Ontario Energy Board | Commission de l'énergie de l'Ontario

BY EMAIL

November 11, 2021
Ms. Christine E. Long
Registrar
Ontario Energy Board
2300 Yonge Street, 27th Floor
Toronto, ON M4P 1E4
Registrar@oeb.ca

Dear Ms. Long:

**Re: Ontario Energy Board (OEB) Staff Submission**
**Hydro One Networks Inc. (Hydro One)**
**Leave to Construct Application**
**Ansonville TS by Kirkland Lake TS A8K/A9K Refurbishment Project**
**OEB File Number: EB-2021-0107**

Please find attached the OEB staff submission for the above proceeding, in accordance with Procedural Order No. 1. This document has been sent to Hydro One and to all other registered parties to this proceeding.

Hydro One is reminded that its reply submission is due by November 26, 2021, should it choose to file one.

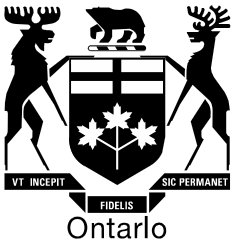
Yours truly,

*Original Signed By*

Andrew Pietrewicz
Project Advisor, Generation and Transmission

Encl.

cc: All parties in EB-2021-0107




# ONTARIO ENERGY BOARD

## OEB Staff Submission

**Hydro One Networks Inc.**

**Leave to Construct Application - Ansonville TS by Kirkland Lake TS**
**A8K/A9K Refurbishment Project**

**EB-2021-0107**

**November 11, 2021**

# 1. Background and Overview

## 1.1 Overview of the Application

Hydro One applied to the OEB on August 25, 2021 under sections 92 and 97 of the OEB Act for approval to upgrade existing electricity transmission circuits A8K and A9K between Ansonville TS and Kirkland Lake TS.

Hydro One also applied for approval of the forms of land use agreements it will offer to affected landowners.

## 1.2 Overview of OEB Staff Submission

OEB staff supports Hydro One's section 92 request for leave to construct, subject to the standard conditions of approval set out in Section 2.6. OEB staff also supports Hydro One's section 97 request for approval of the forms of agreements it will offer to affected landowners. OEB staff's submission is provided in further detail below.

# 2. OEB Staff Submission

## 2.1 Need and Alternatives

Hydro One proposes to refurbish all deteriorated sections of existing 115 kV circuits A8K and A9K between Ansonville TS and Kirkland Lake TS while increasing each circuit's summer long-term emergency operating rating, as requested by the IESO. The project is referred to as the Ansonville by Kirkland Lake Refurbishment Project or A8K A9K Project (Project).

Approximately 180 circuit km of 115 kV wood pole transmission line will be refurbished and upgraded from 230 Amperes (A) (A8K) and 290 A (A9K) to 550 A. The existing line was constructed in the 1930s. Hydro One stated that the line is strung with obsolete copper conductor and 3/0, 4/0, 211.6, 336, 468.3 and 477 kcmil ACSR type conductor. The line will be upgraded with 411.4 kcmil ACSR (Trapezoidal) Compact Conductor between Ansonville TS and Kirkland Lake TS.

Circuits A8K and A9K are in a part of the Northeast electrical zone of the IESO-controlled grid referred to as the Kirkland Lake Area (Area). The IESO stated that the existing 115 kV facilities are not sufficient to reliably supply the customers in the Area. The balance of supply is provided by Northland Power's natural gas-fired generation complex, which is equipped with six generation units. Units 1 through 5 operate in combined cycle configuration, and unit 6 is a simple cycle gas turbine (a peaker).

The IESO stated that if circuits A8K and A9K are replaced with like-for-like conductors

at their end of life (which would increase their amperage to 390A, less than the proposed upgrade to 550A), circuit A8K will experience thermal overload following the loss of circuit A9K starting in 2023. Based on this assessment, the IESO concluded that the reliability of the Area will not be maintained under the like-for-like base option unless other measures are implemented to reduce the thermal overload, namely the greater use of local generation.

The IESO recommended that Hydro One should upgrade the rating of the 115 kV transmission circuits A8K and A9K to 550A as part of their planned end-of-life refurbishment. The IESO noted that circuits A8K/A9K are reaching end-of-life and require replacement, and that their replacement offers an opportunity to right-size them in alignment "with the needs of the system in a cost-efficient manner".

Hydro One considered two options for refurbishing circuits A8K and A9K and upgrading them to a higher amperage. The first option is Hydro One's proposed option: it would refurbish the lines and increase their ratings to 550A. The second option would also refurbish the lines, but would only increase their ratings to 390A, which Hydro One characterized as like-for-like sustainment. Hydro One stated that refurbishing the lines to 390 A would only meet the "pure sustainment need", would not achieve the long-term emergency operating rating recommended by the IESO, and would require other measures to be implemented in the Area, such as the greater use of local generation.

Hydro One considered two other options during the initial development of the Project: a do nothing alternative and an alternative that would build two new circuits to replace circuits A8K/A9K.[1] The do nothing alternative was dismissed because the existing circuits require renewal and because a status quo approach would not address the IESO's recommendation to upgrade the existing circuits to 550A. The new build replacement alternative was ruled out because of its cost (nearly double the cost of the proposed project) and because it would strand some assets that are not yet fully depreciated. In contrast, Hydro One stated that the proposed Project was designed to minimize the replacement of components that have remaining useful life.[2]

The IESO also considered alternatives[3] in the development of its project scope recommendation to Hydro One. The IESO concluded that the proposed Project is more cost effective than alternatives under the range of conditions assessed.

The IESO stated that circuit A8K will experience thermal overload under N-1 conditions (loss of A9K) starting in 2023 or 2024 (depending on the refurbishment option

[1] Exhibit I / Tab 1/ Schedule 2 (Response to OEB Staff 2)
[2] Exhibit I / Tab 7/ Schedule 7 (Response to Pollution Probe 7)
[3] Exhibit B / Tab 6 / Schedule 1 / Attachment 1. IESO report "End-of-Life Conductor Upgrades on the Ansonville x Kirkland Lake (AxK) 115 kV Lines".

implemented) unless local generation support is provided. As noted above, circuits in the Area are currently unable to supply the Area's load on their own. The Area's load is now served by a combination of circuits and local generation at the Northland Power complex. The IESO estimated that less generation support will be required if circuits A8K and A9K are upgraded to 550A than if they are replaced in a like-for-like manner at a rating of 390A. The lower amount of generation support required under the proposed upgrade option includes less production from local generation as well as less replacement local generation capacity following the expiry of existing Northland Power generator contracts.[4]

The IESO estimated that less generation support required under the proposed 550A upgrade option will result in cost savings that will more than offset the higher absolute cost of upgrading the circuits compared to the sustainment option.

The IESO estimated a net benefit of the proposed 550A upgrade option compared to the like-for-like 390A sustainment option. The IESO's estimate accounted for the cost of the two refurbishment options as well as the cost of local generation support required under each option. The IESO stated that the proposed Project, together with support from local generation, will ensure reliability of the Area at the least cost.

In addition to the estimated net savings that were quantified, the IESO also stated that that increasing the ratings of circuits A8K/A9K will provide additional flexibility for generation resources in the Kirkland Lake area to be dispatched in response to system needs, reduce reliance on arming local load rejection that is required today, and allow for future connection of new mining loads in the Area.

Submission

OEB staff supports the proposed solution, considering the IESO's evidence on need, its assessment of alternatives, Hydro One and the IESO's interrogatory responses and the supplemental information provided by Hydro One which "clarifies the IESO's consideration of higher rating options and the IESO's final recommendation to upgrade circuits A8K and A9K to 550A."

OEB staff submits that the IESO has demonstrated that the proposed circuit upgrade will result in net savings compared to the like-for-like, end-of-life-replacement alternative.

OEB staff submits that the IESO has demonstrated that its analysis, which supports its recommendation of the proposed Project, is reasonably robust against a range of key

[4] Exhibit I / Tab 1/ Schedule 8 (Response to OEB Staff 8)

sensitivities. These include natural gas prices, carbon prices, generator replacement options and costs, as well as electricity demand.[5]

OEB staff was assisted by the analysis that Hydro One undertook in response to interrogatories from Environment Defence, which asked Hydro One to compare the proposed 411 kcmil conductor to a larger alternative. [6] Hydro One's analysis demonstrated that the "incremental NPV result of selecting the larger 477 kcmil conductor, compared to the preferred option over a 40 year time horizon, yields an incremental negative cost (i.e. additional cost to ratepayers)" of $10.2 M and $12.9M, depending on the assumed discount rate.[7] Hydro One concluded that the analysis "ultimately shows that the additional incremental cost of the larger 477 kcmil conductor will not be recovered over a 40-year timeframe."

Hydro One's analysis accounted for the additional quantity and value of electricity loss reduction that would be achieved through use of the larger, 477 kcmil alternative. Hydro One's analysis demonstrated that the incremental electricity loss reduction savings associated with the larger, 477 kcmil alternative would be outweighed by its additional costs.

OEB staff acknowledges the IESO's initiative in identifying reliability and cost savings opportunities presented by the need to replace end-of-life circuits A8K/A9K.[8] OEB staff also acknowledges the IESO's analysis which demonstrated the appropriateness of the proposed upgrade compared to an effectively like-for-like replacement alternative.

OEB staff notes that while Hydro One showed that an even higher capacity conductor than the proposed upgrade would not be justified based on its incremental loss reduction alone, the IESO did not evaluate the potential broader benefits of a larger conductor than the proposed 411 kcmil upgrade (such as lower reliance on production from local generation and lower need for replacement local generation capacity).

In its initial response to OEB staff interrogatories, the IESO noted that it "did not consider higher incremental cost alternatives that would have exceeded the reliability need identified for the area in order to maximize net benefit overall for ratepayers".[9] The IESO clarified that "doing so would have been outside the scope and timing of the sustainment project".[10]

[5] Exhibit I / Tab 1/ Schedule 6, 8, 9 10 (Response to OEB Staff 6, 8, 9 and 10)
[6] Exhibit I / Tab 3/ Schedules 3 - 5 (Responses to Environmental Defence 3, 4 and 5)
[7] Exhibit I / Tab 2 / Schedule 5 (Responses to Environmental Defence 5)
[8] For example, Exhibit B / Tab 3 / Schedule 1\ Attachment 1 – "Rationale for the Upgrade of A8K and A9K Circuits in the Kirkland Lake Area"
[9] Exhibit I / Tab 1/ Schedule 3 (Response to OEB Staff 3)
[10] Ibid.

Hydro One filed additional clarification to this interrogatory response, which elaborated on the IESO's conclusion that a larger alternative to the proposed upgrade would have been outside the scope and timing of the options that the IESO reasonably ought to have considered.[11] Hydro One stated that a larger alternative, along with related upstream and downstream reinforcements, would not be feasible within the end-of-life replacement timeframe for A8K and A9K. Hydro One stated that "such options could take up to 10 years to plan and implement (when considering the broad scope of the plan as well as the lead time to develop and construct new circuits) and, therefore, do not meet the urgent nature of the sustainment needs."

Hydro One also clarified that the proposed upgrade would not preclude the option to increase the capacity of circuits A8K/A9K in the future if warranted. Hydro One indicated that the IESO would still recommend the proposed upgrade because "sensitivity analysis conducted by the IESO concluded that there remains to be a net benefit even if circuits A8K/A9K were only serving as a bridge for 9 years i.e., the time-frame until more significant transmission reinforcements that maximize rate payer value could be planned and implemented."

OEB staff appreciates the supplemental information and accepts Hydro One and the IESO's helpful explanations. OEB staff submits that in future instances where the IESO rejects potentially significant alternatives that may have provided more benefits to ratepayers, it would be especially helpful for the applicant or the IESO to provide such explanations for its conclusions in the prefilled evidence and, as applicable, in interrogatory responses.

## 2.2 Project Cost

The estimated project capital cost is $69.7 million, including overheads and capitalized interest but not including removal costs of $5.9 million. The total project cost, including removal costs, is $75.6 million. Hydro One stated that the project cost estimate has an AACE Class 3 level of accuracy (-20% / +30%).

Hydro One's estimated project cost includes a contingency amount in recognition of risks. Hydro One stated that the contingency amount as a percentage of direct costs is within the range of other, similar line construction projects undertaken by Hydro One.

Hydro One cited two of its previous transmission projects as comparator projects; each involved the refurbishment of existing 115 kV circuits in northern Ontario.

[11] Supplementary information to Exhibit I / Tab 1 / Schedule 3 (Response to OEB Staff 3) provided by Hydro One in a letter dated November 10, 2021

Hydro One stated that when considered on a cost per km basis and adjusted to 2023 dollars, the comparator projects demonstrate that Hydro One's cost estimate for the Ansonville by Kirkland Lake Refurbishment Project is consistent with the cost to complete recent transmission line works. The total project cost per circuit km of the comparator projects was between $425,000 and $439,000. Hydro estimates the Ansonville by Kirkland Lake Refurbishment Project will cost $423,000 per circuit km

Submission

OEB staff submits that Hydro One described a reasonable basis for its project cost estimate and that it followed a reasonable process for assessing project risks and developing a contingency estimate.[12] OEB staff also submits that Hydro One has demonstrated that the cost of the Project is consistent with the cost to complete comparable line projects in northern Ontario.[13] Given the above, OEB staff does not take issue with Hydro One's cost estimate for the project.

## 2.3 Consumer Impacts

Circuit A8K is a network transmission line between Ansonville TS and Kirkland Lake TS. Hydro One circuit A9K is a dual function transmission line that carries network flows between Ansonville TS and Kirkland Lake TS and supplies customer loads from Monteith DS, and Ramore TS. Hydro One advised that, based on the cost allocation methodology approved by the OEB, circuit A8K is allocated 100% to the network pool and circuit A9K is allocated 85% to the network pool and 15% to the line connection pool.

The costs for the upgrade of circuits A8K and A9K will be included in the network and line connection pools. Hydro One stated that while the sustainment of the circuits is Hydro One's responsibility, the circuits are being upgraded at the IESO's request. Hydro One therefore stated that the cost of the Project will not be allocated to any individual customer.

Hydro One estimates that the project will have a negative net present value of $60.2 million on the network pool, given the portion of the project cost allocated to the network pool. The resulting revenue requirement shortfall will be recovered via network rates (subject to OEB approval in a future rates case). Hydro One estimates the project will have a negative net present value of $5.3 million on the line connection pool. The resulting revenue requirement shortfall will be recovered via line connection pool rates.

Over a 25-year horizon, Hydro One anticipates that the project will cause a 0.51%

[12] For example, Exhibit I / Tab 1 / Schedule 16 (Response to OEB Staff 16)
[13] For example, Exhibit B / Tab 7 / Schedule 1

increase in the network pool revenue requirement, which will increase the current network rate of $3.92/kW/month to $3.94/kW/month. The maximum annual revenue requirement related to the proposed network facilities will be $4.8 million in 2031.

Hydro one estimates that the project will also change the line connection pool revenue requirement once its impacts are reflected in the transmission rate base. However, Hydro One estimates that this change will not be material enough to impact the 2021 OEB approved rate of $0.81 kW/month. The maximum annual line connection pool revenue requirement related to the proposed facilities will be $0.4 million in the year 2031.

Hydro One estimates that the project will increase the typical residential customer bill by $0.03 per month or 0.02%. This equates to an increase of approximately $0.38 per year.

Submission

OEB staff submits that Hydro One's proposed allocation of project costs to the network and line connection rate pools is appropriate. OEB staff takes no issue with Hydro One's position that no customer contribution is required.

OEB staff submits that the consumer impacts of the Ansonville TS by Kirkland Lake TS A8K/A9K Refurbishment Project are appropriate given the need for the project, its costs and its alternatives.

OEB staff also submits that Hydro One's evidence suggests that the project will have a relatively modest impact on customers: the project will increase the typical residential customer bill by $0.03 per month or by 0.02%. This equates to an increase of approximately $0.38 per year.

## 2.4 Reliability and Quality of Service

Hydro One has proposed to refurbish sections of existing circuits A8K and A9K while increasing their long-term emergency operating rating, as recommended by the IESO. The IESO stated that the existing ratings of circuits A8K and A9K are inadequate for the long-term reliable operation of the Kirkland Lake Area, and that upgrading them will help maintain reliability in the area.

The IESO's Final System Impact Assessment (SIA) concluded that the project is expected to have no material adverse impact on the reliability of the integrated power system.

Hydro One's Final Customer Impact Assessment (CIA) concluded that the project will

not have any adverse effects on connected Hydro One Transmission customers.

Submission

OEB staff does not have any concerns about the reliability and quality of service associated with the Ansonville TS by Kirkland Lake TS A8K/A9K Refurbishment Project, considering Hydro One and the IESO's evidence, interrogatory responses, and the conclusions of the IESO's SIA and Hydro One's CIA.

## 2.5 Landowner Agreements

The existing circuit A8K/A9K transmission corridors are predominantly located on privately-owned properties, over which Hydro One has easement rights. Hydro One identified ten properties on the right of way that do not have easements registered on title. The ten properties are owned by private individuals.

Hydro One stated that it plans to acquire a registered easement on the ten properties, reflecting fair market value as determined by an independent Land Value Study. Hydro One stated that it will pay reasonable legal fees incurred by the owner as well as all survey and registration costs. Hydro One does not expect to require permanent additions to the right of way on any adjacent properties.

Hydro One requested OEB approval of four agreements that it will use to obtain land rights for the Project:

- Offer to Grant an Easement
- Off-Corridor Temporary Access and Temporary Access Road
- Construction License Agreement for construction staging
- Damage Claim Agreement and Release Form

Hydro One stated that the form of these agreements is "similar to" those approved by the OEB in previous leave to construct application applications.

Hydro One stated that it does not anticipate requiring early access to lands. Hydro One also stated that it will work with road authorities as necessary to obtain work permits as required and that railway and waterway crossing permits may be updated as necessary.

Submission

OEB staff has reviewed the proposed forms of agreements and has no issues or concerns. The agreements are consistent with agreements approved by the OEB

through previous proceedings[14].

Hydro One has advised that it has not received any concerns regarding the registration of any permanent easement rights. Hydro One has also advised that it does not foresee any issue with finalizing the registered easements.[15]

### 2.6 Conditions of Approval

The OEB Act permits the OEB, when making an order, to impose such conditions as it considers proper. The OEB has established a set of standard conditions of approval for transmission Leave to Construct applications. They were attached to Procedural Order No. 1 in this proceeding[16].

Submission

OEB staff proposes that the standard conditions of approval attached to Procedural Order No. 1 be placed on Hydro One. The proposed conditions have been approved by the OEB in prior leave to construct applications. They have been reviewed by Hydro One during this proceeding; Hydro One stated that it has no concerns with them.[17]

## 3. Conclusion

OEB staff submits that Hydro One's leave to construct application for the Ansonville TS by Kirkland Lake TS A8K/A9K Refurbishment Project should be granted subject to the conditions of approval proposed in this submission and that Hydro One's proposed forms of landowner agreements should be approved.

~All of which is respectfully submitted~

[14] EB-2019-0077 Decision and Order October 17, 2019 (Power South Nepean Project); EB-2018-0117 Decision and Order April 23, 2020 (Barrie Area Transmission Upgrade)
[15] Exhibit I / Tab 1 / Schedule 21 (Response to OEB Staff 21)
[16] EB-2021-0107 Procedural Order No. 1, Schedule B, Attachment 1
[17] Exhibit I / Tab 1 / Schedule 22 (Response to OEB Staff 22)