

Hamilton 2019 Integrated Regional Resource Planning (IRRP) Webinar

February 4, 2019

Objective of Today's Webinar

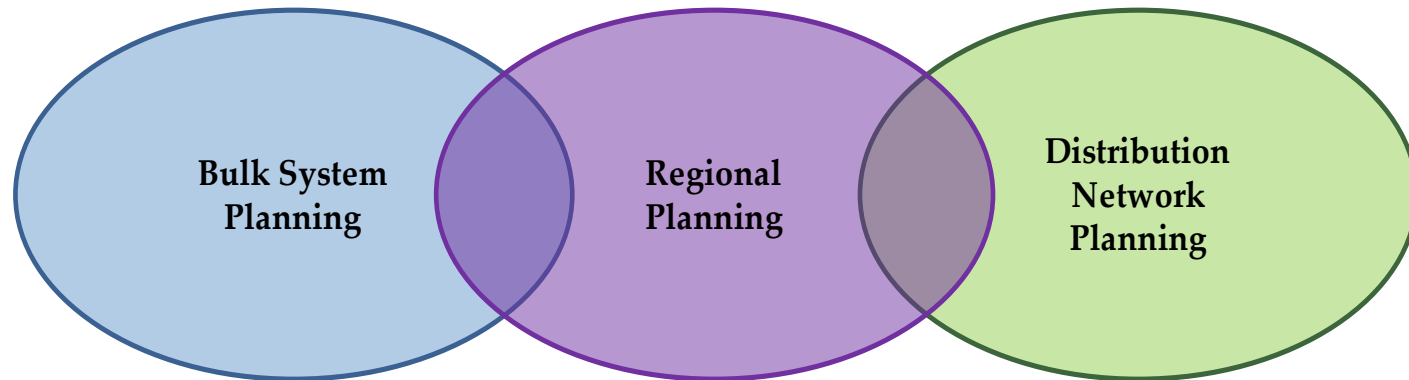
- To provide an overview of the regional electricity planning process in Ontario
- To give an overview of regional electricity planning activities in the Hamilton Area
- To update on regional electricity planning activities in your area including work that is underway and planned for to meet near-term electricity needs
- To provide a summary of the findings and draft recommendations in the upcoming Hamilton Integrated Regional Resource Plan (IRRP)
- To gather feedback and outline next steps

OVERVIEW OF REGIONAL PLANNING

Introduction to Regional Planning

- Regional planning ensures a reliable supply of electricity to regions; it considers conservation, generation, transmission and distribution, and innovative resources; it is the link between provincial and local planning
- IRRPs, or regional plans, are developed by a technical working group consisting of the local utilities in the region, the local transmitter and IESO
- Regional planning is governed by the Ontario Energy Board (OEB) and is a continual process, evaluated every five years, with plans developed for a 20-year outlook
- There are 21 electricity planning regions in Ontario, which are defined by electrical boundaries

Types of Electricity Planning in Ontario



Addresses provincial electricity system needs and policy directions

- Ministry of Energy
- IESO
- Transmitters

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

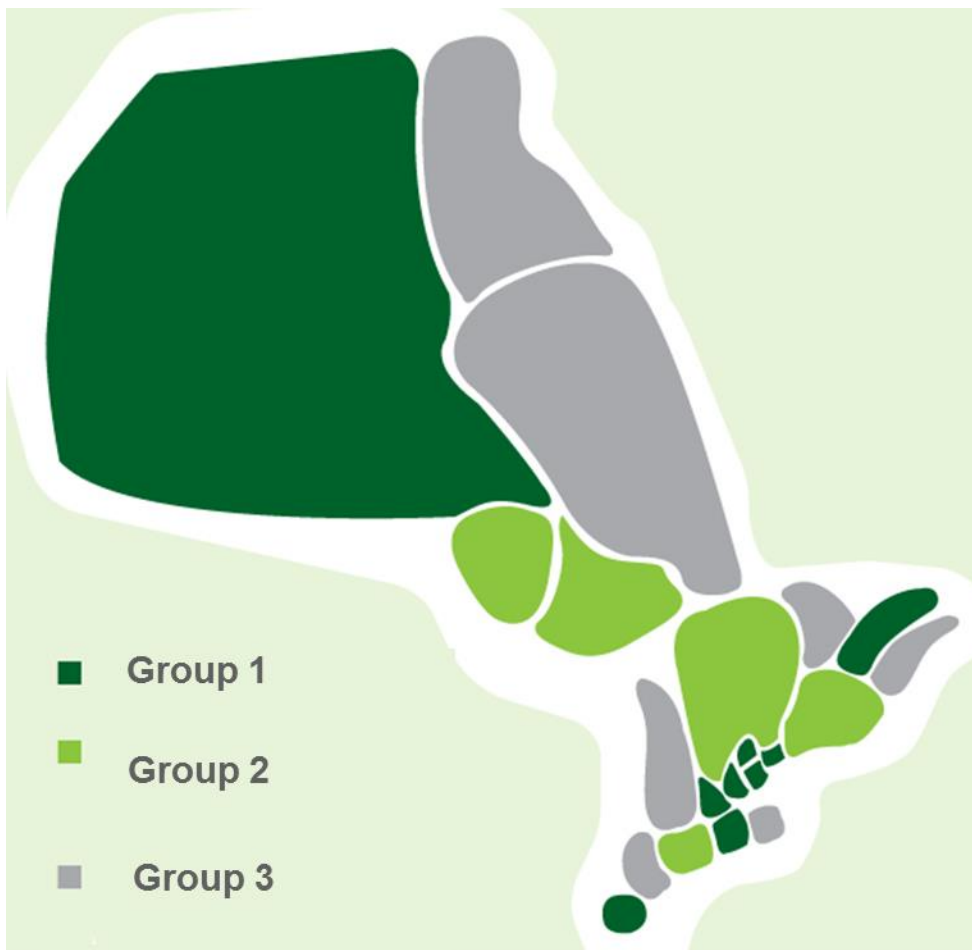
First Nations communities & Métis, municipalities and industry stakeholders

Key Participants

Benefits of Regional Planning

- Minimize unwarranted or risky investments
 - Provides unbiased assessment for the benefit of ratepayers
 - A more realistic look at the need for major expansion, in view of growth uncertainties
 - Consideration of incremental solutions, effect of government policies, new technologies and asset end-of-life opportunities
- Better position to integrate and optimize
 - Examine both bulk and regional needs; allow for exploration of synergies and benefits from both the bulk and regional planning processes
 - Not limited to specific service territory boundaries when assessing needs and solutions
 - Wires, conservation, generation, distribution/transmission and local/provincial aspects are all considered in the development and assessment of solutions
- A more formalized planning process
 - Consistency; adherence to standards; common methodology
 - Greater transparency; public/community/First Nations and Métis awareness and opportunities for input in the early stages; coordination with community energy planning initiatives
 - Short/medium/long-term perspectives; projects as part of a larger context

Ontario's 21 Electricity Planning Regions



Group 1 (First plans completed in April 2015;
second cycle underway)

Burlington to Nanticoke
Greater Ottawa
GTA North (York Region)
GTA East
GTA West
Kitchener-Waterloo-Cambridge-Guelph
Toronto
Northwest Ontario
Windsor-Essex

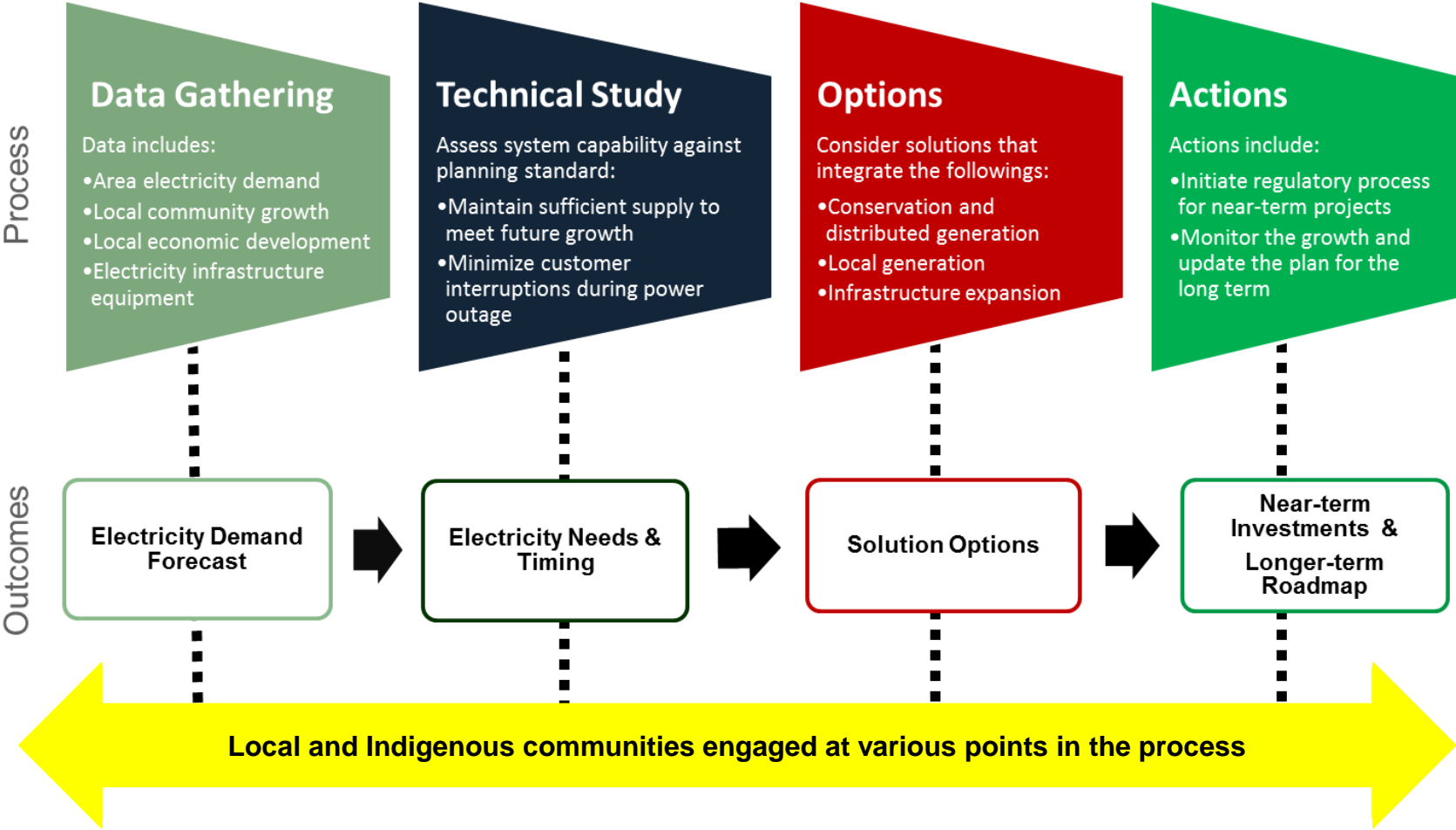
Group 2 (First plans completed in 2016/2017)

East Lake Superior
London area
Peterborough to Kingston
South Georgian Bay/Muskoka
Sudbury/Algoma

Group 3 (No regional needs identified in first cycle)

Chatham/Lambton/Sarnia
Greater Bruce/Huron
Niagara
North of Moosonee
North/East of Sudbury
Renfrew
St. Lawrence

Regional Planning Process Overview



Approaches for Meeting Regional Electricity Needs



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Community Self-Sufficiency

- A variety of **demand side** and **distributed** mechanisms can be used to manage needs, including:
 - DG, CDM, distribution solutions, localized DR, Smart Grid, storage
- **Local community** takes a lead role

Final plan may have elements from each of the approaches

Deliver Provincial Resources

- A traditional **“wires”** option to supply the local area with system resources
- **Utilities (transmitter/LDC)** take a lead role in development



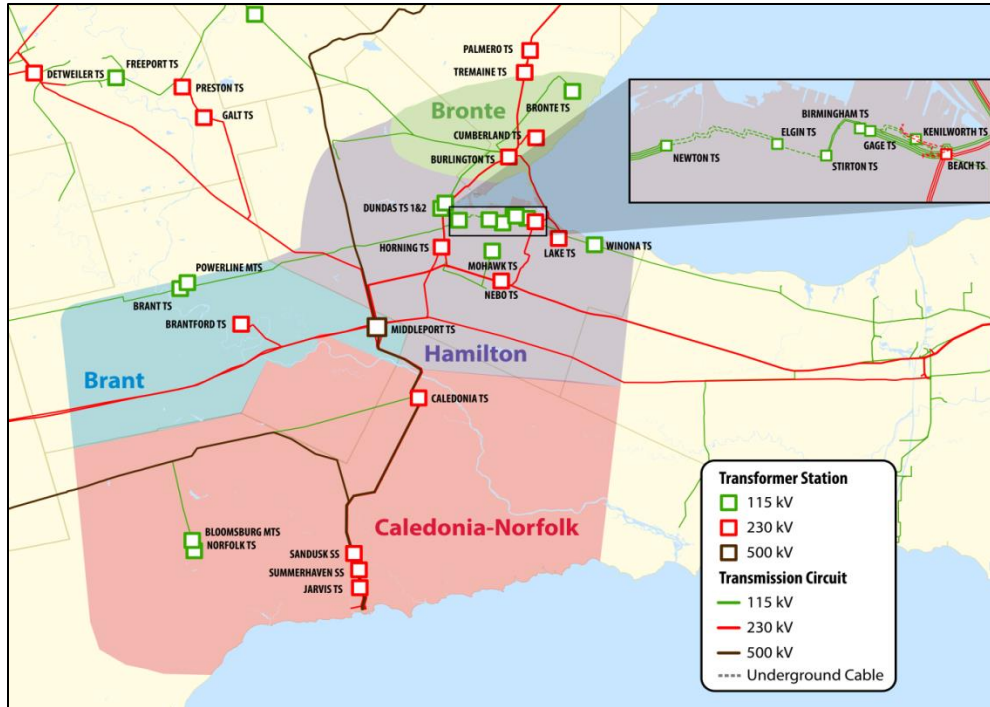
Centralized Local Resources



- A centralized **local supply** resource can be developed to meet regional needs, including:
 - Gas or hydro generation, CHP, district energy
- Lead **responsibility varies** based on resource type

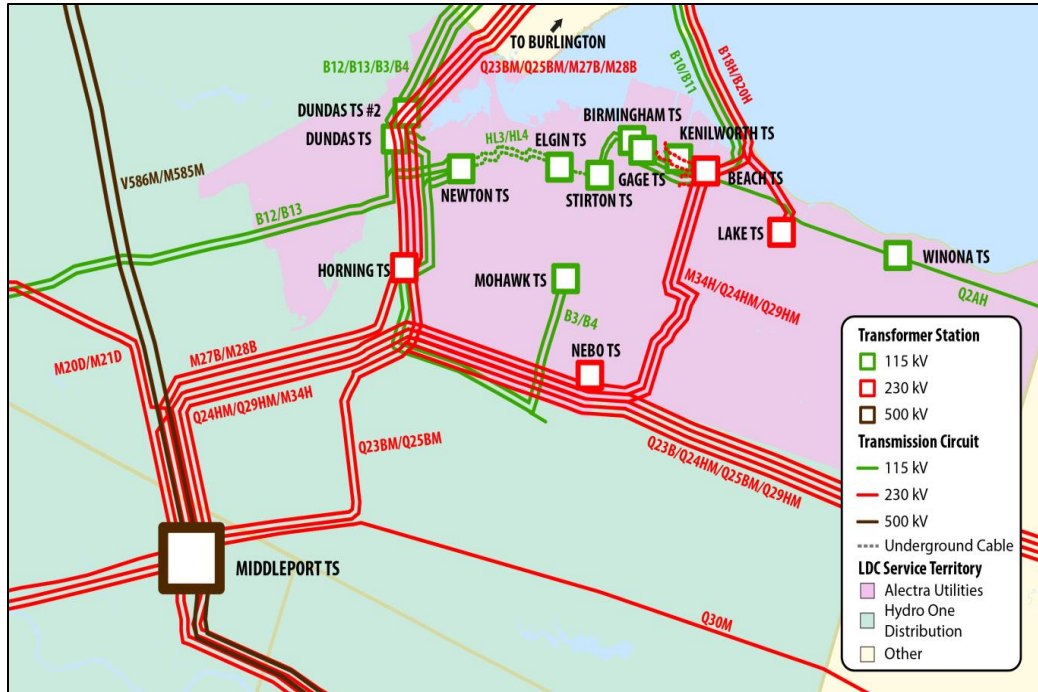
HAMILTON INTEGRATED REGIONAL RESOURCE PLAN

Burlington-Nanticoke Region Map



- The Burlington-Nanticoke region is one of 21 electricity planning regions throughout the province
- Each region undergoes a regional planning process at minimum, every five years
- Hamilton is a sub-region of the Burlington-Nanticoke region
 - There are two previously completed IRRPs in this area from the first cycle of regional planning – one in Brant and Bronte, published in 2016 and early 2017 respectively
 - Only the Hamilton sub-region was identified in this planning cycle as requiring coordinated regional planning, with an IRRP to be published at the end of February

Hamilton Sub-Region Map



- The Hamilton sub-region is defined primarily by electricity infrastructure but generally aligns with municipal boundaries
- The Hamilton sub-region Technical Working Group consists of members from IESO, Alectra, and Hydro One
- The study focuses on addressing a number of asset replacement needs arising due to transmission facilities reaching end of life, ensuring the plan for asset replacement accounts for forecast system conditions and needs
- The result of the study is a 20-year regional electricity plan, with near-, mid- and long-term outlooks.

Characteristics of the Hamilton Sub-region

1

Transmission Assets Requiring Renewal

2

Flat Electrical Load Growth

3

Ability to Accommodate Uncertainty in Large Customer Growth

Transmission Assets Requiring Renewal/Replacement

Ongoing/Previously Planned

Initial Burlington Street/
Industrial Station Renewal

Renewal and Increased
Capacity at Mohawk
(Transformer Station) TS

Renewal of Elgin TS in
Downtown

Near or Mid-term Recommendation in IRRP

Renewal of Newton TS to
Maintain Capacity

Initial Refurbishment at Lake
TS to Maintain Capacity

Additional Study/Investigation of Future Options Initiated as an IRRP Outcome

Future Options to “Right-
Size” Beach TS

Studies to Support Planning
and Staging of End of Life
Underground Cable
Replacement

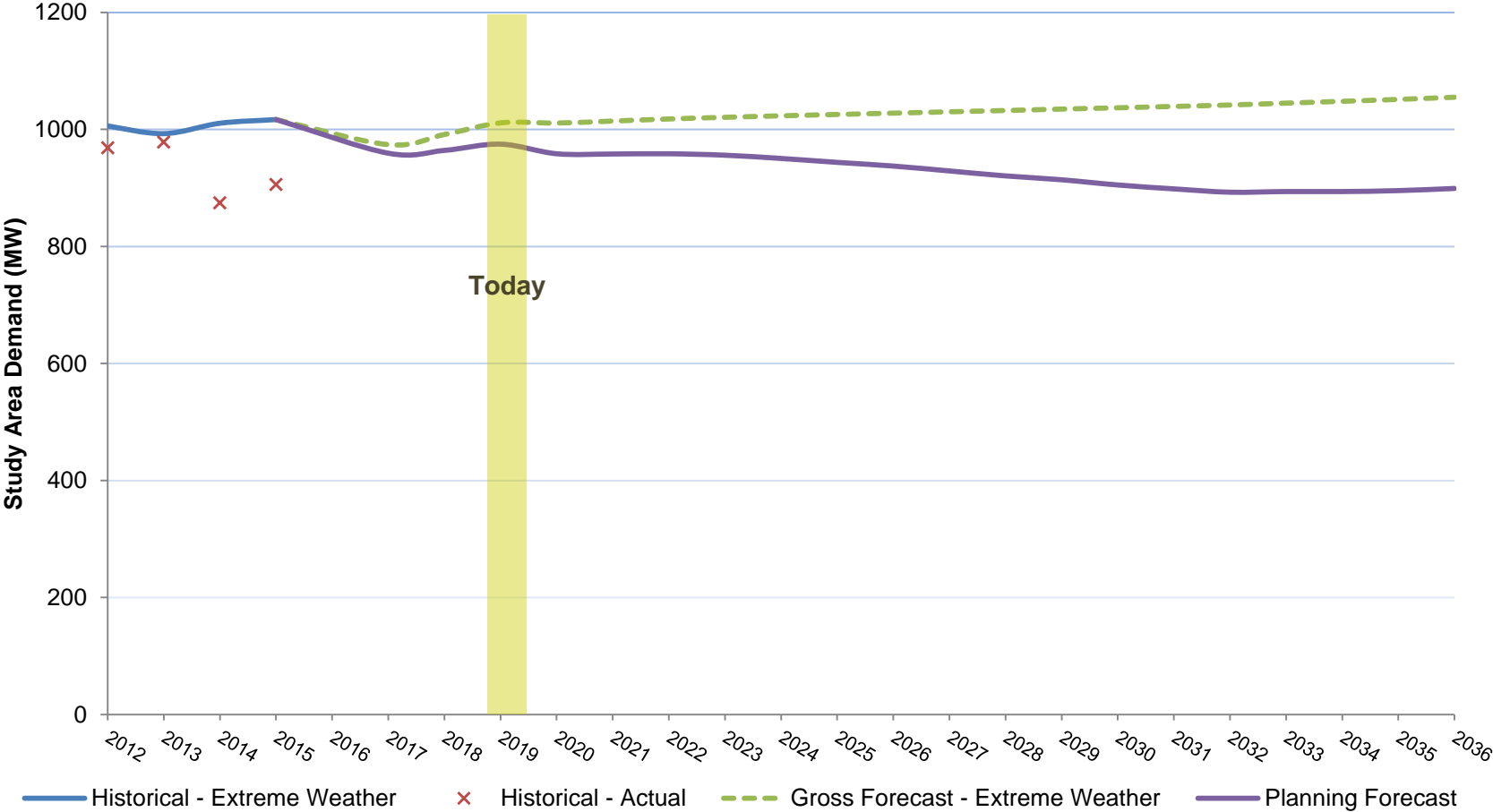
Study of Broader
Transmission System Impact
of Bulk Transmission Asset
Replacement at Beach TS

Approach to Determining Replacement Options for End of Life Transmission Assets

- Development of options considered three main alternatives:
 - Replacement of the assets “like-for-like” or with the closest available standard;
 - Reconfiguration of the existing assets to “right-size” the replacement option based on: the forecast load growth, changes to the use of the asset since it was originally installed or to realize reliability or other system benefits that an alternate configuration may provide; or
 - Retirement of a facility, considering the impact on load supply and reliability.
- The asset replacement needs identified for the Hamilton area all impact transmission assets that are important facilities for maintaining a reliable and sufficient supply to customers in the area.
- As such, complete retirement of any of the assets identified as replacement candidates was ruled out as a feasible alternative, even with consideration of existing conservation and distributed generation forecasts or capacity that may exist at adjacent stations.

Hamilton IRRP Planning Forecast

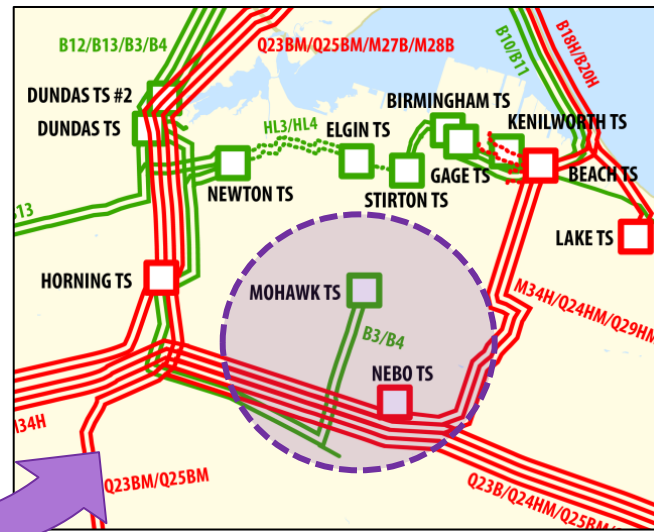
Planning Forecast = Gross Forecast – Conservation – Distributed Generation



Planning for Flat Electrical Load Growth

- Overall gross demand for the Hamilton area is forecast to remain relatively the same over the 20 year planning horizon
- When accounting for provincial conservation targets, overall demand in the Hamilton area continues to decline over the study period
- However, there are two transformer stations in the Hamilton area which are at or near capacity today

- Nebo TS
- Mohawk TS



Recommendations to Address the Capacity Need At Nebo TS & Mohawk TS

Implement Conservation and Demand Management (CDM)

- The capacity need at Nebo TS under the planning forecast assumptions is minor throughout the early 2020s.
- It's currently forecast that the existing CDM programs along with changes to codes and standards would address this need in the mid to long term.
- The Technical Working Group recommends monitoring demand growth and CDM achievement at Nebo TS.
- If required, due to higher than forecast load growth or changes to the CDM forecast, it's recommended that the IESO work with Alectra to assess additional measures to use CDM or other non-wires solutions to continue to defer Nebo TS capacity needs, where cost effective.

Complete Planned End of Life Replacements for Mohawk TS

- The identified capacity need at Mohawk TS will be addressed by Hydro One's end of life asset replacement work that is currently underway for Mohawk TS and the 115 kV supply circuits B3/B4.
- Planned in-service date for both projects is 2020.
- Based on the load forecast this will address capacity needs at Mohawk TS for the duration of the 20 year study period.
- The Technical Working Group recommends this work continues to proceed in a timely manner, as to address the existing capacity need at the station.

Consideration of Future Large Customer Loads or Other Forecast Uncertainty

- While the forecast electrical growth for the Hamilton area is minimal, Alectra identified an area of forecast uncertainty related to potential large customers looking to connect in pockets of the City
- Existing stations on the 115 kV system in Hamilton, particularly in the industrial area along Burlington Street, have available transformer capacity
- Recent refurbishment work has also improved the capabilities of a number of stations on the 115 kV system
- The IESO carried out an assessment to confirm the 115 kV system's load meeting capability (LMC) (i.e., its ability to supply existing load stations to their full capabilities), to better understand the area's capability to respond to future unplanned customer connection requests
- The 115 kV system has the capability to supply load well beyond forecast levels based on application of local planning reliability criteria

Summary of Key Plan Recommendations

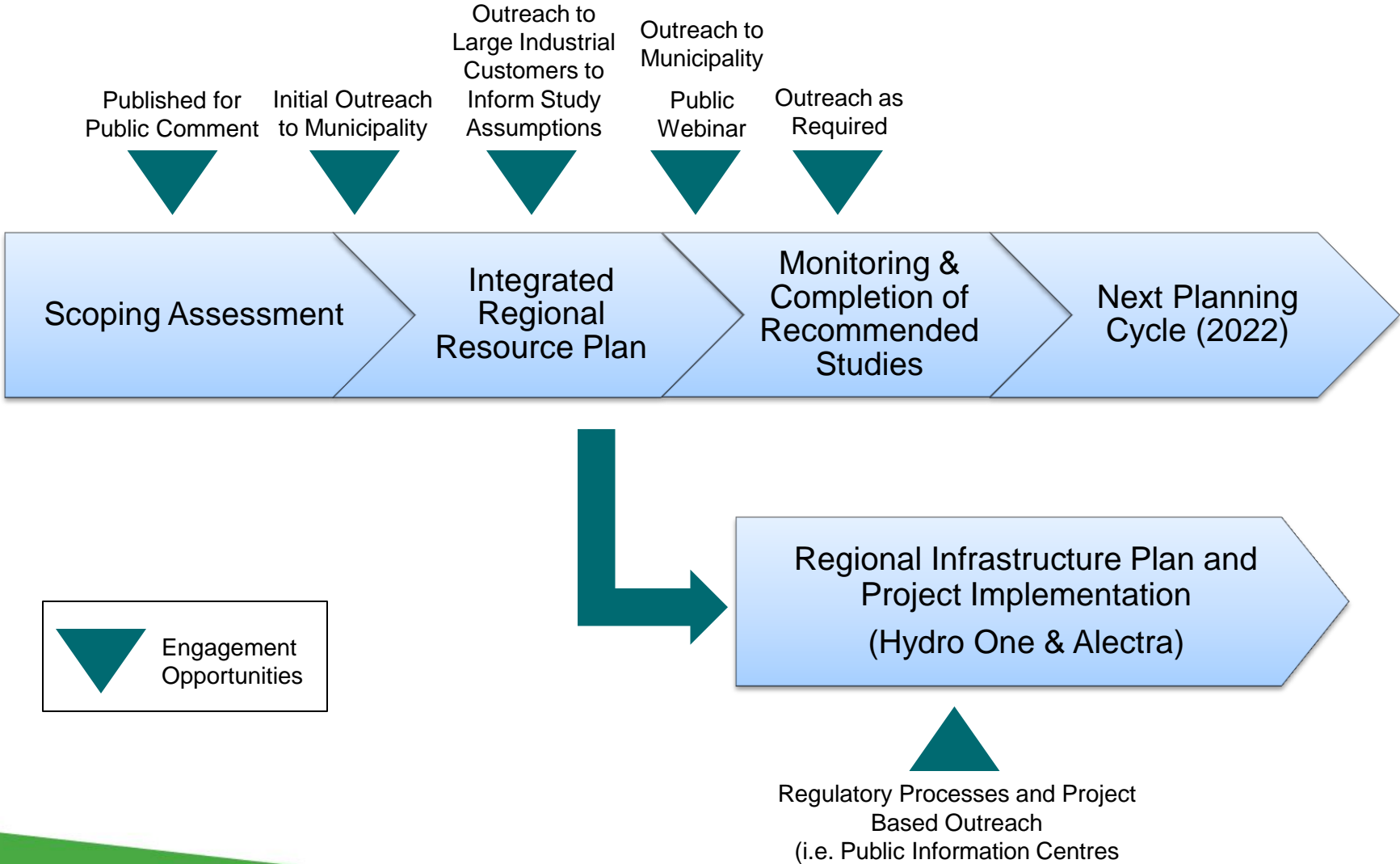
Undertake End of Life Transmission Replacements Required in the Near/Mid Term

Initiate and Complete Additional System Studies to Inform Replacement Options before the Next Regional Planning Cycle

Continue and Monitor Conservation and Demand Management Activities

Monitor Demand and Asset Condition

Engagement in the Hamilton Sub-Region



Next Steps

- The Hamilton Sub-region IRRP will be posted by the IESO by February 25, 2019, following a one week comment period to commence after this webinar
- Hydro One and Alectra will continue with implementation of transmission asset renewal projects previously planned and underway
- Hydro One will initiate a Regional Infrastructure Plan for the Burlington to Nanticoke Region, to be completed by Q4 2019, and begin implementation of plan recommendations working with Alectra and Hydro One Distribution
- IESO will carry out a study of the 115 kV underground cables and a study of broader bulk transmission system to inform the next regional planning cycle
- Technical Working Group will monitor load growth and transmission asset condition between regional planning cycles

QUESTIONS?

Questions

- Do you have any questions for clarification on the material that was presented today?
- Do you want to have a conversation with us regarding regional electricity planning activities in the Hamilton area?
- Is there anything that you would like to see added as part of the final Hamilton IRRP?

*Submit questions via the phone, web portal window or please send an email to communityengagement@ieso.ca by **February 12**.*

All comments that are submitted in writing will be posted on the IESO's website and responded to as part of the finalization process of the Hamilton IRRP.

The final Hamilton IRRP will be posted by February 25, 2019.

For more information

- On the Hamilton sub-region

<http://www.ieso.ca/Get-Involved/Regional-Planning/Southwest-Ontario/Hamilton-sub-region>

- On the broader Burlington to Nanticoke Region

<http://www.ieso.ca/Get-Involved/Regional-Planning/Southwest-Ontario/Burlington-to-Nanticoke>

- On the regional electricity planning process

<http://www.ieso.ca/Get-Involved/Regional-Planning/About-Regional-Planning/How-the-Process-Works>

- Keep in touch. Questions or comments?

communityengagement@ieso.ca or www.ieso.ca/subscribe

THANK YOU FOR
PARTICIPATING TODAY