OCTOBER 18, 2022

Niagara Regional Electricity Planning Engagement Webinar #3

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Purpose & Agenda

Purpose

- To provide an update on the development of an electricity plan – Integrated Regional Resource Plan (IRRP) – for Niagara Region
- To provide an overview and seek input on recommended solutions

Agenda

- Electricity Plan Status Update
- Recap of Needs and Potential Solutions
- Options Analysis and Draft Recommendations
- Next Steps

Seeking Input

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

- What feedback is there to the proposed recommendations?
- What information needs to be considered in these recommendations?
- How can the IESO continue to engage with communities and stakeholders 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 November 8

Electricity Plan Status Update

Plan Progress and Status

- Electricity demand forecast developed based on information on projected load growth and planned development from local electricity distributors and the transmitter, and reflect input received from municipalities
- Emerging needs identified based on the electricity demand forecast
- Potential solutions identified, screened, and evaluated
- Draft recommended solutions developed
- Direct outreach with local municipalities ongoing since Q4 2021
- Public engagement ongoing since Q2 2021 to keep interested parties informed and solicit input into these key components – two public webinars held to date
- Plan is on track for completion this fall

Recap: Engagement Activities to Date

- Engagement launched for Niagara Region electricity planning – July 2021
- Meetings with local municipalities to discuss planned growth and development, projects, and priorities to help inform electricity demand forecast and engagement plans – December 2021/January 2022/October 2022
- Public webinar #1 to seek input on draft electricity demand forecast and planned engagement activities – February 3, 2022
- Public webinar #2 to present and seek input on high-level screening of potential options – April 28, 2022

What we've heard so far…

- Strong population growth across the Niagara region based on 2051 growth projections
- Notable growth in the Town of Lincoln (greenhouses, Secondary Plan areas, potential GO Transit development), along the QEW corridor in Grimsby, and in Thorold
- Strong economic development around the Welland Canal (e.g. Thorold Multimodal Hub "Niagara Ports")
- Key areas of growth in the City of Niagara Falls within intensification nodes and corridors, projects around the GO Transit Station and the new Niagara South Hospital, wastewater treatment plant, and residential new construction

What we've heard so far…(2)

- Industrial, commercial, institutional, and residential development in the Town of Fort Erie and Secondary Plan areas
- Potential urban boundary expansion in the region totaling 130 hectares of residential and 150 hectares of employment lands
- Climate change drivers (e.g. Niagara Adapts: partnership with Brock University and seven Niagara Region municipalities to develop a Climate Change Adaptation Plan)

Recap of Needs and Potential Solutions

Recap: 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

Asset Replacement Needs

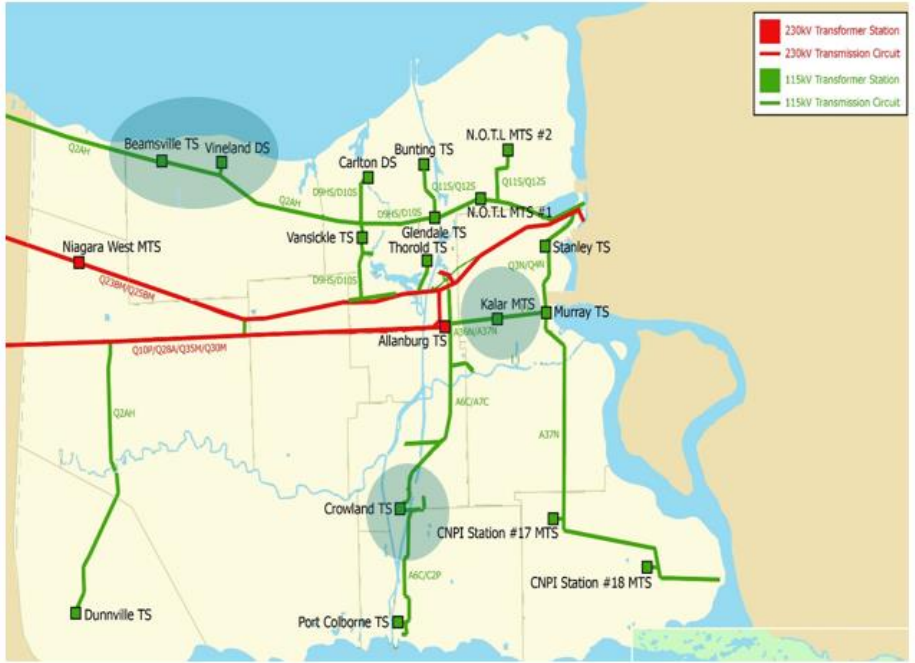
- Based on the best available asset condition information at the time
- Evaluated to decide if the facility should be replaced "like-for-like", "right-sized", or retired

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

Emerging Electricity Needs in Niagara Region (1)

- Station capacity needs identified in the City of Lincoln and Township of West Lincoln
  - Beamsville Transformer Station (TS): existing need
  - Vineland Distribution Station (DS): starting in 2034
- Station capacity needs identified in the City of Welland and Niagara Falls
  - Crowland TS: starting in 2023
  - Kalar Municipal Transformer Station (MTS): starting in 2034



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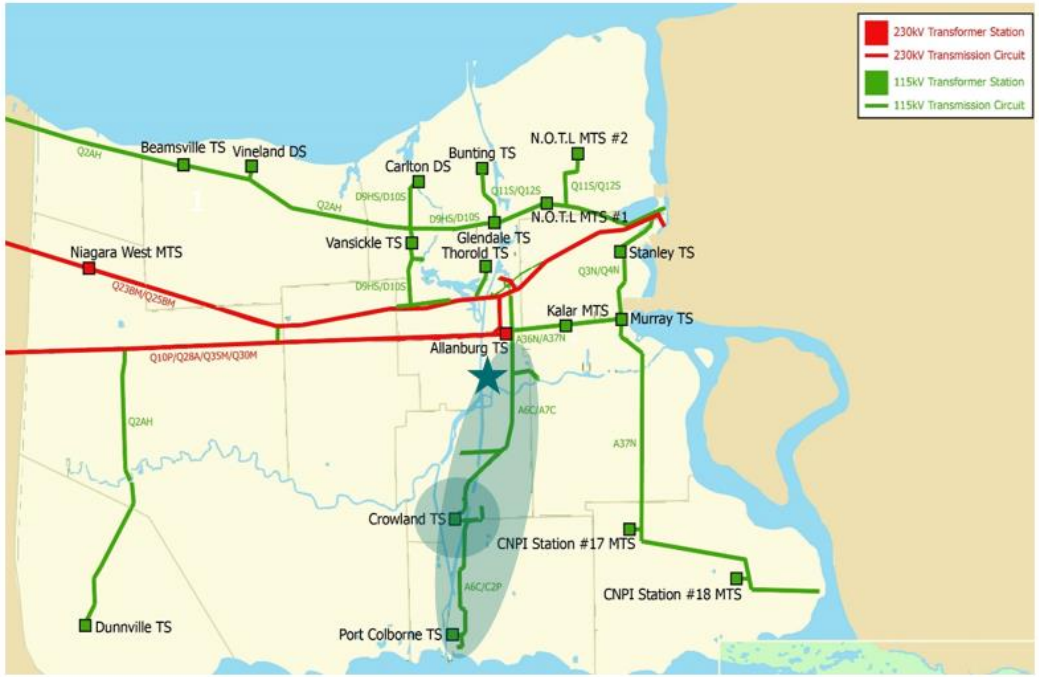
Emerging Electricity Needs in Niagara Region (2)

- Crowland TS reaching end of life in ~2026
- Existing supply capability need affecting all of Niagara Region, based on capability at Allanburg TS
- Power interruption for loads between Allanburg TS and Port Colborne TS, in the event of outages



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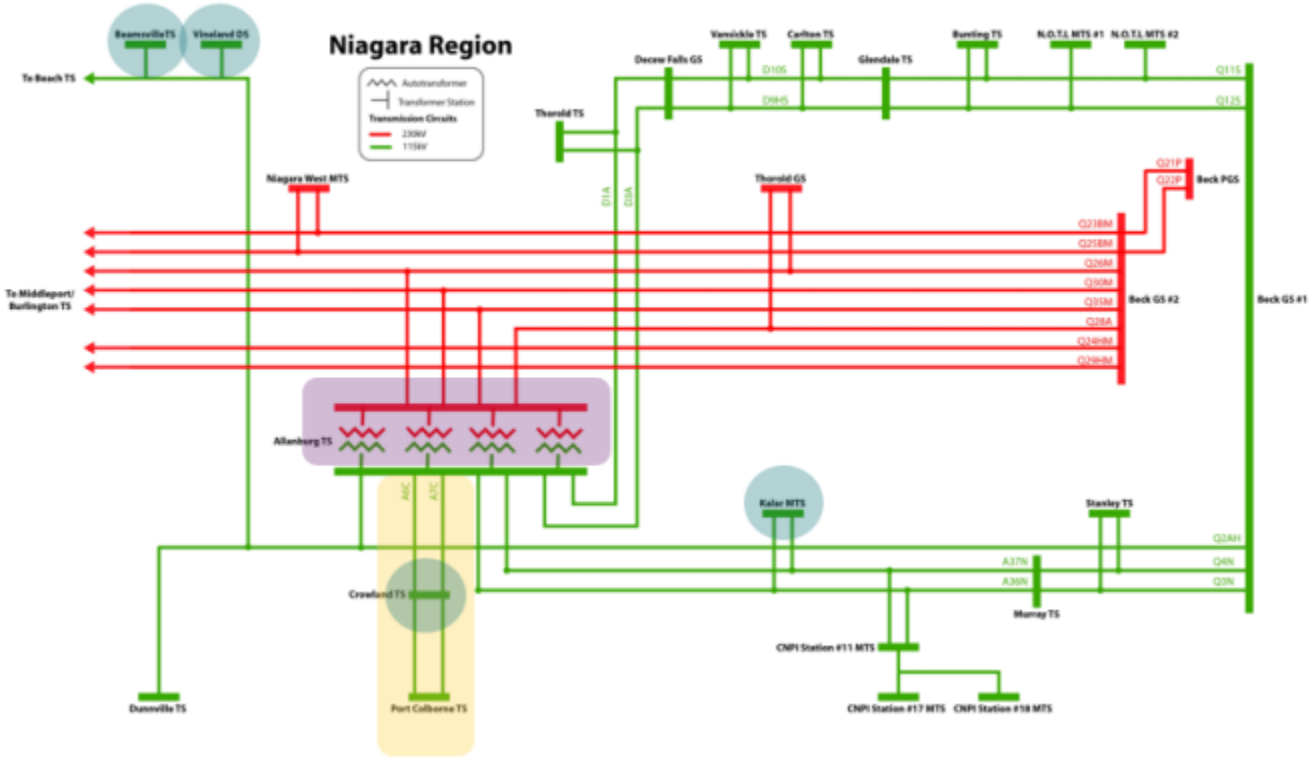
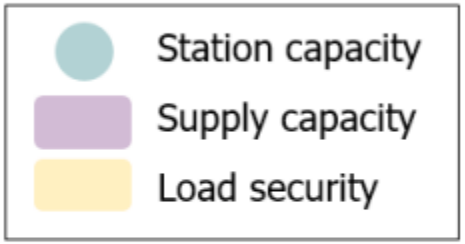
Overview of Niagara Electricity Needs





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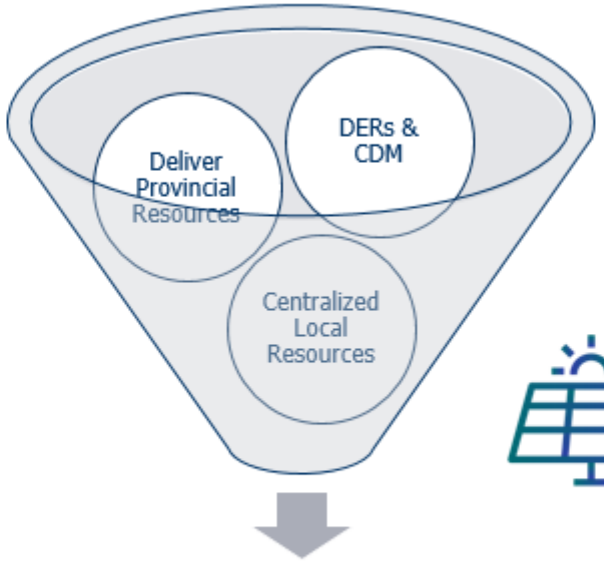
Recap: Possible Options in Electricity Planning

Traditional "wires" option to supply the local area with system resources (may include operational actions and schemes)



Non-wires alternatives (NWAs) like distributed generation (DG) or conservation & demand management (CDM)

Strategically-sited local generation to address transmission infrastructure limitations

Recommendations

Non-Wires Alternatives Considered

Potential NWAs were identified, screened, and evaluated based on technical feasibility and cost:

- Generation – single cycle gas turbine (SCGT)
- Energy efficiency (EE) (also referred to as CDM)
- Energy storage
- A combination of generation and EE, or storage and EE

Options Analysis and Draft Recommendations

Options Analysis and Recommended Solutions (1)

- Need and implicated area: Beamsville TS and Vineland DS (Lincoln & West Lincoln)

Options	Analysis and Draft Recommended Solutions
Transmission Options Near-term load transfer from Beamsville TS to Niagara West MTS, plus additional station capacity: 1. New separate 230 kV station in West Lincoln/Lincoln, **OR** 2. Expand existing Niagara West MTS Non-Wires Option Target 6 MW of incremental EE and build a 18 MW energy storage facility at Beamsville TS	Wires option (new station) of $30M is more cost-effective compared to the non-wires option (cost savings range from $2M – $100M). It also offers long-term flexibility to accommodate more load growth if forecasts at Niagara West MTS and Beamsville TS trend higher. **Near-term load transfer, plus additional station reinforcements (new or expanded station) are recommended.**

Options Analysis and Recommended Solutions (2)

- Needs and implicated area: Crowland TS (Welland and Thorold), Allanburg to Port Colborne, and Niagara 115 kV system (entire region)

Options	Analysis and Draft Recommended Solutions
<u>Integrated Transmission Options</u> Target incremental EE to the region, and: 1. Convert idle 115 kV circuits to 230 kV (~18 km), replace 115 kV end-of-life Crowland TS with a new 230 kV station, and uprate a portion of an existing 230 kV circuit, **OR** 2. Build new 115 kV station, uprate existing 230 kV circuit, rebuild Crowland TS like-for-like, and make significant adjustments at the existing Allanburg TS <u>Non-Wires Option</u> Target 30 MW of incremental EE and build a ~240 MW generation facility	Integrated option with EE and wires reinforcements (Option 1), at approximately $120M, is more cost-effective than the non-wires option (savings of up to $577M). Other benefits include: ability to meet multiple needs, and long-term flexibility for total regional supply. **Replacing Crowland TS with a 230 kV station, uprating the existing Q28A circuit, targeting more EE, and building a new ~18 km 230 kV line in Welland/Thorold south along Regional Rd 84 (Moyer Rd)* are recommended.** *exact routing and siting are subject to transmitter-led development work after the regional plan

Overview of Draft Recommendations

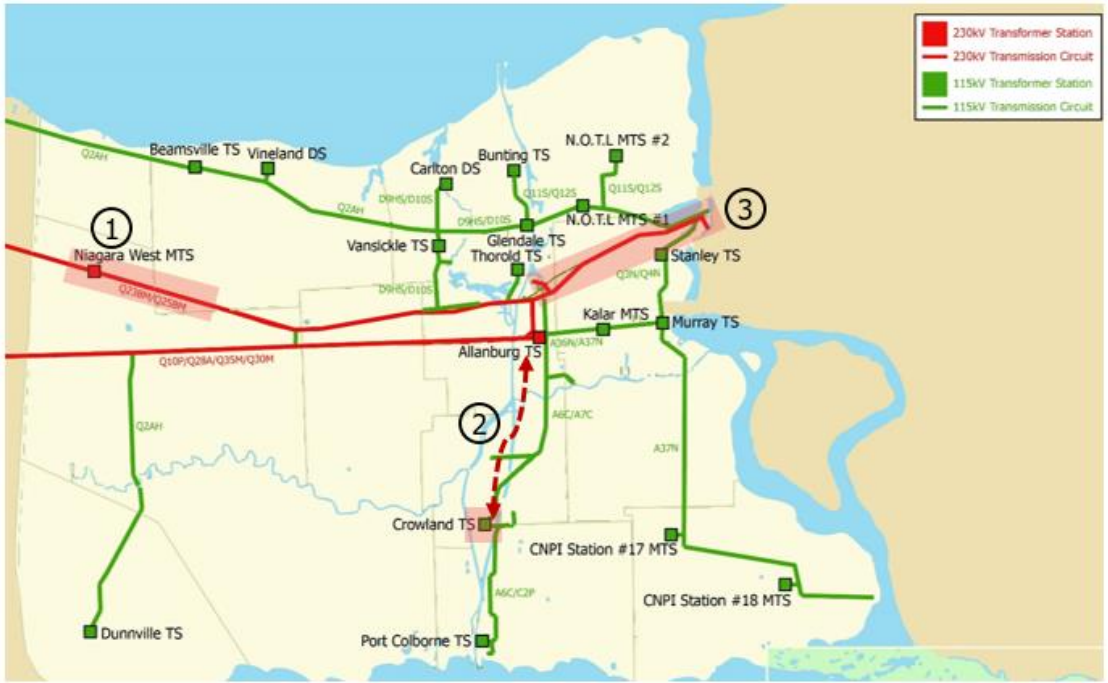
1) Transfer load off Beamsville TS, and build a new 230 kV station or expand Niagara West MTS by 2027

2) Build 230 kV Crowland TS and new double-circuit 230 kV lines by 2028

3) Uprate Q28A circuit by 2024

4) Target incremental EE to the region's 115 kV system

5) Monitor load growth, and re-assess long-term needs (such as at Kalar MTS) in the next planning cycle



*Conceptual map. Exact siting/routing of reinforcements are subject to development work led by Hydro One and/or the LDC.

Next Steps

Next Steps

- Written feedback will be collected up until November 8
- Final plan to be published in the fall
- Further discussions with local municipalities, customers, and stakeholders as necessary

Seeking Input

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

- What feedback is there to the proposed recommendations?
- What information needs to be considered in these recommendations?
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Keeping in Touch

- Subscribe to receive updates on the Niagara regional initiatives on the IESO website – http://www.ieso.ca/subscribe > select Niagara Region
- Follow the Niagara regional planning activities online – https://www.ieso.ca/en/Get-Involved/Regional-Planning/Southwest-Ontario/Niagara
- Dedicated engagement webpage – https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Regional-Electricity-Planning-Niagara
- Regional Electricity Networks provide a platform for ongoing engagement on electricity issues – https://www.ieso.ca/en/Get-Involved/Regional-Planning/Electricity-Networks/Overview > join Southwest Network

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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APPENDIX

IRRP Technical Working Group

Team Lead, System Operator	• Independent Electricity System Operator
Lead Transmitter	• Hydro One Networks Inc. (Transmission)
Local Distribution Companies	• Alectra Utilities • Canadian Niagara Power Inc. • Grimsby Power Inc. • Hydro One Networks Inc. (Distribution) • Niagara on the Lake Hydro Inc. • Niagara Peninsula Energy Inc. • Welland Hydro Electric System Corp.