



SEPTEMBER 27, 2021

Northwest 2021 Integrated Regional Resource Plan (IRRP)

Engagement Webinar #2

Objectives of Today's Webinar

- To provide an update and seek feedback on:
 - The updated engagement plan
 - The electricity demand forecast including mining growth scenarios
 - Preliminary study results and areas of interest for further investigation
- To outline next steps

Seeking Input

As you listen today, please consider the following items to help guide your feedback after today's webinar:

- What additional information or considerations should be reflected in the forecast scenarios?
- What other local reliability concerns in addition to those presented today should be further investigated?
- Are the proposed activities in the Engagement Plan sufficient and suitable?

**Please submit your written comments by October 18
using the feedback form by email to engagement@ieso.ca**

Summary of IRRP Progress to Date

- Mining growth forecast scenarios have been compiled
- Technical study work continues; we will discuss preliminary results and high level areas of interest today
- Engagement plan updated to reflect stakeholder feedback from Webinar #1

Q3 2020	Q4 2020	Q1 2021	...	Q2 2022	Q3 2022
Needs Assessment	Scoping Assessment and Engagement	IRRP Study and Engagement		IRRP Published	



Engagement Plan

What we have heard so far

- Thank you for your feedback following Webinar #1 on May 20th
 - Stakeholders expressed interest for sub-regional targeted discussions, provided feedback on the electricity demand forecast, raised local customer reliability concerns, and asked questions on broader bulk system reliability and future supply
- A summary of feedback received and responses is posted on the [Northwest regional planning engagement webpage](#)

Updated Engagement Plan

- In response to stakeholder feedback, the Engagement Plan was updated to include targeted group discussions on the following topics:
 - Local customer reliability concerns
 - Emerging local initiatives in the Northwest region and their impact on planning electricity needs – i.e. electrification, community energy planning, local solutions, etc.
 - Reliability in the North of Dryden area

Targeted Discussion: Customer Reliability Concerns

- Thus far, the Working Group is aware of a number of local customer reliability concerns raised by stakeholders such as those impacting the traditional territory of Treaty #3, Greenstone area, and Fort Frances area
- The Working Group will investigate the cause of these concerns and have further discussions with impacted stakeholders in the targeted engagement group

Targeted Discussion: Emerging Local Initiatives

- This discussion group will provide a forum to discuss and share experiences on local initiatives such as community/municipal energy plans and climate change action plans, their impact on electricity system needs, and how the IRRP can best align with these plans
- This discussion may also cover emerging trends such as electrification and distributed energy resources as they pertain to electricity system planning

Targeted Discussion: North of Dryden Area

- The North of Dryden area (including Dryden and Pickle Lake subsystems discussed later in this webinar) is very active with significant topology changes and new mining developments since the last cycle of regional planning
- This discussion will focus on growth and emerging reliability needs in these areas

Targeted Discussion Group Dates

- November: Discussion Groups
 1. November 2: 1 to 2:30 pm - Customer reliability concerns
 2. November 18: 10 to 11:30 am – Emerging local initiatives
 3. November 29: 2 to 3:30 pm – Reliability in North of Dryden area



Electricity Demand Forecast

Demand Forecast Topics

- Recap the components of the IRRP forecast and where we left off in Webinar #1
- Main focus for today will be the mining growth forecast scenarios created with your input from Webinar #1

Recap: IRRP Forecast Components

- 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 Mining Projects*

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

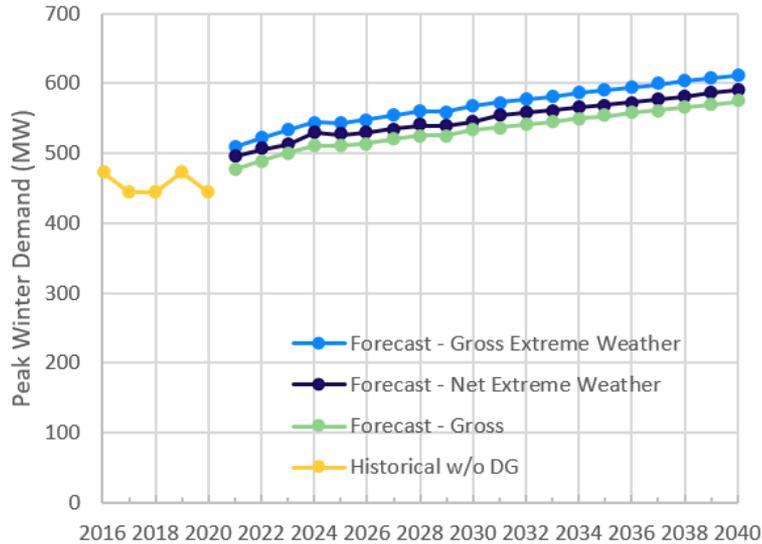
*Existing mining projects are reflected in the distribution- and transmission-connected forecasts.

Where we left off

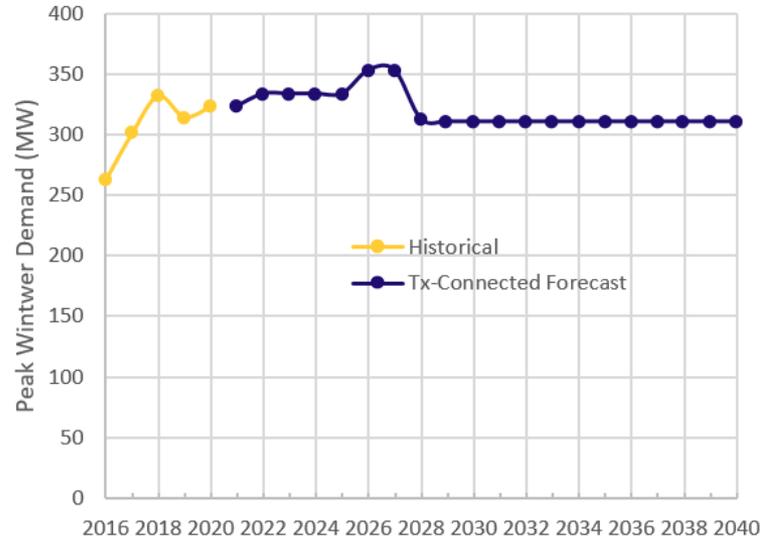
- Webinar #1 explained the methodology used to create each forecast component and how they will be used to inform reliability needs
- The transmission- and distribution-connected forecasts were presented at Webinar #1 and remain unchanged (shown on next slide)
- A list of mining projects was shared as an appendix in Webinar #1 for stakeholder feedback and the IESO committed to presenting mining growth scenarios at the next webinar (today)

Transmission- and Distribution-connected Forecasts

Distribution-connected Forecast



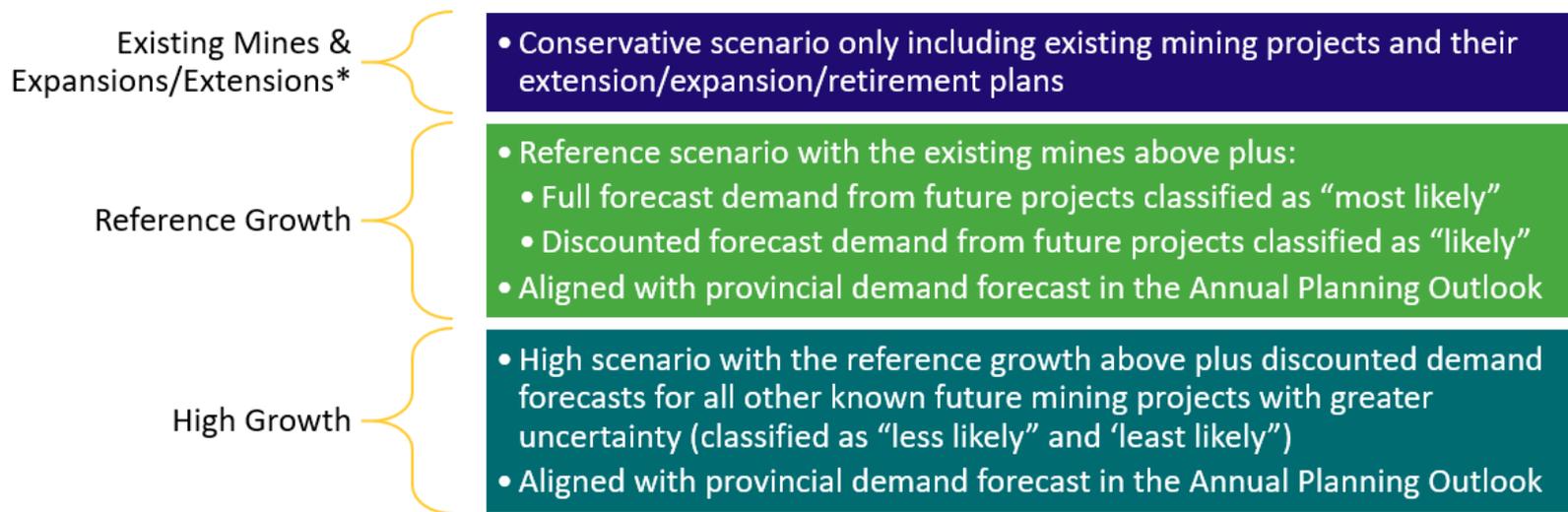
Transmission-connected Forecast



Mining Projects Forecast

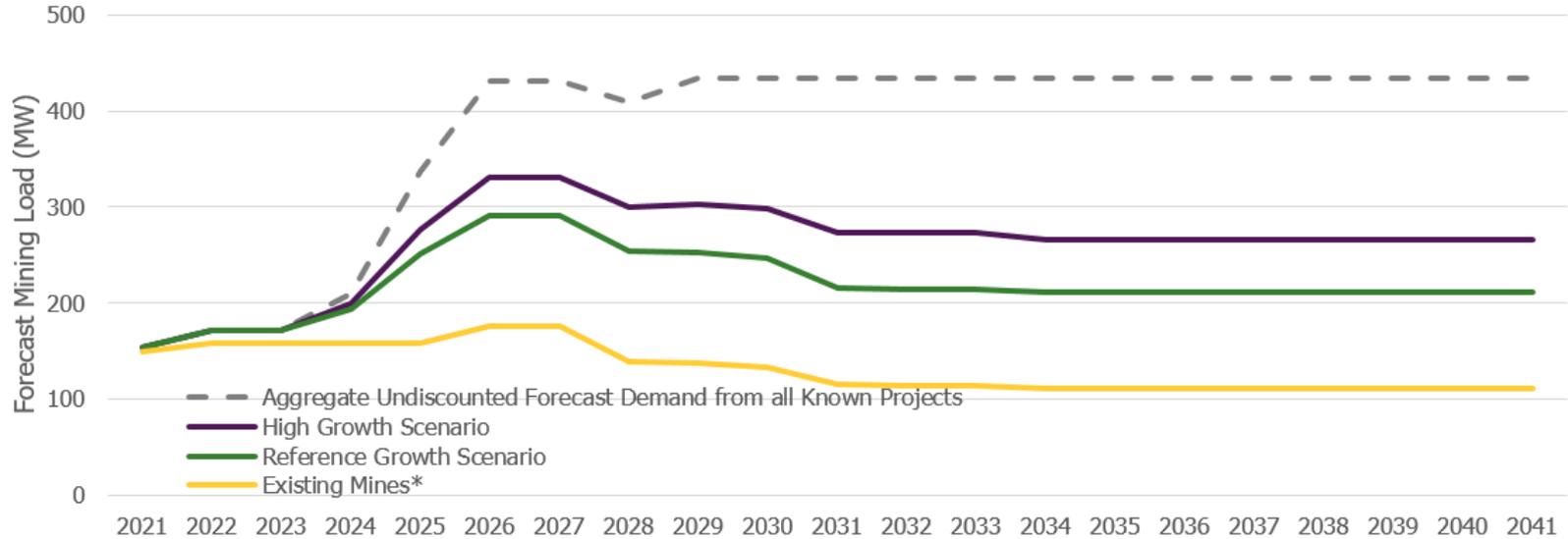
- Future mining projects connecting to the grid are expected to make up a significant portion of overall electricity demand growth in the region
- Based on your feedback from Webinar #1 as well as information from a variety of industry publications, utility companies, and government, three forecast scenarios were created to capture a range of possible growth over the forecast horizon
- These scenarios are based on individual mining project demand forecasts and the “likelihood” factor assigned to each project

Mining Projects Forecast - Scenarios



*This scenario overlaps with the distribution- and transmission-connected forecasts shown on slide 16.

Mining Projects Forecast Scenarios



*This scenario overlaps with the distribution- and transmission-connected forecasts shown on slide 16.

Mining Projects Forecast: FAQs (1/2)

What factors were considered to assess the likelihood of projects materializing?

- Considerations include:
 - Reliability of data sources
 - Development stage
 - Project timing
 - Permitting and other regulatory information

Why does the IRRP not use the aggregate undiscounted forecast demand from all projects as the high scenario?

- The list of all known projects includes those that are in early stages of exploration/development
- The high scenario is intended to reflect an optimistic growth outlook balanced with high development, financing, and commodity pricing risks

Mining Projects Forecast: FAQs (2/2)

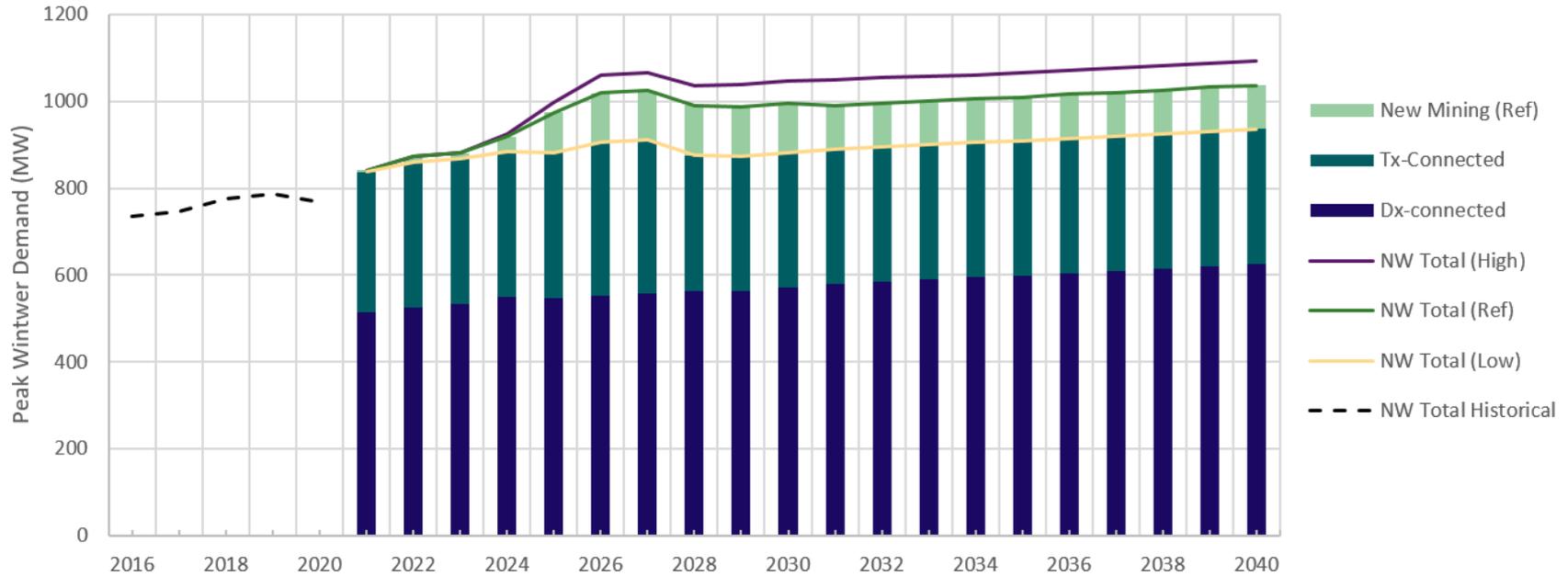
Why does the forecast decline after 2027?

- Most projects with known load forecasts plan to come in service by 2027
- After 2027, the initial demand from these projects begin to taper off as mines reach the end of their planned operating life
- The forecast scenarios do account for project extensions beyond their initial operating life but the greater uncertainty results in lower probability factors

How will these scenarios be used?

- The existing mines scenario will inform local reliability needs that must be addressed even if no new mines materialize
- The reference scenario informs needs that will likely arise and plans to address those needs if/when mines materialize
- The high scenario explores possible additional needs to help test the robustness of the plan

Total Northwest Demand Forecast



Additional Considerations: High Sensitivity

- In addition to the transmission/distribution forecast and mining scenarios discussed so far, the Working Group is also monitoring indications of higher growth that are uncertain/speculative at this time
- Examples include higher distribution system growth in the Thunder Bay and Kenora areas due to electric vehicle adoption and industrial growth inquiries in the Fort Frances area
- These indicators will be used as a high sensitivity to further test the robustness of the plan



Northwest Transmission System Geographic Overview

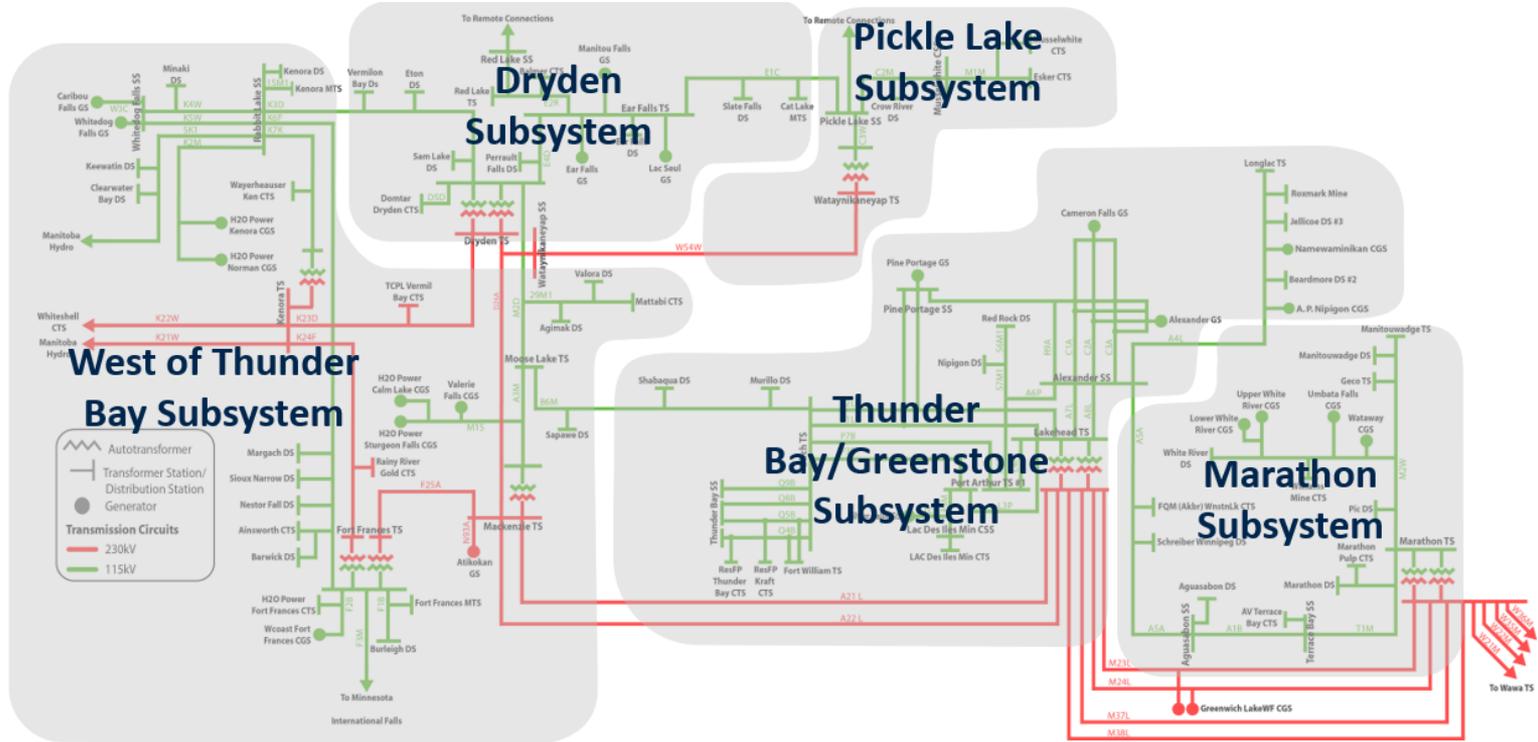
Feedback from Webinar #1

- Participants in Webinar #1 indicated that a general geographic overview of the Northwest transmission system would be helpful to better contextualize the information presented
- The following slides provides a high level overview to better visualize how the Northwest system is configured and where major load centres are located

Single Line Diagram: Notes

- The Northwest system is comprised of a 230 kV bulk transmission network and several interconnected 115 kV pockets supplying load and connecting local generation
- The single line diagram is a simplified representation of the electricity system and is roughly geographic but distances are not to scale
- The municipalities shown is not an exhaustive list; they are labeled only to provide geographic orientation

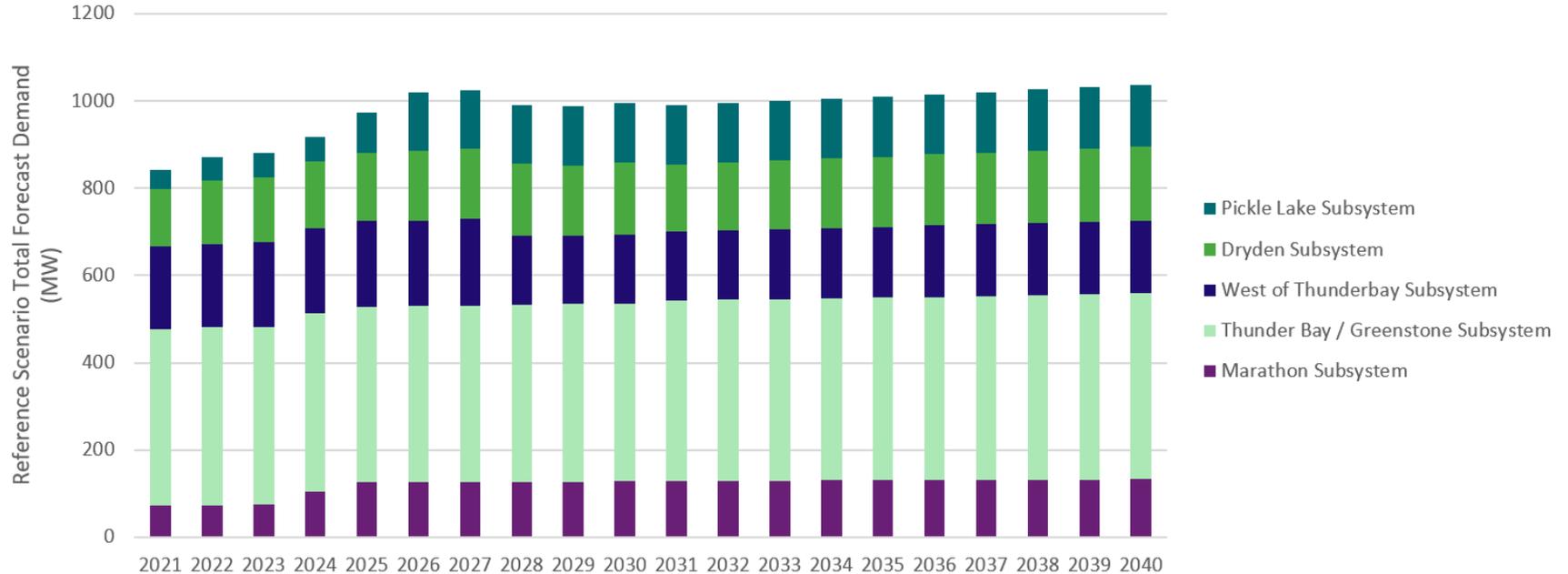
Subsystems



Subsystems: Notes

- Subsystems are a way of dividing up the network into roughly independent pockets to better communicate where demand growth is occurring and associated reliability needs
- Subsystems are subject to change as new information about forecast demand, system conditions, reliability needs, and system topology emerges
- The subsystems shown are named after geographic areas but they are electrically defined and do not follow geographic boundaries

Reference Forecast Scenario: Breakdown by Subsystem



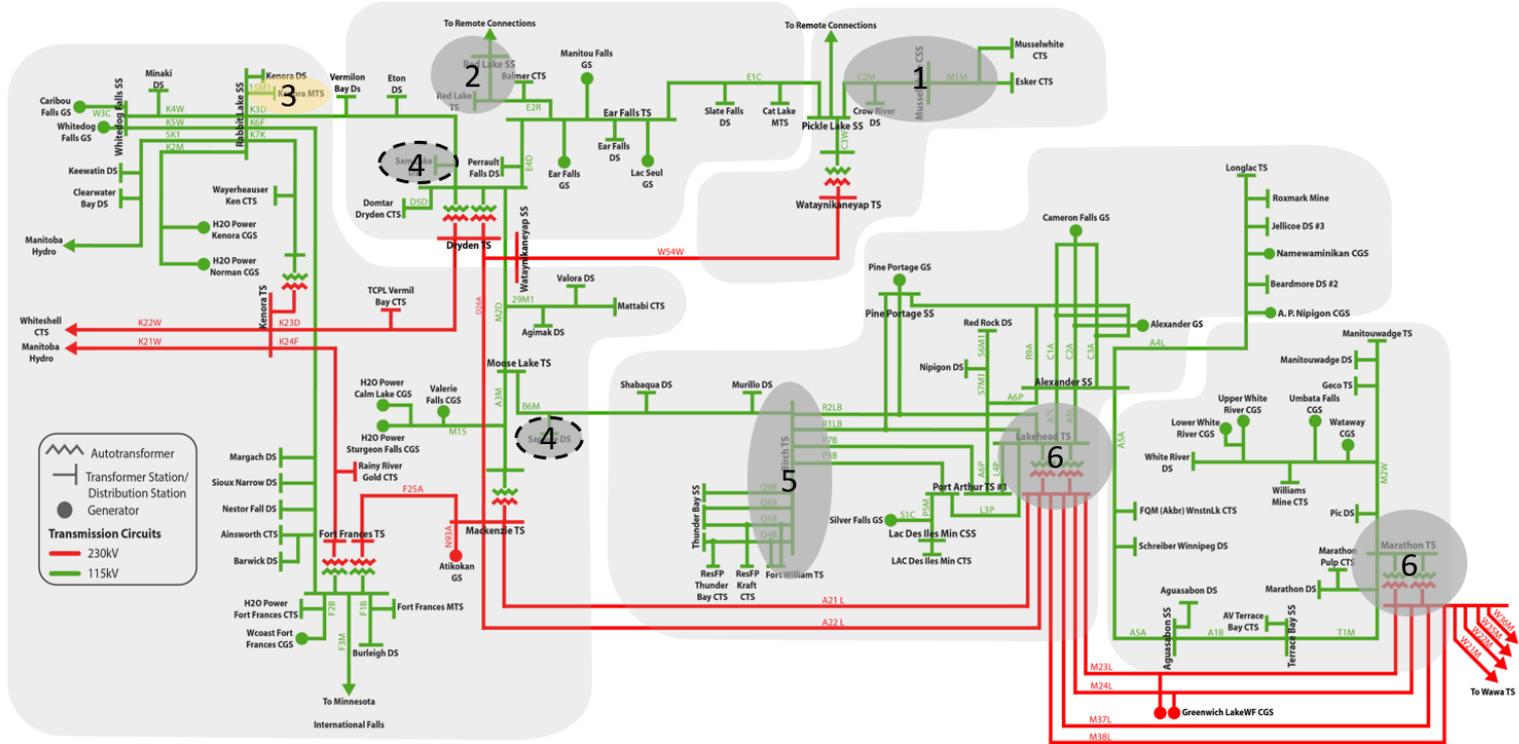


Technical Studies to Date & Areas of Interest

Technical Study Work to Date

- The demand forecast has changed since the 2020 Needs Assessment and new mining development information has been compiled
- Thus far, technical study work has centered around screening the region again both to verify needs documented in the Needs Assessment and to uncover any additional needs that may emerge due to the higher demand forecast
- The next few slides will go over some “areas of interest” uncovered so far that may have local reliability needs which will be further investigated in coming months

Areas of Interest



Preliminary Needs Identified

1. Pre-contingency thermal and voltage constraints east of Pickle Lake
2. Pre-contingency voltage constraints in the Red Lake area
3. Station capacity need at Kenora MTS
4. Station capacity needs at Sam Lake DS and Sapawe DS to be addressed through Local Planning
5. Post-contingency high voltage constraints in the Birch TS area
6. Post-contingency voltage collapse under outage conditions at Lakehead TS and Marathon TS

Upcoming Study Work

- Over the coming months, the Working Group will continue to study these areas of interest and refine the:
 - Limiting phenomenon
 - Need dates
 - Potential options



Next Steps

Upcoming Events

- October 18: Provide feedback on today's webinar
- November: Discussion Groups
 1. November 2: 1 to 2:30 pm - Customer reliability concerns
 2. November 18: 10 to 11:30 am – Emerging local initiatives
 3. November 29: 2 to 3:30 pm – Reliability in North of Dryden area
- Q1 2022: Engagement webinar to seek input on options to be considered to meet future needs

Feedback on...

- What additional information or considerations should be reflected in the forecast scenarios?
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Keeping in Touch

- **Subscribe** to receive updates for Northwest regional planning on the IESO website – www.ieso.ca/subscribe; select 'Northwest'
- **Follow** the Northwest regional planning activities on the dedicated [engagement webpage](#)
- **Join** the Northwest Regional Electricity Network on [IESO Connects](#) - 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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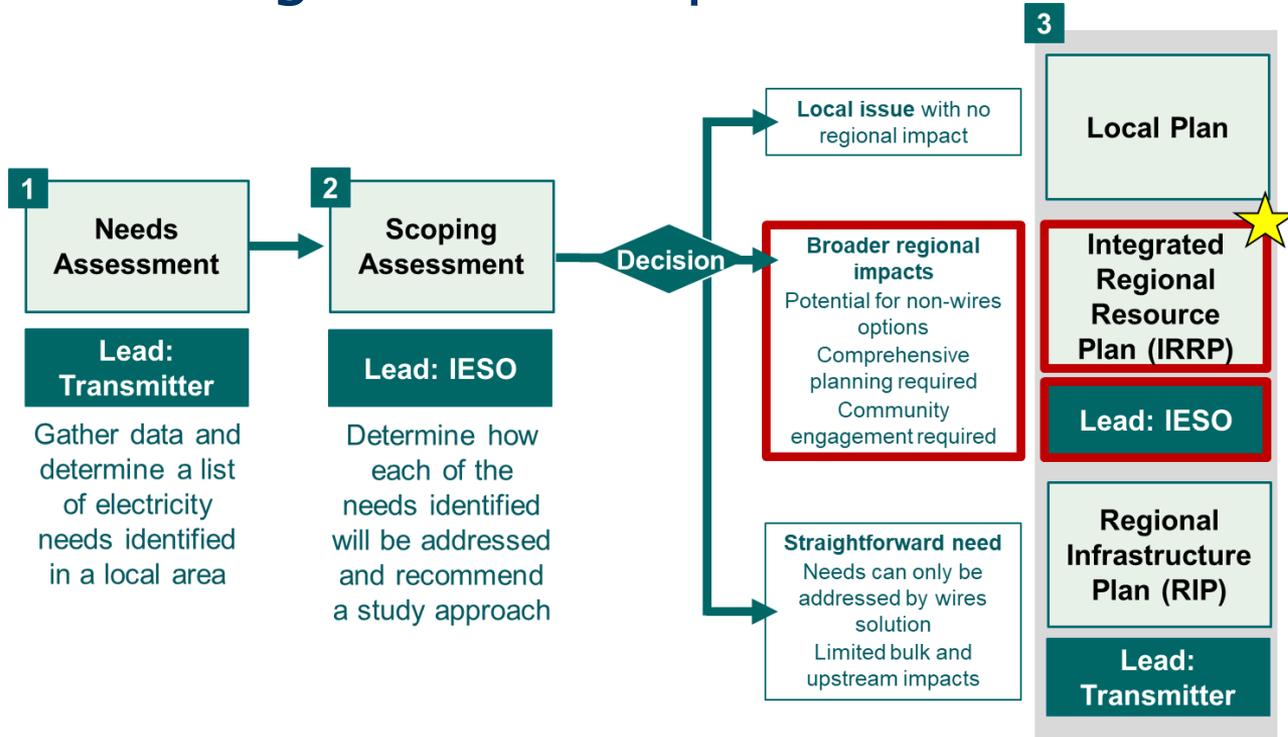


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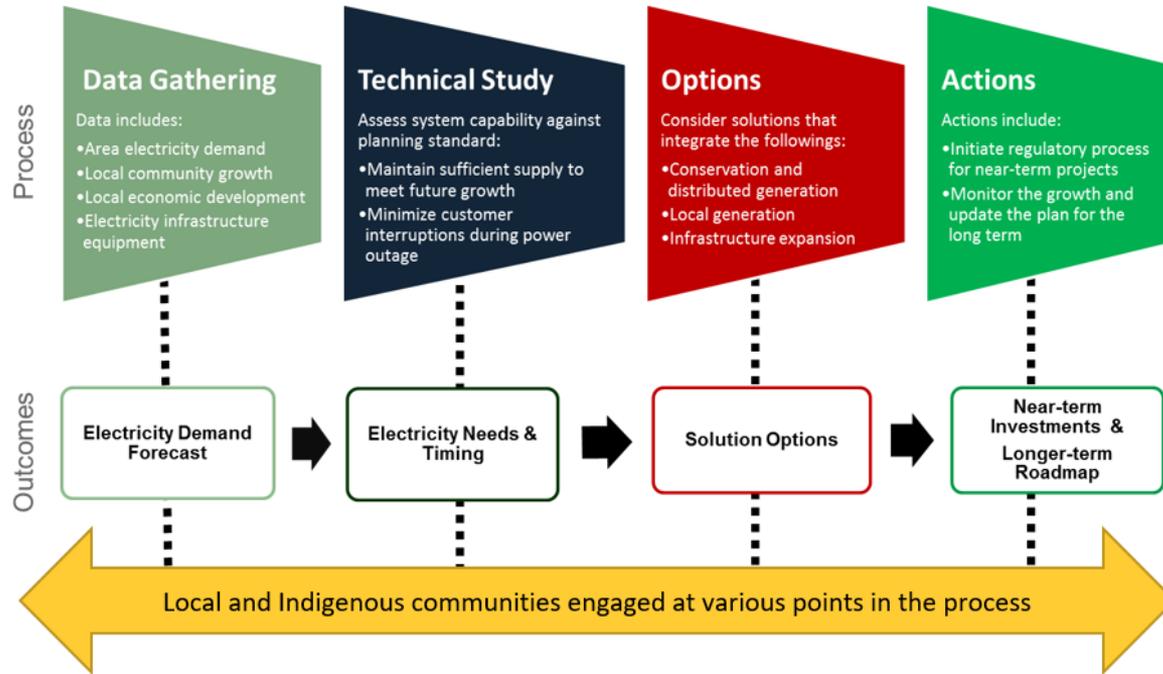


Appendix: Regional Planning Process Background

Regional Planning Process Steps



IRRP Process Overview



IRRP Study Team (“Technical Working Group”)

Team Lead,
System Operator

- Independent Electricity System Operator

Lead Transmitter

- Hydro One Networks Inc. (Transmission)

Local
Distribution
Companies
(LDC)

- Hydro One Networks Inc. (Distribution)
- Atikokan Hydro Inc.
- Fort Frances Power Corporation
- Sioux Lookout Hydro Inc.
- Synergy North