JULY 27, 2021

# Staying Connected:
# Bulk Electricity System Planning in Northeastern Ontario

ieso
Connecting Today. Powering Tomorrow.

# Agenda

- Introduction and Objectives
- Engagement in Electricity Planning
- Overview of Electricity Planning
- Background of Northern Ontario System
- Planning Drivers and Focus Area
- Plan Development and Scenarios
- Next Steps

# Who We Are 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 Conservation

# Ontario's Changing Electricity Landscape

- Ontario is moving into a period of supply shortfalls
- Demand is forecast to increase one per cent annually over the next twenty years
- Existing generation contracts are expiring, nuclear refurbs are underway, and Pickering nuclear is retiring
- More frequent extreme weather events
- Electrification
- Communities helping to address local and provincial needs

# Key Efforts for Reliable and Affordable Future

Enabling more resources to participate in IESO markets

Shorter commitment periods for generation contracts, providing flexibility in years ahead

Creating a more competitive electricity market to drive down costs

Engaging with stakeholders to inform future decision-making

Working with Indigenous peoples to build capacity in electricity skills and knowledge

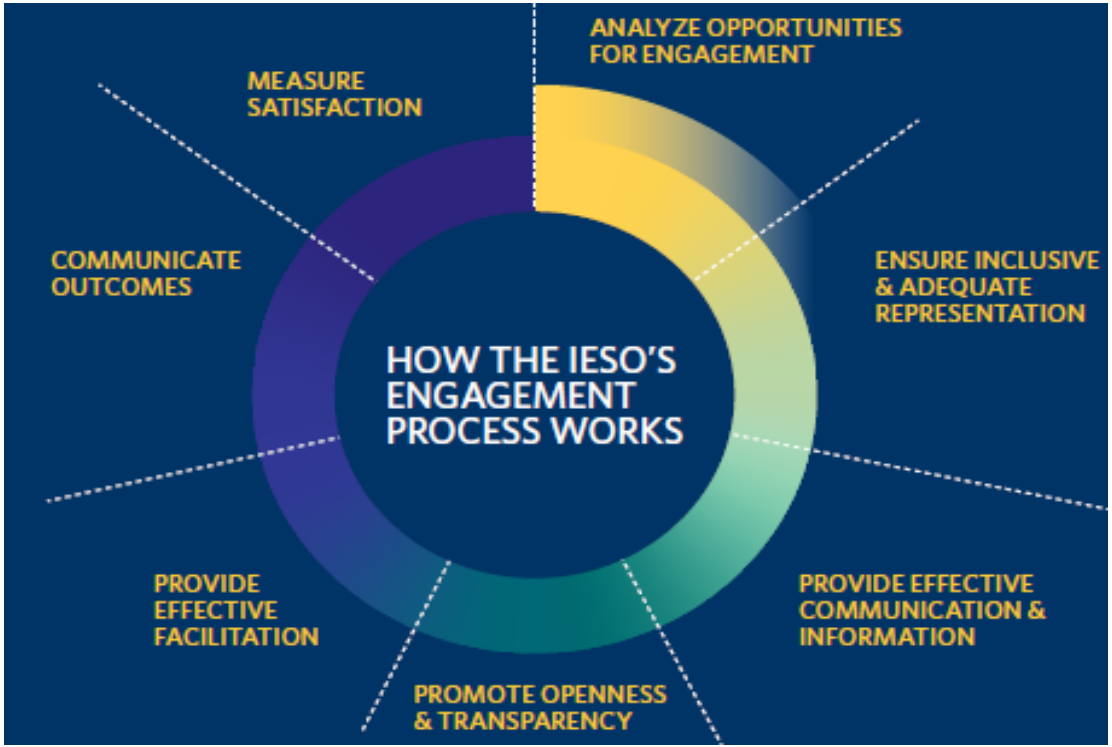
Energy efficiency and demand response programs to help meet future needs

# Today's Objectives

- Provide an overview of the Northeast bulk system planning process and how it fits into the overall context of electricity planning across Northern Ontario
- Provide an overview of and address questions on the scope of the Northeast Bulk Planning study, including underlying assumptions
- Outline next steps in electricity planning in the area

# Engagement in Electricity Planning

- Broaden opportunities for more inclusive engagement
- Increase communication channels to raise awareness
- Inform decision-making process for regional and bulk planning initiatives



# Who Should Participate?

- Large energy users
- Generators
- Municipalities
- Indigenous and Métis communities
- Energy service providers
- Chambers of Commerce/Boards of Trade
- Community groups and associations (e.g. community/resident associations, Business Improvement Areas, home builders associations, etc.)
- Academia and research organizations

# Overview of Electricity Planning

# Different Levels of Electricity Planning in Ontario

# Integrated Bulk System Planning Process Under Development

- An integrated bulk system planning process is currently being developed, with the goal of formalizing the process to enhance transparency and stakeholder input
- At a high-level the process design will include:
    1. The stages in the process from information gathering to the recommendation of actions, including timing
    2. The interaction with the IESO's resource acquisition mechanisms and with other planning processes (e.g. regional planning)
    3. How stakeholders can participate in the planning process, and will be kept informed
- The Northeast Bulk Study will seek to encompass those principles, in advance of this formalized process

# Background of Northern Ontario System

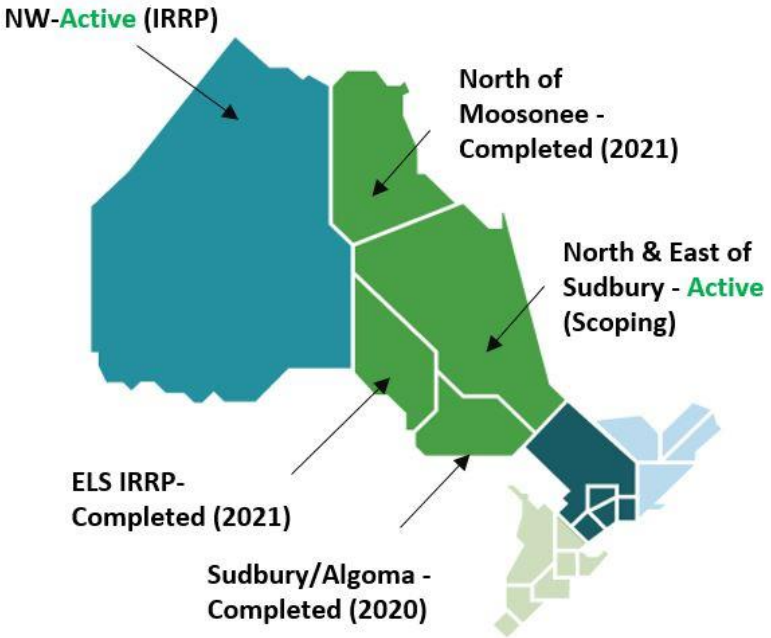
# Landscape of Electricity in Northern Ontario


- The Northern Ontario transmission system consists of 500 kV circuits that generally transfers power north and south, a 230 kV system that is generally connecting east and west, and an underlying 115 kV system that supplies local customers.
- Generation is mainly hydroelectric with a small portion of cogeneration, wind, solar, and biofuel.
- Industrial load is primarily in the mining, processing and forestry sectors.

# Northern Ontario Transmission Projects Underway


- Implementation of East-West Tie Reinforcement project
- Implementation of Wataynikaneyap Transmission project
- Development work of Waasigan Transmission Line

# Regional Planning Activities Across Northern Ontario




- Five regional planning areas (Northwest, East Lake Superior, North of Moosonee, North & East of Sudbury and Sudbury/Algoma)
- IRRP completed for East Lake Superior in April 2021
- Regional planning is actively underway for Northwest and North & East of Sudbury

For more information, please visit the IESO website

# Plan Development and Scenarios

# Planning Drivers in Northern Ontario

- The Federal Government is providing substantial support for decarbonization initiatives that would promote intensification of electricity use (e.g., electric arc furnaces) and result in potentially large industrial demand increase
- Ontario's Critical Mineral Strategy and economic development activities would enhance investment in mineral exploration and development and drive demand
- Potential developers are proposing solutions to help meet the growing electricity needs in the region (e.g., storage facilities)

# Focus Area for Northern Ontario Planning

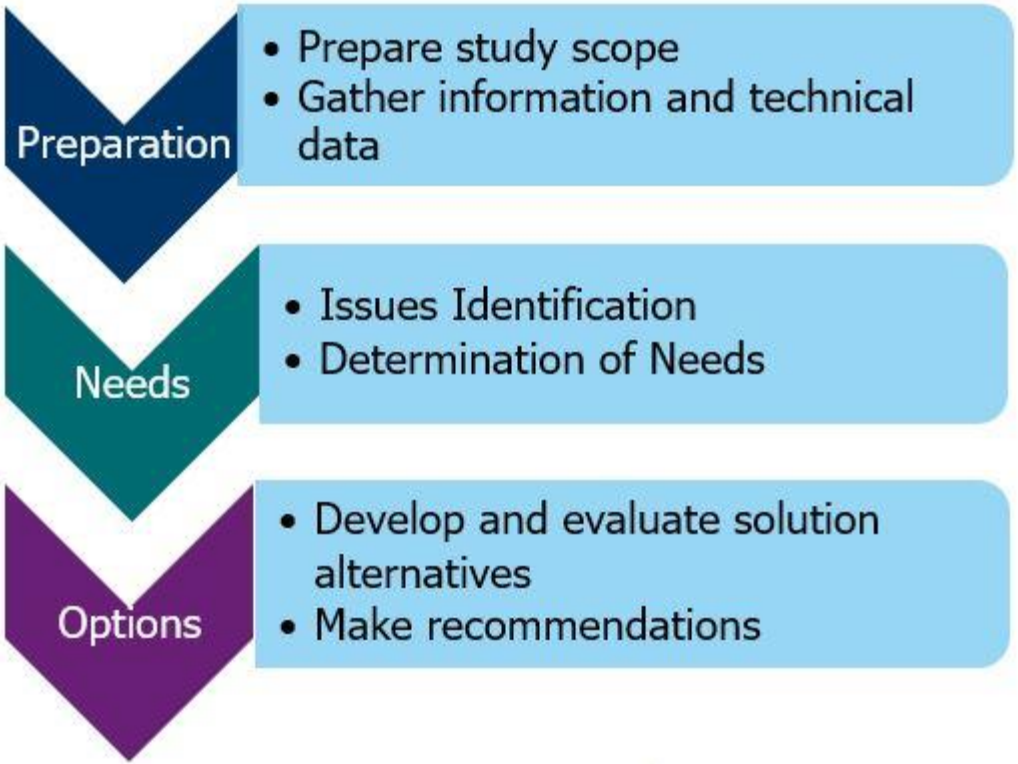

- The focus of this study is to determine if the transmission infrastructure located west of Sudbury to Wawa is sufficient to supply load growth west of Sudbury including the Northwest region
- Additionally, the study will identify needs to securely supply load growth within entire Northern Ontario and opportunities to improve the transmission system's capability to deliver excess capacity to the rest of the province

# Northeast Bulk System Plan Development

**Components of the Plan Development:**

- Data Gathering
- Issues Identification
- Determination of Needs
- Option Development and Evaluation

Opportunities for engagement will be determined as required



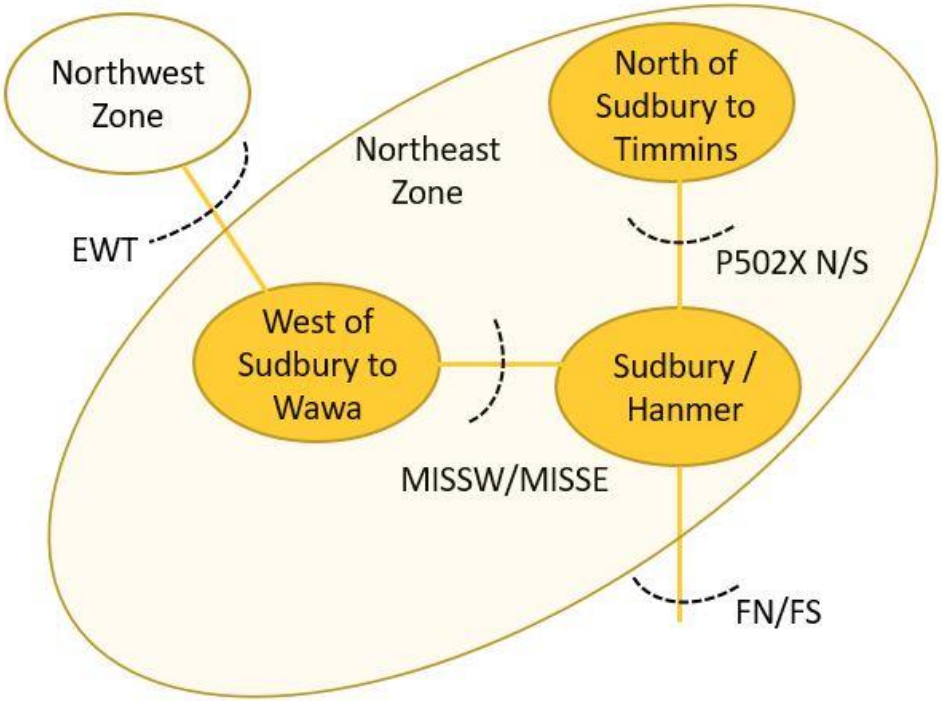
# Demand Forecast Scenarios

- **Base Scenario**: demand forecast and supply outlook to align with the IESO 2020 Annual Planning Outlook (APO)
- **Potential Growth Scenario:** to consider additional industrial developments that are forecasted (e.g., expected growth in metal and mining sub-sector)
- **High Growth Scenario**: to consider incremental developments that could materialize in the region to capture sensitivities

# Considerations for Scenarios

- The Potential and High Growth Scenarios are informed by the IESO mining forecast
- Individual project forecasts will not be published since they may be commercially sensitive and/or confidential information
- While the technical assessment will be performed for all demand scenarios, considerations will be given to balance the need to enable growth and the risk of overbuilding infrastructure

# Bulk Transmission Interfaces in Northern Ontario



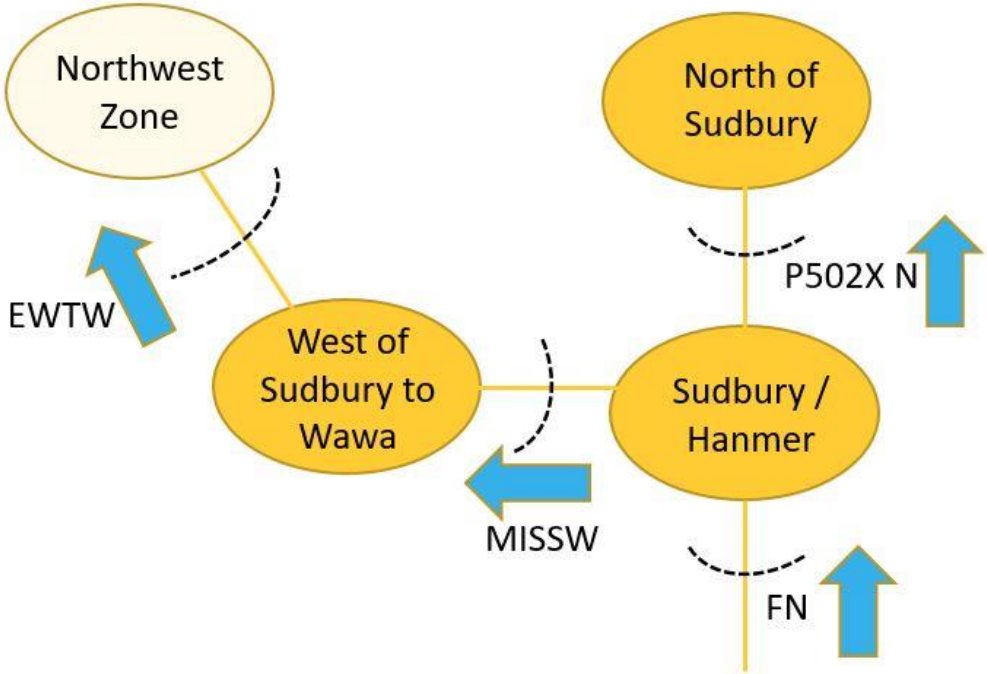

- Bulk Transmission Interface is defined as any circuit or group of transmission circuits interconnecting two subsystems

| Interface | Interconnected subsystems |
|---|---|
| Flow North / South (FN/FS) | Northeast and Essa Zone |
| East-West Tie (EWT) | Northeast and Northwest Zone |
| Mississagi West / East (MISSW/MISSE) | Sudbury and west to Wawa subsystem |
| P502X North/South | Sudbury and north to Timmins subsystem |

# Technical Assessment

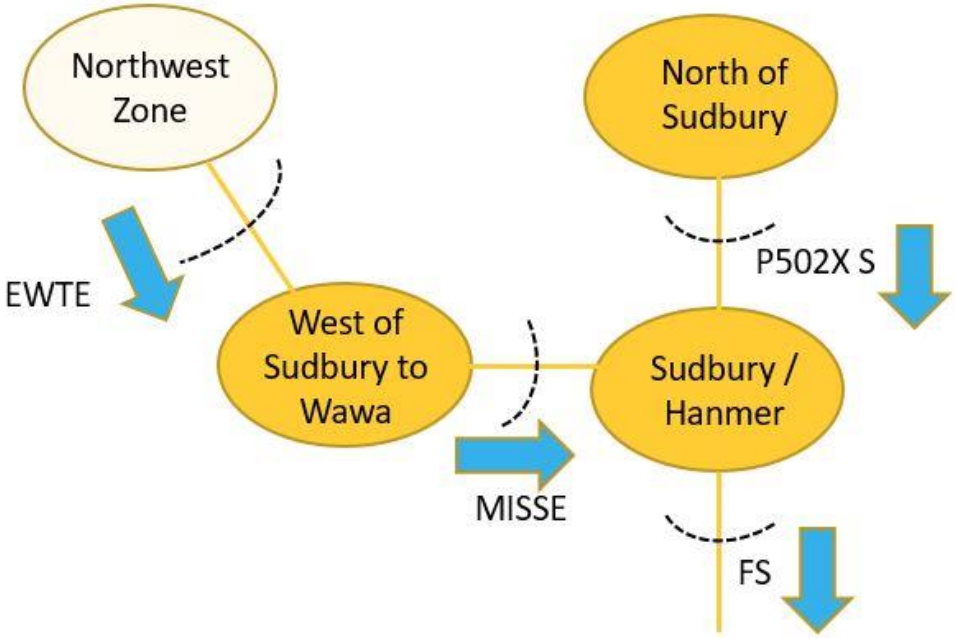
- Two types of analysis will be performed to assess the ability of the transmission system to securely meet power transfer requirements for the respective system demand and supply outlooks
  - **Transmission Security Analysis**: to assess the ability of the transmission system to securely supply forecasted demand
  - **System Deliverability Analysis**: to assess the ability of the transmission system to deliver supply resources

# Transmission Security Analysis



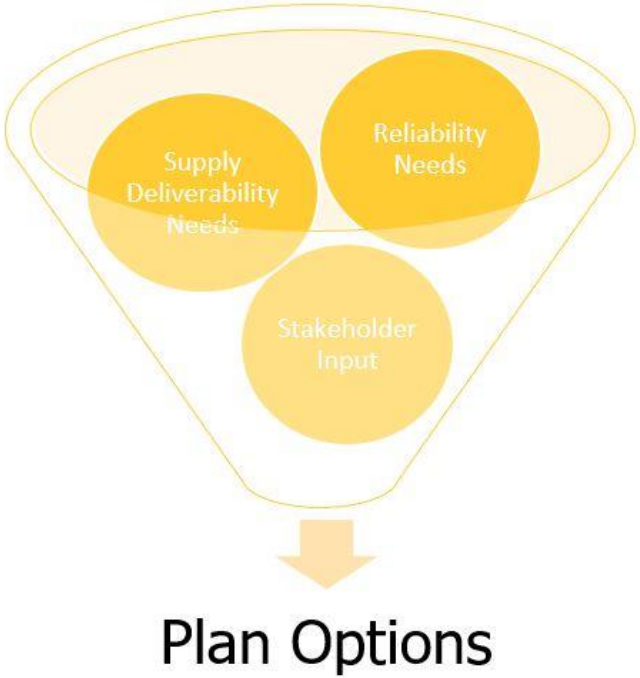

- This set is to assess the condition with winter peak demand and low hydro generation in the Northeast and Northwest Zone
- In this condition, the transfer flows are in the direction of North and West
- Needs related to the ability to supply forecasted demand reliably will be based on the Transmission Security Analysis scenario set

# System Deliverability Analysis




- This set is to assess the condition with summer peak demand of Ontario and high hydro generation in the Northeast and Northwest Zone
- In this condition, the transfer flows are in the direction of South and East
- Needs related to the ability to deliver supply resources from Northern Ontario to the rest of the province will be established from the System Deliverability Analysis scenario set

# Plan Option Development




- The outcome of technical analysis and stakeholder input will be integrated to develop options to address identified needs
- Opportunities for engagement will be available at the option development stage of this planning

# Engagement and Next Steps

# Considerations for Engagement

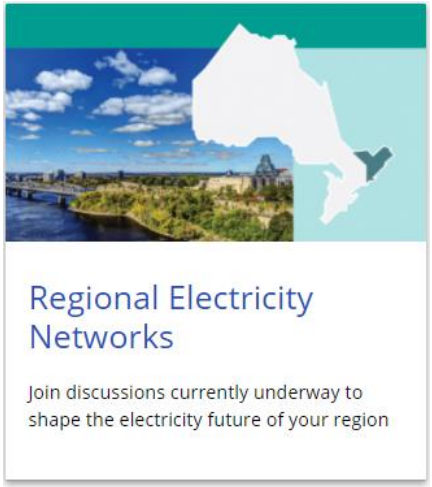
- What additional information should be considered in the study assumptions to determine needs?
- What feedback is there to the potential solutions? What factors should be considered in evaluating options?
- What other potential options should be examined?
- What information should be considered in finalizing the recommendations?

# Next Steps of Engagement for Northeast Bulk Study

- The IESO will engage with stakeholders and communities in two phases throughout the development of a Northeast bulk system plan
  - Phase I: Webinar on July 27 to provide an overview of the bulk planning process, the scope of the study underway and to answer any questions to inform the next phase of engagement
  - Phase II (early 2022): Present the preliminary results of the study and seek feedback from communities and stakeholders on any recommendations that emerge as a result
- The final Northeast bulk study is targeted to be posted in Q2 2022

# Staying Connected

- Dedicated webpages:
  - Northeast bulk planning webpage
  - Northwest bulk planning webpage
- Regional Electricity Networks:
  - Northeast Network
  - Northwest Network



# Thank You

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