North & East of Sudbury Scoping Assessment Outcome Report

August 12 2021

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1. Introduction

This Scoping Assessment Outcome Report has been prepared in accordance with the Ontario Energy Board's (OEB or Board) regional planning process and sets out the planning approach to address electricity needs that have been identified in the North & East of Sudbury region. The OEB started regional planning in 2011 and endorsed the Planning Process Working Group's Report to the Board in May 2013. The Board formalized the process and timelines through changes to the Transmission System Code and Distribution System Code in August 2013.

The first cycle of the regional planning process for the North & East of Sudbury region was completed in April 2017 with the publishing of the Regional Infrastructure Plan (RIP). Prior to the completion of the RIP, a Local Plan for Timmins-Kirkland Lake Voltage Regulation was produced in November 2016; no further regional coordination was required.

The second cycle of the regional planning process for the North & East of Sudbury region was initiated in March 2021 with the Needs Assessment (NA) – the first step in the regional planning process – carried out by the Study Team led by Hydro One Networks Inc. (Hydro One). This report was finalized on May 14, 2021 and concluded that a number of needs did not require regional coordination, while others required regional coordination.

As part of the Scoping Assessment, the Study Team reviewed the nature and timing of all the known needs in the region to determine the most appropriate planning approach to address them. The available planning options considered in the Scoping Assessment include: An Integrated Regional Resource Plan (IRRP), a Regional Infrastructure Plan (wires only plan), or a Local Plan. The Study Team recommends an IRRP for the North & East of Sudbury region focused on needs that have been identified as well as additional needs raised through stakeholder outreach, and those which could emerge from consideration of industrial customer demand forecasts.

This Scoping Assessment report is structured as follows:

- Section 2 lists the Study Team.
- Section 3 provides an overview of the region, the previous regional planning cycle, and major transmission reinforcements since the previous cycle.
- Section 4 summarizes the new and updated needs as described in the Needs Assessment.
- Section 5 describes the criteria used to select a regional planning approach and specifies the scope of the IRRP.

Appendix 1 defines the acronyms used in this document and Appendix 2 establishes the draft Terms of Reference for the IRRP and the composition of the IRRP Technical Working Group.

2. Study Team

The Scoping Assessment was carried out by the Study Team with the following participants:

- Independent Electricity System Operator (IESO)
- Hydro One Networks Inc. (Hydro One Transmission)
- Hydro One Networks Inc. (Hydro One Distribution)
- North Bay Hydro Distribution Limited
- Northern Ontario Wires Inc.
- Hearst Power Distribution Co. Ltd.
- Greater Sudbury Hydro

3. Overview of Region and Background

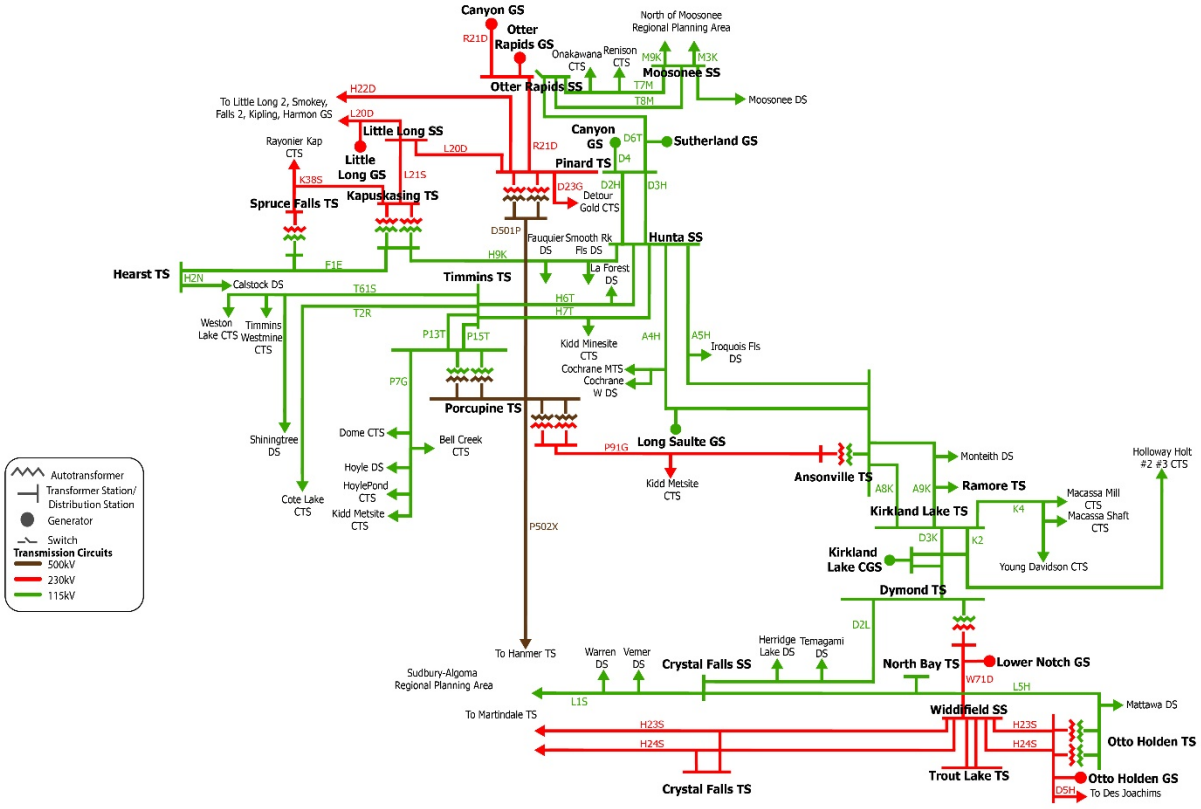
The North & East of Sudbury region extends from the town of Moosonee in the north to the town of East Ferris in the south. It includes the towns of Hearst, Kapuskasing, Smooth Rock Falls, Cochrane, Foleyet, Iroquois Falls, Kirkland Lake and Englehart. It also includes the townships of Black River Matheson and East Ferris, the cities of North Bay, Temiskaming Shores and Timmins and the municipality of West Nipissing. The North & East of Sudbury region is also home to First Nation communities listed in Table 3-1.

Table 3-1 | List of First Nation Communities in the North & East of Sudbury Region

First Nation Communities
Constance Lake First Nation
Flying Post First Nation
Matachewan First Nation
Mattagami First Nation
Missanabie Cree First Nation
Moose Cree First Nation
Nipissing First Nation
Taykwa Tagamou First Nation
Temagami First Nation
Wahgoshig First Nation
Wahnapitae First Nation

Note that, for regional electricity planning purposes, the region is defined by electrical infrastructure rather than geography. The region is supplied through 500/230 kV autotransformers at Porcupine TS and Pinard TS and encompasses the 230 kV circuits east of Martindale TS in the west to Otto Holden TS in the east as well as the 500 kV circuits from Hammer TS to Pinard TS and the 115 kV sub-systems in between. The Otto Holden TS supplies load in Ontario (e.g. North Bay TS and Mattawa DS via 115 kV circuit L5H) and industrial load in Quebec (e.g., a paper plant in Témiscaming, Quebec, via 115 kV intertie circuit H4Z). The load in Quebec will not be part of the study. The single line diagram of the electrical infrastructure in the region is shown in Figure 3-1.

Figure 3-1 | Electricity Infrastructure in the North & East of Sudbury Region



Demand in this region is largely driven by resource based industrial customers such as mines and forestry operations. Their development is highly dependent on factors such as commodity prices and access to financing.

The region has over 2,600 MW of generation, including numerous hydroelectric facilities, solar, gas and bio fuel facilities. The transmitter in the region is Hydro One Networks Inc. and the local distribution companies (LDCs) are North Bay Hydro, Northern Ontario Wires Inc., Hearst Power Distribution Co. and Hydro One Networks Inc. (Distribution)

3.1 Background

The first cycle of the regional planning process for the region was initiated in October 2015 and completed in April 2017 with the publication of the RIP. Prior to the completion of the RIP, a Local Plan for Timmins-Kirkland Lake Voltage Regulation was produced in November 2016. The report identified a few needs that required no immediate action. The plan did not proceed to a Scoping Assessment or to an IRRP.

The second cycle of regional planning was kicked off by Hydro One Networks in March 2021 and the Needs Assessment report was published in May 2021. The needs identified in this report form the basis of the analysis for this Scoping Assessment and are discussed in further detail in Section 4.

3.2 Major Transmission System Reinforcements

There are two major transmission reinforcement projects in the North & East of Sudbury region. The first is the Kapuskasing Area reinforcement and the second is the Kirkland Lake reinforcement. The Kapuskasing Area reinforcement included upgrading a 32 km section of 115 kV circuit H9K, between Spruce Falls JCT and Carmichael Falls JCT, to 310 A in August 2020. In addition, a 10 MVAR capacitor and a 10 MVAR reactor will be installed at Kapuskasing TS and this will be completed in March 2023.

As part of the Kirkland Lake reinforcement, 115 kV circuits A8K/A9K are planned be upgraded to 550 A as part of their end-of-life replacement. The upgrade will allow Kirkland Lake generation to be dispatchable and support mining load growth in the area. This project requires OEB approval and is expected to be in-service in 2023.

4. Summary of New and Updated Needs

This section briefly summarizes the new and updated needs identified in the Needs Assessment report; please refer to the Needs Assessment report for more details. Note that additional needs may be identified in successive phases of regional planning. The system capacity, station capacity, load security/restoration, and end-of-life needs are described in the following subsections. This section documents all identified needs regardless of whether or not further regional coordination is warranted. Section 5 specifies the planning approach and outlines the specific needs that will be in scope for subsequent regional planning stages.

4.1 System Capacity Needs

System capacity 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. System capacity needs identified in the Needs Assessment report are described in Table 4-1.

Table 4-1 | System Capacity Needs

Need #	Station/Circuit	Type	Description of Need
1	Hunta TS, Porcupine TS, Pinard TS, Kapuskasing TS	Area Voltage Control	• Post contingency voltage control in the Ansonville, Hunta area for loss Ansonville T2 and Canyon GS units will be reviewed • Voltage control 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
2	P502X, D501P and potentially other circuits in the region	Thermal Overload	• Potential interest from new transmission connected customers could increase load in area and stress thermal capabilities of circuits. In addition, there is a heavy reliance on Remedial Action Schemes to accommodate new customers • Difficulties in staying within thermal limits during outages to circuits P502X and D501P

4.2 Station Capacity Needs

Station capacity refers to the ability to convert power from the transmission system down to distribution system voltages. No station capacity needs have been identified in the Needs Assessment.

4.3 Load Security and Restoration Needs

Load restoration capability is the ability to restore power to those affected by a transmission outage within reasonable time frames. A restoration need emerges when load is interrupted following a transmission outage and supply cannot be restored within the timelines specified by the applicable planning criteria. These timelines are dependent on the amount of load being interrupted and proximity to maintenance crew and centres.

Load security needs emerge if the total amount of electricity supply at risk of interruption following a transmission outage exceeds the amounts permissible by the applicable planning criteria. The criteria identify areas where a supply outage could affect a vast number of customers, regardless of restoration time. Details on planning contingencies that must be considered, and associated restoration and security guidelines, are defined in Ontario Resource and Transmission Assessment Criteria (ORTAC).

While the Needs Assessment did not identify any load security or load restoration needs, it is noted that the loss of the 500 kV circuits P502X or D501P can result in the loss of more than 150 MW by configuration, which violates ORTAC criteria. However, this ORTAC criterion was put into place after the 500 kV Northeast system was build and, as such, the system was not originally designed to respect it. It is also noted that customer reliability was a theme in stakeholder and community feedback on this Scoping Assessment. While the load restoration criteria in ORTAC is met since the standards allow for leeway in remote locations, outages have high socio-economic costs for impacted communities and, so, load restoration can be further investigated in subsequent stages of regional planning. Alleviating this impact with additional system investments can often be cost prohibitive unless they can be integrated with solutions designed to meet needs driven by criteria violations.

4.4 End of Life Needs

The need to replace aging transmission assets may present opportunities to better align investments with evolving power system priorities. The Needs Assessment identified numerous facilities approaching end of life over the next 10 years as described in Table 4-3 and 4-4. Replacements for these facilities may involve upsizing equipment in areas with capacity needs, downsizing or even removing equipment that is no longer required to supply needs. The Needs Assessment recommended coordination with the IESO for the replacement for circuit sections A4H/A5H and D2H/D3H specifically but others may be considered when required and where feasible.

Table 4-3 | End of Life Circuit Equipment

Station/ Circuit	Timing	Details
K4	2023	Refurbishment of radial Kirkland Lake TS x Matachewan JCT section.
A8K/A9K	2023	Refurbishment of Ansonville TS x Kirkland Lake TS section.
T61S	2023	Radial Timmins TS x Shiningtree JCT section has been prescribed for line refurbishment. This work is bundled with the re-energization of idle T2R circuit (which share common steel structures) to connect a load customer.
K2	2024	Refurbishment of radial Kirkland Lake TS x American Barrick JCT section.
D2H/D3H	2026	Pinard TS x Hunta TS section has been prescribed for line refurbishment.
A4H/A5H	2027	Tunis JCT x Fournier JCT section has been prescribed for line refurbishment.

Table 4-4 | End of Life Station Equipment

Station/ Circuit	Timing	Details
Porcupine TS	2025	The one 500/230 kV and two 500/115 kV autotransformers are reaching EOL.
Kapuskasing TS	2026	The existing HV and LV circuit breakers are approaching EOL.
Otto Holden TS	2026	The two (2) 230/115 kV autotransformers are reaching EOL.
Timmins TS	2027	The existing 115/27.6 KV T2 transformer is reaching EOL.
Crystal Falls TS	2028	The existing two 230/44 kV transformers are approaching EOL.

Station/ Circuit	Timing	Details
Trout Lake TS	2028	The existing two 230/44 kV transformers are near EOL.

5. Regional Planning Approach

Needs identified through the Needs Assessment were reviewed during the Scoping Assessment to determine whether a Local Plan, Regional Infrastructure Plan, or IRRP regional planning approach is most appropriate. The Needs Assessment flagged needs that require further regional coordination and have potential impacts to the bulk system. This Scoping Assessment recommends an IRRP for the North & East of Sudbury region.

The following sections outline the selection criteria, and the scope of the recommended IRRP.

5.1 Selection Criteria

The three potential planning outcomes are designed to carry out different functions and selection should be made based on a region's unique needs and circumstances. The criteria used to select the regional planning approach within each sub-region are consistent with the principles laid out in the PPWG Report to the Board[1], and are discussed in this document to ensure consistency and efficiency throughout the Scoping Assessment.

Local Plans have the narrowest scope; only considering simple wires solutions that do not require further coordinated planning. A Local Plan process is recommended when needs:

- Are local in nature (only affecting a small number of identifiable parties)
- Are limited investments of wires (transmission or distribution) solutions
- Do not require upstream transmission investments
- Do not require plan level community and/or stakeholder engagement and,
- Do not usually require other approvals such as a Leave to Construct application or Environmental Approval.

Regional Infrastructure Plans focus on identifying and assessing the specific wires alternatives and recommend the preferred wires solution for an area and are thus narrower in scope than an IRRP. Regional Infrastructure Plans still require coordinated planning to address identified needs. If it is determined that the only feasible measures involve new/upgraded transmission and/or distribution infrastructure, with no requirement for engagement or anticipated impact on bulk systems, a Regional Infrastructure Plan will be selected. Wires type transmission/ distribution infrastructure solutions refer, but are not limited, to:

- Transmission lines
- Transformer/ switching stations
- Sectionalizing devices including breakers and switches

[1] http://www.ontarioenergyboard.ca/OEB/_Documents/EB-2011-0043/PPWG_Regional_Planning_Report_to_the_Board_App.pdf

- Reactors or compensators
- Distribution system assets

IRRPs are comprehensive undertakings that consider a wide range of potential solutions to determine the optimal mix of resources to meet the needs of an area for the next 20 years, including consideration of non-wires alternatives, for example: conservation and demand management, and generation and/or supply resources, and wires infrastructure. In general, an IRRP is initiated wherever:

- A non-wires measure has the potential to meet or significantly defer the needs identified by the transmitter during the Needs Assessment;
- The planning process or outcome has the potential to impact bulk system facilities
- Needs can be addressed in a coordinated manner (e.g., one solution may address multiple needs);
- Needs impact multiple LDCs in the region; or,
- Community or stakeholder engagement is required;

Additional solutions, including conservation and demand management, generation and/or supply resources, and other electricity initiatives can also play a significant role in addressing needs. Because these solutions are non-wires alternatives, they must be studied through an IRRP process.

5.2 Integrated Regional Resource Plan Scope of Work

The primary purpose of an IRRP is to study needs that require coordination between transmitters, distribution companies, and the IESO. The IRRP will not study bulk system needs. However, the load forecast developed during the IRRP will inform bulk system studies. Additionally, while the IRRP will consider the capability of the regional network to supply projected demand from new, and expansions to, industrial customers, the IRRP will not specifically address new customer transmission connection requests unless there is an opportunity to align with broader regional needs. While the IRRP welcomes information from project proponents to inform load forecasting and to ensure plans for regional infrastructure are adequate, individual customers connection requests may be better suited for a proponent driven Technical Feasibility Study.

One single IRRP is recommended which will cover the entire North & East of Sudbury region, given the broad nature of the needs and because it is the first comprehensive plan for the region. The IRRP will consider industrial customer demand forecasts and both ORTAC and NERC criteria, based on equipment classifications, in performing the IRRP studies. Additional details are provided below.

System Capacity Needs

The Needs Assessment identified high voltages for buses at Hunta TS, Porcupine TS, Pinard TS and Kapuskasing TS during outage conditions, difficulty in staying within thermal limits during planned outages to the circuits P502X and D501P, and other potential thermal overloading from additional industrial customer demand growth in the region. The North & East of Sudbury IRRP will perform transmission studies to investigate pre and post contingency area voltages and thermal performance, with consideration of industrial customer demand growth and ORTAC and NERC criteria.

With respect to the difficultly in staying within thermal limits during planned outages to circuits P502X and D501P, given this issue involves the 500 kV network, it would be considered as part of integrated bulk system planning. However, the working group will consider this issue and any potential solutions recommended through integrated bulk electricity system planning when developing this IRRP. This will ensure bulk electricity planning is well co-ordinated with regional electricity planning.

End of Life

The Needs Assessment identified numerous stations and transmission circuits nearing end of life over the next 10 years. The majority of these anticipated replacements are minor and do not have the potential to impact other system needs. However, the following circuit segments requiring further regional coordination: D2H/D3H between Pinard TS and Hunta TS, and A4H/A5H between Tunis JCT and Fournier JCT. The IRRP will, where feasible within the timelines afforded by each project, examine opportunities to align the replacement of these facilities with other regional needs and potential bulk system needs while considering industrial customer demand growth and ORTAC and NERC criteria.

6. Conclusion and Next Steps

This Scoping Assessment concludes that a coordinated regional planning approach is required and an IRRP is recommended for the North & East of Sudbury region to address the following items:

- Area voltages, particularly at control in Hunta TS, Porcupine TS, Pinard TS and Kapuskasing TS
- Difficulty in staying within thermal limits of network circuits within the region when accounting for 500 kV outage conditions and industrial customer demand growth which includes heavy reliance on Remedial Action Schemes
- End of Life for circuit sections A4H/A5H and D2H/D3H specifically but others may be considered when required and where feasible

It is important to note that this list of needs is not exhaustive, as further detailed evaluation undertaken through the IRRP may identify new needs, particularly those requiring consideration for the longer term. Additionally, the IRRP process is expected to be carried out in a manner that allows for continuous coordination of information with ongoing bulk system studies. The draft Terms of Reference for the North & East of Sudbury IRRP can be found in Appendix 2.

Appendix 1 – List of Acronyms

Acronym	Definition
CDM	Conservation and Demand Management
CTS	Customer Transformer Station
DER	Distributed Energy Resources
DG	Distributed Generation
DS	Distribution Station
FIT	Feed-in-Tariff
IESO	Independent Electricity System Operator
IRRP	Integrated Regional Resource Plan
JCT	Junction
kV	kilovolt
LDC	Local Distribution Company
LP	Local Plan
MW	Megawatt
NA	Needs Assessment
NERC	North American Electric Reliability Corporation
NPCC	Northeast Power Coordinating Council
OEB	Ontario Energy Board
ORTAC	Ontario Resource and Transmission Assessment Criteria
PPWG	Planning Process Working Group
RIP	Regional Infrastructure Plan
SS	Switching Station
TS	Transformer Station

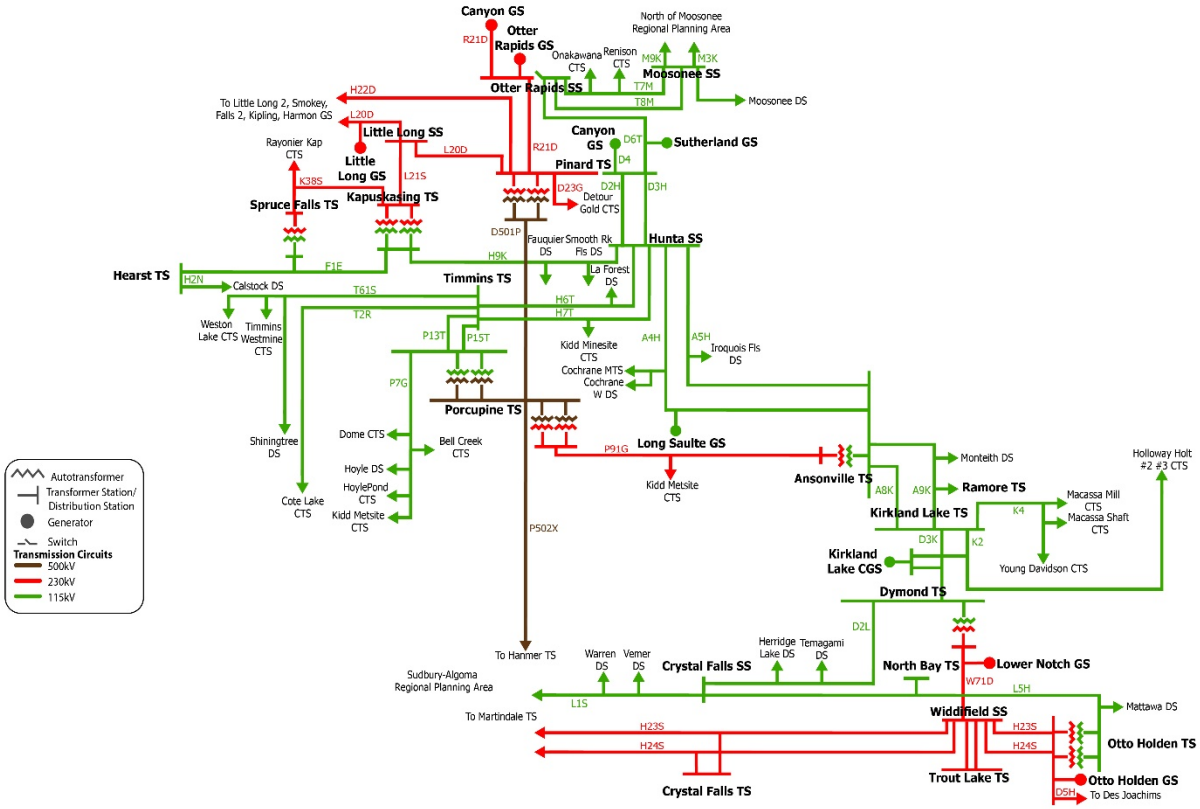
Appendix 2 – North & East of Sudbury IRRP Terms of Reference

1. Introduction and Background

These Terms of Reference establish the objectives, scope, key assumptions, roles and responsibilities, activities, deliverables and timelines for an Integrated Regional Resource Plan (IRRP) for the North & East of Sudbury region.

Based on the needs identified through the Needs Assessment (NA) process, and further investigation through the Scoping Assessment, the Study Team recommended an IRRP approach for the region. The single line diagram is shown in Figure A-1.

Figure A-1 |North & East of Sudbury Region



The previous cycle for North & East of Sudbury was completed in April 2017 with the publication of the Regional Infrastructure Plan (RIP). This cycle did not include a Scoping Assessment or IRRP. The first phase of the current regional planning cycle, the Hydro One-led Needs Assessment, was completed in May 2021.

2. Objectives

The North & East of Sudbury IRRP will assess the reliability of electricity supply to customers in the region and will develop a set of recommended actions to maintain reliability of supply to the region over the next 20 years. The IRRP will:

- Assess the reliability of electricity supply to customers in the area over the next 20 years;
- Determine whether there is a need to initiate development work or to fully commit infrastructure investments in this planning cycle;
- Identify and coordinate major asset renewal needs with regional needs, and develop a flexible, comprehensive, integrated electricity plan for North & East of Sudbury; and,
- Develop an implementation plan with the flexibility to accommodate changes in key assumptions over time, while keeping options viable.

3. Scope

This IRRP will develop and recommend an integrated plan to meet the needs of the region. The plan will be a joint initiative involving, Hydro One Networks Inc. (Transmission), Hydro One Networks Inc. (Distribution), North Bay Hydro, Northern Ontario Wires Inc., Hearst Power Distribution Co., Greater Sudbury Hydro and the IESO. These organizations are defined as the Working Group for the North & East of Sudbury IRRP.

The plan will focus on these specific items:

- Area voltages, particularly at Hunta TS, Porcupine TS, Pinard TS and Kapuskasing TS
- Difficulty in staying within thermal limits of network circuits within the region when accounting for 500 kV circuit outage conditions and industrial customer demand growth which includes heavy reliance on Remedial Action Schemes
- End of Life for circuit sections A4H/A5H and D2H/D3H specifically but others may be considered when required and where feasible
- Any additional needs that emerge in carrying out the IRRP

The North & East of Sudbury IRRP will integrate forecast electricity demand growth, conservation and demand management (CDM) in the area, uptake of distributed energy resources (DER), transmission and distribution system capability, relevant community plans, and bulk system developments as applicable.

The IRRP will be carried out in a manner that allows for continuous coordination of information with other planning activities and processes.

Based on the identified needs, the North & East of Sudbury IRRP process will involve:

1. Development of an Engagement Plan.
2. Development of an updated 20-year demand / load forecast for the region, including a forecast for industrial customer demand growth Consideration of demand forecast scenarios will be discussed with the Working Group in order to test the flexibility and robustness of the plan.
3. Assessment of the reliability of the transmission system against established ORTAC and NERC criteria and determination of the area's load meeting capability.
    a. Identify or confirm the system needs and adequacy of the area's load meeting capability for the study period using the updated load forecast.
    b. Identify or confirm restoration and security needs using the updated load forecast.
    c. Collect information on any known reliability issues and load transfer capabilities from LDCs.
4. Development and assessment of options to mitigate identified needs. Options are evaluated on the basis of technical feasibility, economics, and reliability performance as well as consideration of other factors raised through community and stakeholder engagement.
5. Development of the long-term recommendations and the implementation plan.
6. Completion of the IRRP report documenting the near-, mid-, and long-term needs and recommendations.

Depending on the nature and the urgency of the electricity needs and risks identified, the IRRP could recommend a combination of the following actions:

- Active monitoring of load growth and equipment performance
- Project development work to shorten lead time for the project, without firm commitment for constructing the project
- Commitment of project and proceed with project implementation (e.g., resources acquisition, transmission procurement, regulatory approval)
- Interim measures to manage the near-term requirements, until longer-term solutions could come into service
- Pilots, studies and/or engagement to gather more information
- Coordination with other planning or related processes (e.g., community or bulk system planning)

Should the IRRP identify the need for infrastructure investment, the IRRP will provide a rationale and define high-level project requirements to support project development and implementation to be carried out by other proponents, or, where time permits, recommend that the project requirements be further considered in the RIP. The outcomes from the IRRP will help inform transmitter and LDC rate filings and any related transmission/resources acquisitions processes that may result.

It is important to note that detailed discussion of acquisition mechanisms, cost allocation, cost recovery, siting, operations and implementation of recommended projects are beyond the scope of an IRRP.

In order to carry out this scope of work, the working group will consider the data and assumptions outlined in Section 4 below.

4. Data and Assumptions

The plan will consider the following data and assumptions where applicable:

- Demand Data
  - Historical coincident peak demand information for the region
  - Historical weather data (temperature, humidity, consecutive cooling/heating days, etc.) for the purpose of correcting demand for median/extreme weather conditions
  - Coincident gross peak demand forecast scenarios; note that non-coincident forecasts may be derived using historical coincidence factors to study system capacity needs.
  - Identified potential future load customers and their projected demand
- Conservation and Demand Management
  - Conservation forecast for LDC customers based on planned provincial CDM activities
  - LDC programs, if applicable
  - Conservation potential studies, if available
- Local resources
  - Existing local generation, including distributed generation (DG), district energy, customer-based generation, Non-Utility Generators and hydroelectric facilities as applicable
  - Existing or committed renewable generation from previous procurements (e.g., Feed-in-Tariff (FIT))
  - Future resource proposals as relevant
- Relevant local plans, as applicable
  - LDC distribution system plans
  - Community energy plans, municipal energy plans and climate action plans
  - Municipal growth plans
- Criteria, codes and other requirements
  - Ontario Resource and Transmission Assessment Criteria (ORTAC)
  - NERC and NPCC reliability criteria, as applicable

    - OEB Transmission System Code
    - OEB Distribution System Code
    - Other applicable requirements
- Existing system capability
    - Transmission line ratings as per transmitter records
    - System capability as per current IESO PSS/E base cases
    - Transformer station ratings as per asset owner
    - Load transfer capability
    - Technical and operating characteristics of local generation
- End-of-life asset considerations/sustainment plans
    - Transmission assets
    - Distribution assets
    - Impact of ongoing plans and projects on applicable facility ratings
- Other considerations, as applicable

5. Technical Working Group

The core Technical Working Group will consist of planning representative/s from the following organizations:

- Independent Electricity System Operator (Team Lead for IRRP)
- Hydro One Networks Inc. (Hydro One Transmission)
- Hydro One Networks Inc. (Hydro One Distribution)
- North Bay Hydro Distribution Limited
- Northern Ontario Wires Inc.
- Hearst Power Distribution Co. Ltd.

Authority and Funding

Each entity involved in the study will be responsible for complying with regulatory requirements as applicable to the actions/tasks assigned to that entity under the implementation plan resulting from this IRRP. For the duration of the study process, each participant is responsible for their own funding.

6. Engagement

Integrating early and sustained engagement with communities and stakeholders in the planning process was recommended and adopted by the provincial government to enhance the regional planning and siting processes in 2013.

As such, the IESO, in consultation with the Technical Working Group, is committed to conducting engagement in accordance with IESO Engagement Principles throughout the development of the IRRP[2]. The first step in engagement will consist of the development of an engagement plan, which will be made available for comment before it is finalized. The data and assumptions as outlined in Section 4 will help to inform the scope of community and stakeholder engagement to be considered for this IRRP.

7. Activities, Timeline, and Primary Accountability

Num	Activity		Deliverable(s)	Timeframe
1	**Develop the Planning Forecast**	*IESO / LDCs with input from Hydro One*	Long-term planning forecast scenarios	Aug 2021 – Dec 2021
1.1	Establish historical coincident and non-coincident peak demand information	*IESO*		
1.2	Establish historical weather correction, median and extreme conditions	*IESO*		
1.3	Establish coincident gross peak demand forecast for LDC service areas	*LDCs*		
1.4	Establish existing, committed and potential DG	*IESO and LDCs*		
1.5	Establish near- and long-term conservation forecast based on planned energy efficiency activities and codes and standards	*IESO*		
1.6	Develop planning forecast scenarios for sensitivity analyses	*IESO*		
2	**Provide information on load transfer capabilities under normal and emergency conditions**	*LDCs*	Load transfer capabilities under normal and emergency conditions	Aug 2021 – Dec 2021
3	**Provide and review relevant community plans, if applicable**	*IESO and LDCs*	Relevant community plans	Aug 2021 – Dec 2021
3.1	Based on the review, identify whether there are any potential impacts to the	*IESO and LDCs*		

[2] https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Overview/Engagement-Principles

Num	Activity		Deliverable(s)	Timeframe
	demand forecast that need to be considered			
3.2	Determine whether there are any solution insights that should be factored into the IRRP options analysis	*IESO and LDCs*		
4	**Complete system studies to identify needs over a twenty-year period**	*IESO*	Summary of needs based on demand forecast scenarios for the 20-year planning horizon	Q1-Q2 2022
4.1	Develop PSS/E base cases	*IESO*		
4.2	Apply reliability criteria as defined in ORTAC, NERC and NPCC as applicable	*IESO*		
4.3	Confirm and refine the need(s) and timing/load levels	*IESO*		
5	**Develop Options and Alternatives**	*All*	Develop flexible planning options for forecast scenarios	Q3 2022
5.1	Develop energy efficiency options, where applicable	*IESO and LDCs*		
5.2	Develop local generation options where applicable	*IESO and LDCs*		
5.3	Develop transmission and distribution options where applicable	*All*		
5.4	Develop options involving other electricity initiatives (e.g., smart grid, storage) where applicable	*IESO/ LDCs with support as needed*		
5.5	Develop portfolios of integrated alternatives	*All*		
5.6	Technical comparison and evaluation	*All*		
6	**Plan and Undertake Community & Stakeholder Engagement**	*All*	Community and Stakeholder Engagement Plan; Input from local communities	Ongoing as required
6.1	Early engagement including with local municipalities and First Nation communities within study area, First	*All*		

Num	Activity		Deliverable(s)	Timeframe
	Nation communities who may have an interest in the study area, and the Métis Nation of Ontario			
6.2	Develop communications materials	*All*		
6.3	Undertake community and stakeholder engagement	*All*		
6.4	Summarize input and incorporate feedback	*All*		
7	**Develop long-term recommendations and implementation plan based on community and stakeholder input**	*IESO*	Implementation plan; Monitoring activities and identification of decision triggers; Procedures for annual review	Q3-Q4 2022
8	**Prepare the IRRP report detailing the recommended near, medium and long-term plan for approval by all parties**	*IESO*	IRRP report	February 2023

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