

APRIL 14, 2022

Gatineau Corridor End-of-Life Study Indigenous Meeting

Meeting Purpose

- To provide an overview of the Gatineau Corridor End-of-Life Study and how it fits into the overall context of electricity planning across Eastern Ontario
- To present the IESO's proposed recommendations to address the Gatineau Corridor reaching end-of-life, and existing and forecast supply requirements to the areas of Peterborough to Quinte West and Ottawa
- To seek input on growth and development and other key considerations for plan development
- Outline next steps in electricity planning in the area

About the IESO



Reliably operate Ontario's power system 24/7



Purposefully engage to enable informed decisions



Plan for Ontario's future energy needs



Support innovation



Enable competition and create efficient electricity markets



Show cybersecurity leadership



Deliver province-wide energy efficiency



Serve as Ontario's Smart Metering Entity

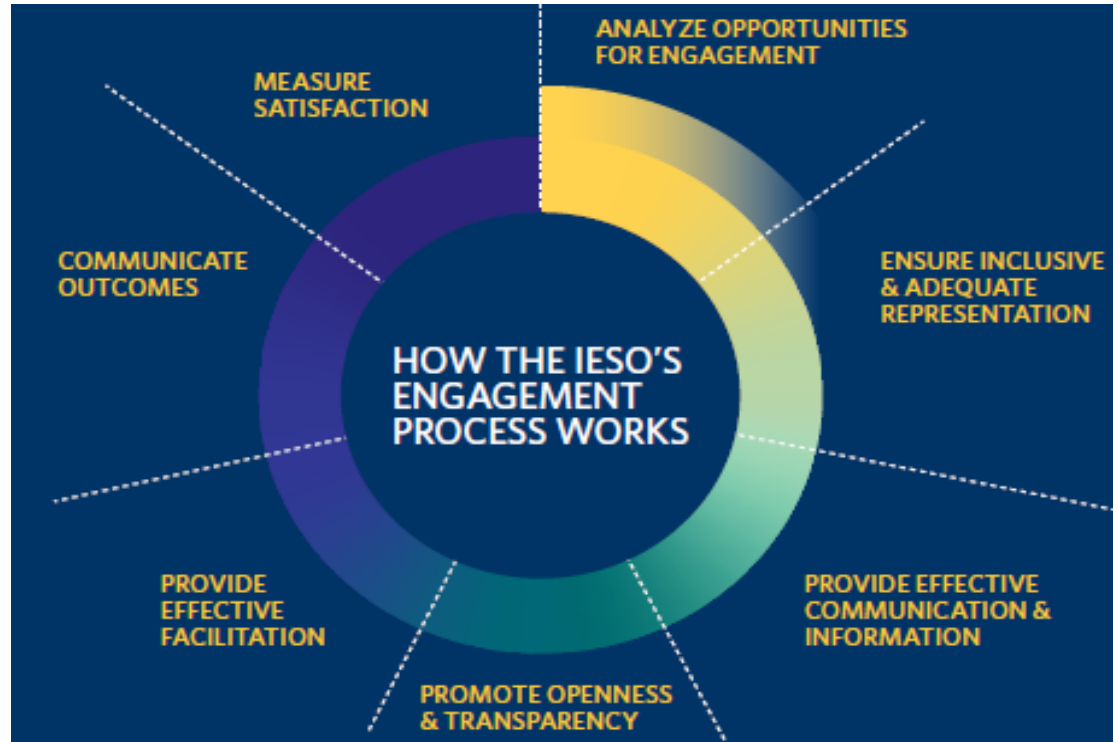
Key Electricity Trends in Ontario Today

- Demand for electricity is on the rise
- Existing and new resources will be required to avoid shortfalls
- Technological evolution can support the energy goals of municipalities, Indigenous communities
- Local energy solutions are being tested
- Interest in decarbonization continues to grow, particularly among municipalities



Engagement in Electricity Planning

- Broaden opportunities for more inclusive engagement
- Increase communication channels to raise awareness
- Inform decision-making process for regional and bulk planning initiatives



Who Should Participate?

- Municipalities
- Indigenous Communities
- Chambers of Commerce/Boards of Trade
- Large energy users
- Community groups and associations
- Academia and research organizations
- Energy service providers
- Environmental and sustainability organizations
- General public



Planning Process

Typical Transmission Development Process



Bulk & regional transmission planning (IESO-led)

Includes community engagement on the forecast, needs identified, and potential options

Transmission Development work (transmitter-led)

Includes the Environmental Assessment, real estate, detailed siting/routing evaluation, & detailed design of facilities

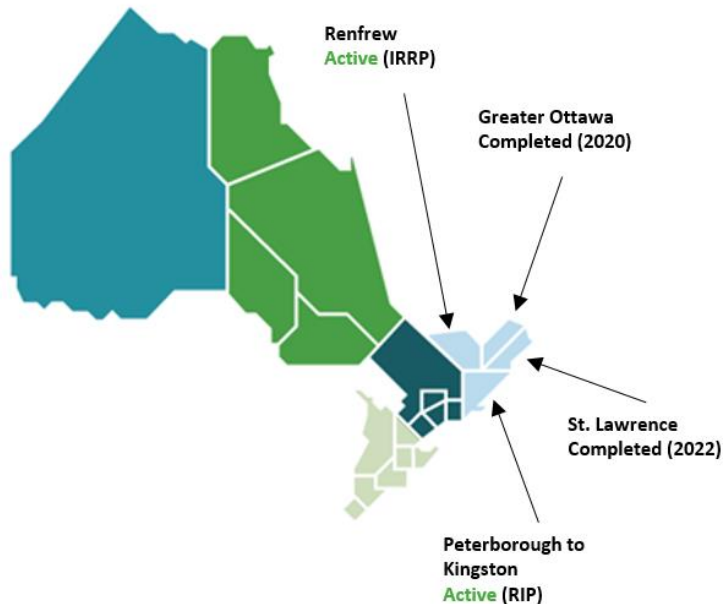
Different Levels of Electricity Planning in Ontario



Gatineau Bulk Study

**Ottawa IRRP
Peterborough to Kingston IRRP**

Regional Planning Activities Across Eastern Ontario



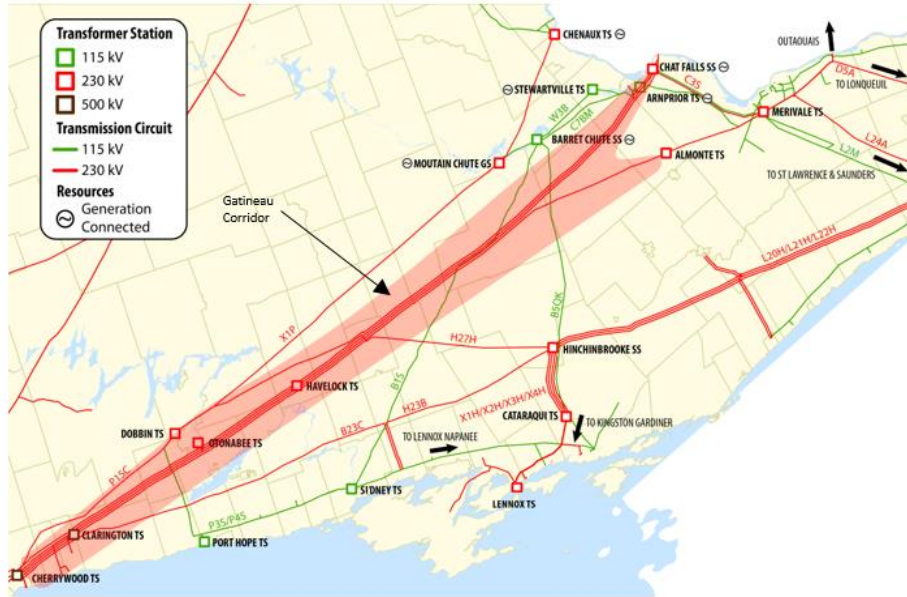
- Four regional planning areas (Renfrew, Greater Ottawa, St. Lawrence, and Peterborough to Kingston)
- IRRP completed for Ottawa Area in February 2020; study of Ottawa 115 kV supply underway
- IRRP completed for Peterborough to Kingston in November 2021
- RIP completed for St. Lawrence Region in March 2022
- IRRP is actively underway for Renfrew Region

For more information, please visit the IESO [website](#)



Gatineau Corridor End-of-life Plan

Electricity System in Eastern Ontario



- The Eastern Ontario transmission system consists of 500 kV and 230 kV circuits that generally transfers power east-west, and an underlying 115 kV system that supplies local customers.
- Generation comes from various sources including nuclear, gas, and hydroelectric with a small portion of cogeneration, wind, solar, and biofuel.

Drivers for the Gatineau Corridor End-of-Life Study

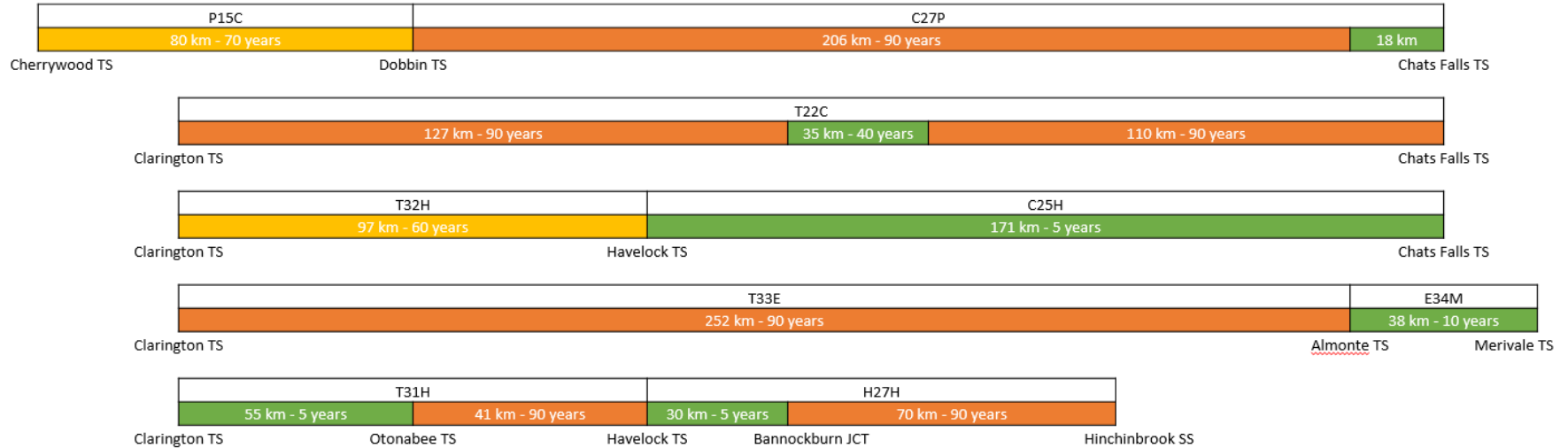
An integrated bulk system planning process was recently put in place to formalize the process to enhance transparency and opportunities for stakeholder and community input.

Prior to the formalized process being established, bulk planning was underway in eastern Ontario.

The Gatineau Corridor bulk study had been initiated to address the following issues:

- Approximately 800 km 230 kV transmission line reaching end-of-life in 5-10 years
- Existing and forecast reliability needs in the Peterborough to Quinte West and Ottawa areas

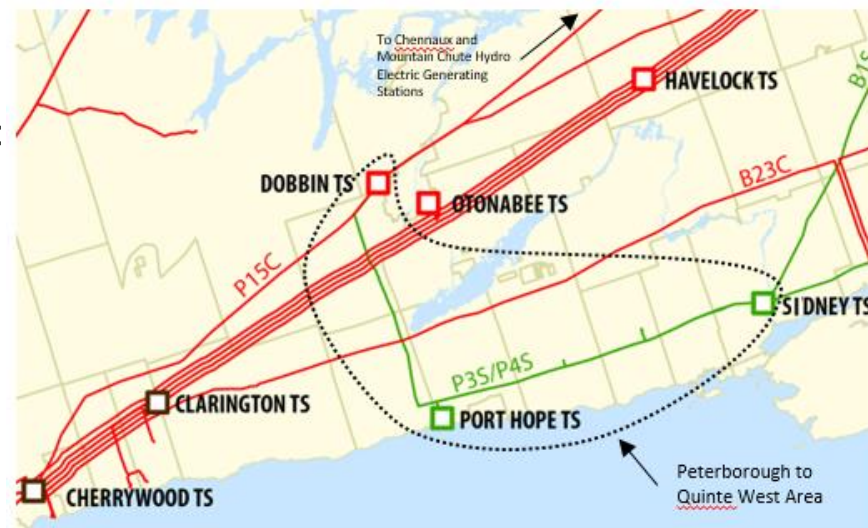
Gatineau Corridor Asset Demographics



- GREEN** Recently refurbished, the plan assumes continued service
- YELLOW** Intermediate age
- ORANGE** Sections that are ~90 years old total 806 km

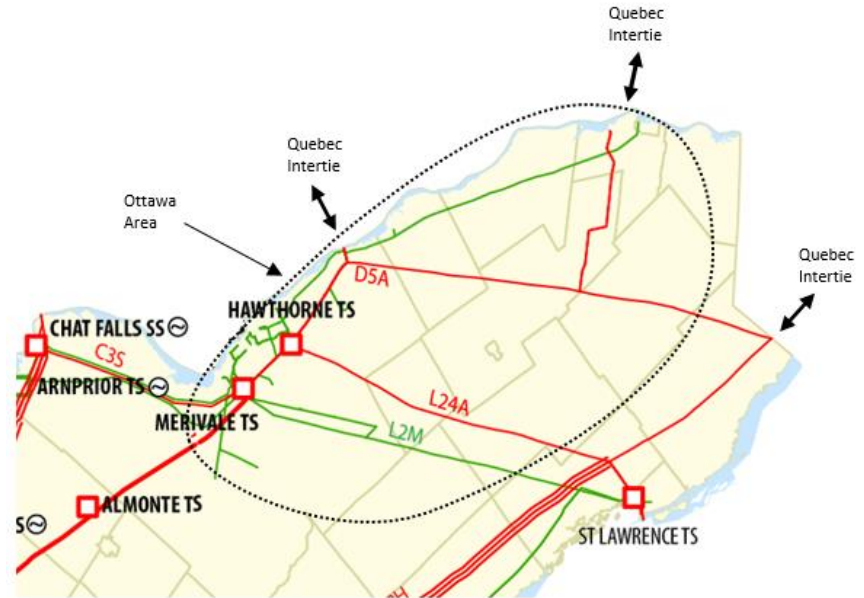
Peterborough to Quinte West Reliability Issues

- The area is primarily supplied by one 115 kV circuits from Cataraqui TS, and two 230 kV circuits in the Gatineau Corridor
- This area is also supported by two hydro-electric generation facilities, Mountain Chute GS and Chenaux GS, both of which are located in the Renfrew Region
- The Peterborough to Quinte West load meeting capability of 270 MW is not sufficient to address the forecast demand today during periods with low water conditions at Mountain Chute and Chenaux generating stations



Ottawa Reliability Issues

- The Ottawa area is primarily supplied by two (2) 500 kV circuits from Lennox TS (located in Lennox and Addington County)
- During outage conditions on the 500 kV system, the Gatineau Corridor circuits combined with other circuits from Chats Falls, Barrett Chute, Stewartville, and St. Lawrence areas are relied upon to supply to Ottawa
- Ottawa's load meeting capability is forecast to be exceeded in 2025¹



¹ The upstream constraint limiting supply to the Ottawa area also limits supply to Peterborough to Quinte West

Transmission Options Considerations

- The assessment of transmission options focused around the necessary reinforcements to Peterborough to Quinte West and Ottawa areas with and without the refurbishment of the end-of-life transmission circuits T22C and T33E
- The most limiting constraint for both Peterborough to Quinte West and Ottawa areas is an overloaded 230 kV circuit that runs from Pickering to Peterborough, as such a transmission reinforcement into Peterborough can help address the existing and near-term forecast reliability needs for both areas

Peterborough to Quinte West Reinforcement

- The transmission reinforcement for the Peterborough to Quinte West area requires a transmission line into Dobbin TS (Peterborough), this reinforcement is required with or without refurbishment of T22C/T33E
- There are different possible routing/termination points in eastern GTA that result in comparable cost, scope, and capability. These different options should be explored during the latter parts of the transmission development process by the transmitter:
 - Rebuilding an existing single circuit 230 kV line from Cherrywood TS (Pickering) to Dobbin TS (Peterborough)
 - Build a new double circuit 230 kV transmission line from Cherrywood TS to Dobbin TS
 - Build a new double circuit 230 kV transmission line from Clarington TS (in Oshawa) to Dobbin TS

Ottawa Reinforcement

- The transmission reinforcement for the Peterborough to Quinte West area described in the previous slide can accommodate the forecast demand in Ottawa up to year 2037 when combined with the refurbishment of T22C and T33E
- Other transmission reinforcements considered as part of the study which would be required if T22C and T33E were decommissioned include:
 - Build a new double circuit 230 kV transmission line from St. Lawrence TS (Cornwall) to Merivale TS (Ottawa)
 - Build a new single circuit 500 kV transmission line from St. Lawrence TS (Cornwall) to Hawthorne TS (Ottawa)

Energy Efficiency and Non-wires Alternatives

- The magnitude and timing of identified reliability needs are too large and appear to soon to be addressed via energy efficiency alone.
- However, energy efficiency was found to be an effective complimentary measure to transmission reinforcement to defer needs in the Ottawa area into the long-term.
- In terms of resource options, battery storage was evaluated to address the capacity need in the areas of Peterborough to Quinte West and Ottawa. However, the battery storage solution is not cost effective relative to the transmission solution.

Recommendations

- The IESO recommends the following integrated solution package:
 - Refurbish all 800 km of 230 kV circuits on the Gatineau corridor
 - Build a new double circuit 230 kV transmission line from either Clarington TS or Cherrywood TS (in Oshawa or Pickering) to Dobbin TS (in Peterborough)
 - Pursue cost-effective energy efficiency in the Ottawa area through province-wide and Local Initiative Programs, while monitoring demand growth and resource acquisition activities in the Ottawa zone

Rationale for Recommendations

The recommended solution package supports the following:

- Timely replacement of EOL transmission equipment for the safe and reliable operation of the power system
- Sufficient supply for Peterborough to Quinte West for the next 20 years
- Sufficient supply for Ottawa for up to the next 20 years if targeted energy savings are successfully pursued
- Minimized costs and land-use impacts

Rationale for Recommendations (cont.)

- This solution package is the lowest cost option, while also preserving the option to support future growth (i.e. constructing the Cornwall to Ottawa reinforcement at a later date to supply high load growth scenarios such as electrification)
- This solution package maintains the capacity provided by the existing circuits being refurbished to Ottawa to help support future growth. This approach also mitigates the need to address localized issues that would result from retiring the circuits (e.g. maintaining imports capability from Chat Falls (Quebec), and avoiding the need to re-terminate existing stations supplied by the circuits).



Engagement and Next Steps

Seeking Input

As you listen today, consider any additional factors that should be considered:

- What additional information should be considered in the study assumptions to determine electricity needs?
- What feedback is there on the recommended scope of refurbishment for the EOL facilities and integrated solution package?
- What information should be considered in finalizing the recommendations?
- What questions does your community have about what was discussed today?

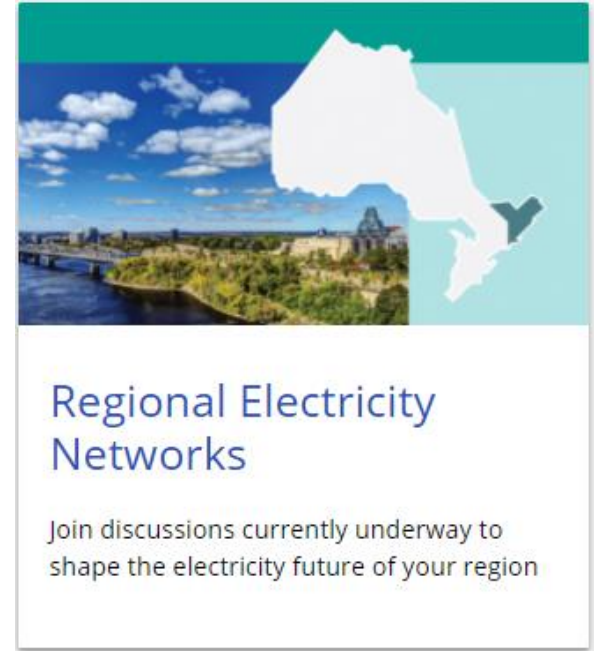
Please submit your written comments by email to engagement@ieso.ca by **May 5**

Next Steps

- Written feedback on draft recommendations– May 5
- Ongoing outreach throughout the development of the recommendations and integrated solution package
- Early Q3 webinar to provide outline feedback received, outcomes of targeted discussions, describe updates to recommendations that emerge as a result of input, and discuss considerations for medium-to long-term planning
- The final Gatineau EOL plan is targeted to be posted in Q3 2022

Stay Connected

- **Visit** the **dedicated engagement webpage**
- **Join** the **East Regional Electricity Network** to participate in a broader regional dialogue



Thank You

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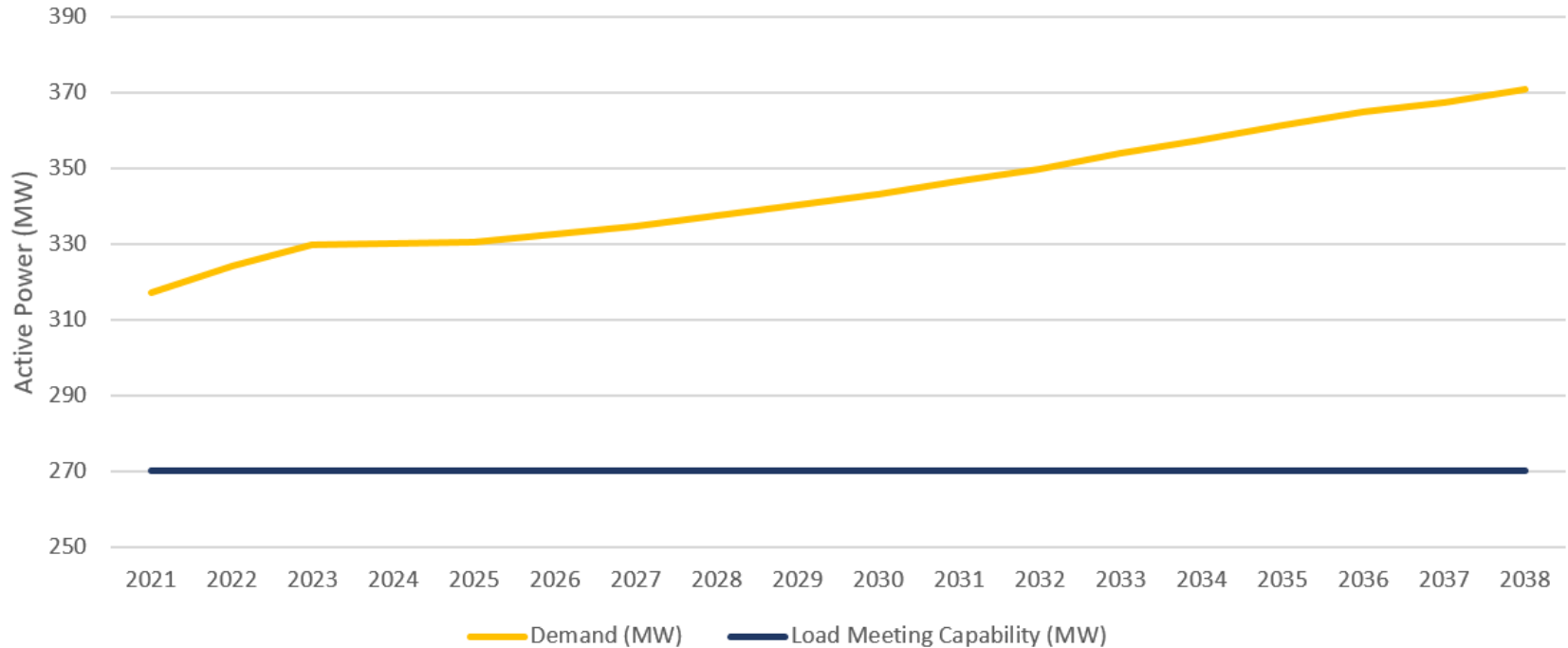


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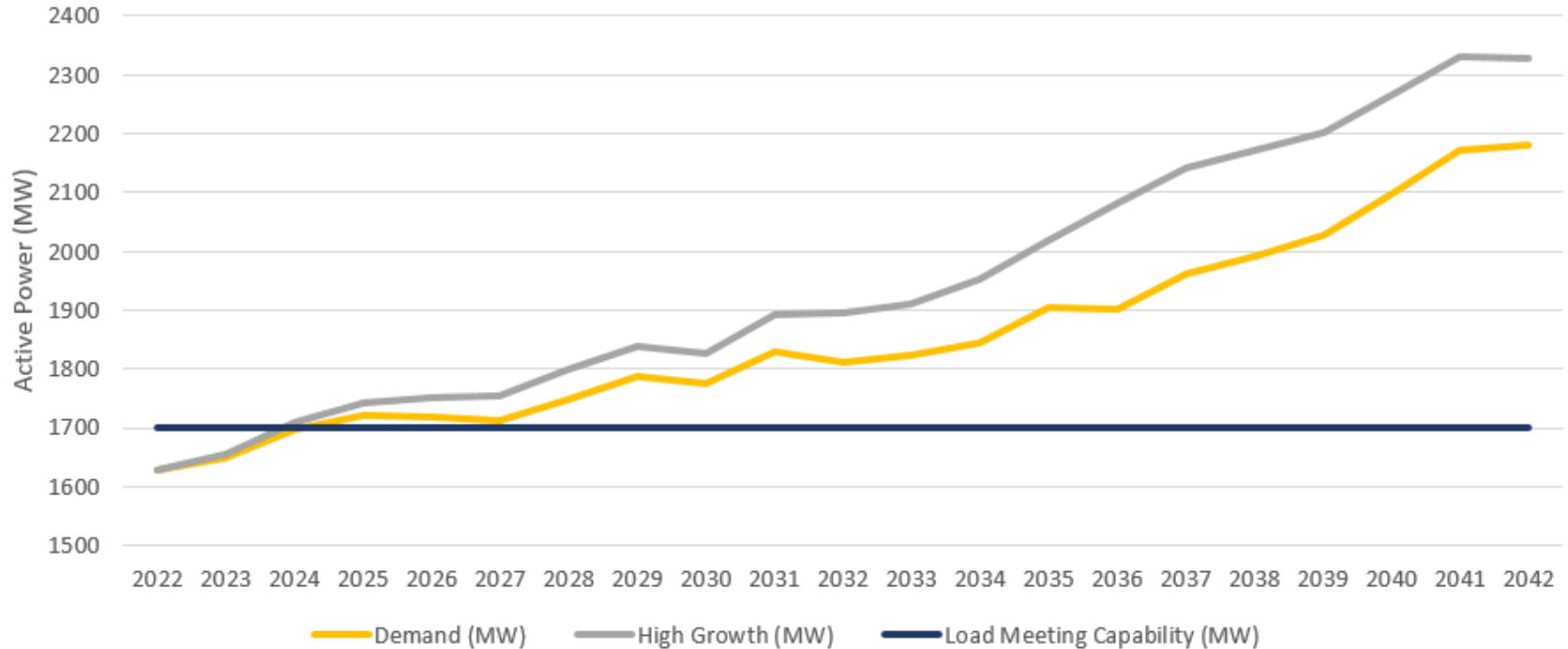
Appendix

Peterborough to Quinte West Demand Forecast



ⁱ Demand forecast adjusted for extreme weather conditions

Ottawa Demand Forecast



ⁱ Demand forecast adjusted for normal weather conditions

Transmission Wires Options Considered (cont.)

	T22C & T33E	Peterborough to <u>Quinte West</u> Improvements	Peterborough to <u>Quinte West</u> LMC	Ottawa Improvements	Ottawa LMC	Capital Cost
1	Refurb	Two 230 kV circuits from Dobbin TS to Clarington TS/ <u>Cherrywood</u> TS	440 MW	N/A	1950 MW	\$525-600M
2	Retire	Two 230 kV circuits from Dobbin TS to Clarington TS/ <u>Cherrywood</u> TS	440 MW	Two 230 kV circuits from St Lawrence TS to Merivale TS	2050 MW	\$675-750M
3	Retire	Two 230 kV circuits from Dobbin TS to Clarington TS/ <u>Cherrywood</u> TS	440 MW	One 500kV circuit from St Lawrence TS to Hawthorne TS	2150 MW	\$800-875M