

Regional Electricity Planning Peel/Halton (GTA West)

2021 Integrated Regional Resource Plan (IRRP)

Engagement Webinar #2

August 5, 2020

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 Peel/Halton Region (GTA West)
 - Seek input on the range of potential options to be considered for meeting local electricity needs over the 20-year plan period
 - Outline next steps
- All interested parties are invited to review and provide written comment on the proposed recommendations

Send feedback to engagement@ieso.ca by August 19

Peel/Halton (GTA West) electricity planning

- A number of studies are currently underway in the GTA West region including:
 - GTA West Transportation Corridor (Ministry of Transportation)
 - NW GTA Transmission Corridor (IESO and Ministry of Energy Northern Development and Mines)
 - GTA West regional electricity planning (IRRP) (IESO)
- Feedback heard from stakeholders and communities indicated confusion with the naming convention of these projects
- In response to feedback, the IESO has amended the name of the GTA West regional planning engagement initiative to Peel/Halton (GTA West). This name change is for the purpose of public engagement only and all formal regional planning documents will retain the official name of the region as GTA West

Today's Agenda

1. Peel/Halton (GTA West) IRRP Status Update
2. Confirming Electricity System Needs
3. Options to be Studied
4. Community Engagement and Next Steps

Seeking Input

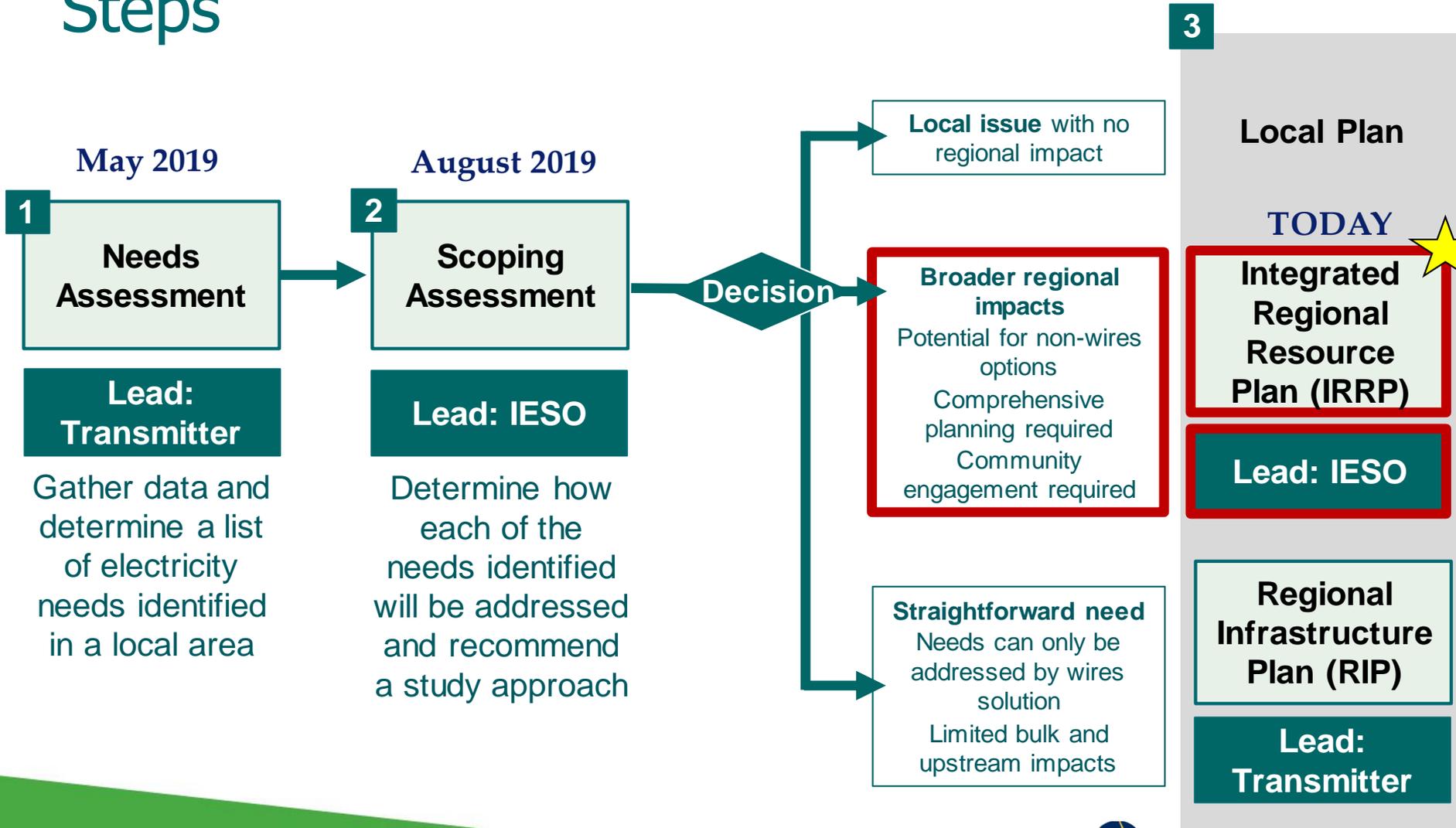
As you listen today, please consider the following questions to guide feedback into the options evaluation for the Peel/Halton (GTA West) IRRP:

- Based on the electricity needs defined in the Peel/Halton region, what other characteristics should be considered?
- What other options should be considered in defining the solutions to meet the electricity needs?
- What other information, if any, is needed to enable further feedback in this initiative?

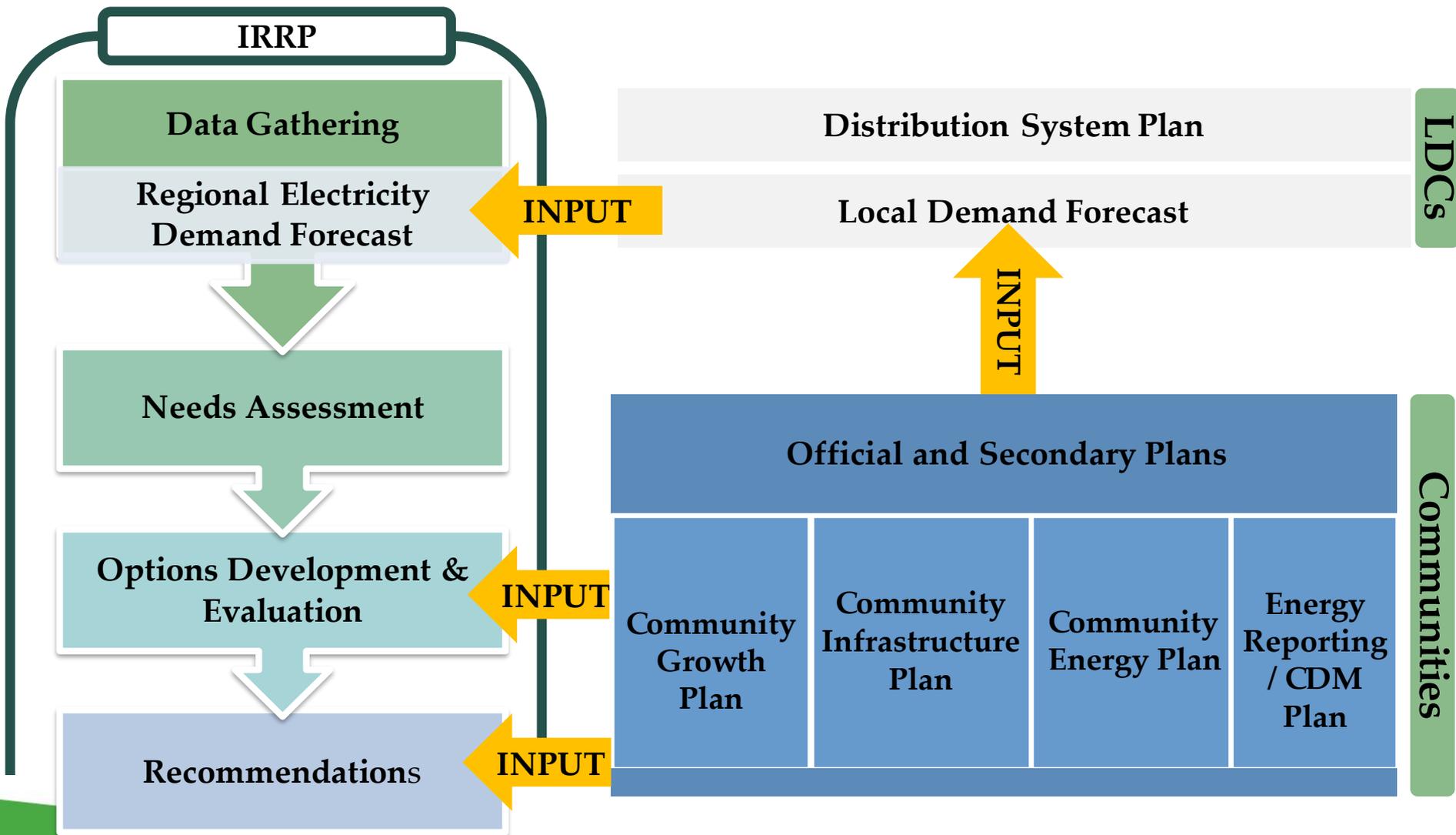
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1. PEEL/HALTON (GTA WEST) IRRP STATUS UPDATE

Recap: Regional Planning Process Steps



Coordinating Local Planning Activities



Current Status of Peel/Halton (GTA West) Regional Planning

- IRRP study work began in Q3 2019, and is on track for completion in early 2021
 - Electricity demand forecast has been completed
 - Needs have been identified
 - Options analysis has begun

Study Timeline



2. NEEDS IDENTIFIED

General Categories of Needs

Capacity

- Station capacity refers to the ability 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

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

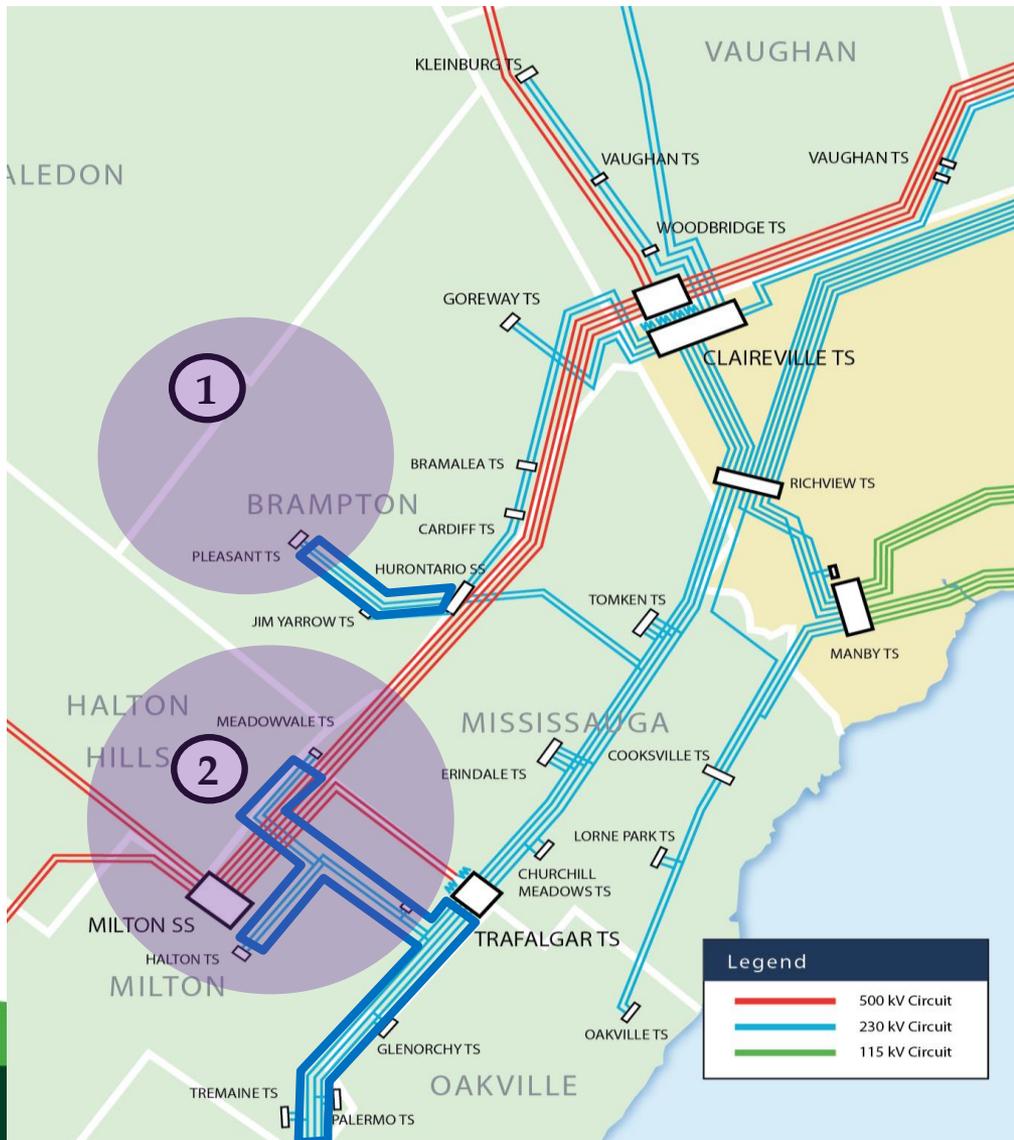
Asset End of life

- Refers to aligning investments to replace aging transmission assets with evolving power system priorities

Needs Identification - Overview

- Today's webinar will focus on two pockets in the region with system capacity needs and supply security needs
- Other station capacity, restoration, and end-of-life needs will be further explored in the coming months with the transmitter and local distribution companies including:
 - Potential station capacity needs at Cardiff TS, Jim Yarrow MTS, and Tremaine TS beginning around 2030
 - End-of-life replacement of Palermo TS transformers
 - Restoration needs after certain contingencies in accordance with planning criteria

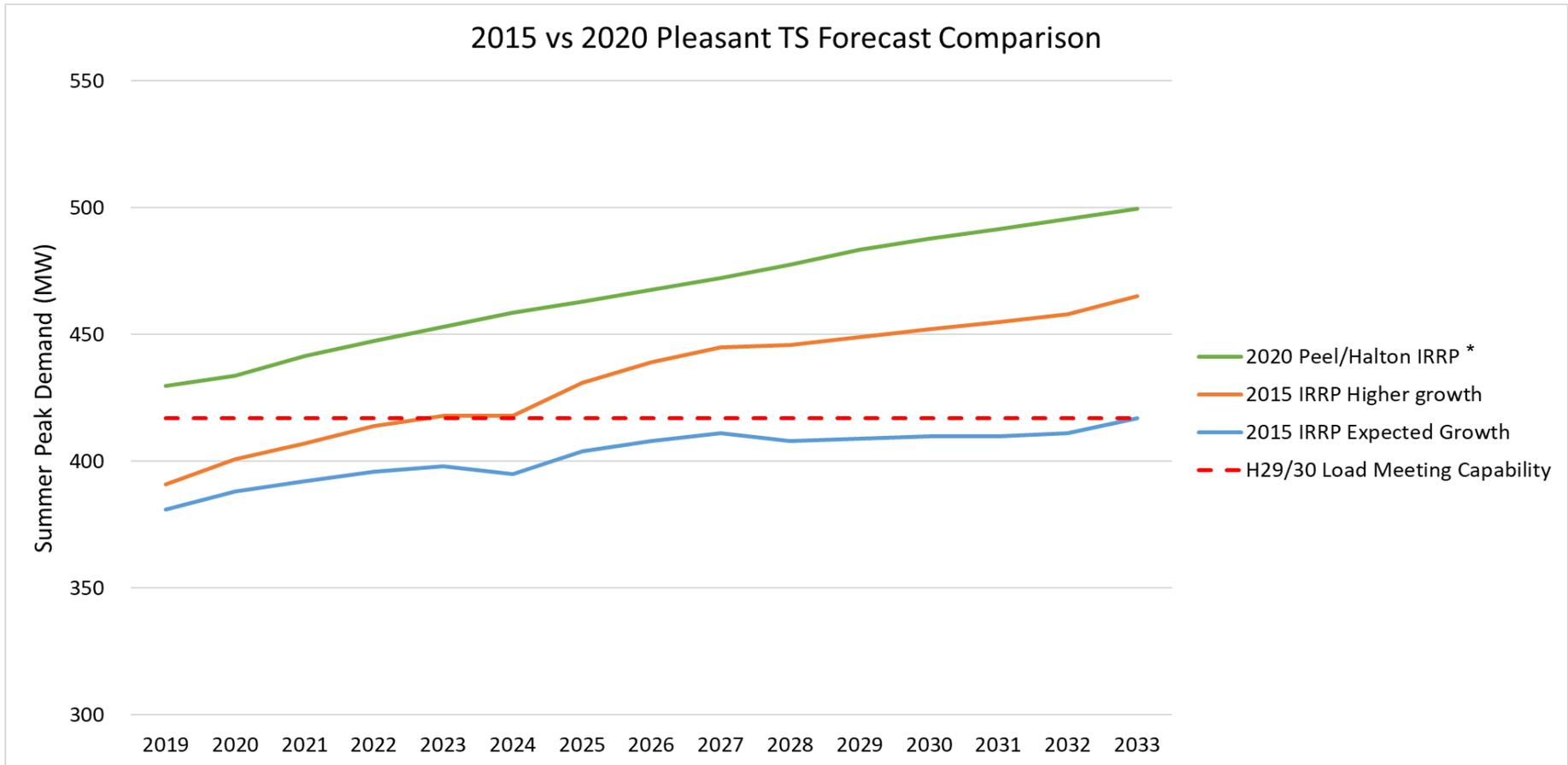
Needs Identification - Pockets



Main driver of needs is the forecasted growth of electricity demand in the Peel/Halton (GTA West) area particularly in two pockets:

- “Pleasant Pocket” (1) comprised on load served from Pleasant TS
- “Halton Pocket” (2) comprised of load served from Tremaine TS, Trafalgar TS, Halton TS, Halton Hills MTS, Meadowvale TS and the planned future Halton Hills #2 TS

Pleasant TS 2015 vs. 2020 Comparison

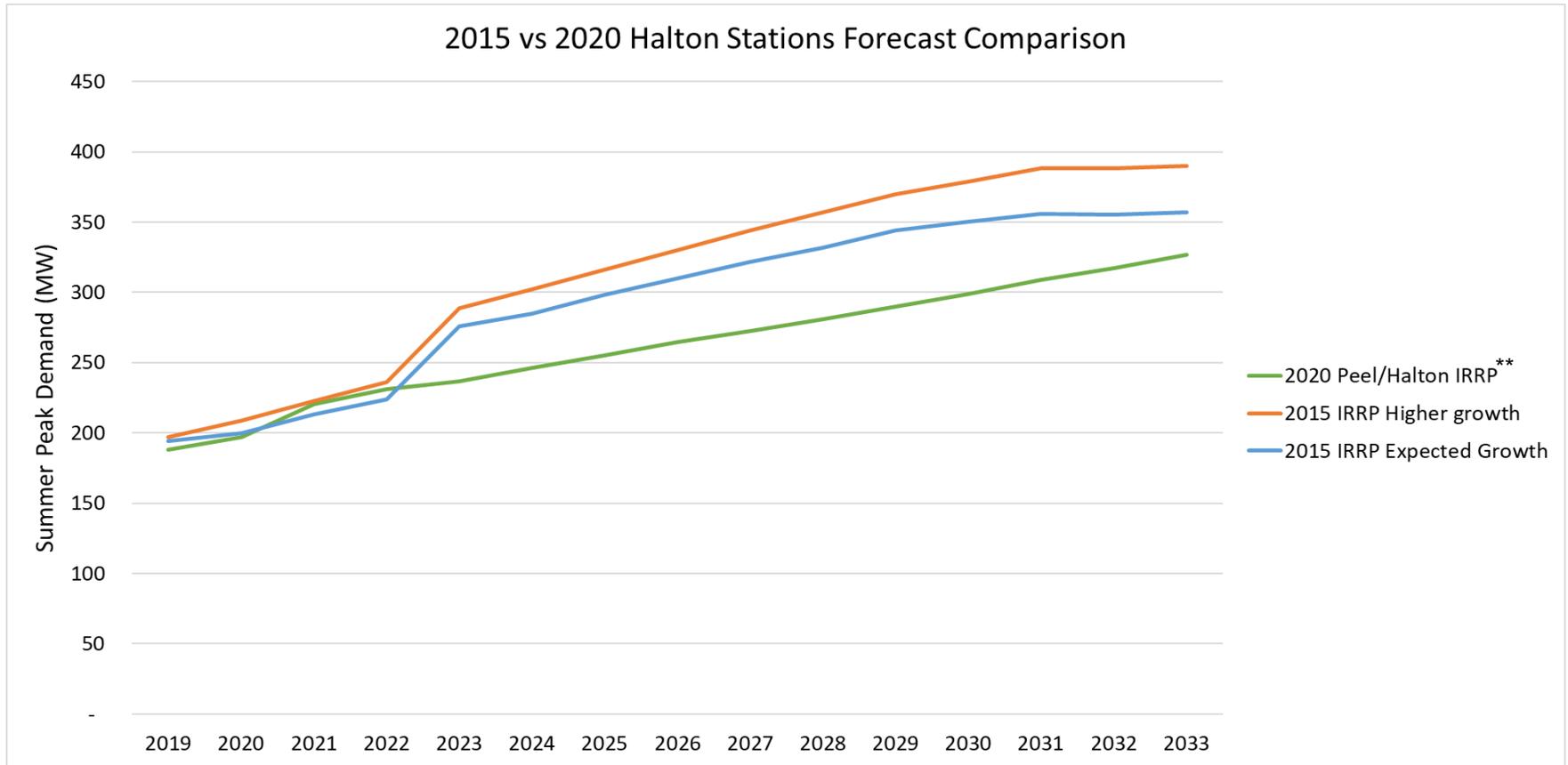


*The 2020 forecast extends to 2038 but is truncated at 2033 for comparison to the 2015 IRRP

Pleasant Pocket Needs

- Capacity needs in this pocket are driven by growth in the Brampton and Caledon areas
- The growth in this area is moving northward further away from existing infrastructure
- Capacity needs arise in this pocket as the thermal limits of the existing transmission system are exceeded following:
 - Certain contingencies with all elements initially in-service
 - Certain contingencies with one element initially out of service
- This issue exists today and will persist as growth continues over the forecast horizon

Halton Stations* 2015 vs. 2020 Comparison



*Note: Includes Halton TS, Halton TS #2 and Halton Hills MTS

**The 2020 forecast extends to 2038 but is truncated at 2033 for comparison to the 2015 IRRP

Halton Pocket Needs

- Growth is expected to continue in the Halton area
 - 2015 IRRP recommended two new stations (Halton TS #2 and Halton Hills MTS) to accommodate new growth
- Starting in the early 2030s, capacity needs arise in this pocket as the thermal limits of the existing transmission infrastructure are exceeded following certain contingencies during outage conditions of the local generator, in accordance with planning criteria
- Additionally, a load security need arises in 2024 as the total amount of load interrupted exceeds planning standards for certain contingencies

3. OPTIONS TO BE STUDIED

Options Identification

There are three categories of potential options to address the needs:

“Wires” Options

- Consists of traditional transmission assets such as switching stations, transformer stations, or transmission lines
- May also include protection schemes and control actions such as load rejection

Centralized Local Generation

- Consists of large utility-scale generation facilities strategically located to alleviate a local reliability need

Non-wires/Demand-side Options

- Consists of local load modifying solutions such as distributed energy resources (including distributed generation/storage and demand response) and energy efficiency measures

Options Evaluation

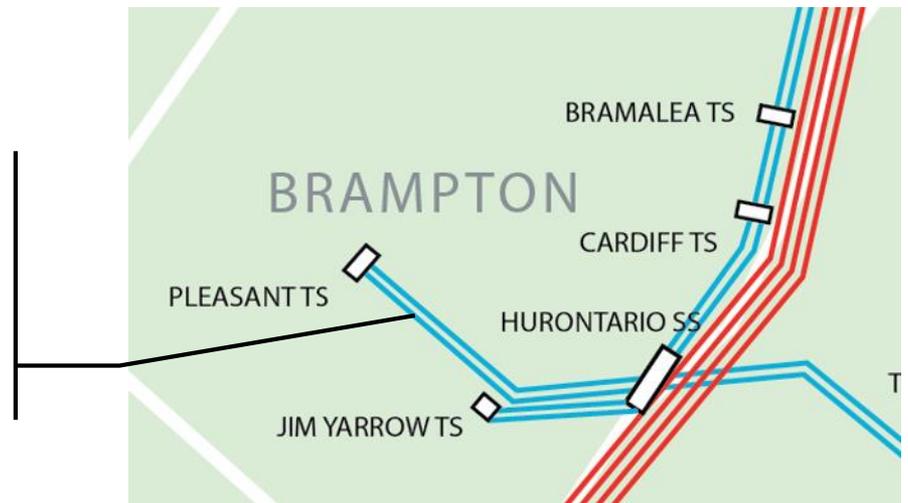
- The IRRP is at the beginning of the options development and evaluation phase – no options have been ruled out yet
- The purpose of today's webinar is to seek feedback on the options identified so far and gather input on any other options that should be considered
- Once options for addressing needs have been identified, a recommended solution is determined based on:
 - How effectively the option meets the identified system needs (i.e. does it provide the required level of reliability?)
 - Cost effectiveness (preference generally given to the lowest cost alternative that meets the identified need)
 - Input from community engagement

Pleasant Pocket – Potential Options

- Need #1: Post-contingency thermal limitation with all elements initially in service

H29/H30 Reconductoring

- Increases circuit thermal capacity
- Was recommended in previous regional planning cycle; timing to be confirmed in current IRRP



Pleasant Pocket – Potential Options

- Need #2: Post-contingency thermal limitation with one element initially out of service

Demand side-options

- Helps manage demand during peak hours to reduce loading on transmission circuits

Load Rejection Scheme

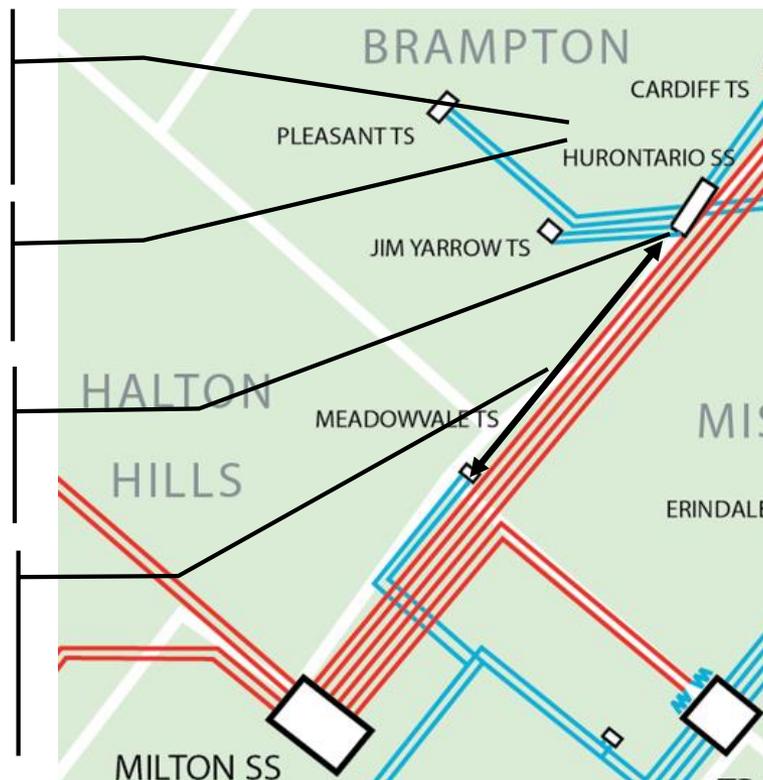
- Provides option to reject load post-contingency during outage conditions

Hurontario SS Reconfiguration

- Improves performance by avoiding certain undesirable post-contingency configurations

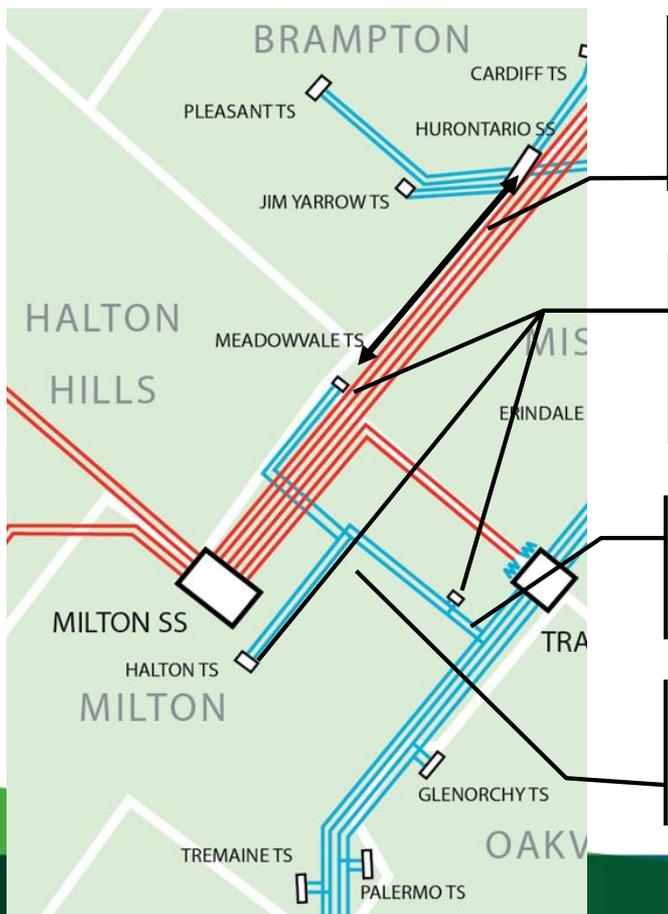
Meadowvale x Hurontario Transmission Line

- Provides alternate supply path to Hurontario SS from the Halton pocket



Halton Pocket - Potential Options

- Need #1: Post-Contingency Thermal Limitation with local generator out of service



Meadowvale x Hurontario Transmission Line

- Provides alternate supply path to the Halton Pocket from Hurontario SS to alleviate thermal overloads

Demand-side Options at Stations on Radial Circuit

- Helps manage demand during peak hours to reduce loading on transmission circuits

T38B/T39B Reconductoring

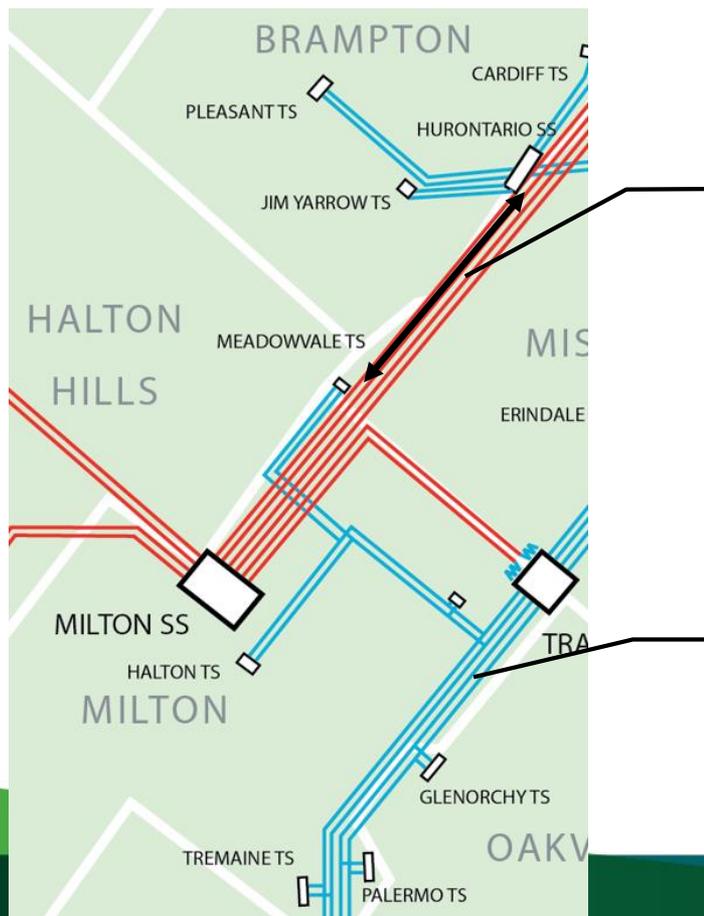
- Increases circuit thermal capacity

Additional Local Generation

- Provides additional source of power when existing local generation is out of service

Halton Pocket - Potential Options

- Need #2: Load security



Meadowvale x Hurontario Transmission Line (with switching facility)

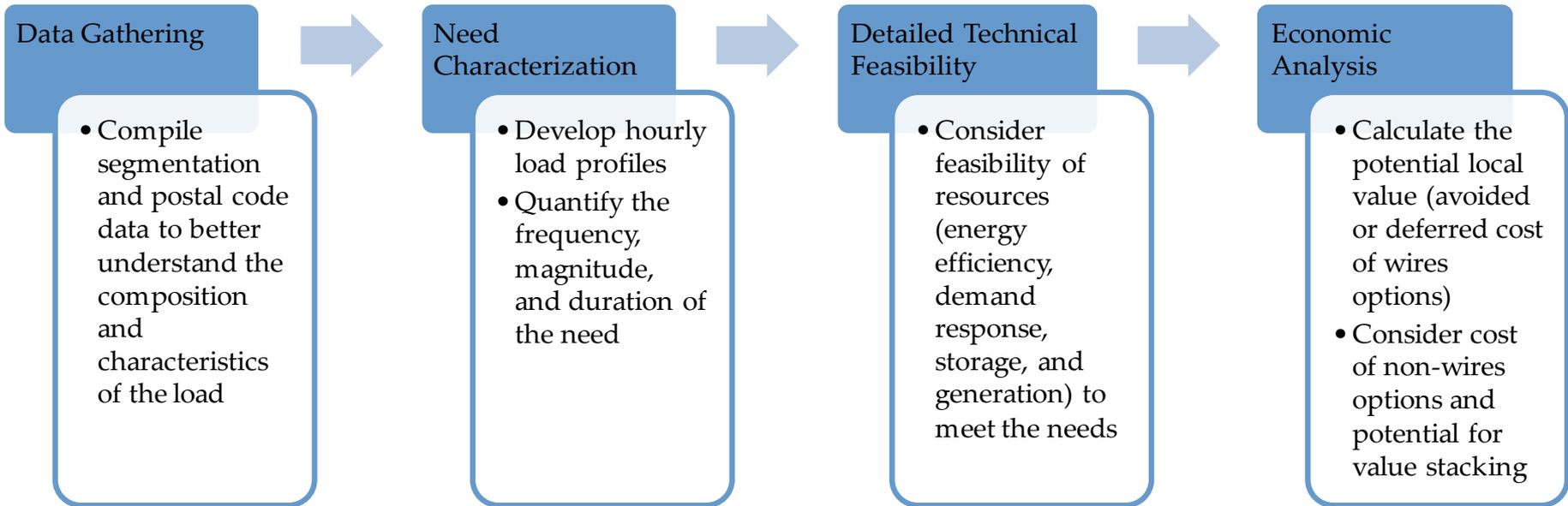
- Provides alternate supply path to the Halton Pocket from Hurontario SS and reduces load interrupted after contingencies

In-line Breakers

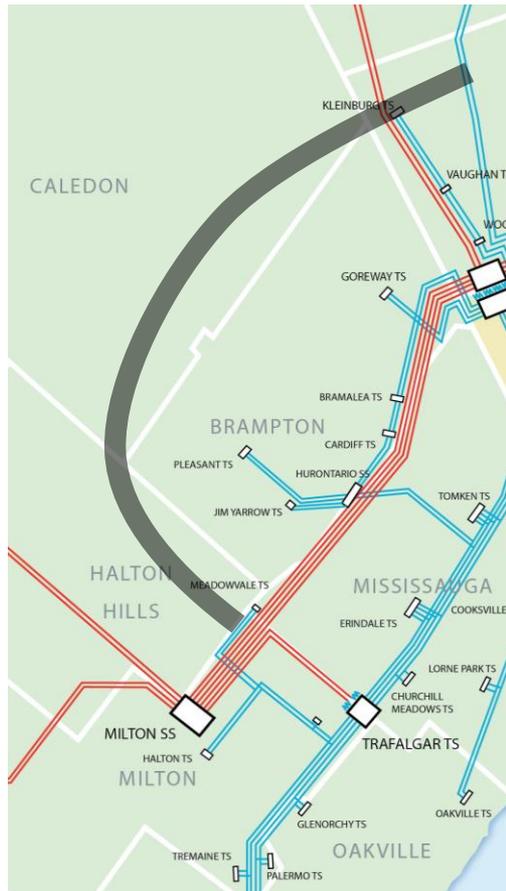
- Sectionalizes circuits to reduce load interrupted after contingencies

Demand-side Options

- The feasibility of the demand-side options discussed earlier will be screened based on the timing and magnitude of the need as well as stakeholder feedback
- In cases where demand-side options warrant closer investigation, the process for studying these options will generally include:



Long-term Option: Utilizing the NW GTA Corridor



- The IESO and the Ministry of Energy, Northern Development and Mines are jointly conducting the NW GTA Corridor Study to identify and protect land for a future transmission corridor though this region so that longer-term needs can be accommodated if and when they arise
- While studies to date have not found a near-term local reliability need for additional transmission along this corridor, the region is experiencing growth in the north that is increasingly removed from existing transmission supply circuits
- This IRRP will continue to study this transmission option for long-term needs that may arise
- More information can be found on the Environmental Registry of Ontario website at <https://ero.ontario.ca/notice/019-1503>
The comment period for the proposal is now closed.

4. COMMUNITY ENGAGEMENT AND NEXT STEPS

Key Areas for Input

Process	Outcome	Community Input
Data Gathering	Electricity demand forecast	<p>Are there any economic development or other growth or project plans that might influence the regional load forecast?</p> <p>Is there additional information that should be considered?</p>
Technical Study	Electricity needs and timing	Is there additional information that should be considered in the study assumptions?
Options 	Solutions options	Is there community feedback to the solutions proposed that should be considered in further development of the IRRP?
Action	Near-term projects and longer-term activities	<p>What further discussions are needed to initiate near-term projects?</p> <p>What should communities consider in their plans in the medium- and long-term? (e.g. Official Plan review, Secondary Plan development, etc.)</p>

Engagement Plan – Timeline

Date	Major Milestones
February 20, 2020	Launch engagement initiative for IRRP and post draft engagement plan for public comment
March 12, 2020	Engagement webinar #1 (seek input on draft engagement plan, load forecast, preliminary local needs/issues identified and timelines)
March 26, 2020	Deadline to submit feedback on draft engagement plan, load forecast, preliminary local needs/issues identified
April 13, 2020	IESO response to feedback received, and posting of final engagement plan
★ August 5, 2020	Engagement webinar #2 (seek input on defined needs, screening of potential options)
Early November 2020	Engagement webinar #3 (seek input on draft IRRP recommendations)
Q1 2021	Final GTA West IRRP posted with IESO responses to feedback on draft recommendations

INPUT

INPUT

INPUT

Seeking Input

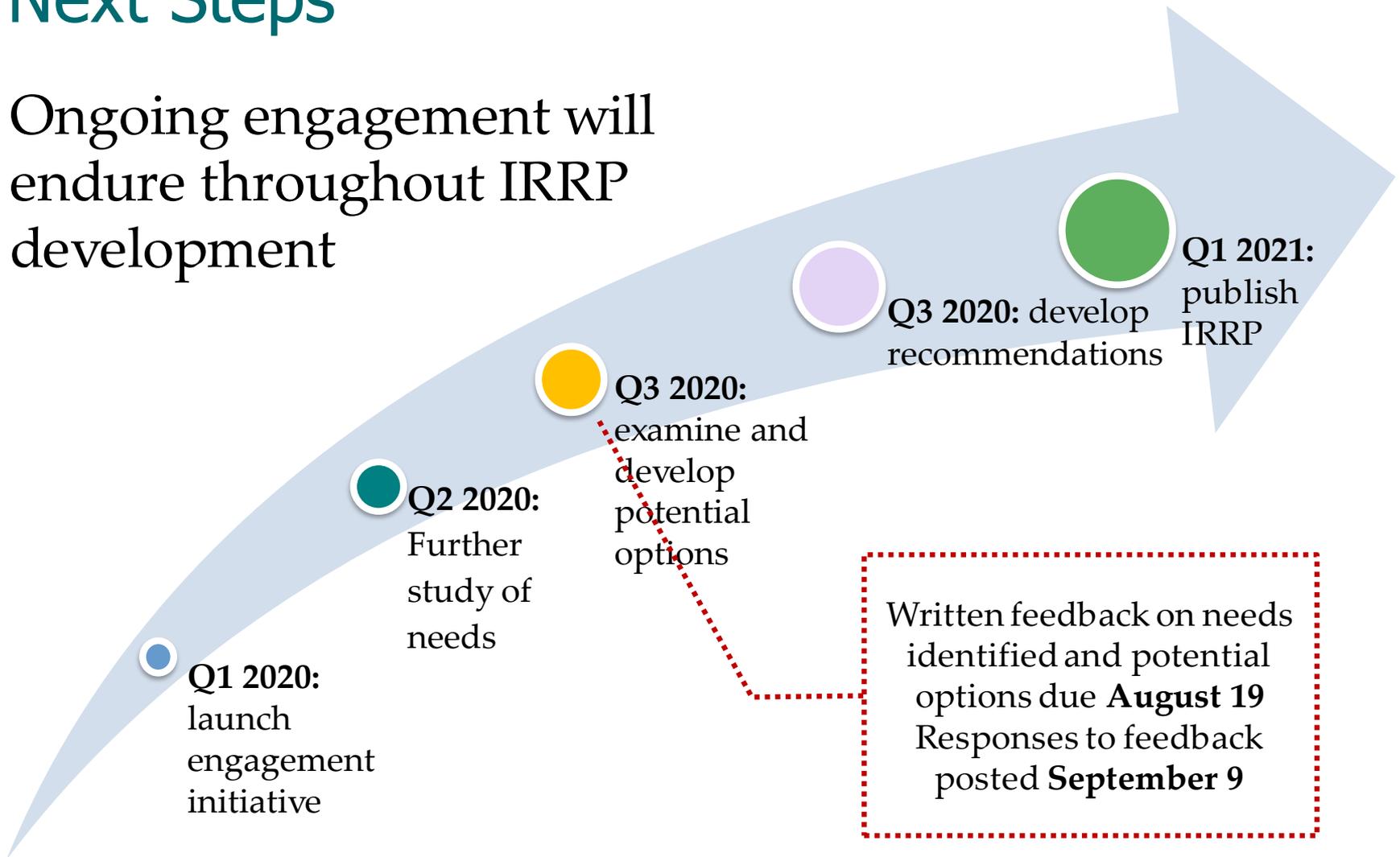
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*Please submit your written comments by email to engagement@ieso.ca by **August 19***

Next Steps

Ongoing engagement will endure throughout IRRP development



Q1 2020:
launch
engagement
initiative

Q2 2020:
Further
study of
needs

Q3 2020:
examine and
develop
potential
options

Q3 2020: develop
recommendations

Q1 2021:
publish
IRRP

Written feedback on needs
identified and potential
options due **August 19**
Responses to feedback
posted **September 9**

Continuing the Dialogue

- A series of five Regional Electricity Networks 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
 - Peel/Halton is part of the GTA and Central Ontario Regional Network
- To learn more or join your network, please visit <http://www.ieso.ca/Get-Involved/Regional-Planning/Electricity-Networks/Overview>



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