Northeast Ontario Electricity Planning

Responses to feedback received

The IESO hosted a public webinar on April 26, 2022 to seek input on key considerations for the scope, needs and potential solutions to meet the future electricity needs of Northeast Ontario being driven by strong economic growth and decarbonization initiatives. The presentation material and recorded webinar are available on the engagement webpage.

This document summarizes the feedback received under the following key themes:

- Planning Considerations
- Non-wires Options
- Wires Options
- Community Engagement

The IESO appreciates all of the input, which will be considered as potential options continue to be examined to inform the development of recommendations. Feedback was received from the following parties and posted on the engagement webpage:

- Ambrose Raftis
- Chapleau PUC
- City of Temiskaming Shores
- Evolugen by Brookfield Renewable
- Hydro One Networks Inc.
- Peter Drury
- Power Workers' Union (PWU)

Theme 1 – Planning Considerations

Feedback provider: City of Temiskaming Shores

Feedback: Much of the focus appears to be on the areas West of Sudbury and Timmins. Although there are significant mining developments in the area, the study should consider:

- Developments East of both Sudbury and Timmins and North of Timmins
- A new refinery under construction in Temiskaming Shores that will require 12 MW as it scales up
- Mines under construction in Kirkland Lake, Cochrane and other Northeast communities
- Significant infrastructure upgrades to support the Ring of Fire

IESO response:
A number of electricity planning initiatives are underway at the provincial (bulk) and regional levels that are implicated by these developments.

For this Northeast Bulk Plan, potential mining development within the entire Northeast area (including around Kirkland Lake and Cochrane) were considered to identify transmission enhancements needed in the areas west of Sudbury and around Timmins. Further studies will identify if additional transmission enhancements are needed outside the areas west of Sudbury and Timmins to supply the expected electricity demand in the North. This work is done in close coordination with a parallel regional planning initiative for the North & East of Sudbury region. Recommendations that will be included in this plan are foundational – it is anticipated that ongoing electricity planning will be undertaken in Northeast Ontario.

With respect to future electricity needs to supply new load including a new refinery in Temiskaming Shores, the IESO would welcome further discussion with the municipality to understand more about this development and any implications this may have one the North & East of Sudbury regional electricity planning initiative already underway.

Electricity needs related to the Ring of Fire are being examined through the ongoing electricity planning for the Northwest region.

Feedback provider: PWU

Feedback: The IESO's 2021 Annual Planning Outlook (APO) high case and Decarbonization Pathways Study should be considered as analyses show demand will increase at an even greater pace. The completion of the Northeast Bulk Electricity System Plan should be informed by and aligned with IESO's Decarbonization Pathways and Gas Phase Out studies, the 2022 APO and the implications for its 2023 Annual Acquisition Report (AAR). It is critical to consider and understand these significant and material medium term needs and the implications of decarbonization to avoid exposing the NE Region's reliability of supply to unnecessary risk.

IESO response: This bulk planning study is aligned with the IESO's latest APO and ongoing IESO studies and initiatives including Pathways to Decarbonization, Gas Phase-Out Impact Assessment, and 2022 APO. This plan will ensure the system can reliably supply the forecasted demand growth and that there are cost-effective options to expand the system further, if needed, to supply higher

demand within the Northeast area. It is important to note that recommendations included in this plan are foundational – it is anticipated that ongoing electricity planning will be undertaken in Northeast Ontario.

Feedback provider: PWU

Feedback: The 2021 APO assumes that the Algoma Steel electric arc furnace conversion project will be competed in 2029, while Algoma has stated it will be completed in 2024. This would shift the need for 160 MW of capacity forward by 5 years.

IESO response: The Northeast Bulk Plan will recommend the transmission enhancements needed to accommodate the full capacity of the Algoma Steel electric arc furnace conversion project. The IESO is working with the customer to ensure that the electricity system can accommodate their connection plan.

Feedback provider: PWU

Feedback: The IESO's five-year planning cycle will put the reliability of supply in the North at risk and diminish the region's economic outlook for the long run given the 4-to-10-year development cycle. It imposes significant risks to ensuring the timely supply of required reliable, low-carbon electricity for Northern Ontario. The importance of Ontario's critical minerals, forestry and hydrogen strategies, including the Ring of Fire is accelerating that the IESO indicated would be addressed in the next planning cycle.

IESO response:

The IESO's regional planning cycle typically occurs every five years at a minimum. A new cycle can be triggered earlier as needed in cases where new developments present reliability risks such as government policies and strategies that can influence the region's electricity demand/supply. Upon commencement of any new planning cycle, the demand forecast is updated to account for any changes, new needs are identified and studied and recommendations are developed as required. Conversely, the bulk planning process is triggered based on the emerging needs identified through the IESO's regular provincial planning processes and products such as the APO.

As noted above, the recommendations that will be included in the Northeast Bulk Plan are foundational. Further electricity planning studies and initiatives are expected to be undertaken to address the emerging needs in Northeast Ontario.

Theme 2 – Non-wires Options

Feedback provider: Ambrose Raftis

Feedback: Solar and wind with mega utility scale battery and hydraulic back up would be the lowest cost opportunity to meet increased demand driven by electrification. New technology that could use the growing battery storage capacity both in vehicles and mega pack utility storage would compliment renewable energy sources and distribute energy over time and location effectively. Utility scale development should also be promoted with provincial energy producers like Ontario Power Generation to supply long-term expertise in construction and operation.

IESO response: In developing this plan, non-wires alternatives such as solar and wind with utility scale battery and hydraulic back up are considered along with the wires options. The solution to be recommended in this plan will ultimately be the lowest cost technically feasible alternative. Details of this analysis used to considered a variety of options will be provided in an upcoming engagement session and as part of the final plan that will be posted.

Feedback provider: Chapleau PUC

Feedback: There is no reference to biomass, which has been promoted by Provincial government in a 2022 news release.

IESO response: This plan considers biomass generation as an option to meet the identified needs and future electricity demand from the forestry sector. Details of this analysis will be included in the final report. Furthermore, the IESO's 2021 APO and 2022 Annual Acquisition Report (AAR) also references the potential re-contracting of existing biomass facilities to meet emerging provincial needs, several of which are located in the North.

Feedback provider: Chapleau PUC

Feedback: Generation projects have not been planned due to limitations in infrastructure. Has consideration been given to potential location and size limits/restrictions with the transmission alternatives?

IESO response: The options for transmission enhancements being examined as part of this plan will help enable new generation projects in Northern Ontario to meet the province's emerging capacity needs. The plan recommendations will be considered in the IESO's future resource procurements.

Feedback provider: PWU

Feedback: The Bulk System Plan should consider the role of Atikokan Generating Station (AGS) and biomass in securing reliability in the area north of Sault Ste. Marie. The AGS is strategically located at the heart of the transmission network that will be feeding the demand north of Dryden, providing resiliency to the region's electricity supply, alleviating demand on the E-W tie line from the Northeast, and providing a source of reactive power.

IESO response: As part of the study work to develop this Northeast Bulk Plan, the Atikokan Generating Station has been assumed to be operating in the modelling scenario to secure reliability in the area. For this particular plan, the status of the Atikokan Generating Station is not expected to have a material effect on the recommendations.

Theme 3 – Wires Options

Feedback provider: Ambrose Raftis

Feedback: Transmission line capacity increases will give the flexibility needed in the future, but needs to be coupled with increased distribution of energy sources.

IESO response: Transmission line capacity increases will increase load supply as well as resource deliverability in the future. Existing distributed energy resources (DERs) have been modelled as part of the plan's study work and additional DERs have been considered as a potential option to address the identified needs. Details of this analysis will be provided in an upcoming engagement session and as part of the final plan that will be posted.

Feedback provider: Chapleau PUC

Feedback: Clarification requested on impacts of the new double circuit 230 kV transmission line between Timmins and Wawa on the existing 115 kV line between Wawa and Chapleau (i.e. will both corridors be maintained and is a step-down 115 kV trunk line considered?). Chapleau PUC and Hydro One have 115 kV substations that deliver power to the community and outlying areas, including First Nations.

IESO response: The new double circuit 230 kV transmission line between Timmins and Wawa would not impact the existing 115 kV line between Wawa and Chapleau. A connection (e.g. a step-down 115 kV trunk line) between the new transmission line and the existing 115 kV system at Chapleau TS was not considered as part of the options development for this plan.

Feedback provider: City of Temiskaming Shores

Feedback: All of the transmission capacity being proposed is moving power from East to West and does not enable any further power production in the North to service the large users in the South. There is significant capability to produce power in the North using hydroelectricity, wind or solar production with little to no impact to the land base. It appears however that production for the South is proposed to be built in the South rather than using the less valuable Northern real estate and transmitting further.

IESO response: This Bulk Plan is being developed with a focus on ensuring the reliable supply to expected load growth in the Northeast area. The IESO's Pathways to Decarbonization study is exploring the value of Northern wind, solar, hydro and transmission enhancements that may be needed to enable further potential power production to service load centres in Southern Ontario.

Feedback provider: Hydro One Networks Inc.

Feedback: Hydro One recommends a strategically sequenced investment in transmission:

- Stage 1: New 500 kV single circuit (Hanmer x Mississagi) plus an additional 230 kV single circuit (Mississagi x Third Line)
- Stage 2: Convert existing 230 kV circuit to 500 kV circuit (Hanmer x Mississagi) or build a new 230 kV double circuit transmission line (Porcupine x Wawa)

Feedback provider: Peter Drury

Feedback: The following should be considered when evaluating options:

- Installing two single-circuit lines on the new Porcupine TS to Wawa TS corridor to complement the two double-circuit lines that now form the enhanced East-West Tie to allow for the possible 'staging' of its development.
- Upgrading the existing Hanmer to Mississagi line to 500 kV will require extensive outages to replace all of the insulators, install new quad-conductor bundles and new 500/230 kV transformation facilities at Mississagi TS. Consider whether increased transmission capacity could be achieved by adding a second (or possibly a third) conductor to the bundle while continuing to operate the Hanmer to Mississagi line at 230 kV.
- Moving one of the existing 230 kV lines between Mississagi TS and Third Line TS circuits on to separate structures and equipping each with twin conductors to eliminate the double-circuit contingency condition and double capacity.

IESO response: The recommended staging, option of two single-circuit lines on the new Porcupine TS to Wawa TS corridor, new 230 kV transmission line between Hanmer to Mississagi and separating existing structures between Mississagi TS and Third Line TS will be considered along with other options. The IESO seeks to find the most cost effective option to meeting the emerging electricity needs while adhering to established criteria and standards.

Feedback provider: Evolugen

Feedback: Inquiry on whether there would be benefits for reactive support and/or voltage control or grid constraints related to additional voltage support capacity at Aubrey Falls (connected to the P25W and P26W 230 kV circuits – 3-terminal stations with Mississagi TS and Wawa TS).

IESO response: Depending on the transmission enhancements recommended in the Northeast Bulk Plan, additional reactive support or voltage control devices may be required. If so, additional voltage support capacity at Aubrey Falls will be considered as a potential solution through future planning studies.

Feedback provider: PWU

Feedback: The IESO should consider the low-carbon energy security of Northern Ontario. The PWU supports this new Tx option from the Porcupine Transmission Station near Timmins to Wawa as it would provide Northern Ontario with additional low-carbon energy security. The Atikokan Generating Station can play a critical role in helping to reduce GHG emissions and displace import-dependent natural gas-fired generation from southern Ontario.

IESO response: The Northeast Bulk Plan recommendations will be able to enhance the connection between the Northeast and Northwest, thus optimizing the existing low carbon generation resources such as the Atikokan Generating Station located in Northern Ontario to supply load.

Theme 4 – Community Engagement

Feedback provider: Ambrose Raftis

Feedback: More methods of promoting community based renewable energy in Northeast Ontario should be considered. Rural communities experience high transmission costs due to delivery of power to relatively small load centres and have the space for cost effective renewable energy solutions. A context should be developed that challenges each region to create its own electrical energy production to supply its own energy needs.

More tools are needed to create awareness and advance new technology in communities beyond energy conservation. Without the knowledge of the positive impacts and an understanding of the business case for renewable energy, communities will continue to see themselves as consumers and not producers. This results in missed economic and distributed value of renewable energy resulting in increased transportation and production costs of energy to non-major urban centres.

IESO response:

One of the most significant changes to electricity systems around the world has been the rapid expansion of local energy solutions such as DERs. In Ontario, more than 4,000 megawatts (MW) of DERs have been contracted or installed over the past 10 years. Output from DERs offsets the need for supply from the province-wide system, which is expected to continue to grow in the coming years. DERs can offer greater customer choice – the IESO has heard from some communities, through the regional planning process, a preference for DERs to address regional demand growth or to replace aging assets. DERs may also present opportunities to optimize overall system investments and provide a range of grid services. The IESO has initiated innovative pilot programs, projects and procurements that are fostering innovation and leading to lessons learned regarding DERs, including:

- A series of white papers to explore emerging economic, technical, environmental, and social issues and trend related to DERs. See Innovation and Sector Evolution White Paper Series.
- A number of DER-related projects such as the City of North Bay Community Energy Park microgrid supported through the IESO's Grid Innovation Fund.
- A local Demand Response (DR) Pilot in the Brant area aimed at better understanding the capabilities of DR to provide services as alternatives to transmission line solutions for meeting local-area capacity needs.
- The potential to aggregate residents who use solar and storage was explored through PowerStream's POWER.HOUSE project in the York region, which was funded, in part, by the IESO's Conservation Fund.
- Two phases of an energy storage procurement that is exploring how batteries, flywheels and other storage technologies can offer ancillary services to support increased reliability and efficiency of the grid, and provide capacity value and price arbitrage through responding to market signals.
- The York Non-Wires Alternative and Interoperability pilot project has been initiated to explore opportunities to address potential barriers to implementing non-wires solutions that mitigate capacity needs in the York region.

The IESO is also developing an Electricity Toolkit for Municipalities to build awareness and education capacity about the important role that communities play in Ontario's electricity system.
Ontario's electricity sector is changing quickly. Technological advances are allowing for a new focus on local electricity resources, and creating the potential for a more diverse and decentralized system to meet the growing electricity needs of Ontarians. This could mean new opportunities for regions and municipalities to meet their priorities of energy independence, and economic development across the province. Rapid change also means municipal leaders need relevant information to make well-informed decisions on key issues that will affect their communities. This toolkit will provide municipalities with:

- An overview of Ontario's electricity system
- The planning underway to ensure the future reliability of the electricity
- Information on Ontario's electricity supply mix
- Ways to engage with the IESO