NOVEMBER 10, 2022

# Burlington to Nanticoke

# Regional Planning Engagement Webinar

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# Objectives of Today's Webinar

- To provide an overview of the regional planning work underway in the Burlington to Nanticoke region
- To discuss the draft Burlington to Nanticoke Scoping Assessment and seek feedback
- Provide a timeline and next steps

# Seeking Input

Some key questions to consider when reviewing the Scoping Assessment:

- What additional information that should be considered as part of the Scoping Assessment?
- What other considerations should be made regarding the areas identified as requiring further study through a regional planning approach based on local developments?
- What other areas or specific considerations should be examined through regional planning?

Please submit your written comments by email to engagement@ieso.ca by **November 24**

# Overview of the IESO and the Regional Planning Process

# Ontario's Electricity Sector

## Connecting Today. Powering Tomorrow.

The IESO works at the heart of Ontario's power system, ensuring that electricity is available where and when it is needed.

We oversee and evolve the electricity market, driving competition to maintain affordability.

We manage the grid in real-time, balancing supply and demand and directing the flow of electricity.

We plan for the future, forecasting demand and securing the resources required to meet Ontario's energy needs.

**We work with:**

**Generators** produce large amounts of electricity to meet Ontario's needs. Ontario has one of the cleanest energy supplies in the world. →

**Transmitters** transport electricity over long distances from power plants to communities. →

**Local Distribution Companies** (the "local hydro company") deliver electricity directly to homes and businesses in your community. →

**Energy consumers** and the communities they live in count on electricity being available.

# Who the IESO is and What We Do

Reliably operate Ontario's province-wide system 24/7

Support innovation

Create electricity market efficiencies

**Work closely with communities to explore sustainable options**

**Plan for Ontario's future energy needs**

Enable province-wide energy efficiency

# Electricity Planning in Ontario

# 21 Electricity Regional Planning Regions

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




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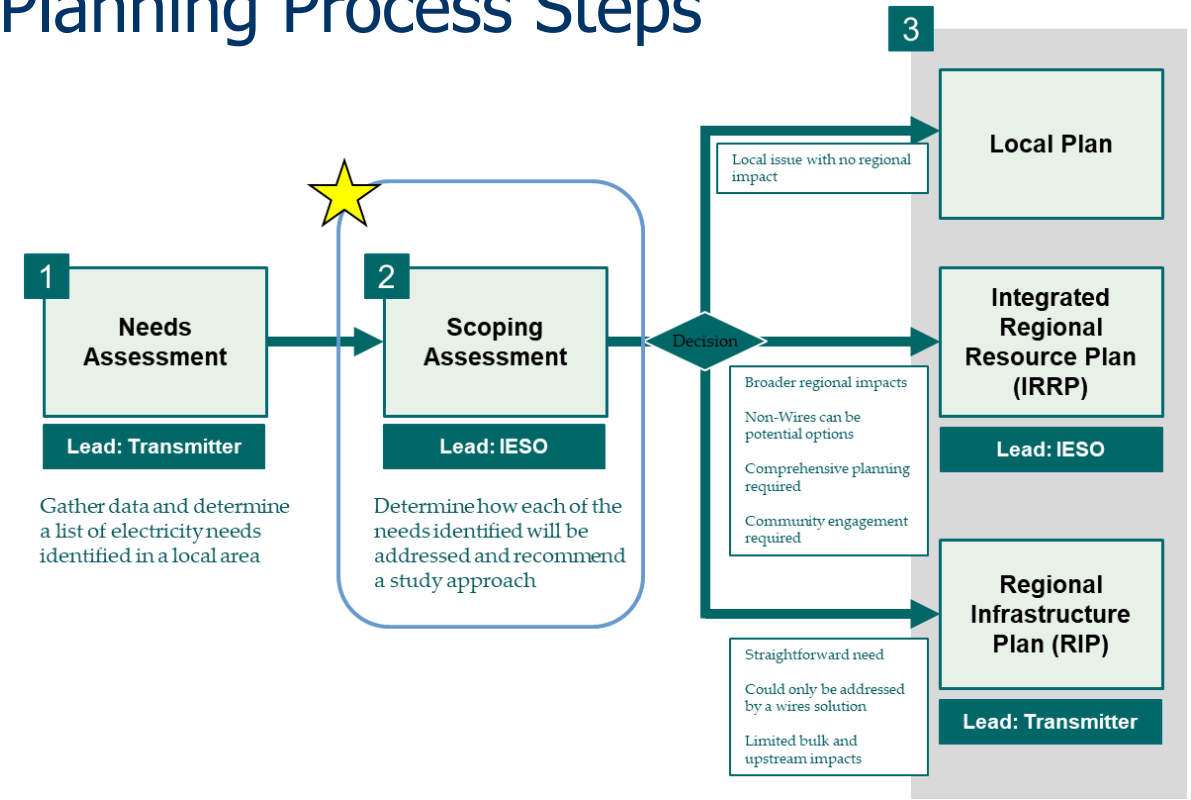
# Regional Planning Process Steps



# What is a Scoping Assessment?

- The Scoping Assessment is triggered following the completion of a Needs Assessment
- It is led by the IESO and includes the transmitter and local distribution companies (LDCs) in the region

## Key Elements

- Review needs that require comprehensive planning
- Determine the geographic grouping (sub-regions) of needs
- Determine the appropriate regional planning approach and scope
- Establish the draft terms of reference for an Integrated Regional Resource Plan, if one is required, and composition of the Technical Working Group

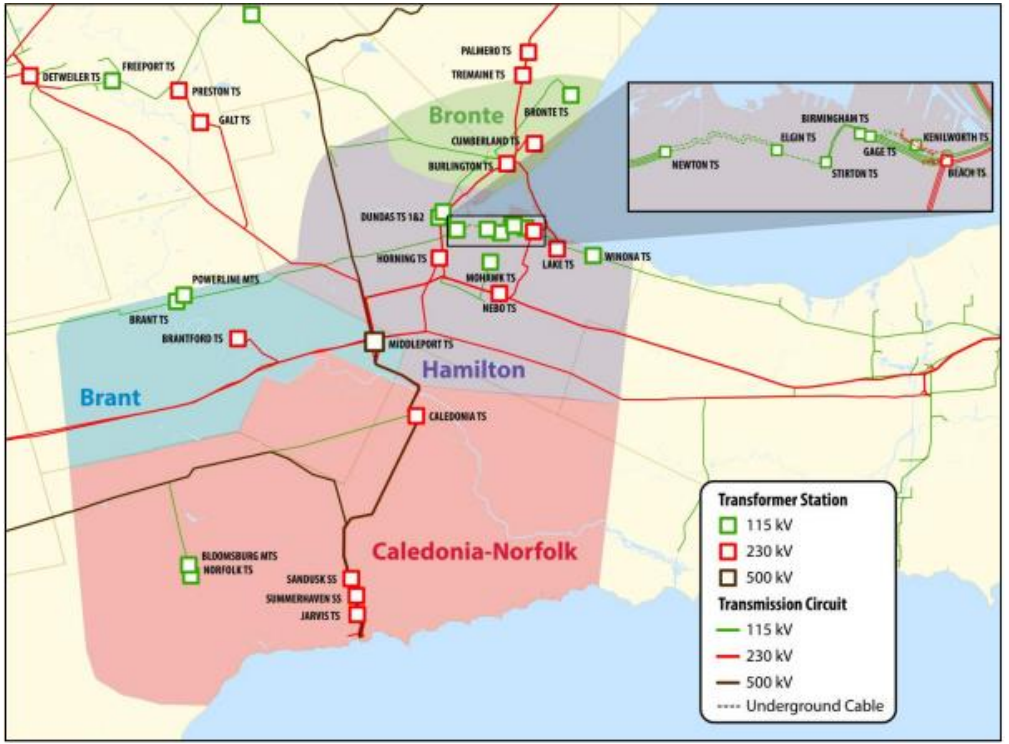
# Identifying the Planning Approach

| Approach | Typical Considerations | Parties Involved |
|---|---|---|
| Integrated Regional Resource Plan (IRRP) | Where a greater range of options, including non-wires, are to be considered, and/or closer coordination with communities and stakeholders is required | IESO (lead)<br>Transmitter<br>LDCs |
| Regional Infrastructure Plan (RIP) | Considers more straight-forward wires-only options with limited engagement | Transmitter (lead)<br>LDCs<br>IESO |
| Local Planning | No further regional coordination is needed | Transmitter<br>LDCs |

# Regional Planning in the Burlington to Nanticoke Region

# Burlington to Nanticoke Region

- 500 kV, 230 kV and 115 kV transmission system located in southwestern Ontario
- Composed of the following municipalities: the City of Hamilton, Brant County, the City of Brantford, Haldimand County, Norfolk County, Regional Municipality of Halton
- Includes a number of Indigenous communities and Métis councils
- Divided into four sub-regions for planning: Bronte, Hamilton, Brant, Caledonia-Norfolk



# Working Group

# Previous Regional Planning for Burlington to Nanticoke

- Since the Ontario Energy Board formalized the regional planning process in 2013, there have been two previous cycles of regional planning for the Burlington to Nanticoke region
- The first resulted in IRRPs for the Brant and Bronte sub-regions, which were completed in April 2015 and June 2016, respectively
- However, at the conclusion of the first cycle, a number of emerging end of life needs in the Hamilton area were identified
- This initiated a new cycle of regional planning for the region, and resulted in the initiation of an IRRP for the Hamilton sub-region, completed in February 2019
- In accordance with the 5 year planning cycle outlined in the OEB's process, a third cycle of regional planning was initiated in 2022. Hydro One undertook a Needs Assessment, published in September, identifying that require further regional coordination was required
- The IESO has initiated the Scoping Assessment as a result

# Burlington to Nanticoke Draft Scoping Assessment

# Categories of Needs

## Capacity Needs

- Station capacity refers to the ability to convert power from the transmission system down to distribution system voltages
- System capacity (or "load meeting capability") refers to the ability of the electricity system to supply power to customers in the area, either by generating the power locally, or bringing it in through the transmission system

## Load Restoration and Supply Security Needs

- Load restoration describes the electricity system's ability to restore power to those affected by a major transmission outage within reasonable timeframes
- Supply security describes the total amount of load interrupted following major transmission outages

## End-of-Life Asset Replacement Needs

- Based on the best available asset condition information at the time
- Evaluated to decide if the facility should be replaced "like-for-like", "right-sized", or retired

# Needs in Burlington to Nanticoke

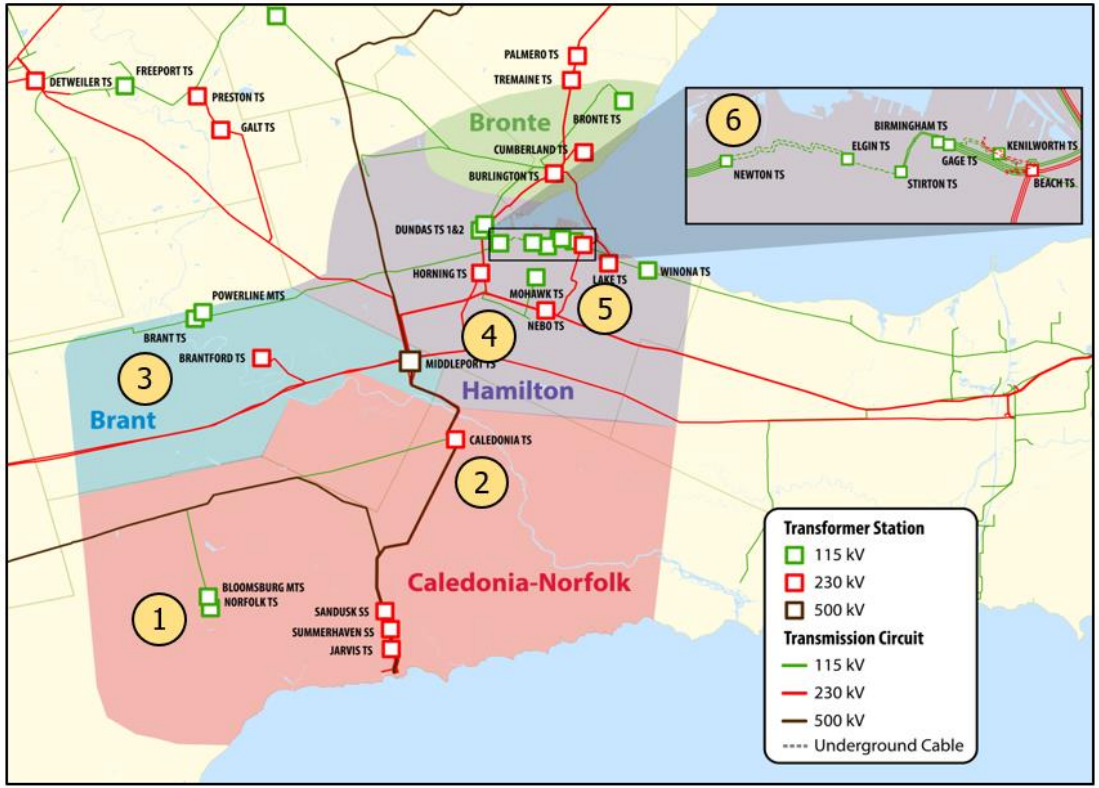
- The Needs Assessment performed by Hydro One identified:
  - Station capacity needs
  - Line/system capacity needs
  - End-of-life needs

- These needs could be altered, and additional needs may be identified in later stages of planning
- These needs are briefly outlined in the following slides
- For a more detailed description of the needs, please refer to the draft Scoping Assessment or the Needs Assessment

# 2022 Needs Assessment Findings

| | Need | Sub-region | Need Type | Description |
|---|---|---|---|---|
| 1 | Norfolk TS and Bloomsburg DS | Caledonia-Norfolk | Station Capacity | Forecasted to exceed its supply capacity in 2030 and 2025 respectively. Currently planned to be addressed through load transfers to upgraded Jarvis TS and new feeder connections in the 2027-2032 timeframe |
| 2 | Caledonia TS | Caledonia-Norfolk | Station Capacity | Forecasted to exceed its supply capacity by 2030 |
| 3 | Brant Area Supply | Brant | Line/System capacity | The 115 kV system that supplies the Brant area (Brant TS and Powerline MTS) has a LMC of 165 MW. This LMC may be exceeded by 2032 |
| 4 | Nebo TS | Hamilton | Station Capacity | Load at T3/T$ 230/13.8 kV DESN at Nebo TS is forecasted to exceed its supply capacity by 2032 |
| 5 | Mohawk TS | Hamilton | Station Capacity | Forecasted to exceed supply capacity by 2024 |
| 6 | Newton TS | Hamilton | Asset end-of-life | 115 kV breakers at Newton TS need to be replaced |

# Geographic Location of Needs Identified



# Option Categories

| Option Type | Description |
|---|---|
| Wires | Traditional transmission assets such as switching stations, transformer stations, or transmission lines; may also include protection schemes and control and operational actions such as load rejection |
| Non-wires | Local load modifying solutions such as distributed energy resources (including distributed generation/storage and demand response) or energy efficiency measures<br>- and/or -<br>Large utility-scale generation facilities located to alleviate a local reliability need |

- Past IRRPs have identified potential non-wires options after assessing hourly forecasts and characteristics of the need (magnitude, duration, frequency)
- Technology type and sizing of non-wires options are based on capacity and energy requirements; a high-level cost estimate can then inform whether more detailed analysis is required

# Draft Scoping Assessment Considerations

When determining the planning approach for needs requiring coordination, consideration was given to whether these needs:

- Have the potential to be addressed by non-wires solutions
- Could be impacted by varying bulk systems flows
- Could potentially be addressed in an integrated manner
- Impact multiple LDCs in the sub-region
- Would require engagement and coordination with community-level energy planning activities

# Draft Scoping Assessment Recommendations (1)

Similar to previous planning cycles, the Burlington to Nanticoke region will be split into four planning sub-regions to better address their needs

It is recommended that an Integrated Regional Resource Planning (IRRP) be performed separately for the following sub-regions:

- Hamilton
- Brant
- Caledonia-Norfolk
- Bronte does not require integrated regional resource planning at this time

Integrated Regional Resource Planning is recommended due to:

- The potential linkages between needs and their required coordination
- The opportunity for public engagement
- The potential for exploring multiple types of options to meet the needs (including non-wires alternatives)
- The potential for regional changes having implications on the upstream bulk power system

# Draft Scoping Assessment Recommendations (2)

**Hamilton Sub-region:**

- Needs are primarily driven by growth in peak capacity needs, but also consider a number of refurbishment opportunities within the planning timeline.
- The close proximity of loads, high anticipated growth rates from new development and intensification, and potential opportunity for right sizing of infrastructure during refurbishment all present opportunities to consider needs in a coordinated manner.
- Options to address needs would include conventional infrastructure and non wires alternatives.
- Uncertainties around demand growth from electrification/decarbonization of industry located in the City
- The area is also in close proximity, and shares key infrastructure, with parts of the bulk power system.

# Draft Scoping Assessment Recommendations (3)

**Brant Sub-region:**

- Needs driven by increase in peak demand.
- Because the need is related to the capability of the upstream system, the combined step down stations must be considered as a collective unit; transfers between stations would not be an effective option to address supply needs.
- Non wires alternatives may be considered as a potential deferment strategy compared to traditional wires infrastructure.

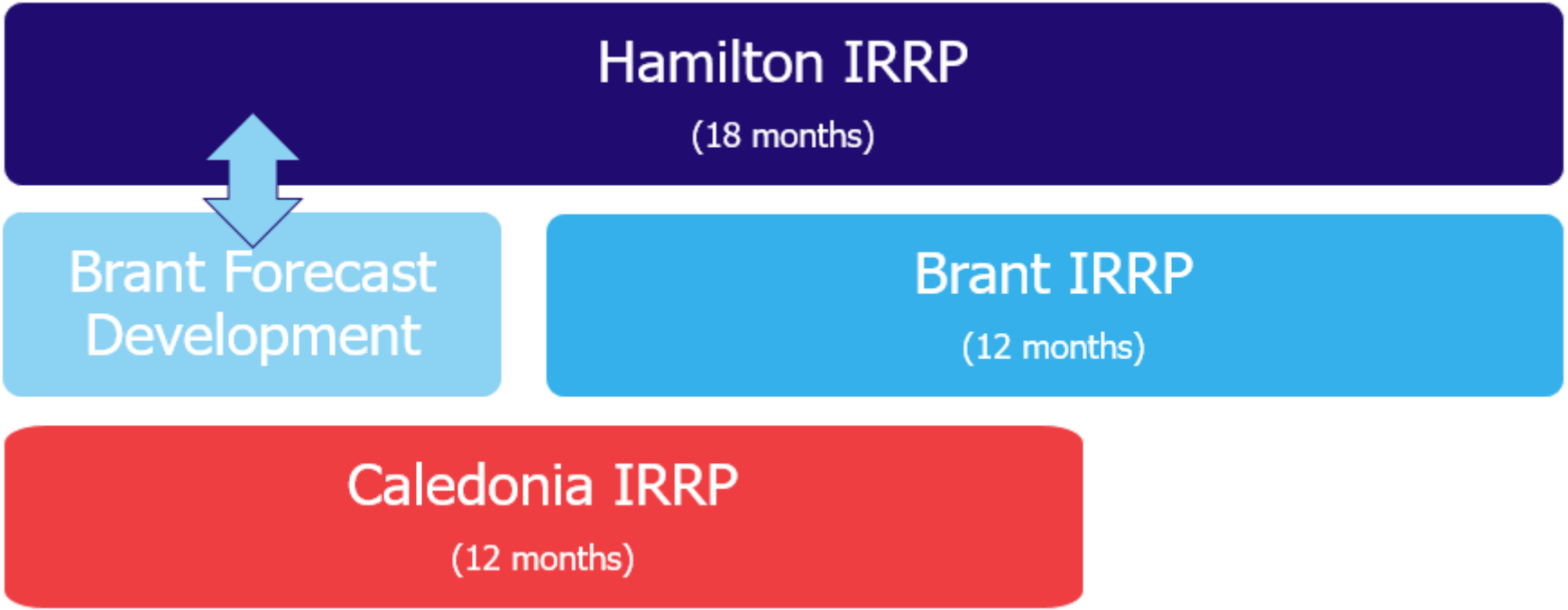
**Caledonia-Norfolk Sub-region:**

- Needs at Norfolk TS, Bloomfield DS, and Caledonia TS are driven by increases in local peak electrical demand.
- As rate of growth is modest, needs may be good candidates to consider non wires alternatives to defer the need for infrastructure investments.
- The potential to shift load between stations in this pocket also makes it a good candidate for integrated study.

# IRRP Scoping and Sizing

- Due to the greater number of potential solutions to consider, the potential bulk system impact, and additional end of life opportunities, the full 18 months' timeline is expected to be required for the more complex Hamilton IRRP.
- The more limited number of needs and potential solutions, in addition to a smaller area of interest with limited bulk system impact, suggests the Brant and Caledonia-Norfolk IRRPs could be completed with an expedited 12-month timeline.

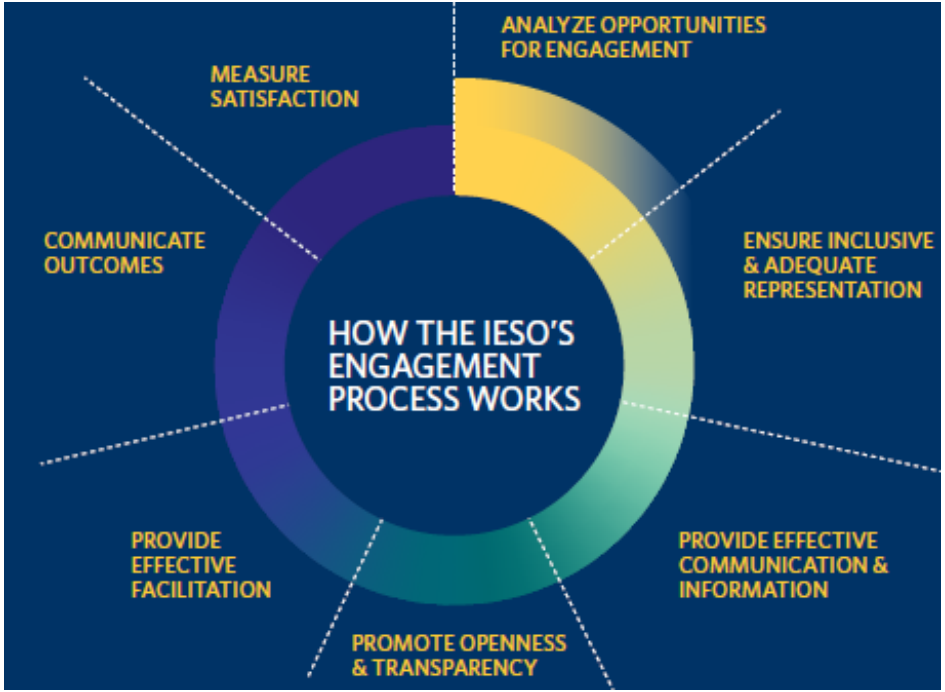
# Draft Illustrative Timelines



# Engagement

# Regional and Community Engagement

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



# 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

# Future Engagement Opportunities

- Further opportunities for engagement may include seeking input on the following major components of the IRRP:
  - Identifying needs
  - Considering options
  - Proposed recommendations

# Seeking Input

Some key questions to consider when reviewing the Scoping Assessment:

- What additional information that should be considered as part of the Scoping Assessment?
- What other considerations should be made regarding the areas identified as requiring further study through a regional planning approach based on local developments?
- What other areas or specific considerations should be examined through regional planning?

Please submit your written comments by email to engagement@ieso.ca by **November 24**

# 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 by **November 24**
- IESO to post and respond to feedback, as well as the final Scoping Assessment by **December 1**
- Further engagement to follow

# How You Can Stay Involved:

- Subscribe to receive updates on the Burlington to Nanticoke regional initiatives on the IESO website http://www.ieso.ca/subscribe
- Follow the Burlington to Nanticoke regional planning activities online (link)
  Comments and questions on the draft Scoping Assessment Outcome Report can be submitted to engagement@ieso.ca by **November 24**

# Thank You

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# APPENDIX

# 2019 Hamilton Sub-region IRRP Needs

| Need | Status |
|---|---|
| **End-of-life of Lake TS low-voltage switchgear** | Rebuild planned when end-of-life is reached in 2026-2027 |
| **End-of-life of Newton TS T1/T2;**<br>**End-of-life of five 115 kV breakers at Newton TS** | T1/T2 have been replaced<br>115 kV breakers still pending replacement |
| **End-of-life of Beach TS T5/T6 and the low-voltage switchgear** | Monitor equipment condition and forecasted load for Beach TS; explore opportunities to consolidate transformers and switchgear in the long term |
| **End-of-life of Beach TS T6/T7 autotransformers** | Slated for replacement between 2027-2032 |
| **End-of-life of the 115 kV underground cable** | IESO to carry out a study of the 115 kV cable in the City of Hamilton |
| **Additional capacity at Mohawk TS** | Complete planned end-of-life replacement of transformers and limiting section of B3/B4 |
| **Additional capacity at Nebo TS** | Implement existing CDM program, monitor demand, additional study of non-wires alternatives |
| **Load restoration need for B3/B4;**<br>**Load restoration need for Q24HM/Q29HM** | Utilize existing distribution load transfer capability and transmission reconfiguration options |