving that goal; and

WHEREAS in 1976 Canada signed onto the International Covenant on Economic, Social and Cultural Rights which included labour, health care, and education rights, as well as rights to an adequate standard of living; and

WHEREAS on June 21, 2019, the Federal government enshrined housing as a right as part of the National Housing Strategy; and

WHEREAS the City of Ottawa has made investments in an effort to reduce chronic homelessness and increase the affordable housing supply; and

WHEREAS in 2019, these investments included \$15 million in capital funding for new affordable housing and \$111 million for operating and repair funding for community housing, housing subsidies, support services, and various housing and homelessness initiatives; and

WHEREAS despite these investments:

- **42% of renters spend more than 30% or more of their pre-tax income to pay the median rent for local housing that is adequate, affordable and suitable**
- **at an average of \$1,281 for all bedroom apartment types (Canada Mortgage and Housing Corporation rental Market reports, 2018), Ottawa has the third highest rents for a major urban centre in Ontario**
- **the number of households on the Centralized Waiting list for affordable housing has increased by a staggering 14.8% from 2017 and is now over 12,000 households**
- **the overall rate of emergency shelter use has increased by 6.5% from 2017 to 2018 to a total of 7,937 individuals accessing emergency shelters in the**

city with the increase driven by a significant rise in the numbers of women (5.5%) and families (10.6%) using shelters

- in terms of chronic and episodic homelessness, significant increases were recorded amongst single men (10.8% and 5.6%), and amongst families (13.7% for chronic homelessness)

WHEREAS according to census data Indigenous people account for 2.5% of Ottawa's population yet 25% of people experiencing homelessness in Ottawa identified as indigenous; and

WHEREAS people living in shelters are part of the crisis and not the solution; and

WHEREAS it is estimated that approximately 92 people are sleeping outside in Ottawa; and

WHEREAS since April 1, 2019, 698 women and their children who fled domestic violence were turned away from VAW shelters with few options for safe shelter often returning to unsafe circumstances; and

WHEREAS these statistics clearly indicate that our current plan and Federal and Provincial funding levels are not sufficient to provide adequate housing for all or to eliminate chronic homelessness in our city; and

WHEREAS the Province through the Housing Services Act requires the City to submit an updated 10 Year Housing and Homelessness Plan by January 31, 2020 that reflects the needs and priorities of the community; and

WHEREAS the success of the Plan is dependent on a commitment of sustained and increased funding from all levels of government to address the issues of housing insecurity and homelessness in Ottawa; and

WHEREAS the needs of the community far outweigh the City's available resources and funding required to effectively address this issue and desperately needs the support of both the Provincial and Federal governments; and

WHEREAS the federal government mandates that the City of Ottawa collect information on homeless veterans on our point in time survey and, at last count, 65 homeless veterans were counted in the City of Ottawa;

THEREFORE BE IT RESOLVED THAT the City of Ottawa declare an Affordable Housing and Homelessness Crisis and Emergency, acknowledging that the City of Ottawa does not possess the resources to manage this crisis alone and that

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Council must call on the Provincial and Federal governments to assist us by providing the City with an immediate increase in emergency funding for housing, housing supports, and housing allowances, as well as a long-term financial plan to meet the needs of the community; and

BE IT FURTHER RESOLVED THAT through the update to our 10 Year Housing and Homelessness Plan, staff provide City Council with what it will take to implement more aggressive targets and a framework for action, in order to:

- **Preserve and increase the affordable housing supply**
- **Increase access to housing affordability**
- **Prevent the occurrence of homelessness and eliminate by 100% chronic homelessness by 2024 with a special emphasis on Indigenous homelessness**
- **Ensure people are supported to achieve housing stability and long-term housing retention; and**

BE IT FURTHER RESOLVED THAT staff be directed to develop a long range financial plan to meet the targets as set out in the 10 Year Housing and Homelessness Plan; and

BE IT FURTHER RESOLVED THAT staff be directed to consider the feasibility of the conversion of buildings left unused and vacant to mixed income housing and/or supportive housing as part of the Empty Building Bylaw Review; and

BE IT FURTHER RESOLVED THAT staff review and report back to the appropriate Standing Committee and Council on the feasibility of establishing a formal structure or mechanism i.e. Land Trust to protect publicly-owned lands, including those identified by staff as appropriate for the development of affordable housing near rapid transit.

CARRIED on a division of 20 YEAS and 0 NAYS, as follows:

YEAS (20): Councillors S. Moffatt, M. Luloff, J. Sudds, G. Gower, L. Dudas, R. King, C. A. Meehan, J. Leiper, T. Kavanagh, T. Tierney, R. Brockington, J. Cloutier, S. Menard, C. McKenney, J. Harder, K. Egli, S. Blais, E. El-Chantiry, M. Fleury, Mayor J. Watson

NAYS (0):

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MOTIONS REQUIRING SUSPENSION OF THE RULES OF PROCEDURE

MOTION NO 26/16

Moved by Councillor G. Gower

Seconded by Councillor J. Suds

BE IT RESOLVED THAT the Rules of Procedure be suspended to consider this time-sensitive matter pertaining to the provincial by-elections in Ottawa-Vanier and Orléans.

WHEREAS two by-laws govern election signs, being By-law 2003-520, as amended (“Signs on City Roads”) and By-law No. 2004-239, as amended (“Temporary Signs on Private Property”); and

WHEREAS under By-law 2003-520 (“Signs on City Roads”) signs on public properties are only permitted 30 days before Voting Day; and

WHEREAS under By-law No. 2004-239 (“Temporary Signs on Private Property”) signs on private properties are only permitted 60 days before Voting Day; and

WHEREAS under section 57 of the *Canada Elections Act* the federal election period must last between a minimum of 36 days and a maximum of 50 days (i.e. “Writs of election”) and this period does not align with the 30-day period set out in By-law 2003-520; and

WHEREAS section 9.1 of the *Elections Act* requires that the writ for a provincial election be dated on a Wednesday and Polling Day must occur on the fifth Thursday after the date of the writ and this period may not always align with the 30-day period set out in By-law 2003-520; and

WHEREAS enforcement of signs by-laws during an election period requires significant municipal resources;

WHEREAS Motion No. 16/15 further directed staff to review the by-laws governing election signs to consider potential amendments to the by-laws governing election signs and that staff be directed to report back to Council as part of the Mid-Term Governance Review or at the earliest policy review opportunity; and

WHEREAS staff have not yet had an opportunity to conduct this review on by-laws governing election signs; and

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WHEREAS on June 26, 2019, Council approved Motion No. 16/15, which among other things, directed staff to amend By-law 2003-520 for the purposes of the 2019 general federal election such that signs be permitted on public properties once the Chief Electoral Officer of Canada issued the Writs; and

WHEREAS on August 2, 2019, the Chief Electoral Officer of Ontario received a Notice of Vacancy in the Legislative Assembly of Ontario for the provincial electoral district of Ottawa-Vanier; and

WHEREAS on September 24, 2019, the Chief Electoral Officer of Ontario received a Notice of Vacancy in the Legislative Assembly of Ontario for the provincial electoral district of Orléans; and

Under the *Legislative Assembly Act*, a by-election must be called within six months of the Chief Electoral Officer's receipt of the Speaker's Warrant informing him of a vacancy; and

WHEREAS the Ottawa-Vanier provincial by-election must be called by February 2, 2020 and the Orléans provincial by-election must be called by March 23, 2020, with the date(s) of the by-elections to be determined by the Premier; and

WHEREAS January 29, 2020 is the last Wednesday in which a Writ can be issued before the above-noted February 2020 deadline;

THEREFORE BE IT RESOLVED staff be directed to amend By-law 2003-520 for the purposes of the 2020 provincial by-elections in Ottawa-Vanier and Orléans such that signs be permitted on public properties once the Chief Electoral Officer of Ontario issues the relevant Writ; and

BE IT FURTHER RESOLVED that this amendment to By-law 2003-520 respecting election signage on public property upon issuance of the relevant Writ remain in effect for any future provincial or federal by-elections or until such time that Council has an opportunity to receive and consider staff's forthcoming review the by-laws governing election signs as part of the Mid-Term Governance Review or at the earliest policy review opportunity; and

BE IT FURTHER RESOLVED that staff from the Office of the City Clerk be directed to include the relevant By-law title in the procedural Motion to Adopt By-laws.

CARRIED

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DIRECTION TO STAFF:

That the City Clerk be directed to review the Motion approved by Council and make any amendments required to align with the writs issued on January 29, 2020 for the Ottawa-Vanier and Orléans provincial by-elections. (Motion 26/16 above reflects these amendments)

MOTION NO 26/17

Moved by Councillor J. Leiper

Seconded by Councillor R. Brockington

That the Rules of Procedure be suspended to consider the following Motion, in order that the property owner may address these issues as soon as possible,

WHEREAS the building at 89 Richmond Road is considered to be unsafe and uninhabitable following a fire in 2017; and

WHEREAS there are neighbourhood concerns related to the state of the property; and

WHEREAS given the dilapidated condition of the building and the community's concerns, it would be in the public interest to demolish the building; and

WHEREAS there is currently no building permit application for a replacement building;

THEREFORE BE IT RESOLVED that Council approve demolition control for the existing building on the property upon application of the owner subject to the following conditions;

- 1. That should the registered Owner fail to execute a Site Plan Control Agreement for 89 Richmond Road as part of application D07-12-19-0067 by May 31, 2020, the registered Owner shall landscape the property to the satisfaction of the General Manager, Planning, Infrastructure and Economic Development Department. The registered Owner shall prohibit the use of the property for other interim uses and maintain the property in accordance with the Property Standards Control By-law;**
- 2. The landscaping of the property shall be finalized in accordance with conditions established by the General Manager of Planning, Infrastructure and Economic Development;**

3. The registered Owner agrees that, to the discretion of the General Manager, Planning, Infrastructure and Economic Development Department, a replacement building must be substantially completed within five years from the date of this approval and in default thereof, the City Clerk shall enter on the collector's roll the sum of \$5,000 for the residential dwelling to be demolished;
4. The registered Owner shall enter into an Agreement with the City of Ottawa to include the foregoing conditions and pay all costs associated with the registration of said Agreement. At such time as a building permit is issued to redevelop the site and the replacement building is in place, the Agreement will become null and void and will be released upon request of the Owner. The Owner shall pay all costs associated with the release of the Agreement;
5. The registered Owner agrees that a demolition permit will not be issued and the building cannot be demolished until such time that the Agreement referenced herein has been executed and registered on title;
6. This approval is considered null and void if the Agreement is not executed within one month of Council's approval or if the building is not demolished prior to March 31, 2020.

MOTION NO 26/18

Moved by Councillor Egli

Seconded by Councillor Menard

That the Rules of Procedure be suspended to consider the following Motion:

WHEREAS Medhurst Park was hit by a tornado on September 21st, 2018; and

WHEREAS approximately 45 trees were lost in Medhurst Park; and

WHEREAS Forestry Services has begun replanting trees in Medhurst Park to replace those lost from the tornado; and

WHEREAS Tanglewood Hillsdale Community Association created and paid for a plaque in memory of the trees lost in Medhurst Park; and

WHEREAS the plaque reads "In memory of our many trees lost in the tornado on Sept. 21, 2018"; and

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WHEREAS Arbour Day is on April 24, 2020;

THEREFORE BE IT RESOLVED that City Council approve the installation of the plaque at 72 Medhurst Drive in Medhurst Park in memory of the trees lost due to the 2018 tornado by April 24 2020.

CARRIED

NOTICES OF MOTION (FOR CONSIDERATION AT SUBSEQUENT MEETING)

MOTION

Moved by Councillor R. Brockington

Seconded by Councillor S. Blais

WHEREAS the City is undertaking a water, sewer and road renewal project on Claymor Avenue, Senio Avenue, and Falaise Road in Ward 16; and

WHEREAS as part of the design process for these streets, staff has reviewed the driveways within the project limits and found some driveway widths are not in full conformance with the City's front yard parking restrictions and Private Approach By-law;

WHEREAS for existing properties, the front yard parking restrictions and Private Approach By-law are normally enforced only on a complaint-driven basis; and

WHEREAS there have been no complaints with respect to non-compliant driveways (private approaches) or front-yard parking in this area; and

WHEREAS the area residents support providing relief for residents with existing driveways (private approaches) while acknowledging that any future driveways (private approaches) and front-yard parking must be in accordance with City by-laws.

THEREFORE BE IT RESOLVED that in respect of the renewal of Claymor Avenue, Senio Avenue, and Falaise Road, that private approaches be reinstated as they were immediately prior to the reconstruction of these streets.

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MOTION

Moved by Councillor S. Menard
Seconded by Councillor C. Meehan

WHEREAS On March 6th, 2019, City Council approved, on the basis of available information provided by senior staff and external legal counsel, the staff-recommended Stage 2 LRT proponent, TNEXT, to construct and maintain the north-south Trillium line; and

WHEREAS members of the public, transit users, media and Councillors have raised concerns with the integrity of the procurement and decision-making process that resulted in the staff recommendation to Council;

WHEREAS; staff have since confirmed that the bid put forward by TNEXT did not meet the 70% minimum technical requirement as set out in the RFP process; and

WHEREAS; On January 23rd, 2020 staff released the Technical Evaluation Committee's Consensus presentation for the Trillium Line Extension which revealed significant technical deficiencies in the bid put forward by the preferred proponent TNEXT; and

WHEREAS; the release of this information has further eroded the public's confidence in the procurement and decision-making process as well as in TNEXT's ability to successfully deliver the Trillium Extension; and

WHEREAS; Council has engaged the city's Auditor General who conducted an audit of specific elements of the Stage 2 Light Rail Transit (LRT) Project and provided Council with a list of recommendations to improve the process for future P3 projects which included enhancing public transparency; and

WHEREAS; the Auditor's recommendations only address a portion of the public's concerns and despite the audit there is still significant pressure from the public to continue the investigation into the Stage 2 LRT Trillium Line Extension procurement and decision-making processes; and

WHEREAS; Council is accountable to the public and therefore should explore all options to restore public trust;

THEREFORE FURTHER RESOLVED that, at its meeting of March 25, 2020, City Council select and approve the recruitment and engagement of an independent

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third party to review and report back to Council by September of 2020 on the City's Purchasing By-law, being By-law No. 2017-362 as amended and the Delegation of Authority By-law, being By-law No. 2018-397 as amended, as it pertains to Public-Private Partnership (P3) Projects, as well as projects of significant public interest, in order to improve Council's ability to exercise leadership and oversight as mandated by Subsection 224(d) and (d.1) of the *Municipal Act, 2001* and to ensure that procurement best practices are incorporated so that the process is more transparent to the public; and

BE IT FURTHER RESOLVED that staff provide a transparent evaluation criterion and the relative performance of a minimum of three recommended parties for the review of the procurement bylaws and delegation of authority bylaw for Council's consideration and approval; and

BE IT FURTHER RESOLVED that staff provide Council with a report by March 2020 containing the solutions proposed by TransitNext in order to comply with the mandatory technical requirements outlined in the Stage 2 LRT Trillium Line extension RFP. The report should indicate how TNext responded to all of the deficiencies identified in their bid by the Technical Evaluation Committee and presented in the Trillium Line Extension Technical Evaluation Consensus Presentation on Oct 3 and Oct 23, 2018. The report should also include all of the deficiencies we have witnessed with the roll out of Stage 1 and the necessary adjustments to Stage 2 as a result.

MOTION TO INTRODUCE BY-LAWS

MOTION NO 26/19

Moved by Councillor G. Gower

Seconded by Councillor M. Luloff

That the by-laws listed on the Agenda under Motion to Introduce By-laws, Three Readings, be read and passed; and

That the by-law entitled "A by-law of the City of Ottawa to amend By-law No. 2003-520 respecting signs", approved by Motion at today's meeting, be read and passed.

CARRIED

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Note: As a result of Motion 26/4 above, the By-law previously listed as By-law “o” on the Agenda (A by-law of the City of Ottawa to amend By-law No. 2008-250 to change the zoning of the lands known municipally as 1375 Clyde Avenue) was not adopted, as the associated Zoning By-law Amendment was refused by Council

By-Laws

THREE READINGS

- 2020-4. A by-law of the City of Ottawa to establish certain lands as common and public highway and assume them for public use (rue Rallidale Street, promenade Kelly Farm Drive, promenade Esban Drive, voie Ginebik Way, avenue Paakanaak Avenue).
- 2020-5. A by-law of the City of Ottawa for the imposition of development charges for Feedmill Creek In-Stream Measures.
- 2020-6. A by-law of the City of Ottawa to amend By-law No. 2008-250 to remove the holding symbol from the lands known as the east side of Chaudière Island and Albert Island.
- 2020-7. A by-law of the City of Ottawa to establish fees and charges in the Building Code Services Branch for agency letters and to repeal By-law 2019-75.
- 2020-8. A by-law of the City of Ottawa to amend By-law No. 2019-76 to address fees relating to the prohibition, inspection and remediation of buildings used for marijuana grow operations.
- 2020-9. A by-law of the City of Ottawa to amend By-law No. 2019-77 respecting the naming of private roads and highways and the numbering of buildings and lots.
- 2020-10. A by-law of the City of Ottawa to amend By-law No. 2014-220 respecting the fees for building applications and permits, and to repeal By-law No. 2019-78.
- 2020-11. A by-law of the City of Ottawa to amend By-law 2003-69, respecting fees for compliance reports in the Building Code Services Branch, and to repeal By-law 2019-79

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- 2020-12. A by-law of the City of Ottawa to amend By-law 2016-326 respecting fees for permanent signs on private property and to repeal By-law 2019-80.
- 2020-13. A by-law of the City of Ottawa to amend By-law No. 2015-85 respecting fees for enclosures for privately-owned outdoor pools.
- 2020-14. A by-law of the City of Ottawa to amend By-law No. 2015-96 respecting fees for planning applications.
- 2020-15. A by-law of the City of Ottawa to establish certain lands as common and public highway and assume them for public use (Hartsmere Drive).
- 2020-16. A by-law of the City of Ottawa to amend By-law No. 2001-17 to appoint certain Inspectors, Property Standards Officers and Municipal Law Enforcement Officers in the Building Code Services Branch of the Planning, Infrastructure and Economic Development Department.
- 2020-17. A By-law of the City of Ottawa to establish fees and charges for services, activities and information provided by Revenue Services of the Finance Services Department
- 2020-19 A by-law of the City of Ottawa to establish stormwater service fees
- 2020-20 A by-law of the City of Ottawa respecting fees and charges for solid waste services
- 2020-21 A by-law of the City of Ottawa to amend By-law No. 2003-445 with respect to road cut fees
- 2020-22 A by-law of the City of Ottawa to amend By-law No. 2003-446 respecting fees for encroachments
- 2020-23 A by-law of the City of Ottawa to amend By-law No. 2003-447 respecting fees for private approaches.
- 2020-24 A by-law of the City of Ottawa to amend By-law No. 2003-497 respecting permit fees for over-dimensional vehicles.
- 2020-25 A by-law of the City of Ottawa to amend By-law No. 2003-520 respecting the fees for certain signs and advertising devices on City roads.

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- 2020-26 A by-law of the City of Ottawa to amend By-law No. 2017-92 respecting fees for ROW patios on City highways
- 2020-27 A by-law of the City of Ottawa to amend By-law No. 2017-92 respecting the regulation of Right of Way patios on City highways.
- 2020-28 To amend By-law No. 2003-499 respecting fire routes
- 2020-29 To amend By-law No. 2017-180 respecting the appointment of Municipal Law Enforcement Officers in accordance with private property parking enforcement
- 2020-30 A by-law of the City of Ottawa to designate certain lands at voie Gartersnake Way, chemin Miikana Road, voie Omagaki Way and croissant Wabikon Crescent on Plan 4M-1618, as being exempt from Part Lot Control.
- 2020-31 A by-law of the City of Ottawa to designate certain lands at rue Jardiniere Street, promenade Edenwylde Drive, voie Maygrass Way and rue Kayenta Street on Plan 4M-1647, as being exempt from Part Lot Control.
- 2020-32 A by-law of the City of Ottawa to designate certain lands at cercle de l'Argonaut Circle, cours Crevier Walk and rang de Loury Row on Plan 4M-1648, as being exempt from Part Lot Control.
- 2020-33 A by-law of the City of Ottawa to designate certain lands at Kingston Avenue on Registered Plan 294, as being exempt from Part Lot Control.
- 2020-34 A by-law of the City of Ottawa to amend By-law No. 2008-250 to change the zoning of the lands known municipally as 36, 38, 40, 44 and 46 Robinson Avenue
- 2020-35 A by-law of the City of Ottawa to amend By-law No. 2008-250 to change part of the zoning of the lands known municipally as 4800 and 4836 Bank Street.
- 2020-36 A by-law of the City of Ottawa to amend By-law No. 2008-250 to change the zoning of the lands known municipally as 2175 Carling Avenue.

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- 2020-37 A by-law of the City of Ottawa to amend By-law No. 2008-250 to change the zoning of the lands known municipally as 966, 968 and 974 Fisher Avenue.
- 2020-38 A by-law of the City of Ottawa to amend By-law No. 2008-250 to change the zoning of the lands known municipally as 17, 19, 23, 27, 29, 31, 130, 134 and 138 Robinson Avenue.
- 2020-39 A by-law of the City of Ottawa to amend By-law No. 2008-250 to change the zoning of part of the lands known municipally as 2190 Halifax Drive
- 2020-40 A by-law of the City of Ottawa to designate the all lands within the geographic boundary of the City of Ottawa as the Heritage Community Improvement Plan Area
- 2020-41 A by-law of the City of Ottawa to adopt the Heritage Community Improvement Plan
- 2020-42 A by-law of the City of Ottawa to amend By-law No. 2003-520 respecting signs

NOTICE OF INTENT

Mayor Watson advised Council of the following Notices of Intent from the Integrity Commissioner and Light Rail Regulatory Monitor and Compliance Officer:

- Notice of Intent from the Integrity Commissioner to Submit an Interim Report to Council pursuant to Section 9(3) of the Complaint Protocol respecting an ongoing investigation for consideration at the 12 February 2020 Council Meeting.
- Notice of Intent from Light Rail Regulatory Monitor and Compliance Officer to submit the Annual Compliance Report to the February 19, 2020 meeting of the Transit Commission, rising to the City Council meeting of February 26, 2020.

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CONFIRMATION BY-LAW

MOTION NO 26/20

Moved by Councillor G. Gower
Seconded by Councillor M. Luloff

That the following by-law be read and passed:

To confirm the proceedings of the Council meeting of January 29, 2020.

CARRIED

INQUIRIES

Councillor S. Menard (Inquiry OCC 20-1)

I am requesting that staff provide a detailed breakdown of the costs, both upfront and ongoing, of the new security measures recently introduced at the entrance of Council Chambers. Further, I am requesting that staff provide evidence of the need for heightened security, as well as evidence that these new security measures are an effective and measured response to a demonstrable need. Finally, I am requesting that staff provide substantive evidence regarding the effect security measures may have on public participation through peer reviewed papers and journals published about the subject.

Councillor S. Menard (Inquiry OCC 20-2)

I am requesting that staff provide a detailed breakdown of the estimated cost to the City should we terminate the contract with RTG/RTM due to the negligence of the proponent, through convenience, or for any other avenue of termination that is currently available to the City through the Project Agreement.

Further, I am requesting that staff report back on the feasibility, and estimated cost, of a negotiated purchase of the controlling interest in RTG/RTM through purchase of equity.

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Finally, I am requesting information regarding the process to terminate the contract and to bring these services in house.

Councillor S. Menard (Inquiry OCC 20-3)

That by the end of February 2020, city staff provide Council with a list of preferred mechanisms to look at the possibility of establishing an independent, external review of the Stage 2 Trillium Line decision-making and procurement process for Council's consideration, such that the independent review report would, at a minimum, identify and critically review the Stage 2 LRT procurement and decision making process as follows:

- i. the use of delegated authority by City staff and the foundation used to exercise that authority;*
- ii. the decision-making process of the Technical Evaluation Committee and the Executive Steering Committee in selecting the preferred proponent for Council recommendation;*
- iii. the process and decision-making at the Council meeting that resulted in the Preferred Proponent being selected;*
- iv. offer any options or best practices for similar infrastructure projects in the future.*

Councillor M. Fleury (Inquiry OCC 20-4)

In reference to the January 23rd, 2020 Memo "O-Train Light Rail Transit Stage 2 Technical Evaluations" can City Staff advise how the following RFP technical requirements were resolved in the Final awarded contract for Stage 2 LRT?

- Bidder's failure to include signaling and train control system;*
- Bidder's lack of plan for snow removal operations;*
- Bidder's failing score for systems integration management plan;*
- Bidder's lack of plan for future use of the Trillium Line's existing fleet of Alstom LINT diesel trains;*

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- *Bidder's lack of description on how the Maintenance and Rehabilitation services will be executed in a timely, diligent, safe and professional manner.*

In addition, can staff explain why a 70 percent score was initially determined as the threshold required for technical evaluations?

Councillor M. Fleury (Inquiry OCC 20-5)

In December 2019, the City of Ottawa's Corporate Security implemented new security measures at the entrance of Council Chambers. These measures included new screening procedures for the public attending Council and Committee meetings in this room. At the first two meetings in January 2020 in which these new security measures were employed, public complaints arose with respect to issues of accessibility and privacy. Therefore, can staff please advise Council:

1. *Under what specific delegated authority, either in the Delegation of Authority By-Law or elsewhere, did staff develop and then implement these new security measures?*
2. *When and through what mechanism did City Council authorize staff to implement these new security procedures?*
3. *What public consultation or public meeting was undertaken prior to implementing these new security procedures and was the City's Accessibility Advisory Committee or its Accessibility Office formally engaged?*

Councillor R. Brockington (Inquiry OCC 2020-6)

The Municipal Act, 2001, specifically sets out the following statutory duties for all councils in Ontario [emphasis added]:

S. 224 It is the role of council,

(d) to ensure that administrative policies, practices and procedures and controllership policies, practices and procedures are in place to implement the decisions of council;

(d.1) to ensure the accountability and transparency of the operations of the municipality, including the activities of the senior management of the

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municipality.

In fulfillment of these mandatory responsibilities, Council considered and amended an original proposal for the Mayor to be given the delegated authority to “conduct performance reviews” for the City Manager and the Auditor General on December 3rd, 2014. Being the only two positions that report directly to it and that Council hires, provides goals and objectives for, performance appraises and, ultimately dismisses, Council unanimously “carried” the following two significant components to Recommendation 4, Part V of the “2014-2018 Governance Review Report”:

“that the Mayor be given delegated authority to conduct performance review meetings for the City Manager and the Auditor General based on written weighted evaluation forms filled out by each Member of Council and report the results of the meetings to Council in the manner deemed most appropriate by the Mayor”; and

“that the Mayor and the Deputy Mayors be given delegated authority to conduct performance reviews for the City Manager [and] that the Mayor and the Chair and Vice-Chair of the Audit Committee be given the delegated authority to conduct performance reviews for the Auditor General”.

With the unanimous hiring by Council of Steve Kanellakos at its Special Meeting on February 8th, 2016, the above-noted provisions were inserted into the City Manager’s employment contract with the additional proviso that his “performance shall be reviewed and assessed annually”. In a similar manner, the Auditor General has a matching provision requiring an “annual review of [his] performance as Auditor General”.

In light of this factual background, can the City Clerk consult with the Mayor and advise Council as follows:

- 1. Were these performance reviews for both the City Manager and the Auditor General carried out in the manner established by Council for the years 2016 to 2019 for Steve Kanellakos and for the years 2015 to 2019 for Ken Hughes?;*
- 2. If so, were the results for these performance reviews disclosed accordingly to Council?; and*
- 3. If not, why were these performance reviews not undertaken in the manner and timelines as directed by Council?*

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ADJOURNMENT

Council adjourned the meeting at 2:23 pm.

CITY CLERK

MAYOR

MAYOR'S STATE OF THE CITY ADDRESS

State of the City Address

Mayor Jim Watson
Wednesday, 29 January 2020

I want to start by thanking Elder Claudette Commanda – the youngest elder I've ever met – for being here today to offer that wonderful Algonquin prayer and blessing.

We must always be mindful and recognize that we are on the sacred land of Claudette's people – the Algonquin Anishnabeg Nation – who have been the stewards of this region for over 6,000 years.

I hope that her words – inspired by traditions and teachings passed down for millennia – will help guide Council's deliberations and inspire us to make decisions that will benefit our communities for centuries to come.

Thank you, Claudette.

Inviting our Indigenous friends and partners to share their culture and language with us at these important events is vital to the reconciliation efforts that our city and our entire country have committed to bring justice and equality to this relationship.

I very much value our relationship with our surrounding Algonquin communities – Pikwakanagan and Kitigan Zibi – as well as with all First Nation, Métis and Inuit residents of Ottawa.

Last year, we announced with Pikwakanagan and Ottawa Tourism that our region would have the honour of hosting the 2021 Ontario Indigenous Summer Games, as well as the 2021 and 2023 Masters Indigenous Games.

Registration for the 2021 Masters Indigenous Games will open next week – and we're very excited to welcome thousands of participants who will join us in Ottawa to celebrate their wonderful culture through sport.

We know that these major events are a great boost to Ottawa's economy and help sustain good jobs in the tourism sector.

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That's why we are hard at work with Michael Crockatt and his team at Ottawa Tourism to strengthen this industry and the approximately 40,000 jobs it supports in our hotels, restaurants and small businesses across the city.

And we are keeping the momentum with many great sporting events coming to our city this year and next:

- the 2020 Men's and Women's U-Sports Basketball Championships at TD Place in March
- the 2020 Pan American Olympic Qualifying Wrestling Tournament at the Shaw Centre in March – where Stittsville's own Olympic Gold medalist Erica Wiebe will be competing for her place in the Tokyo 2020 Olympics; and
- the 2021 Canada Soccer Under-15 National Championships in March of next year.

And since we delivered Ottawa 2017 with our tourism partners, the industry has continued to grow – seeing once again a solid increase of 4.3% in hotel room nights last year, with visitors coming to Ottawa from 179 countries.

Confidence in our tourism industry continues to grow, with \$25-million in improvements taking shape at the Ottawa International Airport – in addition to a new ALT Hotel and an LRT station that will both have direct access to the terminal.

Over the last two years, we've also seen more than 1,300 hotel rooms added across the city, in order to meet this growing demand from visitors from around the world.

This enthusiasm is being fueled by players in our tourism community, which are constantly innovating to ensure Ottawa remains an appealing destination for visitors.

In December, we learned that our region was going to be home to the first interprovincial zipline in the world.

Interzip Rogers at Zibi is a great addition to our region's tourism offering.

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This zipline will soar 120 feet above the Ottawa River and offer incredible views of the region – including the Parliament Buildings, the Supreme Court, the Chaudière Falls and the Museum of History.

This photo of former London Mayor Boris Johnson shows why I will nominate Gatineau Mayor Maxime Pedneaud-Jobin to test the system first.

And I see this project as a thriving symbol of the special connection that exists between our two cities.

For the first time ever, Ottawa will host the culminating event of a great nationwide tradition, the Canadian Culinary Championships – which will take place at the Shaw Centre this weekend.

And I know a lot of participants are looking forward to an incredible feast.

In a few months, we'll also have a brand-new sports franchise to cheer on in the nation's capital when the Ottawa Blackjacks make their debut in the Canadian Elite Basketball League at the Arena at TD Place.

But we also have a number of recurring events that are commemorating anniversaries – and we should be enthusiastically celebrating their success.

The Rideau Canal Skateway – the longest skating rink in the world – is celebrating its 50th anniversary.

Now as all you know, I can't really skate – but I can certainly appreciate what this long-standing tradition means for our community and for tourism in Ottawa.

The Jazz Festival will celebrate its 40th edition – and I look forward to joining the crowds, who will once again return to Confederation Park for the occasion.

And last but not least, our beloved Canadian Tulip Festival will help us mark a special anniversary this year, as we celebrate 75 years of friendship between Canada and the Kingdom of the Netherlands.

And I'm pleased that Chargé d'Affaires Frederieke Quispel and Taylor Heaven are here from the Dutch Embassy today on behalf of Ambassador Henk van der Zwan.

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As many of you know, this friendship dates back to the Second World War – when Canadian soldiers led the forces that liberated the Netherlands in 1945.

And I'm proud that my father fought in those battles during the Second World War, as a member of the 1st Battalion of the Royal Regiment of Canada.

He fought alongside the brave young men who played a pivotal role in North Western Europe.

The Royal Regiment is credited with liberating the city of Assen on April 13, 1945 – before participating in the clearing of Groningen until April 15 – some 20 days before the Netherlands was liberated from German occupation.

For his efforts, my father – Bev Watson – was awarded the France and Germany Star, the Canadian Volunteer Service Medal and Clasp, and the 1939 to 1945 War Medal.

I'm very proud of my father's service to our nation – and it was a special honour for me to visit the Netherlands last fall in the country where he served Canada and defended our freedom during the War.

During our time there, I had the distinct pleasure of meeting Her Royal Highness Princess Margriet – who was born at the Ottawa Civic Hospital while the Dutch Royal Family were living here in exile.

I took that opportunity to invite her to visit Ottawa to renew the special relationship between our two countries and attend a naming ceremony at the new Princess Margriet Park near the Civic Hospital.

And it's my pleasure to announce today that Princess Margriet is indeed planning on joining us in Ottawa in May to mark this momentous occasion.

But before we fast forward to 2020, let's take this opportunity to look back on the challenging and eventful year that was 2019 – during which we approved two budgets, launched the Confederation Line, moved ahead with Stage 2 of LRT – and once again overcame many challenges as a community.

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It was certainly a productive year at City Hall – and our committees worked to deliver many ambitious initiatives with a great deal of success.

Following the historic back-to-back flooding that hit our region in 2017 and again last year, the Agriculture and Rural Affairs Committee updated the flood plain mapping for the region, which will provide more certainty to residents and developers looking for guidance on where to build new homes in our rural areas.

The flooding once again lasted for many weeks – but this time, our City had to declare a state of emergency to bring in some much-needed reinforcement from the Canadian Armed Forces.

As a result, approximately 600 women and men in uniform joined 15,000 residents who volunteered in this effort to fill and deploy 1.5 million sandbags to protect homes as well as critical infrastructure, like the Britannia Water Treatment Plant.

This emergency response – which was superbly coordinated and executed by our City staff and first responders – significantly limited the damage caused by these floods, when compared to the 2017 events.

And although more than 150 families had to evacuate their homes, our community came together once again to support our fellow residents in need.

However, it takes years for these affected neighbourhoods to recover from such devastating weather events.

Many residents of West Carleton – who were the victims of the devastating tornadoes in 2018 – will only be returning home in the coming months.

Encouraging signs of progress can we observed in this community, with the new Dunrobin Plaza taking shape once again – this time with a stronger roof.

And many are hoping that the Dunrobin Meat and Grocery – a family business owned by sisters Cindy and Julie Delahunt – will once again find a home there, as a welcome sign that things are getting back to normal.

Unfortunately, these natural disasters seem to be getting all too common – and their effects are being felt right around the world.

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In the face of this, our Environment Committee has been working to tackle a worldwide climate challenge, adopting an important Climate Change Master Plan at its last meeting of 2019 – a plan that will be up for debate later today and that I hope you will all support.

This roadmap for a more sustainable community contains ambitious targets that will hopefully see our City eliminate its corporate greenhouse gas emissions by 2040 – and for our community to do the same by 2050.

Working with our partners, the Plan will deliver numerous concrete actions to achieve these targets – including many energy efficiency projects as part of Energy Evolution, the development of a climate resiliency plan, and applying a climate lens to the new Official Plan.

Despite these environmental challenges, I want to acknowledge the progress we have made over the last few years in reducing GHGs.

According to the latest greenhouse gas inventory, our community's emissions decreased by 14 percent between 2012 and 2018.

The City's corporate emissions – which account for about five percent of Ottawa's total emissions – were reduced by an impressive 36 percent over that same period.

And later this year, OC Transpo will begin piloting electric buses as part of its operations – and I'm hopeful that this will put us on a path to greening our entire fleet, especially as battery technology improves in the coming years.

I want to thank Minister Catherine McKenna for her support of this initiative.

Although we still have much work to do to achieve our long-term targets, there are promising signs that our investments in new technologies and energy efficiency projects are paying off.

The Environment Committee also strengthened the Tree Protection Bylaw, which will put in place greater safeguards – like compensation for removals – and higher fines to help protect Ottawa's precious tree canopy.

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I encourage all colleagues to support these strengthened tree protection measures when they come to a vote today.

One of the City's most important environmental initiatives will be completed later this year when we start operating the Combined Sewage Storage Tunnel.

This key project of the Ottawa River Action Plan will help us reduce by approximately 80% the discharge of waste water into the Ottawa River – thereby increasing our residents' enjoyment and improving the water quality for our wildlife of this great waterway.

These are all important initiatives that will help improve our residents' quality of life for generations to come – and the City is delivering on many others that will have a similar lasting impact.

Think of the new Ottawa Central Library and Library and Archives Canada joint facility, which has tremendous potential to become a people place like no other – both for residents and visitors.

After some of the most enthusiastic community consultations in recent history, the OPL team and the architects at Diamond Schmitt and KWC Architects unveiled the preliminary design last week to much acclaim.

I certainly look forward to us breaking ground on this amazing city-building project and witnessing its grand opening in 2024.

This facility will without a doubt become a stunning architectural addition to Ottawa's downtown – and one that will kickstart the revitalization and encourage the type of development we want to see take place at LeBreton Flats and around Pimisi Station.

To help steer our city's development, the Planning Committee and ARAC are in the midst of developing a new Official Plan, which will guide the growth of Ottawa over the next decades.

With its 5 Big Moves, the new OP will identify long-term trends, challenges and opportunities facing Ottawa – and it will ensure that our city remains on track to be the most liveable mid-sized city in North America.

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The new Official Plan will prioritize the climate change lens across the board, but it will also facilitate economic activity thanks to special economic zone designations for Kanata North – where businesses are bursting at the seams – and the Ottawa International Airport, which is surrounded by underutilized properties.

As our high-tech community in Kanata continues to grow at an impressive rate – now is the time to introduce flexible policies that will foster the development of much-needed office space and attract the attention of investors worldwide.

There is no better time to conduct this important Official Plan review – because as you know, our city reached an important milestone last year when it surpassed the one million population mark.

By crossing that threshold, Ottawa now finds itself in a new league when competing with cities around the globe – and we have to live up to the expectations of a world-class G7 capital city.

For its part, the Transportation Committee has been tasked with finding mobility solutions to handle this growth – and this process is now underway following the launch of the Transportation Master Plan refresh in December.

It's important for us to work with all our mobility partners across the region – as tens of thousands of residents cross the Ottawa River every morning and afternoon to get to and from work.

And I am proud of the good relationship that Mayor Pedneaud-Jobin and I have developed in recent years.

This relationship benefits several projects on both sides of the river, and it has led to increased collaboration between our transportation teams, as well as between OC Transpo and the STO.

We are both opposed to the construction of a sixth bridge between Ottawa and Gatineau, because we want the federal government to prioritize funding for light rail projects that will have positive effects on the quality of life of our residents and on the environment for decades to come.

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We are working closely with each other to ensure that the Board of Directors of the NCC understands our position.

Our teams are also working on plans to connect Gatineau's future light rail network from western Gatineau with Ottawa, in order to maximize the benefits of this system for users on both sides of the river.

I look forward to seeing the results of their study sometime in the next few months, when they make a presentation to the Transportation Committee.

The largest transportation projects have the potential to change not only how we get around – but also how we develop our city.

And the launch of the Confederation Line in September was certainly a defining moment in our city's history – since this critical investment in public transit will help us manage our population's growth for decades to come.

And although LRT has faced a number of significant challenges since its launch four months ago, I'm confident that we will find permanent solutions to these issues.

Yesterday afternoon, I had the opportunity to visit the Belfast Yard MSF with the Chair and Vice-Chair of our Transit Commission to meet with the team at JBA, who arrived from Britain a few days ago.

It was helpful to get an understanding of their focus over the coming days and weeks, as they assist RTM to increase the number of available trains, as well as help find permanent solutions to improve the reliability of LRT and the experience of our customers.

I wish to thank our transit users for their patience as we work through this.

You rightfully expect and deserve a higher level of service from our transit network.

I'm confident that we will start finding solutions to these issues in the coming weeks.

But LRT remains the right long-term investment for our city.

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In a recent Globe & Mail article entitled "Ottawa is poised to grow and meet new work force demand," Adam Stanley highlights the enthusiasm that LRT has created given its long-term economic potential.

While describing it as the most impactful piece of transportation infrastructure since the construction of the Rideau Canal nearly 200 years ago, he goes on to say that: "as a result of recent investments in LRT, and other new infrastructure, Ottawa seems poised at last to step out of the long shadows cast by Toronto and Montreal."

These are encouraging words for our city – and I'm proud that we are continuing the progress.

As you have all seen, our crews have been hard at work on the construction of our Stage 2 extensions to bring light-rail farther east, west and south.

The construction of Stage 2 LRT will add 44 kilometres of new rail and 24 new stations to our city's O-Train network.

And we won't stop there, having already laid the groundwork to keep extending the system to Kanata-Stittsville and Barrhaven as part of Stage 3.

LRT is also inspiring confidence amongst investors and creating economic opportunities right across the city.

Our local economy is firing on all cylinders, posting significant job gains in 2019, as the unemployment rate hovered between 4.2 and 4.4 percent for most of the year.

I'm proud as Mayor of the city to say that 50,000 new jobs were created in Ottawa in 2019 – spread across all sectors from construction to media & culture, and healthcare to high-tech.

This represented an annual job increase of 8.5 percent, ranking second amongst Canada's 33 largest cities.

There is obviously a lot of confidence from employers and investors in the strength of our economy.

And these numbers also demonstrate the impact of many economic development projects taking shape in many areas across the city.

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Next week, ARAC will be considering Hard Rock's \$320-million expansion plans for the Rideau Carleton Raceway in the south end.

If approved, this would lead to the construction of a new eight-story hotel with 178 rooms, a 1,600-seat theatre, and space for a number of restaurants and shops, in Osgoode Ward.

In Nepean, we have a number of exciting projects taking shape at the NCC Research Farm.

In May, working with Invest Ottawa, we launched the Ottawa L5 Testing Facility – which is helping our local partners grow and lead worldwide in the ever-growing Autonomous Vehicle industry.

This site is now the first and largest AV testing facility of its kind in North America – serving as a test track, research facility and data centre where we can test a number of new products and technologies.

We now have many partners that are benefitting from this initiative – including Smartcone, BlackBerry QNX, Autonomous Stuff, Aurigo and Carleton University – who are actively testing and conducting leading-edge research at this facility.

This complements our AV test track in Kanata North, which has for a few years enabled the testing of vehicles that communicate in real time with live City infrastructure.

And as a result of L5, INDRO Robotics, Autonomous Stuff and Aurigo – Britain's leading AV company – are all opening offices in Ottawa, which speaks to the economic benefits of this strategic investment.

In a recent article defining what should be our business community's long-term aspirations, journalist and entrepreneur Mark Sutcliffe described our driverless test track as a shining example of what defines our city as a place of innovation.

We have also been working with the Ottawa Film Office and TriBro Studios on a film studio project for this site, one that would create approximately 500 new jobs during construction – and hundreds of other full-time jobs in film, TV and animation.

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Just a few days ago, we had a production using the Rink of Dreams and Confederation Park to film a winter scene – and we can all be sure that Ottawa will once again be showcased on the Lifetime Channel next December.

Following a thorough review of the business case for this project, staff will be bringing forward to FEDCO in March a proposal for the loan financing of this facility – one that will benefit taxpayers and the Film Office while growing this important cultural sector and creating good jobs in our city.

And another opportunity is percolating on the site, with the possible creation of a world-class Smart Farm.

This facility – located a stone's throw away from the farming industry regulators – would bring together academic and private sector partners to advance precision agriculture and tackle the food insecurity challenges faced by our planet.

This precision agriculture innovation will eventually benefit the 1,045 farms that make up our rural areas and fuel our agricultural economy.

To support even more job creation in our rural villages, staff have been hard at work consulting with residents and businesses to develop a Rural Economic Development Strategy, which ARAC will be approving in the next few months. In the east end, the arrival last year of the Amazon fulfillment centre in Carlsbad Springs certainly delivered opportunities in this rural village – with the facility now providing employment to over 600 residents.

But we need to do more to stimulate economic growth in Orléans – and I'm pleased that we are working on a roadmap to do this.

Thanks to our Orléans-Highway 174 Economic Corridor Study, we will identify available lands primed for development and target business opportunities to create jobs in the east end.

And although the new Civic Campus project is only in its infancy, we are working closely with the team at The Ottawa Hospital and the Province to ensure that the planning continues to progress on this important healthcare facility for our region.

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All these projects are helping us diversify our local economy while creating businesses and jobs in all parts of the city.

To give a leg up to our local innovators and entrepreneurs, we opened the Innovation Centre at Bayview Yards in 2017 – where Michael Tremblay and the team at Invest Ottawa are delivering the tools and coaching that will ensure our local start-ups continue to grow.

They have so far accelerated and grown more than 200 small local companies – and the centre is bursting at the seams.

In November, Council approved a two-storey addition to Bayview Yards in order to meet the growing demand.

And with the demand for office, commercial and industrial space continuing to rise – vacancy rates reached new lows in 2019.

According to Avison Young – one of Canada's largest commercial real estate firms – the Ottawa market shows no signs of slowing down in 2020.

And as we know, there's a similar reality in the rental housing market right across the city: as the vacancy rates drop, prices increase.

I know that access to and affordability of housing has been top of mind for City Council and for thousands of residents who are struggling to find a suitable place to live.

But I'm proud that for two years in a row now, this Council has invested \$15 million per year to build new affordable housing units for our residents in need.

This two-year \$30-million-dollar investment in housing infrastructure is the single largest in the City of Ottawa's history.

Working with our community partners and other levels of government, we leveraged this funding last year and launched many projects across the city – representing a total of 519 affordable housing units that are currently in the works.

- 140 units for seniors and families in Centretown with OCH;
- 40 supportive housing units in the Glebe Annex with the John Howard Society;

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- 40 units dedicated to homeless veterans at Veteran's House – named in honour of former Air Force pilot Andy Carswell – delivered with Multifaith Housing;
- 42 supportive housing units with the Shepherds of Good Hope near Montfort Hospital; and
- 35 Units of affordable and supportive housing in Bell's Corners with the Anglican Diocese of Ottawa.

This is in addition to many projects that were completed and opened last year – including 58 units for seniors on Cambridge Street South, and a project with the Youth Services Bureau that delivered 39 supportive housing units for youth in Riverside Park.

Just last fall, Council approved a joint initiative with Ottawa Community Housing that will produce another 271 affordable housing units in Rideau-Rockcliffe.

We are currently working with our not-for-profit partners to ensure that the sites they have identified for affordable housing projects are shovel ready this year and next.

Last year, Council also approved the refinancing of many OCH mortgages, which will generate as much as \$35 million to reinvest in critical repairs to our existing social housing stock.

I'm also committed to continuing our work with our federal and provincial partners to ensure that they take on an increased role and invest their fair share to help us tackle this housing crisis, which is being felt right across the country.

I recently spoke to the provincial Minister of Finance and the Housing Minister, in advance of the provincial budget, to stress the urgent need for new funding to support and build more affordable housing.

And I will be meeting with federal Minister Ahmed Hussen later this week to ask the federal government to move forward with historic investments on affordable housing in the upcoming federal budget – in order to reduce the 56% funding share currently being absorbed by municipalities.

The City is also planning for longer-term opportunities to locate affordable housing near transit stations – because affordable transit is also essential to many residents who cannot afford to own a car to get around the city.

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And that's why this past year, FEDCO approved a plan from the Interdepartmental Task Force on Housing to target 18 prime pieces of land that will become transit-oriented neighbourhoods.

These publicly-owned properties along Bus Rapid Transit and the Trillium and Confederation Lines will be developed over the next 20 years and transformed into communities with a strong mix of affordable housing units.

The first of these affordable housing projects will be located beside our new Central Library Project and will help us kickstart the revitalization of LeBreton Flats.

And in response to record-low vacancy rates and market demand, private sector developers have launched a wave of apartment and multi-residential projects.

Earlier this month, we learned of the Bayshore Centre's plans for two towers on its property – a project with 500 rental units for residents who want convenient access to the future Bayshore Station of Stage 2 LRT.

And similar projects are planned for the Trillium Line, with Arnon announcing its plans for six buildings containing 295 rental units within a few hundred metres of the Carling LRT Station.

These are only two examples of many projects providing additional rental housing units while encouraging greater density along our light-rail transit projects – and it is clearly good news in our city's efforts to tackle urban sprawl.

In addition to these new developments, I'm encouraged that old and decrepit office buildings are being transformed into apartment rental buildings.

The nearby redevelopment of 170 Metcalfe at the corner of Nepean went online last summer with 64 rental units – which are almost all spoken for.

The old Government of Canada building at the corner of King Edward and Rideau is in the midst of a similar transformation and has been taking in uOttawa students since last fall.

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Along the same line, we learned a few weeks ago that the office building at 473 Albert Street had been purchased by a real estate investment trust for the same purpose – and it will undergo a complete renewal this year that will add 153 units to the rental stock.

What's encouraging is that the private sector is finding greater value in offering decent and affordable rental units rather than lower grade office space.

And although I'm hopeful this increase in the rental stock will provide some relief to apartment seekers, we know the City has an important role to play to ensure that housing remains accessible for our most vulnerable residents.

I very much look forward to the important review of both the 10-Year Housing and Homelessness Plan, as well as the emergency shelter standards – a review that our Community and Protective Services Committee will undertake in the coming months.

And there is more that can be done at the municipal level to address these issues of affordability and accessibility to housing.

That is why last year, CPSC considered a major report to regulate the business of short-term rentals and limit their presence to primary residences – which could bring back as many as 1,200 units into the long-term ownership or rental market.

When this framework is implemented later this year, it will ensure that condos and apartment units cannot be purchased and used for the sole purpose of acting as illegal hotels.

We know that over the last few years, this practice has negatively affected our community by reducing the housing stock, changing the fabric of our neighbourhoods – and in certain instances, has led to criminal activity in residential neighbourhoods.

These are social issues that all large cities are faced with – but we must do everything we can to continue to address some of their root causes.

That's why I'm proud of the work that City Council has done in recent years to bolster the inclusion of underrepresented and vulnerable communities.

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- Our ongoing efforts on Indigenous Reconciliation;
- Affordable transit services for all residents by freezing the EquiPass and EquiFare;
- The Transit Commission's ongoing work to decrease waiting times for Para Transpo customers by introducing online booking;
- The appointment of our City's first Women and Gender Equity Liaison and the creation of a Women and Gender Equity Strategy.

These are all concrete actions that this Council has endorsed to make our city more inclusive and more liveable for all.

The development of our Women and Gender Equity Strategy engaged over 400 residents last year and recently led to productive consultations with members of our 2SLGBTQ+ community.

The team is also in the process of establishing its Working Group – and they have engaged with 22 different community partners and allies that will help us envision and deliver on the strategy.

In the last budget, we also set aside the funding required to create an Anti-Racism Secretariat, which will complement our work on Women and Gender Equity and help us fight back against racism in our community.

Although our community is a welcoming and accepting one – as I learned firsthand when I came out last summer – there is always work left to do on this front, particularly at a time when populism and intolerance are on the rise around the world.

Interestingly, a program delivered by Economic Development is also helping us become a more supportive and inclusive community.

One of the initiatives currently being piloted under the Innovation Pilot Program – in partnership with Ottawa Public Health – is a mobile app called Timsle, which is revolutionizing the way we manage mental health.

Created here in Ottawa by Quayce Thomas – who's in the audience today – Timsle creates a social accountability network that can help improve users' mental health by leveraging the support of family and friends.

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Users of the app are asked to establish goals – like exercising, taking medication or having healthy and regular meals – and then identify the friends or family members that will keep them on track along the way.

Users will then check-in every day as they accomplish these tasks – but if they fail to do so, Timsle will notify members of their network so they can reach out to see if everything is okay and offer their support.

OPH has recognized its value in supporting positive mental health through strong routines and healthy living – and I'm pleased that Timsle is being added to our community's wellness toolbox.

I also want to take this opportunity to thank the team at Ottawa Public Health for their efforts to tackle the vaping epidemic which has invaded our schoolyards. We must do much more to combat teenagers' access to these deceptive and dangerous vaping products.

I want to thank Premier Ford, who acted quickly – only a few days after I called him on the topic – to announce a ban on the promotion of these products in convenience stores and gas stations.

Unfortunately, companies are using appealing flavours and marketing to win over these customers – and the federal government must also act quickly on this front nationwide in order to protect our teenagers from these hazardous side effects.

As an inclusive city, it is also our responsibility to provide a safe environment for our marginalized or vulnerable residents – and the City does that on a few fronts.

With the Coronavirus having now made its way to 16 countries, Dr. Etches and her team at OPH are keeping a close eye on the matter and working with their healthcare partners to make sure that Ottawa is prepared to deal with any local cases.

I look forward to Dr. Etches' update on this following my remarks.

I was encouraged when Chief Soly announced a few weeks ago the creation of three new Neighbourhood Resource Teams, which are a pillar of the OPS Community Policing Strategy.

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This announcement follows the successful deployment of three teams in Vanier/Overbrook, Heron Gate/South Ottawa and Carlington/Caldwell in 2019.

These three new teams will be deployed in the ByWard Market/Lowertown in May, followed by Centretown and Bayshore in the fall.

The OPS officers that form these teams will be dedicated exclusively to their assigned neighbourhoods, where they will spend a minimum of two years working with residents and community agencies to tackle crime and its underlying socioeconomic factors.

I also welcome the decision of the Ottawa Police Services Board to support Chief Sloly's plan to hire 100 officers this year – fast tracking the hiring of officers slated for between now and 2023.

This move will see 100 road-ready officers be fully deployed and improving public safety in our community by next year – and supporting initiatives like neighbourhood policing, reducing gun and gang violence, and violence against women.

We also need to ensure that our neighbourhood streets remain safe for children and families to enjoy.

And that's why in 2019, the Transportation Committee made permanent the successful Pedestrian Crossover Program, which had led to a reduction in collisions where these had been installed.

The Committee also enacted a series of road safety measures to protect vulnerable users, starting with the creation of eight new Community Safety Zones meant to protect children walking to nearby schools and community parks.

With the recent approval from the Province, Transportation staff will start deploying automated speed enforcement measures in the coming months, with the goal of eliminating speeding and dangerous driving around children in those safety zones.

A few months ago, the Transportation Committee also adopted its third Strategic Road Safety Action Plan – a comprehensive roadmap to reduce by 20% the rate of fatal and major injury collisions over the next five years.

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In 2020, this plan will lead to investments of 31.5 million dollars in road safety measures and initiatives – up from \$25 million in 2019 – which will help make our streets safer for all road users, including downtown, in the suburbs and on our rural roads.

Over the next few years, this Plan will deliver traffic calming measures in school zones, improvements to warranted pedestrian signals and infrastructure changes that will make our streets safer.

To help us deliver these initiatives, the revenue generated by all new red-light cameras installed beyond 2020 will be directed to funding this Strategic Road Safety Action Plan.

And we're seeing great results from some of the measures that Safer Roads Ottawa has piloted and deployed in recent years.

I'm happy to report that in the seven months following the launch of the school bus stop-arm camera project last May, the Ottawa Police have laid a total of 110 charges – of \$490 each – to drivers who had dangerously failed to stop for a school bus.

To put this in perspective, OPS officers had issued on average 35 fines per year in the two years leading up to the launch of the project.

Since it was first introduced in 2016, OPS has leveraged its now five Automated License Plate Recognition units to apprehend close to 800 suspended drivers still roaming freely on our roads.

It has also generated close to \$2.7 million in fine revenue for the City.

In 2020, the Transportation Committee will consider safety countermeasures for 34 high-volume intersections with heavy traffic and cycling interactions – and our cycling community will also benefit from the adoption and implementation of the City's Bike Parking Strategy.

And we are constantly providing our residents with more options to get around our city without using a car.

This past year, I was excited to open the beautiful new Flora Footbridge – and it's a highlight of my year at City Hall.

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This popular bridge over the Rideau Canal now connects the residents of Old Ottawa East to Lansdowne and the Glebe – and it greatly enhances our pedestrian and cycling networks.

And between its opening day and January 22nd, it had been used by pedestrians and cyclists close to 450,000 times.

I hope the excitement will be as great when we reopen the Harmer Avenue pedestrian and cycling bridge this fall, which will finally reconnect the Civic Hospital and Wellington West communities.

And in honour of a true community builder, I will bring forward a proposal to name the bridge after former Mayor Jackie Holzman, who now lives in Kitchissippi.

As a passionate advocate for the disabled and the first Jewish woman to become mayor of Ottawa, Jackie worked tirelessly during her time at City Hall to bridge differences between communities and to unite residents around important issues.

I hope City Council and residents will join me in supporting this naming proposal and the well-deserved acknowledgment of Jackie Holzman's contributions to our community.

Please join me in welcoming Jackie Holzman today.

This coming spring, we will also begin a number of major renewal projects that will greatly revitalize certain neighbourhoods.

Vanier will benefit from the revitalization of Montreal Road, which will take place over the next two years, in conjunction with the deployment of the Montreal Road Community Improvement Plan.

Jointly, these two initiatives will help us inject vitality and attract investments and urban renewal to Vanier.

Following the opening of LRT, the redevelopment of Mackenzie Avenue and Rideau Street – from Sussex to Dalhousie – will start this spring to rejuvenate this arts, culture and fashion district connecting the ByWard Market to the new Ottawa Art Gallery and Arts Court.

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With the addition of bike lanes and some greenery, Rideau Street will become more liveable and inviting – especially for shoppers and commuters using the Rideau Station of LRT.

This year, we will also complete the revitalization of Elgin Street, which will feature much wider sidewalks, benches and trees.

I know this great street will regain its glory and soon become a pedestrian destination.

We are seeing that renewal projects like Main Street, Queen Street, Montreal Road and Elgin Street are all revitalizing neighbourhoods and creating business and job opportunities for the future – and that's why we are also planning for the revitalization of Sparks Street and the ByWard Market.

These are only a few of the investments we are making to maintain our extensive road network in good condition for all road users.

This year, the City will invest \$51 million in road resurfacing projects across the city – up from the yearly average of \$35.5 million over the last Term of Council.

We are also investing \$66.2 million for growth projects that will benefit commuters in rapidly expanding neighbourhoods, who use roads like Strandherd Drive, Campeau Drive and the Kanata South Link.

And because residents across the city have to benefit from these improvements, we are making critical investments of \$44.5 million in our rural infrastructure – up from the four-year average of \$39.7 million.

This will deliver a number of important culvert projects and will improve the conditions of many rural roads and bridges – like Spruce Ridge Road in West-Carleton, Ashton Station Road in Rideau-Goulburn and River Road in Osgoode.

And we are also making significant investments to support the development of our Francophone community, which is now established in every corner of the city.

I look forward to officially opening the Maison de la Francophonie tomorrow evening – this multi-service hub is set to become an important meeting place for the growing Francophone community in Ottawa's west end.

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And I am proud of the City's role in giving this project a home, by donating the former Grant School on Richmond Road to the CMFO.

Following several years of community efforts, I want to thank all the volunteers who contributed hundreds of hours to achieving this project, as well as the Conseil des écoles publiques, which ensured that the centre was completed.

I am certain that tomorrow's event will be a memorable opportunity to celebrate the opening of this important facility and to recognize the contributions of volunteers and the community.

So many individuals in the community and here at the City are behind the success of these countless initiatives that strengthen our community.

I want to take this opportunity to thank our City Manager Steve Kanellakos, his Senior Leadership Team, and all our dedicated City staff.

They work day in and day out to make Ottawa such a wonderful place to live.

I know 2019 was a tough and demanding year for many teams at the City – and I thank all of you who sacrificed family time and personal commitments to ensure you were serving our residents and our community in times of need.

Finally, I'm pleased to announce that this year, I will be recognizing the work of distinguished individuals as well as an organization who have made our city proud by presenting the Key to the City to:

- Accomplished golfer and three-time Canadian Press female athlete of the year: Brooke Henderson;
- Former Governor General, accomplished journalist and worldwide ambassador of La Francophonie: Michaëlle Jean;
- TSN sportscaster and proud Carleton University journalism graduate: James Duthie;
- and last but not least, the Ottawa Citizen, an organization that has been providing news coverage in the nation's capital for 175 years – the longest continuing local business in Ottawa today.

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There is a lot to celebrate in Ottawa – and we are sometimes too modest when boasting about our city.

But when speaking recently about Ottawa's employment growth, Shawn Hamilton, who's Senior Vice-President at CBRE in Ottawa, recently acknowledged that "a confluence of well-timed events – a thriving tech scene, multiple postsecondary institutions, easy access to green space, and new infrastructure such as a new library and a new hospital coming down the pipe – have contributed to an upward spiral for the city, and I'm hard-pressed to find a strike against us for growth."

And similar aspirations were echoed in Harley Finkelstein and Lindsay Taub's "Love Letter to Ottawa," published in the Citizen at the end of December, in which they state that "in the next decade, we can transform this city by saying yes more often."

I love their enthusiasm and passion for this great city we all call home.

And I believe they come at it with the right attitude, recognizing that "there's a lot of work to be done – but there is also so much opportunity ahead."

I very much share their point of view that there is a lot we can do to brighten the future of our city.

We need to invest in our infrastructure if we want our local economy to continue to prosper, sustaining good paying jobs in communities across the city.

But we must also ensure that this rising tide of prosperity lifts all boats and helps us support residents from all walks of life, including those who are most vulnerable.

I believe City Council can deliver on all these goals if we continue to take the right approach.

There's an ancient African proverb that says: "If you want to go fast, go alone; if you want to go far, go together."

I invite us all to continue this important work together, to the benefit of our community. Thank you.

From: [Energy Evolution / Évolution de l'énergie](#)
To: [Energy Evolution / Évolution de l'énergie](#)
Subject: Invite to Sounding Board Meeting (August 12) / Invitation à la réunion du groupe de rétroaction (12 août)
Date: July-24-20 1:16:56 PM

CAUTION: EXTERNAL EMAIL

This email originated from outside of Hydro Ottawa or its affiliates. Please report suspicious emails by clicking Report Email or forward to phishing@hydroottawa.com.

Hello,

You are receiving this email as you are a member of the City of Ottawa's Energy Evolution Sounding Board or have participated in one of the project's supporting technical working groups.

The purpose of this email is to provide an update on the current status of Energy Evolution and to invite you to an upcoming Sounding Board meeting on August 12th.

Timing of Energy Evolution strategy

Staff have been hard at work finalizing the different elements of Energy Evolution, including fine-tuning the energy and emissions model, completing the financial analysis, and drafting the strategy. Due to the need to refocus efforts and resources to navigate the coronavirus pandemic and the state of emergency, there were corporate-wide delays on bringing forward reports to Standing Committees and Council. The final Energy Evolution strategy will now be brought forward to the Standing Committee on Environmental Protection, Water and Waste Management in October.

Upcoming Sounding Board meeting

Before then, we'd like to get your feedback. We invite you to join us for a virtual Sounding Board meeting on August 12th. The purpose of the meeting is to:

- Provide an overview of what is proposed to be brought forward in the fall for Energy Evolution, including the financial analysis and priority projects
- Provide a forum for discussion and an opportunity to ask staff questions on the upcoming report
- Introduce the Ottawa Climate Action Fund

The meeting will be held on:

Date: Wednesday, August 12, 2020
Time: 9:00 am to 11:00 am
Location: Online

To confirm your attendance, please sign up [here](#). A confirmation email will follow with details on how to log-in to the meeting on the 12th. A meeting package with a detailed agenda and supporting meeting materials will be sent out closer to the date.

Please also note that this event is intended for recipients of this email only as it will allow us to keep the numbers manageable to support a better forum for discussion. We will be holding separate consultations in August for the general public; further details will be made available in the coming weeks.

If you have any questions on what's been provided, please respond to this email and a member of the Energy Evolution project team will reach out.

Thank you and we hope that you everyone is doing well in these uncertain times.

The Energy Evolution project team

Bonjour,

Vous recevez ce courriel, car vous êtes membre du groupe de rétroaction du projet Évolution énergétique de la Ville d'Ottawa ou avez participé à l'un des groupes de travail techniques en appui au projet.

Le présent courriel vise à vous fournir une mise à jour sur l'état d'avancement d'Évolution énergétique et à vous inviter à la réunion du groupe de rétroaction qui aura lieu le 12 août.

Calendrier de la stratégie d'Évolution énergétique

Le personnel a travaillé fort pour peaufiner les différents éléments d'Évolution énergétique, y compris la mise au point du modèle de gestion de l'énergie et des émissions, la réalisation de l'analyse financière et l'élaboration de la stratégie. En raison de la nécessité de recentrer nos efforts et nos ressources en vue de composer avec la pandémie de coronavirus et l'état d'urgence, il y eut des délais à l'échelle de la Ville concernant la présentation de rapports aux comités permanents et au Conseil. La stratégie finale d'Évolution énergétique sera soumise au Comité permanent de la protection de l'environnement, de l'eau et de la gestion des déchets en octobre.

Réunion à venir du groupe de rétroaction

Avant cette date, nous aimerions recueillir vos commentaires. Nous vous invitons à vous joindre à une réunion du groupe de rétroaction le 12 août. L'objectif de la réunion est de :

- Donner un aperçu de ce qu'on propose de présenter à l'automne en ce qui concerne Évolution énergétique, notamment l'analyse financière et les projets prioritaires;
- Tenir une discussion ouverte et offrir la possibilité de poser des questions au personnel sur le rapport à venir;
- Présenter le Ottawa Climate Action Fund (Fonds d'action pour le climat Ottawa).

La réunion aura lieu le :

Date : Le mercredi 12 août 2020
Horaire : De 9 h à 11 h
Lieu : En ligne

Pour confirmer votre présence, [veuillez-vous inscrire ici](#). Vous recevrez un courriel de confirmation précisant comment accéder à la réunion le 12 août. À l'approche de la date, nous vous enverrons une trousse de réunion comprenant l'ordre du jour détaillé et les documents d'accompagnement.

Veuillez noter que cet événement est réservé aux destinataires de ce courriel seulement, car cela nous permet de maintenir à un niveau gérable le nombre de participants afin de faciliter les discussions dans le cadre du forum. Nous organiserons des consultations publiques séparément en août. Nous communiquerons de plus amples détails à ce sujet au cours des prochaines semaines.

Si vous avez des questions, veuillez répondre à ce courriel et un membre du projet Évolution énergétique communiquera avec vous,

Nous vous remercions et espérons que tout le monde va bien en cette période sans précédent.

L'équipe du projet Évolution énergétique

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

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TECHNICAL CONFERENCE UNDERTAKING - JT 2.18

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3 JT 2.18

4 To provide an executed copy of the connection cost recovery agreement between Hydro Ottawa
5 and Hydro One for South Nepean or Cambrian MTS Project.

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8 RESPONSE:

9

10 A copy of the executed Connection Cost Recovery Agreement ("CCRA") between Hydro Ottawa
11 and Hydro One Networks for the Cambrian MTS Project is appended as Attachment JT 2.18(A):
12 CCRA Connection of Cambrian MTS and S7M Line Upgrade.



CONNECTION AND COST RECOVERY AGREEMENT (CCRA) - LOAD

between

Hydro Ottawa Limited

and

Hydro One Networks Inc.

for

Connection of Cambrian MTS and S7M Line Upgrade

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

Hydro Ottawa Limited (the “**Customer**”) had requested and Hydro One Networks Inc. (“**Hydro One**”) has agreed to perform the work described below under Project Summary (the “**Project**”) on the terms and conditions set forth in this Agreement dated September 27th 2019 (the “**Agreement**”) and the attached Standard Terms and Conditions for Load Customer Transmission Customer Connection Projects V5 6-2014 (the “**Standard Terms and Conditions**” or “**T&C**”). Schedules “A” and “B” attached hereto and the Standard Terms and Conditions are to be read with and form part of this Agreement.

Project Summary

The Customer is constructing a new transformer station, Cambrian MTS in Ottawa, Ontario which will be connecting to Hydro One’s transmission system via a new Hydro One-owned 230kV E34M circuit section between STR 673 JCT and Cambrian MTS which will involve Hydro One performing the work described in detail in Schedule “A” as the Line Connection Pool Work – New 230 kV Line and the Network Customer Allocated Work – New 230 kV Line.

Hydro One’s existing 115 kV wood pole section of transmission circuit S7M is 10.9 km long and runs between STR 673 JCT and Cambrian Junction (the “**Existing S7M Circuit**”). A 7.4 km portion of the Existing S7M Circuit between STR 673 JCT and Manotick JCT has reached end-of-life (the “**EOL Existing S7M Assets**”). The remaining portion of the Existing S7M Circuit between Manotick Junction and Cambrian Junction has not reached end-of-life (the “**Non-EOL Existing S7M Assets**”).

Hydro One would normally perform the Avoided Cost Work to replace the end-of-life portion like-for-like, at its own expense to continue to supply the Customer’s load.

The Customer wants to be able to use the Existing S7M Circuit as a backup supply to the new Cambrian MTS in the event of a contingency. In order to be able to do so, Hydro One will need to:

- (a) perform the equipment upgrade work described in detail in Schedule “A” as Work Chargeable to Customer to remove:
 - (i) the EOL Existing S7M Assets (instead of performing the Avoided Cost Work); and
 - (ii) the Non-EOL Existing S7M Assets;

and replace them with a new 115 kV 997 kcmil transmission circuit on steel poles as the existing 477 kcmil ACSR and 211.6 kcmil ACSR conductors means that the capacity of the Existing S7M Circuit is insufficient for use as a backup supply; and

- (b) construct a new 1.3 km steel pole line extension using 997 kcmil ACSR conductor from Cambrian Junction to the new Cambrian MTS which will involve Hydro One performing the work described in detail in Schedule “A” as the Line Connection Pool Work – 115 kV Line Extension and the Network Customer Allocated Work – 115 kV Line Extension.

For greater certainty, the Project does not involve any Transformation Pool Work.

Term:

The term of this Agreement commences on the date first written above and will terminate on the earliest of the 25th anniversary of the In Service Date.

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

Additional Terms:

1) The Standard Terms and Conditions are hereby amended as follows:

(a) by adding the following terms:

“Avoided Cost” means fixed amount that is Hydro One’s estimate of the Engineering and Construction Cost of the Avoided Cost Work as identified in Schedule “B” of the Agreement.

“Avoided Cost Work” means the work described in Schedule “A” of the Agreement as Avoided Cost Work.

“Revised Avoided Cost” means the fixed amount that results from Hydro One performing another estimate of the Engineering and Construction Cost of the Avoided Cost Work in the limited circumstances described in Section 10.5.

(b) by replacing Section 10.1 with the following:

10.1 The Customer agrees to pay Hydro One:

- (a) the Engineering and Construction Cost (not including Taxes) of the Work Chargeable to Customer less the Avoided Cost or where applicable, the Revised Avoided Cost;
- (b) a Capital Contribution towards the Pool Funded Cost of the Line Connection Pool Work - 115 kV Line Extension to the extent that same is not recoverable from the Line Connection Revenue – 115 kV Line Extension during the Economic Evaluation Period;
- (c) a Capital Contribution towards the Pool Funded Cost of the Line Connection Pool Work - New 230 kV Line to the extent that same is not recoverable from the Line Connection Revenue – New 230 kV Line during the Economic Evaluation Period;
- (d) a Capital Contribution towards the Pool Funded Cost of the Network Customer Allocated Work - 115 kV Line Extension to the extent that same is not recoverable from the Network Connection Revenue - 115 kV Line Extension during the Economic Evaluation Period; and
- (e) a Capital Contribution towards the Pool Funded Cost of the Network Customer Allocated Work - New 230 kV Line to the extent that same is not recoverable from the Network Connection Revenue – New 230 kV Line during the Economic Evaluation Period; and
- (f) any amounts payable to Hydro One under Subsection 12(a)(i) hereof.

To reflect that Hydro One will not be performing the Avoided Cost Work by reason of the Work Chargeable to Customer being performed, Hydro One shall deduct the Avoided Cost from the Engineering and Construction Cost of the Work Chargeable to Customer.

An estimate of the Engineering and Construction Cost (not including Taxes) of the Line Connection Pool Work – 115 kV Line Extension, the Line Connection Pool Work – New 230 kV Line, the Network Customer Allocated Work - 115 kV Line Extension, Network Customer Allocated Work - New 230 kV Line; and the Work Chargeable to Customer is provided in Schedule “B” of the Agreement. An estimate of the Capital Contribution for

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

each of the Line Connection Pool Work – 115 kV Line Extension, the Line Connection Pool Work – New 230 kV Line, the Network Customer Allocated Work - 115 kV Line Extension and the Network Customer Allocated Work – New 230 kV Line is also specified in Schedule “B” of the Agreement (plus Taxes).

The Customer shall pay Hydro One the:

- estimated Engineering and Construction Cost of the Work Chargeable to Customer less the Avoided Cost; and
- estimated Capital Contribution(s),

in the manner specified in Schedule “B” of the Agreement.

Within 180 calendar days following the Ready for Service Date, Hydro One shall provide the Customer with a new Schedule “B” to replace Schedule “B” of the Agreement attached hereto which shall identify the following:

- (ii) the actual Engineering and Construction Cost of the Line Connection Pool Work - 115 kV Line Extension;
- (iii) the actual Engineering and Construction Cost of the Line Connection Pool Work - New 230 kV Line;
- (iv) the actual Engineering and Construction Cost of the Network Customer Allocated Work - 115 kV Line Extension;
- (v) the actual Engineering and Construction Cost of the Network Customer Allocated Work – New 230 kV Line;
- (vi) the actual Engineering and Construction Cost of the Work Chargeable to Customer and the actual Engineering and Construction Cost of the Work Chargeable to Customer less the Avoided Cost or where applicable, the Revised Avoided Cost;
- (vii) the actual Capital Contribution required to be paid by the Customer for the Line Connection Pool Work – 115 kV Line Extension;
- (viii) the actual Capital Contribution required to be paid by the Customer for the Line Connection Pool Work – New 230 kV Line;
- (ix) the actual Capital Contribution required to be paid by the Customer for the Network Customer Allocated Work - 115 kV Line Extension;
- (x) the actual Capital Contribution required to be paid by the Customer for the Network Customer Allocated Work – New 230 kV Line;
- (xi) the revised Line Connection Revenue – 115 kV Line Extension based on the Load Forecast or the Adjusted Load Forecast, whichever is applicable;
- (xii) the revised Line Connection Revenue – New 230 kV Line requirements based on the Load Forecast or the Adjusted Load Forecast, whichever is applicable;
- (xiii) the revised Network Revenue – 115 kV Line Extension requirements based on the Load Forecast or the Adjusted Load Forecast, whichever is applicable;
- (xiv) the revised Network Revenue – New 230 kV Line requirements based on the Load Forecast or the Adjusted Load Forecast, whichever is applicable; and
- (xv) where applicable, the Revised Avoided Cost.

The new Schedule “B” shall be made a part hereof as though it had been originally incorporated into the Agreement.

If the total sum of the amounts paid by the Customer in the manner specified in Schedule “B” of the Agreement exceeds the total sum of the actual amounts required to be paid by the Customer identified in the new Schedule “B”, Hydro One shall refund the difference to the Customer (plus Taxes) within 30 days following the issuance of the new Schedule “B”. If the total sum of the amounts paid by the Customer in the manner specified in Schedule “B” of the Agreement is less than the total sum of the actual

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

amounts required to be paid by the Customer identified in the new Schedule “B”, the Customer shall pay Hydro One the difference (plus Taxes) within 30 days following the issuance of the new Schedule “B”.

- (c) by adding the following as Section 10.5:

Subject to the foregoing, the Avoided Cost is a fixed amount. Should:

- (i) After commencing the Hydro One Connection Work, Hydro One determine, acting reasonably, that all or any portion of the scope of the Avoided Cost Work requires revision;
- (ii) Hydro One determine, acting reasonably, that there has been a Material change in the cost of any component used by Hydro One to estimate the cost of the Avoided Cost Work, including, but not limited to the cost of obtaining any approvals required under any Applicable Laws, obtaining land rights, labour, materials or equipment; and/or
- (iii) the Customer request that Hydro One perform another estimate of the cost of the Avoided Cost Work because the Customer reasonably believes that: (a) all or any portion of the scope of the Avoided Cost Work requires revision; and/or (b) that there has been a Material change in the cost of any component used by Hydro One to estimate the cost of the Avoided Cost Work,

Hydro One will provide the Customer with a Revised Avoided Cost in the new Schedule “B” to be provided by Hydro One in accordance with Section 10.1 above.

Acknowledgements re. Estimate Agreement and Letter Agreement

Hydro One and the Customer are parties to: (a) a Connection Estimate & Environmental Assessment Study Agreement dated February 10, 2017 as amended by an Amending Agreement dated November 24, 2017 (collectively, the “**CEEA**”) and a Pre-CCRA Letter Agreement for Advance Payment of Engineering Design Work and Procurement of Certain Equipment Prior to Execution of a Connection and Cost Recovery Agreement dated April 8, 2019; (the “**Letter Agreement**”) (the CEEA and the Letter Agreement are collectively referred to as the “**Pre-CCRA Agreements**”). Hydro One and the Customer acknowledge and agree that:

- (i) pursuant to the CEEA, the Customer made payments of \$1,801,500.00 (plus HST in the amount of \$234,195.00) (the “**CEEA Payments**”) for performance of the Work (as that term is defined in the CEEA) (the “**CEEA Work**”);
- (ii) Hydro One has completed the performance of the CEEA;
- (iii) notwithstanding any term to the contrary in the CEEA, the scope of the CEEA Work is included in the Scope of Work and the estimates of the Engineering and Construction Cost of the work being performed under this Agreement, the CEEA Work Cost is included in the amounts payable by the Customer under the terms of this Agreement; and the CEEA Payment is credited against the amounts payable by the Customer under the terms of this Agreement;
- (iv) pursuant to the Letter Agreement, the Customer provided three payments totalling \$1,519,658.00 plus HST in the amount of \$197,555.54 (the “**Advance Payment(s)**”) towards the cost of the Pre-CCRA Work (as that term is defined in the Letter Agreement); and
- (v) consistent with the terms of the Letter Agreement, the scope of the Pre-CCRA Work is in the Scope of Work and the estimates of the Engineering and Construction Cost of the work being performed under this Agreement, the Actual Cost of the Pre-CCRA Work is included in the amounts payable by the Customer under the terms of this Agreement; and

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

the Advance Payment(s) are credited against the amounts payable by the Customer under the terms of this Agreement.

The Parties further acknowledge and agree that there will be no separate true-up process under the terms of the CCEA or the Pre-CCRA Letter Agreement.

Special Circumstances

In addition to the circumstances described in Section 5 of the Standard Terms and Conditions, the Ready for Service Date is subject to (i) the Customer executing and delivering this Agreement to Hydro One by no later than **September 23rd, 2019 (the "Execution Date") and (ii) receipt of the Ontario Energy Board's approval of the application for leave to construct pursuant to Section 92 of the *Ontario Energy Board Act***

Subject to Section 31 of the Standard Terms and Conditions, this Agreement constitutes the entire agreement between the parties with respect to the subject matter of this Agreement and supersedes all prior oral or written representations and agreements concerning the subject matter of this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by the signatures of their proper authorized signatories, as of the day and year first written above.

HYDRO OTTAWA LIMITED

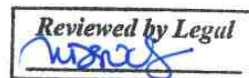


Name: Bryce Conrad
Title: President and Chief Executive Officer

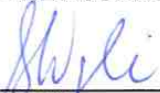


Name: **Geoff Simpson**
Title: **Chief Financial Officer**
Execution Date:

I/We have the authority to bind the Corporation



HYDRO ONE NETWORKS INC.



Name: Susan Wylie
Title: Director, Key Account Management
Execution Date: **September 27, 2019**
I have the authority to bind the Corporation

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

Schedule “A” (Connection of Cambrian MTS and S7M Line Upgrade):

PROJECT SCOPE

New or Modified Connection Facilities: 230kV E34M transmission circuit and 115 kV S7M transmission circuit

Connection Point: Cambrian MTS

Ready for Service Date: November 15, 2021

AVOIDED COST WORK:

Hydro One would have had to provide project management, engineering, equipment and material, construction and commissioning of new and modified Hydro One facilities with respect to the following work but for the Customer's upgrade request:

Circuit S7M refurbishment from S7M STR673N JCT to Manotick JCT.

Line Refurbishment

- Replace 46 single circuit H-Frame wood pole structure
- Replace 2 composite 3 pole dead end structure with guying and anchors
- Conductor: 7.4km of ACSR 477kcmil 26/7
- Skywire: 7#8 Alumoweld

Line bypass:

- Build 7.4km of 115kV Wood Pole Bypass parallel to existing S7M transmission line. Phase conductor: ACSR 477kcmil 26/7; skywire: 7#10 Alumoweld.
- Connect bypass to S7M at STR673N JCT and Manotick JCT.
- Connect bypass to Fallowfield MTS.

Real Estate

- Temporary easement for bypass line.
- Temporary easement for off corridor construction access road to install.

HYDRO ONE CONNECTION WORK

Hydro One will provide project management, engineering, equipment and material, construction and commissioning of the Hydro One Connection Work. The scope of the Hydro One Connection Work includes the requirements from:

- IESO's SIA Report dated June 26, 2019 (CAA ID #2017-627 and CAA ID #2017-629); and
- Hydro One's Customer Impact Assessment (CIA) Report dated July 3, 2019.

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

Hydro One, or its agents:

- (i) will supply and install all materials and equipment not specifically described herein that are required or may be necessary to complete the work for the purpose required;
- (ii) shall repair any damage caused to lands, owned by Hydro One or third parties, associated with or related to the Hydro One Connection Work;
- (iii) where Hydro One deems necessary, install appropriate solutions to address public safety concerns regarding the facilities being constructed by Hydro One, which may include, but is not limited to, safety enclosures and signage; and
- (iv) scrap all materials and equipment removed by Hydro One, or its agents, at site including, but not limited to, all granular material deposited on temporary construction access roads; provided, however, that Customer shall be given the right of first refusal to retain such materials, subject to the payment of any reasonable incremental haulage costs incurred by Hydro One

Part 1: Transformation Connection Pool Work

None.

Part 2: Line Connection Pool Work

I. Line Connection Pool Work – 115 kV Line Extension

Hydro One will build a 1.3km 115kV line tap from Cambrian JCT to Cambrian MTS. The scope of the work is described below.

Please note: The 115kV circuit line tap is built on the same towers and in conjunction with the 230kV circuit line tap from Cambrian JCT to Cambrian MTS, therefore some of the work description in the following sections is common and is indicated by “[common]” below.

Line work:

- Build and commission 1.3km 115kV circuit using a combination of steel poles and lattice towers [common]
- String conductor 997kcmil 26/7 ACSR from Cambrian JCT to Customer’s site.
- String skywire 7#15 Alumoweld (note, the towers will have two (2) skywires) from Cambrian JCT to Customer’s site [common].
- Hydro One will terminate conductors at Customer’s line entrance structure.
- Hydro One will terminate skywires at Customer’s line entrance structure [common].
- A set of three (3) mid span openers (MSO) will be installed on the phase conductors between the BPE structures and customer’s entrance structure.
- Remove vegetation, as required, on the Right of Way [common].

Real Estate [common]

- Obtain permanent easement on new section of the line from Cambrian junction to Cambrian MTS.
- Land value study, property appraisals, Legal surveys and legal fees.

Environmental Assessment [common]

Ontario Government Class EA has been obtained. Customer and Hydro One were co-applicants in the submission to the MOECC.

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

Federal environmental section 67 application for construction work in crown lands, Canadian Food Inspection Agency (CFIA) and National Capital Commission (NCC), submitted on June 28, 2019.

Leave to Construct - Section 92 [common]

A joint application has been submitted to the Ontario Energy Board on May 28, 2019.

II. Line Connection Pool Work – New 230 kV Line

Hydro One will build a 12.2km 230kV circuit from Hunt Club Road (S7M STR673N JCT) to the Customer's site. Work includes the removal of a 10.9km section of existing 115kV single circuit wood pole S7M to allow for the construction of this 230kV line and the work described under Part 5.

Note: The 230kV line is built on the same towers and in conjunction with the 115kV circuit work described in Part 2-I and Part 5, therefore some of the work description in the following sections is common and is indicated by "[common]" below.

Description of major items of Line work:

- Build and commission 12.2km 230kV circuit using a combination of steel poles and lattice towers between Hunt Club Road (S7M STR673N JCT to Customer's site) [common]
- Three (3) tapping structures BPE structures will be installed at Hunt Club Road JCT
- Line Traps will be installed at Hunt Club Road JCT.
- Three (3) tapping structures BPE structures will be installed on the ROW near the Customer's site.
- String conductor 997kcmil 26/7 ACSR from Hunt Club Road JCT to Customer's site.
- String skywire 7#15 Alumoweld (note, the towers will have two (2) skywires) from Hunt Club Road To Customer's site [common].
- Hydro One will terminate conductors at Customer's line entrance structure.
- Hydro One will terminate skywires at Customer's line entrance structure [common].
- A set of three (3) mid span openers (MSO) will be installed on the phase conductor between the BPE structures and customer's entrance structure.
- Work with MTO to obtain approval for highway closure for stringing of the tower [common].

Description of major items of Line Bypass:

- Build 3.5km of 115kV Wood Pole Bypass parallel to existing S7M transmission line. Phase conductor: ACSR 477kcmil 26/7; skywire: 7#10 Alumoweld.
- Connect bypass to S7M at Manotick JCT and Cambrian JCT.

Description of major items of Real Estate [common]

- Obtain permanent easement on new section of the line from Hunt Club Road (S7M STR673N JCT) to Cambrian MTS.
- Land value study, property appraisals, Legal surveys and legal fees.
- Temporary easement for bypass line.
- Temporary easement for off corridor construction access road to install.

Environmental Assessment [common]

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

Ontario Government Class EA has been obtained. Customer and Hydro One were co-applicants in the submission to the MOECC.

- Federal EA. Application under Section 67 has been submitted to the Federal government.

Leave to Construct - Section 92

A joint application has been submitted to the Ontario Energy Board on May 28, 2019. [common]

Part 3: Network Customer Allocated Work

I. Network Customer Allocated Work – 115 kV Line Extension

Protection equipment and settings at the terminal stations will be modified as follow:

Merivale TS

- Upgrade protection relays with HONI standard IEDs.
- Existing scheme will be retained with modifications to include sending/receiving of TT to/from the Customer station.
- Revise protection settings.
- Provide entrance facility to accommodate fiber from Customer.

South March SS

- Review and revise protection settings.

COVER and design review.

II. Network Customer Allocated Work – New 230 kV Line

Protection equipment and settings at the terminal stations will be modified as follow:

Merivale TS

- Review and revise protection settings.
- Existing scheme will be retained with modifications to include sending/receiving of TT to/from the Customer station.
- Modify E34M protections to cascade TT from the new customer MTS to Almonte TS and Terry Fox MTS, as well as to cascade TT from Almonte TS and Terry Fox MTS to the new customer station

Almonte TS

- Review and revise protection settings.

COVER and design review.

Part 4: Network Pool Work (Non-Recoverable from Customer)

None

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

Part 5: Work Chargeable to Customer

Hydro One will upgrade a 10.9km section of 115kV circuit S7M from Hunt Club Road (S7M STR673N JCT) to Cambrian JCT. The removal of a 10.9km section of existing 115kV single circuit wood pole S7M is required to allow for this upgrade of the 115kV circuit S7M and for the work described under Part 2-II.

Note 1: The upgraded 115kV circuit tap is built on the same towers and in conjunction with the 230kV circuit work described in Part 2-II from Hunt Club Road to Cambrian JCT, therefore some of the work description in the following sections is common and is indicated by "[common]" below.

Note 2: The cost of the Hydro One avoided work described above will be subtracted from the cost of work described in this section.

Description of major items of Line work:

- Build and commission 10.9km 115kV circuit using a combination of steel poles and lattice towers between Hunt Club Road (S7M STR673N JCT to Cambrian JCT) [common]
- Three (3) tapping structures BPE structures will be installed at Hunt Club Road JCT
- String conductor 997kcmil 26/7 ACSR from Hunt Club Road JCT to Cambrian JCT.
- String skywire 7#15 Alumoweld (note, the towers will have two (2) skywires) from Hunt Club Road Cambrian JCT [common].
- Work with MTO to obtain approval for highway closure for stringing of the tower [common].

Description of major items Line Bypass:

- Build 7.4km of 115kV Wood Pole Bypass parallel to existing S7M transmission line. Phase conductor: ACSR 477kcmil 26/7; skywire: 7#10 Alumoweld.
- Connect bypass to S7M at Manotick JCT and Cambrian JCT.

Real Estate [common]

- Obtain permanent easement on new section of the line from Manotick junction to Cambrian MTS.
- Land value study, property appraisals, Legal surveys and legal fees.
- Temporary easement for bypass line.
- Temporary easement for off corridor construction access road to install.

Environmental Assessment [common]

- Ontario Government Class EA has been obtained.
- Federal EA. Application under Section 67 has been submitted to the Federal government.
- Federal environmental section 67 application for construction work in crown lands, Canadian Food Inspection Agency (CFIA) and National Capital Commission (NCC), submitted on June 28, 2019.

Leave to Construct - Section 92 [common]

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

A joint application has been submitted to the Ontario Energy Board on May 28, 2019.

Part 6: Scope Change

For the purposes of this Part 6 of Schedule “A”, the term “**Non-Customer Initiated Scope Change(s)**” means one or more changes that are required to be made to the Project Scope as detailed and documented in Parts 1 to 5 of this Schedule “A” such as a result of any one or more of the following:

- any environmental assessment(s);
- requirement for Hydro One to obtain approval under Section 92 (leave to construct) of the Ontario Energy Board Act if the transmission line route selected by Hydro One is greater than 2 km in length;
- Hydro One having to expropriate property under the Ontario Energy Board Act;
- conditions included by the OEB in any approval issued by the OEB under Section 92 of the Ontario Energy Board Act or any approval issued by the OEB to expropriate under the Ontario Energy Board Act; and
- any IESO requirements identified in the System Impact Assessment or any revisions thereto.

Any change in the Project Scope as detailed and documented in Parts 1 to 5 of this Schedule “A” whether they are initiated by the Customer (“**Customer Initiated Scope Changes**”) or are Non-Customer Initiated Scope Changes, may result in a change to the Project costs estimated in Schedule “B” of this Agreement and the Project schedule, including the Ready for Service Date.

All Customer Initiated Scope Changes must be made in writing to Hydro One.

Should Hydro One be agreeable to performing any Customer Initiated Scope Changes, Hydro One will advise the Customer of any cost and schedule impacts of such scope changes. Hydro One will not implement any Customer initiated scope changes until written approval has been received from the Customer accepting the new pricing and schedule impact.

Hydro One will advise the Customer of any Material cost and/or Material schedule impacts of any Non-Customer Initiated Scope Changes.

CUSTOMER CONNECTION WORK

The Customer will design, build, and operate the station. Customer will be required to design, install, and commission the follow:

- Provide fiber link between the customer’s station and Hydro Ottawa Merivale MS. Hydro One shall be responsible for the fiber link from Merivale MS to Hydro One’s Merivale TS.
- Dual line protection to isolate the substation from fault on either 230kV circuit E34M or 115kV circuit S7M.
- Send transfer trip to Merivale TS on breaker failure of the connecting HV breaker. Full opening of the HV breaker disconnect switch will block the transfer trip to Merivale TS.
- Redundant telecom link to Merivale TS for transfer trip
- Provide fast transfer switch scheme to allow the station to be transferred from E34M to S7M upon reception of Line End Open (LEO) signal or transfer trip (TT) signal from Merivale TS. The scheme has to have the ability to be blocked as per instruction from IESO.
- Provide SCADA telemetry and alarms to IESO, OGCC, via ICCP.

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

- Install metering as per IESO requirement
- Update and revise protection at Terry Fox MTS.
- Blocking signal from South Nepean MTS to South March SS for circuit S7M.
- Provide access road for the MSO inside the station fence.
- Any activities required by Transmission System Code.

EXISTING LOAD:

	A	B
Existing Load Facility (Name)	Existing Load (MW) ¹	Normal Capacity (MW) ²
Bridlewood MTS	28.0 ³	
Fallowfield MTS	43.6 ⁴	
Marchwood MTS	43.0 ⁵	
Richmond MTS	6.6 ⁶	
Manotick DS	6.8 ⁷	

Notes:

1. Existing Load means the Customer's Assigned Capacity at the Existing Load Facility as of the date of this Agreement (Section 3.0.3 of the Transmission System Code).
2. Any station load above the Normal Capacity of the Existing Load Facility (Overload) will be determined in accordance with Section 6.7.9 of the Transmission System Code and Hydro One's Connection Procedures. If the Overload is transferred to the New or Modified Connection Facilities, the Overload will be credited to the Line Connection Revenue, Transformation Connection Revenue or Network Revenue requirement, whichever is applicable.

Existing capacity of S7M: 168MW is based on most restricted constraint.

3. Bridlewood MTS existing peak load based on average of May, June, and July 2016 peaks.
4. Fallowfield MTS existing peak load based on average of June, July, August 2018 peaks.
5. Marchwood MTS existing peak load based on average of July, August, September 2015 peaks.
6. Richmond MTS existing peak load based on average of May, June, July 2016 peaks.
7. Manotick DS existing peak load based on average of July, August, September 2018.
This is a Hydro One Distribution station. Listed here as it is also supplied by circuit S7M.

OTHER RELEVANT CONSIDERATIONS:

N/A

EXCEPTIONAL CIRCUMSTANCES RE. NETWORK CONSTRUCTION OR MODIFICATIONS:

N/A

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

MISCELLANEOUS

Customer Connection Risk Classification: Low Risk

True-Up Points: (a) following the fifth and tenth anniversaries of the In Service Date; and
(b) following the fifteenth anniversary of the In Service Date as the Actual Load was more than 20% lower than the Load Forecast at the end of the tenth anniversary of the In Service Date.

Customer's HST Registration Number: 863391363 RT001

Documentation Required (after In Service Date): As built drawings or as prescribed by Hydro One.

Ownership: Hydro One will own all equipment provided by Hydro One as part of the Hydro One Connection Work.

Security Requirements: Nil

Security Date: Not applicable

Easement Required from Customer: No

Easement Date: N/A

Easement Lands: N/A

Easement Term: N/A

Anticipated Approval Date (for OEB leave to construct): 25 day of September, 2019

Revenue Metering: IESO compliant revenue metering provided by the Customer.

Customer Notice Info:

Hydro Ottawa Limited
2711 Hunt Club Rd.
PO Box 8700
Ottawa, Ontario
K1G 3S4

Attention: Fraser Basten,
Project Manager, Major Projects

Contact: 613-738-5499

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

Schedule “B” (Connection of Cambrian MTS and S7M Line Upgrade):

TRANSFORMATION CONNECTION POOL WORK

Not applicable

LINE CONNECTION POOL WORK – 115 KV LINE EXTENSION

Estimate of the Engineering and Construction Cost of the Line Connection Pool Work – 115 kV Line Extension: \$2,947,818.00 plus HST in the amount of \$383,216.34

Estimate of Line Connection Pool Work Capital Contribution – 115 kV Line Extension: \$3,087,500.00 plus HST in the amount of \$401,375.00

Actual Engineering and Construction Cost of the Line Connection Pool Work – 115 kV Line Extension: To be provided 180 days after the Ready for Service Date.

Actual Line Connection Pool Work Capital Contribution – 115 kV Line Extension: To be provided 180 days after the Ready for Service Date.

LINE CONNECTION POOL WORK – NEW 230 KV LINE

Estimate of the Engineering and Construction Cost of the Line Connection Pool Work – New 230 kV Line: \$28,438,143 plus HST in the amount of \$3,696,958.60

Estimate of Line Connection Pool Work Capital Contribution – New 230 kV Line: \$26,963,500.00 plus HST in the amount of \$3,505,255.00

Actual Engineering and Construction Cost of the Line Connection Pool Work – New 230 kV Line: To be provided 180 days after the Ready for Service Date.

Actual Line Connection Pool Work Capital Contribution – New 230 kV Line: To be provided 180 days after the Ready for Service Date.

NETWORK CUSTOMER ALLOCATED WORK - 115 kV Line Extension

Estimate of the Engineering and Construction Cost of the Network Customer Allocated Work - 115 kV Line Extension: \$488,013.00 plus HST in the amount of \$63,441.70

Estimate of Network Customer Allocated Work Capital Contribution - 115 kV Line Extension: \$509,900.00 plus HST in the amount of \$66,287.00

Actual Engineering and Construction Cost of the Network Customer Allocated Work - 115 kV Line Extension: To be provided 180 days after the Ready for Service Date.

Actual Network Customer Allocated Work Capital Contribution - 115 kV Line Extension: To be provided 180 days after the Ready for Service Date.

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

NETWORK CUSTOMER ALLOCATED WORK - New 230 kV Line

Estimate of the Engineering and Construction Cost of the Network Customer Allocated Work - New 230 kV Line: \$601,714.00 plus HST in the amount of \$78,222.82

Estimate of Network Customer Allocated Work Capital Contribution - New 230 kV Line: \$0.00 plus HST in the amount of \$0.00

Actual Engineering and Construction Cost of the Network Customer Allocated Work - New 230 kV Line: To be provided 180 days after the Ready for Service Date.

Actual Network Customer Allocated Work Capital Contribution - New 230 kV Line: To be provided 180 days after the Ready for Service Date.

NETWORK POOL WORK (NON-RECOVERABLE FROM CUSTOMER):

Not applicable

WORK CHARGEABLE TO CUSTOMER

Avoided Cost: \$8,717,000.00

Revised Avoided Cost: Where applicable (e.g. in the limited circumstances described in Section 10.5).

Estimate of the Engineering and Construction Cost of the Work Chargeable To Customer: \$26,354,324 plus HST in the amount of \$3,426,062.12

Estimate of the Engineering and Construction Cost of the Work Chargeable To Customer Less Avoided Cost: \$17,637,324.00 plus HST in the amount of \$2,292,852.12

Actual Engineering and Construction Cost of the Work Chargeable To Customer: To be provided 180 days after the Ready for Service Date.

Actual Engineering and Construction Cost of the Work Chargeable To Customer Less the Avoided Cost (or where applicable, the Revised Avoided Cost): To be provided 180 days after the Ready for Service Date.

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

MANNER OF PAYMENT OF THE ESTIMATE OF CAPITAL CONTRIBUTIONS AND WORK CHARGEABLE TO CUSTOMER

The Customer shall pay Hydro One the estimate of the Line Connection Pool Work Capital Contribution – 115 kV Line Extension, Line Connection Pool Work Capital Contribution – New 230 kV Line, Network Customer Allocated Work Capital Contribution - New 230 kV Line, Network Customer Allocated Work Capital Contribution – 115 kV Line Extension; and the estimate of the Engineering and Construction Cost of the Work Chargeable to Customer Less the Avoided Cost by making the progress payments specified below on or before the Payment Milestone Date specified below. Hydro One will invoice the Customer for each progress payment 30 days prior to the Payment Milestone Date.

Payment Milestone Date	Total Payment Required (including HST)
February 8/17 (CEEAA)	\$1,661,100.0
November 24/17 (CEEAA)	\$374,595.0
April 8 - July 15/19 (Pre-CCRA Letter Agreement Advance Payment(s))	\$1,717,111.8
October 11 th , 2019	\$1,912,277.5
Jan 20 2020	\$5,997,950.7
April 20, 2020	\$8,087,220.2
July 20, 2020	\$10,684,544.4
Oct 19, 2020	\$7,265,885.3
Jan 18, 2021	\$6,146,016.9
April 20, 2021	\$5,555,776.1
July 19, 2021	\$3,569,293.7
Oct 18, 2021	\$1,492,221.5

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

**LINE CONNECTION REVENUE REQUIREMENTS
AND LOAD FORECAST FOR THE LINE CONNECTION WORK – 115 KV LINE EXTENSION**

Annual Period Ending On:	New Load** - (MW)	Part of New Load Exceeding Normal Capacity of Existing Load Facilities [C]	Adjusted Load Forecast (MW) [D]	Line Connection Revenue (k\$) for True-Up, Based on [C] or [D], whichever is applicable
1 st Anniversary of In Service Date	0	0	0	0
2 nd Anniversary of In Service Date	0	0	0	0
3 rd Anniversary of In Service Date	0	0	0	0
4 th Anniversary of In Service Date	0	0	0	0
5 th Anniversary of In Service Date	0	0	0	0
6 th Anniversary of In Service Date	0	0	0	0
7 th Anniversary of In Service Date	0	0	0	0
8 th Anniversary of In Service Date	0	0	0	0
9 th Anniversary of In Service Date	0	0	0	0
10 th Anniversary of In Service Date	0	0	0	0
11 th Anniversary of In Service Date	0	0	0	0
12 th Anniversary of In Service Date	0	0	0	0
13 th Anniversary of In Service Date	0	0	0	0
14 th Anniversary of In Service Date	0	0	0	0
15 th Anniversary of In Service Date	0	0	0	0
16 th Anniversary of In Service Date	0	0	0	0
17 th Anniversary of In Service Date	0	0	0	0
18 th Anniversary of In Service Date	0	0	0	0
19 th Anniversary of In Service Date	0	0	0	0
20 th Anniversary of In Service Date	0	0	0	0
21 st Anniversary of In Service Date	0	0	0	0
22 nd Anniversary of In Service Date	0	0	0	0
23 rd Anniversary of In Service Date	0	0	0	0
24 th Anniversary of In Service Date	0	0	0	0
25 th Anniversary of In Service Date	0	0	0	0

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

**LINE CONNECTION REVENUE REQUIREMENTS
AND LOAD FORECAST FOR THE LINE CONNECTION WORK – NEW 230 KV LINE**

Annual Period Ending On:	New Load** - (MW)	Part of New Load Exceeding Normal Capacity of Existing Load Facilities [C]	Adjusted Load Forecast (MW) [D]	Line Connection Revenue (k\$) for True-Up, Based on [C] or [D], whichever is applicable
1 st Anniversary of In Service Date	0.0	0.0	0.0	0.0
2 nd Anniversary of In Service Date	0.0	0.0	0.0	0.0
3 rd Anniversary of In Service Date	0.0	0.0	0.0	0.0
4 th Anniversary of In Service Date	0.7	0.7	0.7	7.8
5 th Anniversary of In Service Date	7.2	7.2	7.2	80.6
6 th Anniversary of In Service Date	12.1	12.1	12.1	135.5
7 th Anniversary of In Service Date	15.5	15.5	15.5	173.6
8 th Anniversary of In Service Date	18.9	18.9	18.9	212.3
9 th Anniversary of In Service Date	22.0	22.0	22.0	247.3
10 th Anniversary of In Service Date	25.0	25.0	25.0	281.1
11 th Anniversary of In Service Date	26.8	26.8	26.8	300.8
12 th Anniversary of In Service Date	29.0	29.0	29.0	325.9
13 th Anniversary of In Service Date	31.3	31.3	31.3	351.7
14 th Anniversary of In Service Date	33.9	33.9	33.9	380.2
15 th Anniversary of In Service Date	34.4	34.4	34.4	386.8
16 th Anniversary of In Service Date	34.7	34.7	34.7	389.2
17 th Anniversary of In Service Date	35.7	35.7	35.7	400.5
18 th Anniversary of In Service Date	36.8	36.8	36.8	413.6
19 th Anniversary of In Service Date	38.0	38.0	38.0	426.9
20 th Anniversary of In Service Date	39.1	39.1	39.1	439.4
21 st Anniversary of In Service Date	40.3	40.3	40.3	452.6
22 nd Anniversary of In Service Date	41.5	41.5	41.5	465.9
23 rd Anniversary of In Service Date	42.7	42.7	42.7	479.1
24 th Anniversary of In Service Date	43.9	43.9	43.9	493.0
25 th Anniversary of In Service Date	45.0	45.0	45.0	505.7

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

**NETWORK REVENUE REQUIREMENTS AND LOAD FORECAST
AT THE NEW OR MODIFIED CONNECTION FACILITIES – 115 KV LINE EXTENSION**

Annual Period Ending On:	New Load** - (MW)	Part of New Load Exceeding Normal Capacity of Existing Load Facilities [C]	Adjusted Load Forecast (MW) [D]	Network Revenue (k\$) for True-Up, Based on [C] or [D], whichever is applicable
1 st Anniversary of In Service Date	0	0	0	0
2 nd Anniversary of In Service Date	0	0	0	0
3 rd Anniversary of In Service Date	0	0	0	0
4 th Anniversary of In Service Date	0	0	0	0
5 th Anniversary of In Service Date	0	0	0	0
6 th Anniversary of In Service Date	0	0	0	0
7 th Anniversary of In Service Date	0	0	0	0
8 th Anniversary of In Service Date	0	0	0	0
9 th Anniversary of In Service Date	0	0	0	0
10 th Anniversary of In Service Date	0	0	0	0
11 th Anniversary of In Service Date	0	0	0	0
12 th Anniversary of In Service Date	0	0	0	0
13 th Anniversary of In Service Date	0	0	0	0
14 th Anniversary of In Service Date	0	0	0	0
15 th Anniversary of In Service Date	0	0	0	0
16 th Anniversary of In Service Date	0	0	0	0
17 th Anniversary of In Service Date	0	0	0	0
18 th Anniversary of In Service Date	0	0	0	0
19 th Anniversary of In Service Date	0	0	0	0
20 th Anniversary of In Service Date	0	0	0	0
21 st Anniversary of In Service Date	0	0	0	0
22 nd Anniversary of In Service Date	0	0	0	0
23 rd Anniversary of In Service Date	0	0	0	0
24 th Anniversary of In Service Date	0	0	0	0
25 th Anniversary of In Service Date	0	0	0	0

CONNECTION AND COST RECOVERY AGREEMENT (CCRA) – LOAD

NETWORK REVENUE REQUIREMENTS AND LOAD FORECAST AT THE NEW OR MODIFIED CONNECTION FACILITIES – NEW 230 KV LINE

Annual Period Ending On:	New Load** - (MW)	Part of New Load Exceeding Normal Capacity of Existing Load Facilities [C]	Adjusted Load Forecast (MW) [D]	Network Revenue (k\$) for True-Up, Based on [C] or [D], whichever is applicable
1 st Anniversary of In Service Date	0.0	0.0	0.0	0.0
2 nd Anniversary of In Service Date	0.0	0.0	0.0	0.0
3 rd Anniversary of In Service Date	0.0	0.0	0.0	0.0
4 th Anniversary of In Service Date	0.7	0.7	0.0	1.8
5 th Anniversary of In Service Date	7.2	7.2	0.4	18.5
6 th Anniversary of In Service Date	12.1	12.1	0.7	31.2
7 th Anniversary of In Service Date	15.5	15.5	0.9	39.9
8 th Anniversary of In Service Date	18.9	18.9	1.1	48.8
9 th Anniversary of In Service Date	22.0	22.0	1.3	56.9
10 th Anniversary of In Service Date	25.0	25.0	1.5	64.7
11 th Anniversary of In Service Date	26.8	26.8	1.6	69.2
12 th Anniversary of In Service Date	29.0	29.0	1.7	75.0
13 th Anniversary of In Service Date	31.3	31.3	1.8	80.9
14 th Anniversary of In Service Date	33.9	33.9	2.0	87.5
15 th Anniversary of In Service Date	34.4	34.4	2.0	89.0
16 th Anniversary of In Service Date	34.7	34.7	2.0	89.5
17 th Anniversary of In Service Date	35.7	35.7	2.1	92.1
18 th Anniversary of In Service Date	36.8	36.8	2.1	95.2
19 th Anniversary of In Service Date	38.0	38.0	2.2	98.2
20 th Anniversary of In Service Date	39.1	39.1	2.3	101.1
21 st Anniversary of In Service Date	40.3	40.3	2.3	104.1
22 nd Anniversary of In Service Date	41.5	41.5	2.4	107.2
23 rd Anniversary of In Service Date	42.7	42.7	2.5	110.2
24 th Anniversary of In Service Date	43.9	43.9	2.5	113.4
25 th Anniversary of In Service Date	45.0	45.0	2.6	116.3

** New Load based on Customer's Load Forecast which includes Part of New Load Exceeding Normal Capacity of Existing Load Facilities. "Overload" derived in accordance with Section 6.7.9 of the Transmission System Code and the OEB-Approved Connection Procedures. Any Customer load below the Normal Capacity of the Existing Load Facilities transferred to the New or Modified Facilities will not be credited towards the Transformation Connection Revenue Requirements, Line Connection Revenue Requirements or the Network Connection Revenue Requirements. The discounted cash flow calculation for Network Revenue requirements will be based on Incremental Network Load which is New Load less the amount of load, if any, that has been by-passed by the Customer at any of Hydro One's connection facilities.