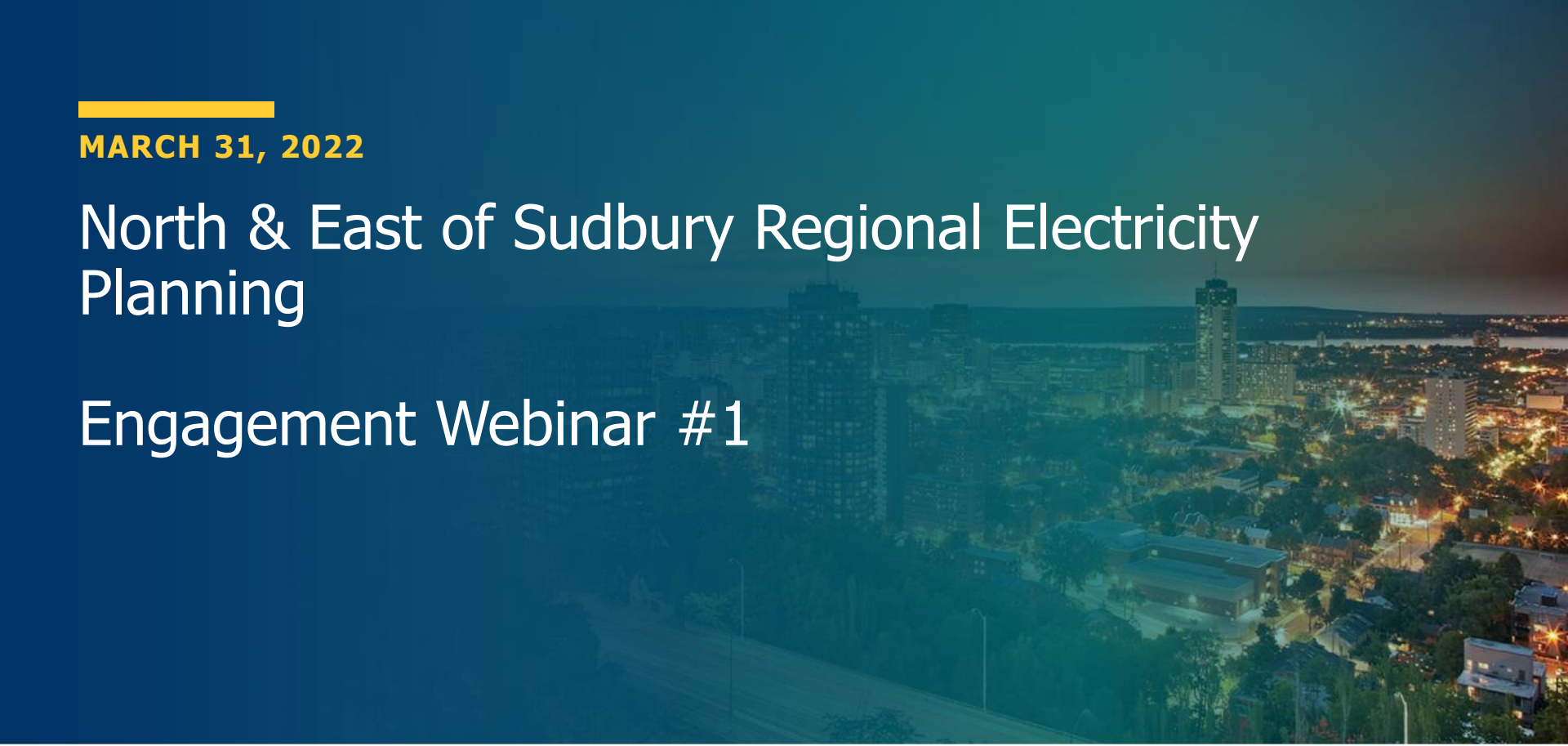

MARCH 31, 2022

North & East of Sudbury Regional Electricity Planning

Engagement Webinar #1

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Connecting Today. Powering Tomorrow.

Objectives of Today's Engagement Webinar

- To provide an update on the electricity planning underway in the North & East of Sudbury region
- To seek feedback on the demand forecast and planned engagement activities for the development of an electricity plan – Integrated Regional Resource Plan (IRRP) – for the North & East of Sudbury region
- To outline next steps

Agenda

1. North & East of Sudbury Regional Electricity Planning Status Update
2. Draft Electricity Demand Forecast
3. Community Engagement and Next Steps

Seeking Input

- What key developments, projects or initiatives should be considered in the North & East of Sudbury electricity demand forecast? What other information should be taken into account that would influence the forecast?
- What areas of concern or interest about electricity should be considered as part of the planning process?
- What information is important to provide throughout the engagement?
- Does the proposed Engagement Plan provide sufficient scope and opportunities for input? What other engagement activities or methods should be considered?

Please submit your written comments by email to engagement@ieso.ca by April 21

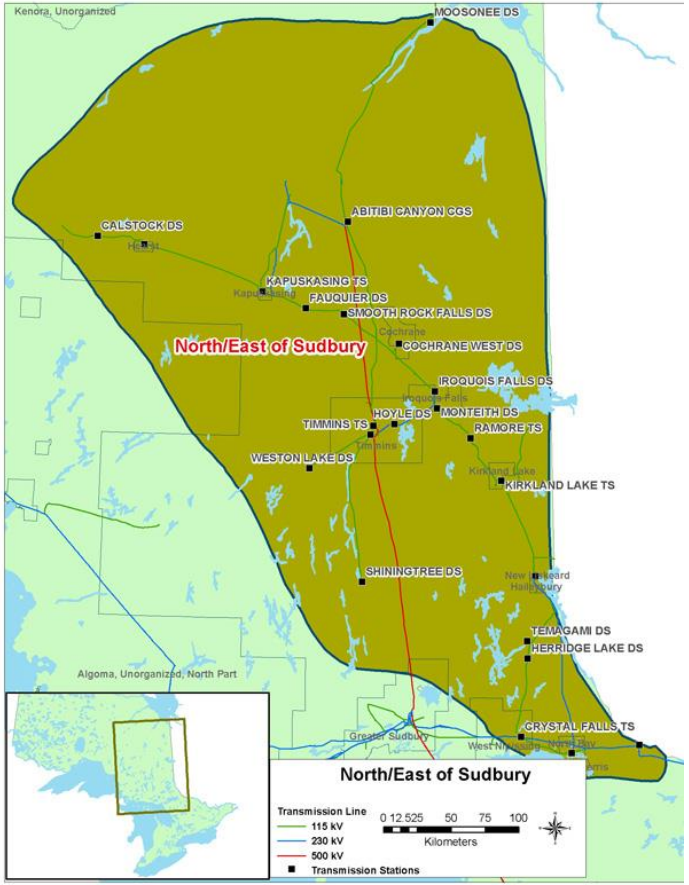
North & East of Sudbury Regional Electricity Planning Status Update

Different Levels of Planning in Ontario

Recap: Regional Planning Process Steps

North & East of Sudbury Region

- Encompasses the Town of Moosonee, Town of Hearst, Municipality of East Ferris, Town of Kirkland Lake, Town of Kaspuskasing, Town of Cochrane, Town of Iroquois Falls, City of Timmins, City of Temiskaming Shores, City of Greater Sudbury, Municipality of West Nipissing, and City of North Bay
- The region also includes several First Nation and Métis communities



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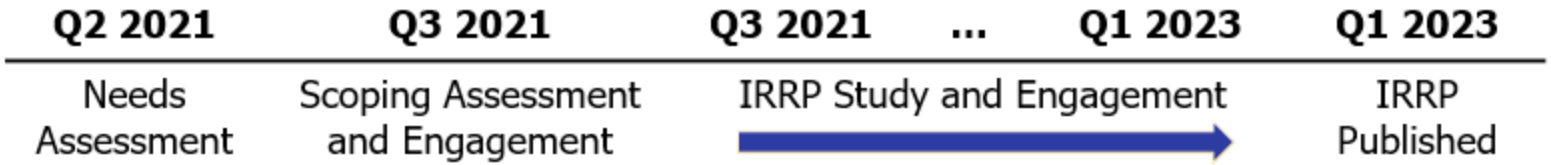
IRRP Working Group

Team Lead, System Operator	• Independent Electricity System Operator ("IESO")
Lead Transmitter	• Hydro One Networks Inc. ("Hydro One Transmission")
Local Distribution Companies	• Greater Sudbury Hydro Inc. • Hearst Power Distribution • North Bay Hydro • Northern Ontario Wires • Hydro One Networks Inc. ("Hydro One Distribution")

Current Status – North & East of Sudbury IRRP

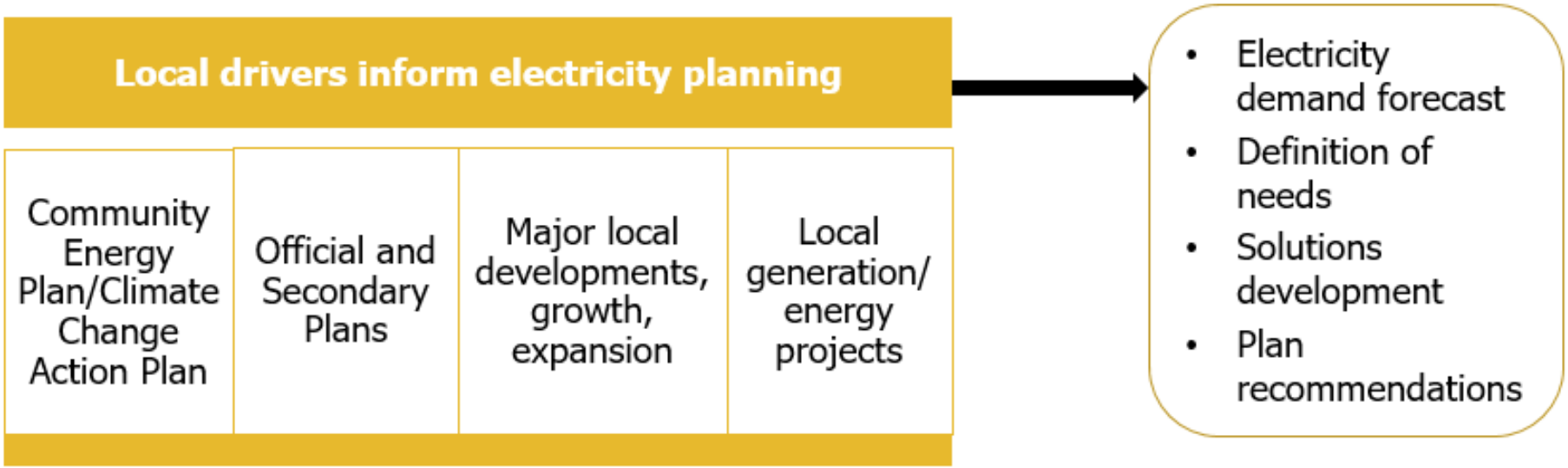
- IRRP development work began in late Q3 2021, and is on track for completion in Q1 2023
- Preliminary electricity demand forecast and draft Engagement Plan have been developed for public input
- Plan timeline:



Activities to Date

- Engagement launched on North & East of Sudbury Scoping Assessment – June 24, 2021
- Draft North & East of Sudbury Scoping Assessment Outcome Report posted for public comment – July 12, 2021
- Public webinar on North & East of Sudbury electricity planning – July 19, 2021
- Final Scoping Assessment posted with responses to feedback– August 12, 2022
- Local outreach to help inform electricity demand forecast and engagement plans – March/April 2022

Coordination with Local Planning Activities



What we've heard so far…

- Reliability is important to communities in this region, and in Northeast Ontario more broadly.
- Enablement of economic growth and development is a key priority, and lack of electricity capacity is seen as a significant barrier.
- Engagement with local First Nations communities, customers and stakeholders is important to understand planned growth (e.g. new hospital complex in the Town of Moosonee) and opportunities to participate in developing solutions to meet emerging needs.
- Technical feedback related to specific transformer stations and circuits in the region as well as potential transmission reinforcements to meet emerging needs.

Preliminary North & East of Sudbury Regional Electricity Demand Forecast

Electricity Demand Forecast

- The IRRP uses a 20-year forecast with three components:

Distribution-connected

Based on local distribution company forecasts

Transmission-connected

Informed by outreach to existing customers directly connected to the IESO-controlled Grid (ICG)

Future New Mining Projects

Informed by data from government, industry publications, and engagement with individual proponents

*The future mining forecast covers upcoming projects that have yet to connect to the grid. Expansion/retirement of existing customers are reflected in the distribution- and transmission- connected forecasts.

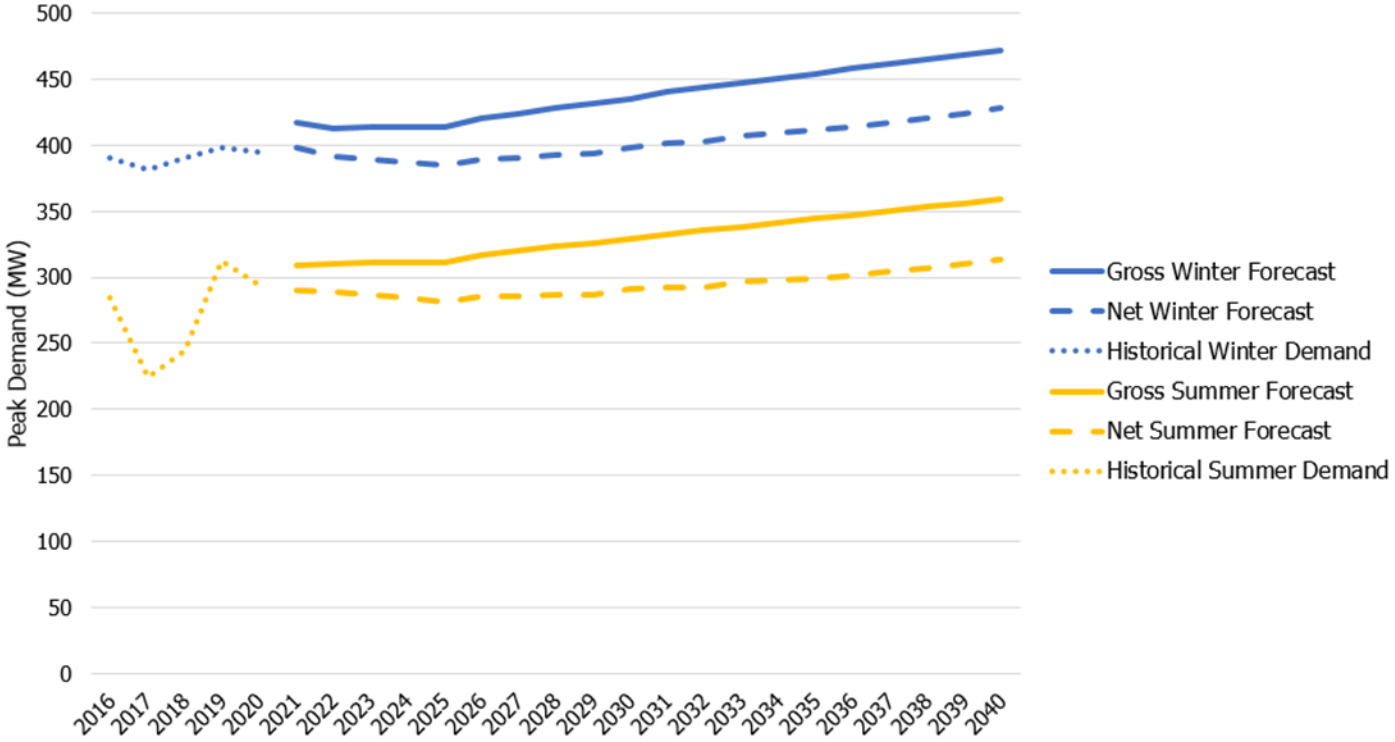
Distribution-connected Forecast: LDC Role

- The regional planning process relies on local distribution companies (LDCs) to provide an electricity demand forecast for their service territory
- LDCs play a crucial role translating municipal official plans, community energy plans, development proposals, and other data sources into annual peak demand forecasts for their service territory
- These forecasts are then aggregated and adjusted to account for extreme weather, distributed generation (DG), and conservation and demand management (CDM) programs

Developing the Demand Forecast

- The region's needs are assessed based on a 20-year forecast of peak electricity demand that is net of existing and committed CDM and DG
- The peak demand forecast is created by:
  - Collecting gross demand forecast information from each LDC and transmission customer in the region assuming median weather conditions
  - Estimating the impact of province-wide conservation and demand management (CDM) targets on the region's peak demand
  - Calculating the forecast peak demand contribution of contracted distributed generation (DG)
  - Adjusting the forecast to account for extreme weather conditions

LDC Forecast – Extreme Weather Net of CDM & DG



Developing the Mining Forecast

What is included?

- Information on mining exploration/projects collected from a variety of industry publications, utility companies, and government

How do we account for uncertainty in future projects?

- Each project is assigned a "likelihood" factor that represents the probability of their electricity demand materializing and enables the creation of scenarios that represent different potential future outcomes
- These factors are informed by the reliability of data sources, project timing, permitting, among others
- The IESO seeks input from stakeholders (including various Ministries, customers, etc.) on the forecast and likelihood factors

Developing the Mining Forecast- Scenarios

Existing Mines & Expansions/Extensions*	• Conservative scenario only including existing mining projects and their extension/expansion/retirement plans

Reference Growth	• Reference scenario with the existing mines above plus:
	  • Full forecast demand from future projects classified as “most likely”
	  • Discounted forecast demand from future projects classified as “likely”
	• Aligned with provincial demand forecast in the Annual Planning Outlook

High Growth	• High scenario with the reference growth above plus discounted demand forecasts for all other known future mining projects with greater uncertainty (classified as “less likely” and ‘least likely”) • Aligned with provincial demand forecast in the Annual Planning Outlook

Transmission Connected Mining Forecast

Other Forecast Considerations

- Important considerations that influence the load forecast include:
  - Municipal/regional growth plans
  - Climate change action plans
  - Community energy plans
  - Business plans of major electricity consumers or large projects
- Some of these plans may have implications on the load forecast that are difficult to quantify (i.e., accelerated electrification)

North & East of Sudbury Preliminary Needs

Need*	Description	Location
System Capacity: Area Voltage Control	Reliability risk in the management of high voltage at Hunta TS, Porcupine TS, Pinard TS and Kapuskasing TS during outage conditions	Kapuskasing, Hunta, Timmins
System Capacity: Thermal Limits	System operations to reliably supply critical loads during 500kV circuit outage conditions	Throughout N&E of Sudbury
End-of-Life Asset Replacement	End-of-Life replacement strategy needed for circuits supplying the region	Ansonville, Iroquois Falls, Kirkland Lake

*See Appendix for additional details about the preliminary needs

Northeast Bulk Plan Webinar

- Electricity demand from the mining and mineral processing sectors in Northeast Ontario is forecasted to increase, driven by decarbonization policies
- The existing bulk transmission system is insufficient to supply forecasted growth
- Solutions recommended in the bulk plan will likely impact portions of the North & East of Sudbury region
- Webinar on the Northeast Bulk Plan options will take place on **April 26**. Registration for the webinar will open on March 31

Engagement and Next Steps

Engagement Plan – Draft Timeline

A draft engagement plan* for the region is now posted for comment on the engagement webpage:

Milestone	Timeline	Input
Electricity demand forecast, Engagement Plan	Mar 2022	What economic development, growth or project plans might influence the demand forecast? What additional information should be considered? What feedback is there to the proposed engagement plans?
Needs and potential options	Q2 2022	What additional information should be considered in the study assumptions? What community feedback is there to the potential solutions? What other options should be considered?
Options analysis and draft recommendations	Q3/Q4 2022	What feedback is there on the draft recommendations? What information should be considered in the recommendations?
Final IRRP	Q1 2023	

***Additional engagement activities may be undertaken as needs and potential solutions are studied**

Who should participate in the Engagement process?

- Municipalities
- Communities
- Chambers of Commerce/Boards of Trade
- Large energy users
- Community groups and associations
- Academia and research organizations
- Energy service providers
- Environmental and sustainability organizations
- General public

Next Steps

- Written feedback on draft electricity demand forecast and Engagement Plan due – April 21
- Final engagement plan and responses to written feedback posted – May 9
- Ongoing engagement throughout the development of the IRRP

Your Feedback is Important

- What key developments, projects or initiatives should be considered in the North & East of Sudbury electricity demand forecast? What other information should be taken into account that would influence the forecast?
- What areas of concern or interest about electricity should be considered as part of the planning process?
- What information is important to provide throughout the engagement?
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Keeping in Touch

- Subscribe to receive updates on regional initiatives on the IESO website – http://www.ieso.ca/subscribe > select North & East of Sudbury region
- Follow the North & East of Sudbury regional planning activities online – https://www.ieso.ca/en/Get-Involved/Regional-Planning/Northeast-Ontario/North-East-Sudbury
- Dedicated engagement webpage – https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Regional-Electricity-Planning-North-East-of-Sudbury
- 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 Northeast Network

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

Appendix

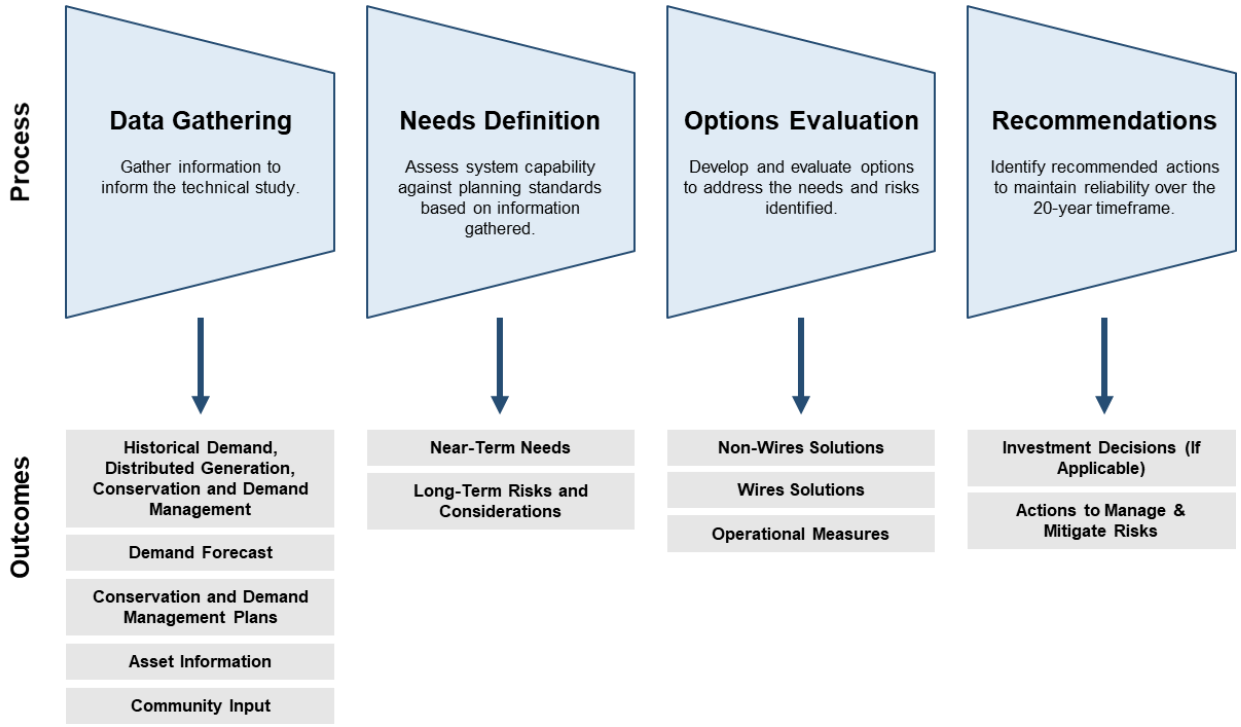
Previous Regional Planning Cycle: North & East of Sudbury

The previous planning cycle was completed in 2017 following the assessment of needs by the local transmitter (Hydro One) for this region and found that there were no needs that required regional coordination

- Needs Assessment was completed in April 2016
- Local Planning report was completed in August 2016

Local Plan and Needs Assessment report formed the RIP for the region

How do we carry out an IRRP?



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

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

End-of-Life 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

System Capacity: Area Voltage Control

Reliability risk in the management of high voltage at Hunta TS, Porcupine TS, Pinard TS and Kapuskasing TS during outage conditions

- Post contingency voltage control in the Ansonville, Hunta area for loss Ansonville T2 and Canyon GS units
- Existing practices to control voltages on 500/ 230 kV buses at Hanmer/Porcupine/Pinard during shunt reactor and SVC outages
- Porcupine TS 115 kV is currently being operated continuously at voltages up to 135 kV; the maximum is 127 kV as per ORTAC criteria

System Capacity: Thermal Limits

System operations to reliably supply critical loads during 500kV circuit outage conditions

- Potential interest from new transmission connected customers (particularly in the mining sector) in the Kirkland Lake / Dymond and Timmins / Porcupine areas could increase load in area and stress thermal capabilities of circuits
- Difficulties in maintaining thermal limits during outages to 500 kV circuits P502X and D501P

End-of-Life Asset Replacement

End-of-Life replacement strategy for the following circuits

- 115 kV D2H/D3H circuit section Pinard TS by Hunta SS refurbishment
  - New conductor will be larger than existing conductor
  - Need to see if upgrade beyond a base refurbishment plan is required
- 115 kV A4H/A5H circuit section Tunis JCT x Fournier JCT refurbishment
  - No intention of ampacity increase
  - Need to see if upgrade beyond a base refurbishment plan is required