MARCH 18, 2021

Kitchener-Waterloo-Cambridge-Guelph
Integrated Regional Resource Plan (IRRP) Engagement Webinar #2

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Objectives of Today's Engagement Webinar

- To provide an update on the electricity planning underway in the Kitchener-Waterloo-Cambridge-Guelph (KWCG) region
- To provide an overview of the options analysis and seek input on draft recommendations
- To outline next steps

Seeking Input

As you listen today, please consider the following questions to guide your feedback on the draft recommended plan for the KWCG region:

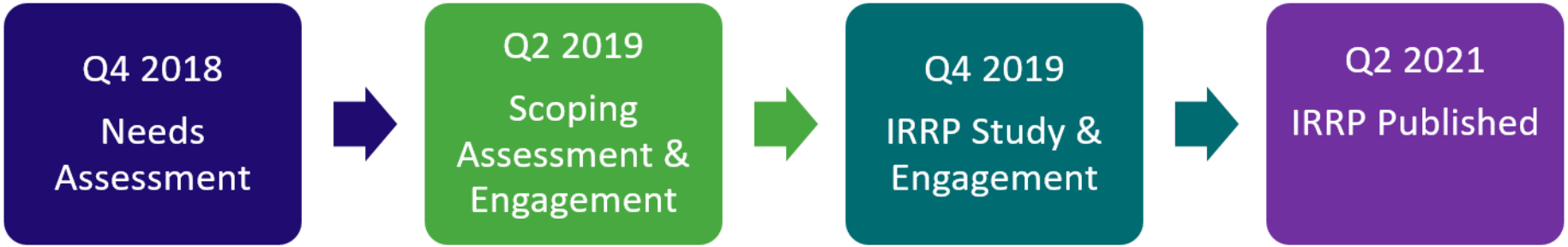
- What information needs to be considered in these recommendations?
- What community feedback is there to the proposed recommendations?
- How can the IESO continue to engage with communities as these recommendations are implemented, or to help prepare for the next planning cycle?

Please submit your written comments by email to engagement@ieso.ca by April 1

Long-term Electricity Plan Status Update

KWCG Long-term Electricity Plan Status

- IRRP study work began in Q2 2019, and is on track for completion in early Q2 2021
  - Electricity demand forecast and needs have been determined, potential options identified and evaluated, and draft recommendations developed
  - The next focus is on finalizing recommendations



Recap: Engagement Activities to Date

- Engagement launched on KWCG Scoping Assessment:
  - Draft report posted for public comment – April 2019
  - Final report posted with IESO responses to comments received – May 2019
- Meetings with KWCG municipalities – November 2019 and July 2020
- IRRP engagement launched – November 2019
- Public webinar to seek input on draft electricity demand forecast and planned engagement activities – December 2019
  - Responses to feedback posted – January 2020
- Email update on status of IRRP development and summary of needs and potential options sent to KWCG municipalities and regional subscribers – September 2020

What we've heard so far…

- Consider areas of concentrated planned growth (e.g. East Side Development Lands)
- Impacts of local plans including Official Plans, community energy plans, climate change plans and energy conservation plans should be considered in planning for the future electricity needs of the region
- Projects and initiatives stemming from local plans should be taken into account (e.g. Stage 2 ION corridor, electrification of vehicles and public transit, etc.)

Overarching Themes

- Overall, the electricity infrastructure is in a strong position to meet and support future growth in the KWCG region
  - Major investments in transmission infrastructure from the previous planning cycle have provided significant benefits to supporting growth
- The majority of electricity needs are medium- (up to 2028) and long-term (2029 and beyond) in nature
- Medium-term needs are expected to be most effectively addressed by low-cost technical solutions and long-term needs present an opportunity to explore alternative solutions
- In the long-term and depending on the load growth and addition of new developments, the electricity infrastructure may not be sufficient to meet anticipated demand

KWCG Needs and Recommended Solutions

Categories of Needs – Definitions

Capacity

- Station capacity refers to the ability to convert power from the transmission system down to distribution system voltages
- Supply 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 Security

- Load restoration describes the electricity system's ability to restore power to those affected by a major transmission outage within reasonable timeframes
- Load 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

Categories of Options – Definitions

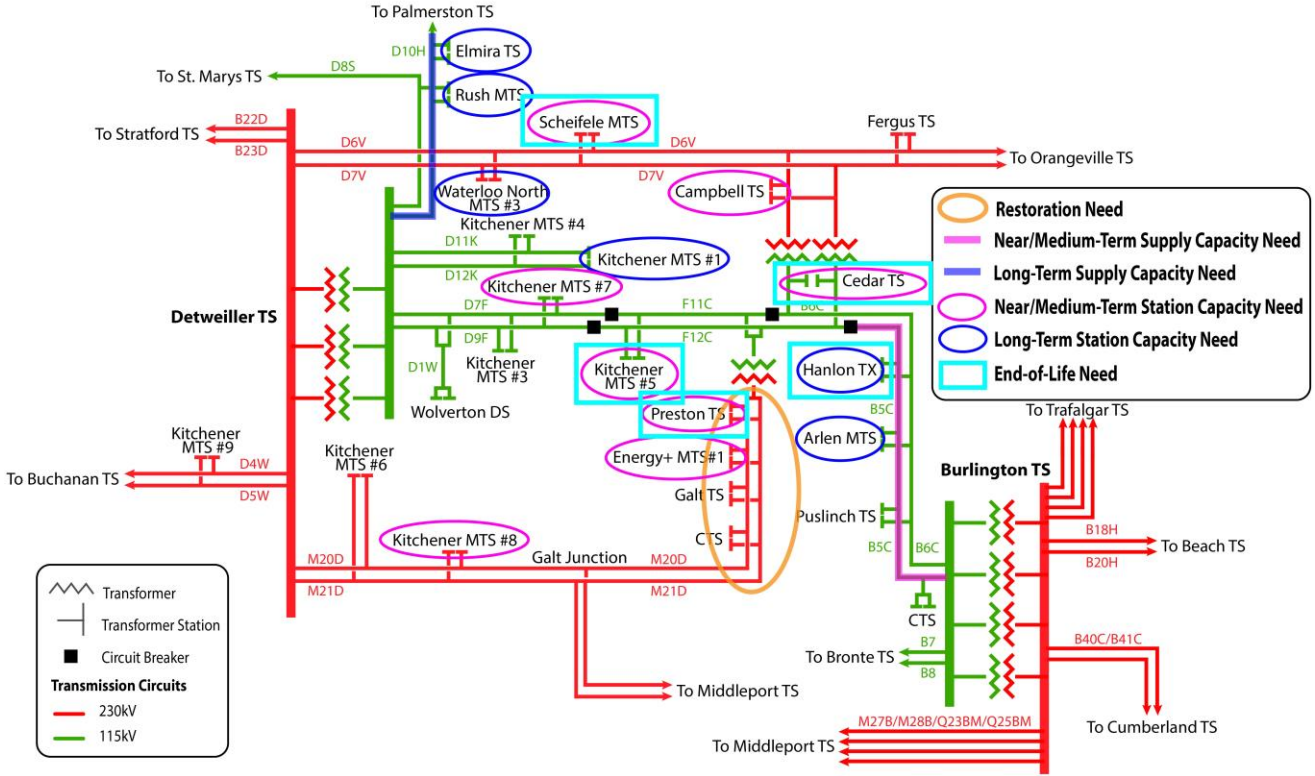
Wires

- 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); and/or energy efficiency measures; and/or, large utility-scale generation facilities strategically located to alleviate a local reliability need

Needs at a Glance



KWCG IRRP: Near- to Medium-term Station Capacity Need

- Capacity needs on eight stations in the near- to medium-term (up to 2030 – see Appendix for full list)
- **Recommended solution:**
  - Many of the needs can be managed by transferring the load to other stations with spare capacities either on a permanent or temporary basis
  - A few stations are due for replacing their transformers because of end-of-life; Although like-for-like replacements are considered, the available standard transformers have higher ratings which provide additional relief on station capacity needs

KWCG IRRP: Near- to Medium-term Supply Capacity Needs

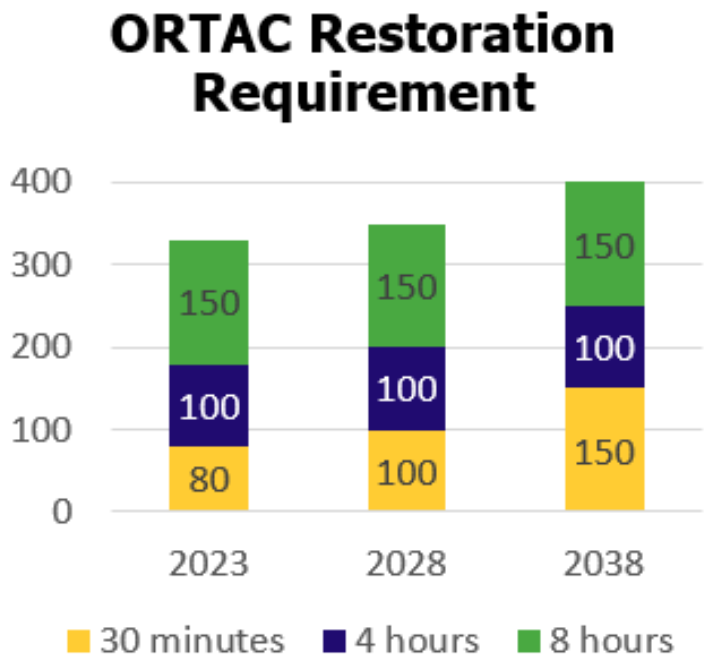
- Potential supply capacity need with the post-contingency overloading of the 115 kV circuit from Burlington TS to Cedar TS under pre-contingency outage conditions
- **Recommended solution:**
  - This need is marginal and can be managed with operational measures such as rescheduling outages
  - Ongoing monitoring to ensure appropriate actions are taken if the need becomes significant

KWCG IRRP: Long-term Capacity Needs

- Supply capacity need due to the post-contingency overloading of the 115 kV circuit from Detweiler TS towards Hanover TS Station capacity needs at Arlen, Hanlon, Rush, Elmira, Kitchener #1 and Waterloo North #1 TS
- **Recommended solution:**
  - Needs are not significant and do not require early development work for major infrastructure projects
  - Explore opportunities to manage future electricity demand through Conservation and Demand Management (CDM) activities including the Local Initiatives Program under the 2021-2024 CDM Framework
  - Needs will be re-evaluated periodically and non-wires solutions explored

KWCG IRRP: Cambridge Load Restoration Need

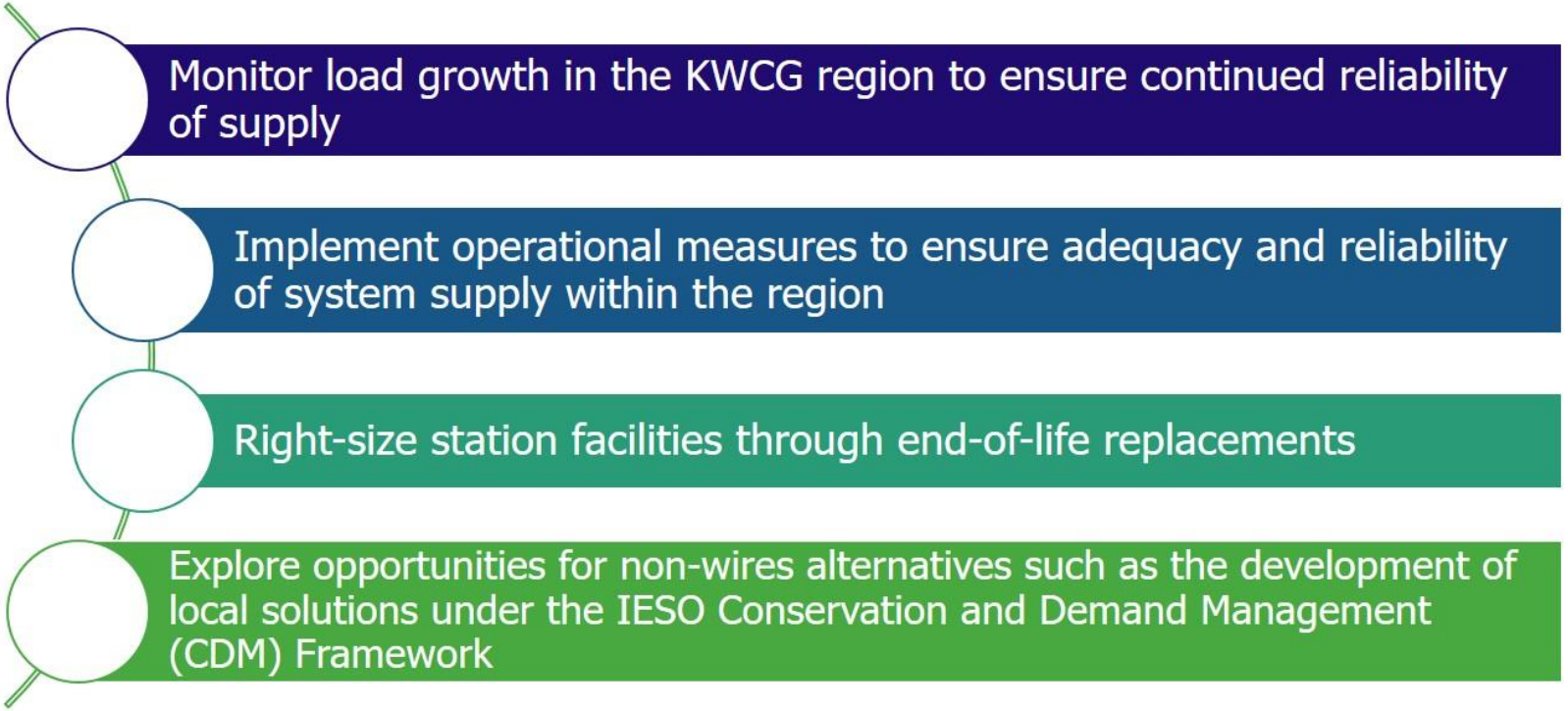
- With addition of new loads, load restoration requirements may not be met in the Cambridge area as mandated by the Ontario Resource and Transmission Assessment Criteria (ORTAC)
- **Recommended solution:**
  - Conduct ongoing monitoring of actual electricity demand growth as needs are dependent on the magnitude and timing of future developments (planned and unplanned)



KWCG IRRP: End-of-life Optimization

- Transformers at Cedar TS, Hanlon TS, Kitchener #5 MTS, Preston TS and Scheifele MTS
- **Recommended solution:**
  - KWCG Working Group assessments indicated that there are no opportunities for end-of-life optimization
  - Like-for-like replacements will be carried out as planned
    - Standard replacements available have higher ratings

KWCG IRRP: Summary of Recommendations



Future Opportunities for Meeting Needs

- As part of the new 2021-2024 Conservation and Demand Management (CDM) Framework, funding has been committed for a Local Initiatives Program.
- Targeted local CDM programming helps to maximize value to electricity ratepayers and customers, demonstrating the ability to use energy efficiency as a resource to help manage local electricity demand, and to avoid or defer costly infrastructure investments.
- Opportunities for local program initiatives will be deployed in targeted areas across Ontario based on needs identified through the IESO's existing regional planning process.
- Beginning later this year, the implementation of local programs will leverage competitive mechanisms to provide targeted energy and demand savings for specific areas, while encouraging innovation and energy cost savings.

Developments and Projects to Consider for Next KWCG Planning Cycle

- Metrolinx electrification project
- East side development lands: Future connection in the Cambridge area, around Preston TS, with potential for optimization with long-term options for meeting the Cambridge load restoration need (e.g. addition of a new autotransformer at Preston)
- West side employment lands
- Stage 2 ION corridor for light rail transit from Kitchener to Cambridge

Next Steps

Your Feedback is Important

As you prepare your feedback, consider the following questions to guide feedback your feedback on the draft recommended plan for the KWCG IRRP:

- What information needs to be considered in these recommendations?
- What community feedback is there to the proposed recommendations?
- How can the IESO continue to engage with communities 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 April 1

Next Steps for Engagement

- Written feedback due period on options analysis and draft recommendations – April 1
- Final KWCG IRRP posted with IESO responses to feedback received – by end of April
- Ongoing discussion is encouraged through the Southwest Network to prepare for the next planning cycle and to facilitate monitoring

Keeping in Touch

- Subscribe to receive updates on the KWCG regional electricity planning initiatives on the IESO website – select Kitchener-Waterloo-Cambridge-Guelph
- Follow the KWCG regional planning activities on the dedicated engagement webpage
- Join the Southwest Regional Electricity Network on IESO Connects provide a platform for ongoing engagement on electricity issues

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

Seeking Input on the Webinar

- Tell us about today
- Was the material clear? Did it cover what you expected?
- Was there enough opportunity to ask questions?
- Is there any way to improve these gatherings, e.g., speakers, presentations or technology?

Chat section is open for comments

Thank You

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