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Joanne Richardson
Director – Major Projects and Partnerships
Regulatory Affairs

BY EMAIL AND RESS

August 25, 2021

Ms. Christine E. Long
Registrar
Ontario Energy Board
Suite 2700, 2300 Yonge Street
P.O. Box 2319
Toronto, ON M4P 1E4

Dear Ms. Long:

EB-2021-0107 – Hydro One Networks Inc. Leave to Construct Application – Ansonville TS and Kirkland Lake TS A8K/A9K Refurbishment Project – Application and Evidence

Pursuant to Section 92 of the *Ontario Energy Board Act, 1998*, Hydro One Networks Inc. seeks the Ontario Enery Board's ("OEB") approval for an Order or Orders granting leave to upgrade existing transmission line facilities ("**A8K A9K Project**" or "**Project**") in the townships of Iroquois Falls, Black River-Matheson, and Kirkland Lake.

Additionally, pursuant to s. 97 of the *Ontario Energy Board Act, 1998,* Hydro One Networks Inc. seeks for an Order granting approval of the forms of the agreement offered or to be offered to affected landowners.

An electronic copy of this Application and Evidence has been filed through the OEB's Regulatory Electronic Submission System.

Sincerely,

Joanne Richardson

Exhibit List

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ONTARIO ENERGY BOARD

IN THE MATTER OF the *Ontario Energy Board Act, 1998*;

AND IN THE MATTER OF an Application by Hydro One Networks Inc. pursuant to s. 92 of the *Act* for an Order or Orders granting leave to upgrade existing transmission line facilities ("**A8K A9K Project**" or "**Project**") in the townships of Iroquois Falls, Black River-Matheson, and Kirkland Lake.

And in the matter of an Application by Hydro One Networks Inc. pursuant to s. 97 of the Act for an Order granting approval of the forms of the agreement offered or to be offered to affected landowners

APPLICATION

1. The Applicant is Hydro One Networks Inc. ("**Hydro One**"), a subsidiary of Hydro One Inc. The Applicant is an Ontario corporation with its head office in the City of Toronto. Hydro One carries on the business, among other things, of owning and operating transmission facilities within Ontario.
2. Hydro One hereby applies to the Ontario Energy Board (the "**Board**") pursuant to s. 92 of the *Ontario Energy Board Act, 1998* (the "**Act**") for an Order or Orders granting leave to upgrade approximately 90 kilometres of transmission line facilities in northern Ontario. These facilities are required to meet the areas overall load requirements as recommended by the IESO in concert with addressing end-of-life sustainment needs. Documentation from the IESO outlining the need for upgrading the facilities has been provided as **Exhibit B, Tab 3, Schedule 1, Attachment 1 and 2**. Accordingly, this Project has been identified as a non-discretionary sustainment project in **Exhibit B, Tab 4, Schedule 1**.

3. The proposed A8K A9K Project will upgrade approximately 180 km in total, or 90 km per circuit, of 115 kV circuits ("**A8K and A9K**") between Ansonville Transmission Station ("**TS**") and Kirkland Lake TS. An overview map of this area is provided in **Exhibit B, Tab 2, Schedule 1, Attachment 1** and a schematic diagram of the Project can be found at **Exhibit B, Tab 2, Schedule 1, Figure 1**.

   The proposed in-service date for the A8K A9K Project is the end of April 2023, assuming a construction commencement date of January 2022 and an OEB approval of this Application by October 2021. A project schedule is provided at **Exhibit B, Tab 11, Schedule 1**.

4. The Project will continue to utilize the existing corridor. Hydro One has identified ten properties on the right of way that do not have easements registered on title. Hydro One will be registering easements on these properties, however the right of way over the properties is not expected to change. Temporary construction rights for access or staging areas may be required for the duration of the construction period of the A8K A9K Project. Further information on land related matter is found at **Exhibit E, Tab 1, Schedule 1**.

5. The IESO has completed a System Impact Assessment ("**SIA**"). The SIA concludes that the Project is expected to have no material adverse impact on the reliability of the integrated power system and recommends that a *Notification of Conditional Approval for Connection* be issued. The IESO's Notification of Conditional Approval is provided as **Exhibit F, Tab 1, Schedule 1, Attachment 1** and the SIA is provided as **Exhibit F, Tab 1, Schedule 1, Attachment 2** of Hydro One's prefiled evidence.

6. Hydro One has completed a Customer Impact Assessment ("**CIA**") in accordance with Hydro One's connection procedures. The results confirm that there will be no impacts on area customers as a result of the A8K A9K Project. A copy of the CIA is provided as Exhibit G, Tab 1, Schedule 1. Hydro One will fulfill any requirements of the SIA and the CIA, and will obtain all necessary approvals,

permits, licences, certificates, agreements and rights required to construct, operate and maintain the Project.

7. The total capital cost of the transmission line facilities for which Hydro One is seeking approval is approximately $70 million[1]. The details pertaining to these costs are provided at Exhibit B, Tab 7, Schedule 1, Table 1.

8. Using 2020 OEB-approved uniform transmission rates, project economics, as filed in **Exhibit B, Tab 9, Schedule 1**, show that the A8K A9K Project will result in a ($0.02/kw/month) increase in the network connection pool rate, no impact on the line connection pool rate and a 0.02% increase on the overall average Ontario residential consumer's electricity bill. The 2020 OEB-approved uniform transmission rates have been used to measure the Project's customer impacts on rates. 2020 rates were used because, unlike 2021 OEB-approved rates, they do not include any foregone revenue that Hydro One is currently recovering.

9. This Application is also for approval of the forms of the agreement offered or to be offered to affected landowners, pursuant to s. 97 of the Act. The agreements are in the same form as previously approved in prior Hydro One Networks leave to construct proceedings. The agreements can be found as attachments to **Exhibit E, Tab 1, Schedule 1**.

10. The Application is supported by written evidence which includes details of the Applicant's proposal for the transmission line. The written evidence is prefiled and may be amended from time to time prior to the Board's final decision on this Application.

11. Given the information provided in the prefiled evidence, Hydro One submits that the Project is in the public interest. The Project meets the need of the transmission system and improves quality of service and reliability with minimal impact on price.

[1] There will be an additional $6M of OMA removal costs associated with constructing this project.

12. Hydro One requests that a decision on this Application be provided by October 2021 to ensure the system benefits enabled by this Project, described in **Exhibit B, Tab 6, Schedule 1, Attachment 1**, flow to ratepayers as expeditiously as possible. Notably, Hydro One highlights that even under a low growth scenario for the Kirkland Lake Area, when compared to a *like-for-like* replacement, the IESO's planning studies show that the overall benefit of proceeding with the Project is six times greater than the cost of the Project. To that end, Hydro One consents to this Application being disposed of without a hearing as the net impact of the Project[2] will not adversely affect customers in a material way. However, if the OEB believes a hearing is necessary, Hydro One is requesting a written hearing for this proceeding.

13. Hydro One requests that a copy of all documents filed with the Board be served on the Applicant and the Applicant's counsel, as follows:

a) The Applicant:

Eryn MacKinnon
Sr. Regulatory Coordinator
Hydro One Networks Inc.

Mailing Address:

7th Floor, South Tower
483 Bay Street
Toronto, Ontario M5G 2P5
Telephone: (416) 345-4479
Fax: (416) 345-5866
Electronic access: regulatory@HydroOne.com

b) The Applicant's counsel:

Michael Engelberg
Assistant General Counsel
Hydro One Networks Inc.

[2] At Exhibit B, Tab 6, Schedule 1, Attachment 1, Section 5.4 and 5.5.

Mailing Address:

8th Floor, South Tower
483 Bay Street
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Fax: (416) 345-6972
Electronic access: mengelberg@HydroOne.com

Project Overview Documents

The 115 kV circuits A8K and A9K span between Ansonville TS and Kirkland Lake TS (about 90km per circuit). For the most part, these circuits run in parallel, but have locations of slight deviation, where one circuit feeds or bypasses intermediate or tapping stations Ramore TS and Monteith DS. These circuits were constructed in the 1930s and provide supply to H20 Power, Iroquois Falls Power Corp. and local Hydro One distribution customers.

Hydro One's proposed A8K/A9K Refurbishment Project (**"A8K A9K Project**" or "**Project**") aims to refurbish all deteriorated line sections of circuits A8K and A9K, including segments containing obsolete copper conductor and aluminum conductor steel reinforced ("**ACSR**") conductor tested to be at end-of-life condition, while increasing each circuit's Long Term Emergency operating rating to 550 A, as requested by the IESO. Approximately 180 circuit km of 115kV wood pole transmission line has been identified for refurbishment and upgrade to meet the new 550 A ampacity.

Attachment 1 of this Schedule provides a map of these circuits and Figure 1 below shows a single line diagram of circuits A8K and A9K.

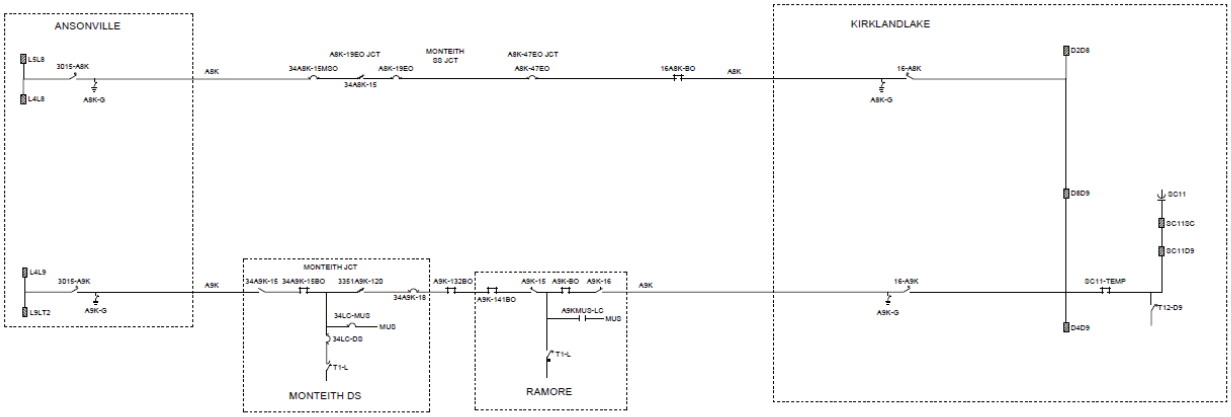

Figure 1: Single Line Diagram of Circuits A8K and A9K

All of the proposed facilities are subject to section 92 approval.

Lake Abitibi
Abitibi River
ANSONVILLE TS
A9K
Town of
Iroquois Falls
Cochrane, Unorganized, North Part
Wahgoshig
First Nation
(Abitibi Indian
Reserve No. 7)
HIGHWAY 11
HIGHWAY 101
Township of
Black River-Matheson
Cochrane, Unorganized,
South West Part
Cochrane,
Unorganized,
South East Part
A8K
A9K
Town of
Kirkland Lake
KIRKLAND LAKE TS
HIGHWAY 11
HIGHWAY 112
Timiskaming, Unorganized, West Part

hydro one

Produced By: Hydro One
Date: Nov 6, 2020

Transformer Station
Section of A8K/A9K Circuits to be Refurbished
Transmission Line
Highway
Railway
First Nation Reserve
Municipal Boundary
Waterbody

A8K/A9K Transmission Line Refurbishment Project: Overview Area Map

1:215,000

0 4 8 km

Evidence In Support of Need

On August 15, 2019, the IESO provided Hydro One with a written recommendation to 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 stated that upgrading these circuits running from Ansonville to Kirkland Lake transformer stations are an important part of meeting the area's overall load requirements, maintaining reliability in the area, and enabling system benefits. The IESO concluded through planning studies covering a range of scenarios, that the existing ratings of circuits A8K and A9K are inadequate for the long-term reliable operation of the area.

This letter was followed up with a subsequent letter on May 6, 2020, providing further detail on the justification for this request to uprate circuits A8K and A9K. This justification included:

- Reduce the reliance on Northland Power's Kirkland Lake Generating Station ("NPKL") for baseload supply and enable its ability for greater dispatch
- Enable greater bulk system transfers to meet industrial loads
- Improve the ability to connect new loads in the Kirkland Lake area, including new mining loads.

The aforementioned letters are provided as Attachment 1 and 2 of this Schedule.

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May 6, 2020

Mr. Robert Reinmuller
Director, Transmission Planning
Hydro One Networks Inc.
483 Bay St., 13th Floor, North Tower
Toronto, Ontario M5G 2P5

Re: Rationale for the Upgrade of A8K and A9K Circuits in the Kirkland Lake Area

Dear Robert:

This is a follow-up to our August 15, 2019 letter, in which the IESO recommended that Hydro One proceed with upgrading the rating of the 115 kV transmission lines A8K and A9K (the "**Circuits**") in the Kirkland Lake area (the "**Area**") as part of their planned end-of-life refurbishment. These Circuits running from Ansonville to Kirkland Lake transformer stations are an important part of meeting the Area's overall load requirements. As stated in our previous letter, this upgrade is required to maintain reliability in the Area, and enable system benefits by allowing local generation to operate in a more cost effective manner. Herein we describe the rationale for these upgrades, in the context of potential long-term value to Ontario ratepayers.

Background

Customer load in the Area is met by both 115 kV transmission facilities and local generation – Northland Power's Kirkland Lake Generating Station ("NPKL").[1] The customer mix in the Area consists primarily of industrial loads with relatively flat demand profiles, which means that the overall Area load is relatively constant. Since the existing 115 kV transmission facilities are insufficient to reliably meet Area needs, a level of baseload output from NPKL is required. The 115 kV system also provides an underlying path for limited bulk system transfers. With the end-of-life refurbishment of the Circuits, there is an opportunity to reduce the reliance on NPKL for baseload supply, and increase transfers, economic or otherwise, into the Area.

Rationale for Line Upgrades

At present, the summer planning ratings of the A8K and A9K circuits are 230 Amperes (A) and 290 A, respectively. The IESO assessed the load meeting capability of replacing the Circuits with "like-for-like" and up to ratings of 550 A[2] (the highest rating that can be accommodated by the existing tower structures), recognizing the incremental cost of the 550 A replacement to be approximately $10 M above the estimated like-for-like replacement cost of $57 M.[3]

[1] NPKL is comprised of both a combined cycle plant and a peaking plant, but any reference within this letter is in respect of the combined cycle plant.

[2] This is the required summer long-term post-contingency rating; however, the IESO understands from Hydro One that due to sag limitations caused by low line clearances, the summer continuous long-term and short-term emergency ratings are the same for A8K and A9K.

[3] Source: Hydro One Networks Inc.

As described in the August 15, 2019 letter, the IESO concluded through planning studies covering a range of scenarios, that the existing ratings of the Circuits are inadequate for the long-term reliable operation of the Area. If upgraded to 550 A, the increased load meeting capability would enable greater bulk system transfers to meet industrial loads, and enable greater dispatch-ability of NPKL. This would create the opportunity for a new incentive structure and shared savings with NPKL. Once the upgrade to 550 A comes into service, the ratepayer benefit is expected to significantly exceed the cost of the $10 million incremental investment over the remaining life of the NPKL contract.

Additional Line Upgrade Considerations

In addition to ratepayer savings resulting from NPKL, higher line ratings would also improve the ability to connect new loads in the Area, including new mining load. The planned expansions of existing mines, and the potential for a new mining project, could increase peak electricity demand in the Area by approximately 90 MW over the next several years.

Recommendation

The IESO continues to recommend that Hydro One upgrade the rating of the Circuits to 550 A as part of their planned end-of-life refurbishment. The IESO also requests that Hydro One continue to keep the IESO informed of the planned in-service date for the refurbished Circuits. This will enable the timely execution and implementation of a revised contract for NPKL, maximizing the opportunity for ratepayer savings.

The IESO would be pleased to provide Hydro One and/or the Ontario Energy Board with additional technical study details if requested in support of regulatory approval.

Yours truly,

Ahmed Maria
Director, Transmission Planning
Independent Electricity System Operator (IESO)

Cc: Bruno Jesus, Hydro One
Alessia Dawes, Hydro One
Leonard Kula, IESO
Terry Young, IESO
Michael Lyle, IESO
Chuck Farmer, IESO
Steve Norrie, IESO
Christopher Reali, IESO
Salvatore Provvidenza, IESO
Edward Davidian, IESO
IESO Records

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August 19, 2019

Mr. Robert Reinmuller
Director, Transmission Planning
Hydro One Inc.
483 Bay St., 13th Floor, North Tower
Toronto, Ontario M5G 2P5

Dear Robert,

Re: End-of-Life Conductor Upgrades on the Ansonville x Kirkland Lake (AxK) 115 kV Lines

The purpose of this letter is to request that Hydro One upgrade the rating of the 115 kV circuits A8K and A9K, between Ansonville TS and Kirkland Lake TS, to 550 Amperes[1] as part of the planned end-of-life refurbishment of these lines. This upgrade is required to maintain reliability in the Kirkland Lake area under a number of potential planning scenarios.

Need

The 115 kV transmission circuits, A8K and A9K, between Ansonville TS and Kirkland Lake TS, are reaching end-of-life and require refurbishment. Circuit A8K presently has a summer planning rating of 230 Amperes, while A9K presently has a summer planning rating of 290 Amperes. It is the IESO's understanding that Hydro One has an investment plan to replace the existing conductors with conductors that would maintain the existing thermal ratings.

The IESO's planning studies have determined that the existing ratings of circuits A8K and A9K are inadequate for the reliable operation of the Kirkland Lake area, given a range of potential planning scenarios. These scenarios include different modes of operation for the generation resources in the area and different load forecast assumptions. Higher conductor ratings were assessed, given these planning scenarios, for the potential benefit to the system as well as the ability to connect new loads to the system. The IESO's assessments indicate that increasing the ratings 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. Planned expansions of existing mines and a potential new mining project could increase peak electricity demand by approximately 90 MW between 2019 and 2024.

There is an opportunity to better align the rating of A8K and A9K transmission circuits with the current system needs as well as prepare for potential future needs of the area, as part of the anticipated

[1] This is the required summer long-term post-contingency rating. However, the IESO understands from Hydro One that due to sag limitations caused by low line clearances, summer continuous, and long-term and short-term emergency ratings (i.e., continuous, LTE, and STE) are the same for A8K and A9K.

refurbishment. The IESO understands that a rating of 550 Amperes is the highest rated conductor that can be accommodated with the current tower structures at the lowest incremental cost.

Request

The IESO recommends that Hydro One upgrade the rating of the 115 kV circuits A8K and A9K, between Ansonville TS and Kirkland Lake TS, to 550 Amperes[2] as part of the planned end-of-life refurbishment of these lines. The IESO also requests that Hydro One provide the planned in-service date for the refurbished circuits.

The IESO would be pleased to provide Hydro One with support for the upgrade in the approvals processes associated with these facilities.

Kind regards,

Chris Reali for:

Ahmed Maria,
Director, Transmission Planning,
Independent Electricity System Operator (IESO)

c.c. Mr. Bruno Jesus, Hydro One
Mr. Leonard Kula, IESO
Mr. Terry Young, IESO
Mr. Chris Reali, IESO
Mr. Steve Norrie, IESO
Mr. Edward Davidian, IESO

[2] Refer to footnote 1.

Project Classification and Categorization

Project Classification

Per the Board's filing guidelines, rate regulated projects are classified into three groups based on their purpose.

- Development projects are those which
  - (i) provide an adequate supply capacity and/or maintain an acceptable or prescribed level of customer or system reliability for load growth or for meeting increased stresses on the system; or
  - (ii) enhance system efficiency such as minimizing congestion on the transmission system and reducing system losses.
- Connection projects are those which provide connection of a load or generation customer or group of customers to the transmission system.
- Sustainment projects are those which maintain the performance of the transmission network at its current standard or replace end-of-life facilities on a "like for like" basis.

Based on the above criteria, the Project is predominantly a Sustainment project, as it will replace end-of-life facilities with the most-similar current like-for-like facilities. However in doing so, the Project will also improve the supply in Northeastern Ontario by providing greater bulk system transfers capabilities, meet industrial load requirements, and enable greater dispatch-ability of Northland Power's Kirkland Lake Generating Station.

Project Categorization

The Board's filing guidelines require that projects be categorized to distinguish between a project that is a "must-do", which is beyond the control of the applicant ("non-discretionary"), from a project that is at the discretion of the applicant ("discretionary"). Non-discretionary projects may be triggered or determined by such things as:

a) mandatory requirement to satisfy obligations specified by regulatory organizations including NPCC/NERC or by the Independent Electricity System Operator (IESO);
b) a need to connect new load (of a distributor or large user) or new generation connection;
c) a need to address equipment loading or voltage/short circuit stresses when their rated capacities are exceeded;
d) projects identified in a provincial government approved plan;
e) projects that are required to achieve provincial government objectives that are prescribed in governmental directives or regulations; and
f) a need to comply with direction from the Ontario Energy Board in the event it is determined that the transmission system's reliability is at risk.

Based upon the above criteria, the Project is considered non-discretionary. The Project is being undertaken to replace end of life facilities and, at the request of the IESO, it will increase power transfer capability into the Kirkland Lake area and it will support the transmission system during periods of high output from generation sources.

Categorization and Classification

		Project Need	
		Non-discretionary	Discretionary
Project Class	Sustainment	**X**	

Cost Benefit Analysis and Options

TRANSMISSION ALTERNATIVES

Hydro One aims to refurbish all deteriorated line sections of circuits A8K and A9K, while increasing each circuit's Long Term Emergency operating rating to 550 A, as requested by the IESO. To achieve this, the following options were considered:

Alternative 1 (Preferred) – Replace the deteriorated components along all line sections of circuits A8K and A9K, including obsolete copper conductor, aluminum conductor steel reinforced ("**ACSR**") conductor tested to be at end-of-life condition, corroded steel shieldwire and rotten wood poles. The higher Long Term Emergency operating rating of 550 A will be achieved through the use of taller wood poles, which will provide for the increased clearances required for higher thermal capability. Any work on non-deteriorated components in order to meet the increased rating requirement will be minimized. Alternative 1 refurbishes an approximate total of 180 circuit km of transmission circuits A8K and A9K.

Alternative 2 – Replace the deteriorated components along all line sections of circuits A8K and A9K, including obsolete copper conductor, aluminum conductor steel reinforced ("ACSR") conductor tested to be at end-of-life condition, corroded steel shieldwire and rotten wood poles. The existing ampacity of circuits A8K and A9K are limited to 230 A and 290 A respectively. Scope of work for this alternative is limited to refurbishing end of life structures, conductors and other transmission line components. This approach would result in an ampacity of 390 A. This alternative, however, would only meet the pure sustainment need and would not meet a Long Term Emergency operating rating of 550 A, as requested by the IESO. Alternative 2 refurbishes an approximate total of 112 circuit km of transmission circuits A8K and A9K.

The estimates developed for both options were consistent with the American Association of Cost Engineering (AACE) standards and were characterized by an AACE Class 3 (+30%/-20%) estimates. Alternative 1 estimate resulted in a total gross capital cost of $75.7M resulting in a cost per cct-km of $423k. Conversely, Alternative 2 resulted in an estimated gross capital cost of $57.7M resulting in a cost per cct-km of $515k[1].

Hydro One recommends Alternative 1 in order to meet both the sustainment and IESO's ampacity requirements for circuits A8K and A9K.

[1] Alternative 2 requires work on 112 cct kms, i.e., less than the 180 kms on Alternative 1.

Quantitative and Qualitative Benefits of the Project

System benefits delivered by the Project are predominantly documented in the supplementary evidence provided by the IESO found at Attachment 1 of this Schedule. In concert with those benefits, the A8K/A9K Project encompasses the following quantitative benefits:

Increase Thermal Rating of A8K and A9K

This investment will increase the thermal limit of A8K and A9K circuits to a minimum summer Long Term Emergency rating of 550A.

Loss Reduction

Hydro One's minimum standard size conductor for this range of application is 411 ACSR. All alternatives presented use this size of conductor, however the preferred alternative results in replacing more line with this sized conductor, and therefore results in greater loss reduction.

Savings due to decreased system losses will continue to be observed due to the life expectancy of the asset, and will increase over time as system flows increase on both circuits. This solution addresses planned sustainment activities and benefits ratepayers by implementing a project that will minimize transmission line losses.

Table 1 - Annual Savings due to Loss Reduction

	A8K	**A9K**
Total Annual Energy Loss (MWh) - Existing Conductor	1572	1329
Total Annual Energy Loss (MWh) - 411 ACSR	829	710
Annual Energy Savings (MWh)	743	619
Annual Savings ($)	$10,030	$8,356
Total Annual Savings ($)	$18,386	

The line loss results above are predicated on the following:

- Average 2020 HOEP @ $13.5/MWh
- 2020 Network Flows used to determine average annual savings ($)
- IESO Winter Base case used to determine loss % on conductors pre/post project

End-of-Life Conductor Upgrades on the Ansonville x Kirkland Lake (AxK) 115 kV Lines

August 2021

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Table of Contents

1. Overview

This report provides a summary of the Independent Electricity System Operator's ("IESO") planning studies conducted for the Kirkland Lake Area (the "Area") that informed the recommendation to upgrade the 115 kV circuits A8K/A9K to a summer planning rating of 550 Amperes (the "Upgrade Option") as part of their planned end-of-life replacement.

As outlined in this report, upgrading circuits A8K/A9K as part of their planned end-of-life replacement is the least-cost means of ensuring reliability in the Area when considering planning assumptions related to demand growth and capability of local generation.

Since the IESO issued letters to Hydro One Networks Inc. ("Hydro One" or "HONI") recommending the upgrade (refer to Attachments 1 and 2 to Exhibit B-03-01), new information is available on the demand growth in the area, the capability of local generation, and the project costs (provided by Hydro One); these updates are noted throughout this report and reflected in the analysis.

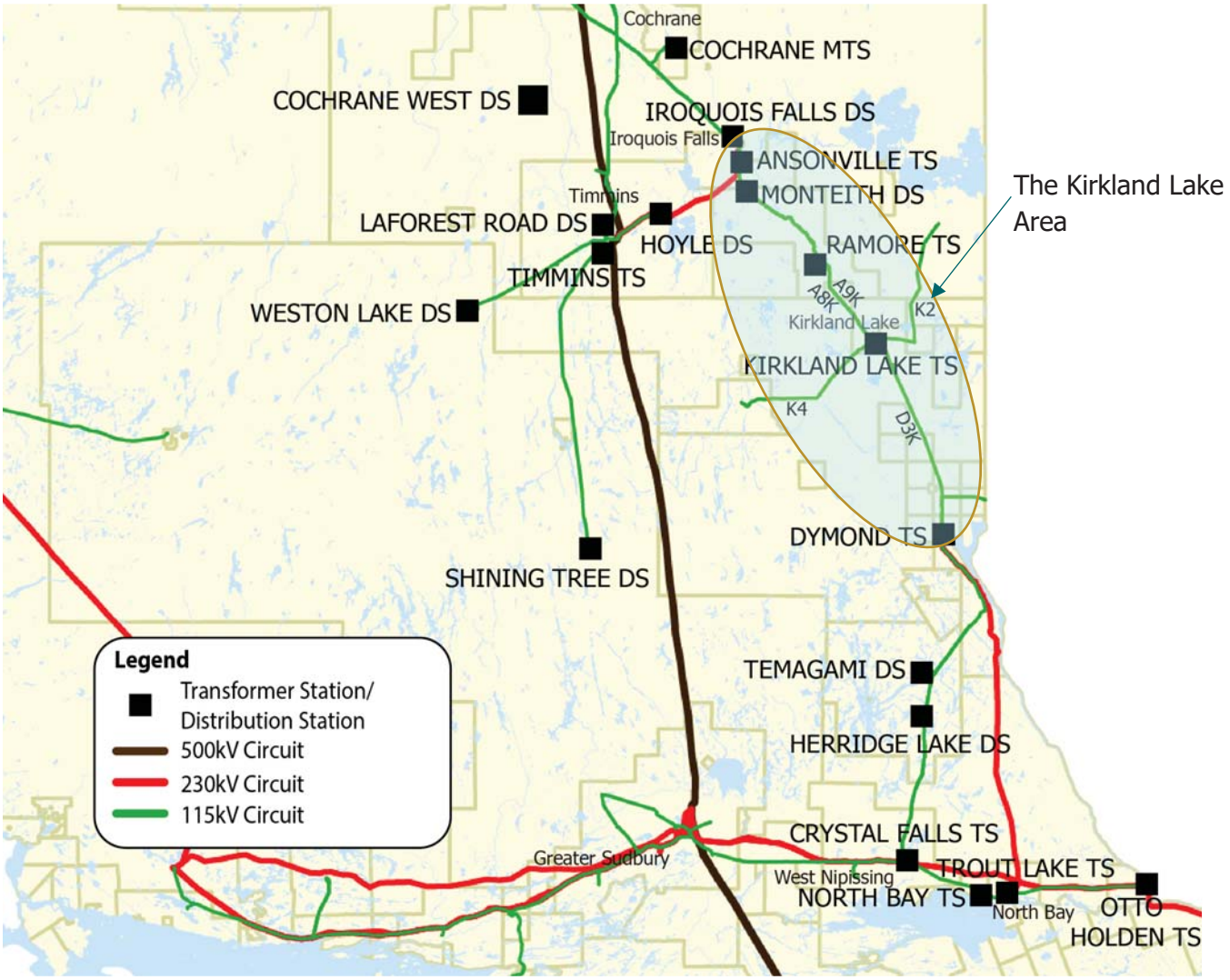
2. The Kirkland Lake Area

The Area is a 115 kV local network in the Northeast Zone of the IESO-controlled grid ("ICG"). As shown in Figure 1, this local network is supplied by two 230/115 kV transformer stations at Dymond TS, in the municipality of Temiskaming Shores, and Ansonville TS, in the municipality of Iroquois Falls, and circuits A8K, A9K and D3K, which also form part of the Northeast Zone's underlying 115 kV network and support bulk transfers. The local network also includes circuits K2 and K4, which are radial load-serving circuits that serve a load centre concentrated near the municipality of Kirkland Lake that primarily consists of mining loads with relatively flat load profiles.

The existing 115 kV transmission facilities are not sufficient to reliably supply the customers in the Area, and thus the balance of supply is provided by Northland Power's natural-gas fired generation complex (NPKL CGS), particularly the combined cycle units.

NPKL CGS is equipped with six generation units, G1 through G6. Units G1-G5 operate in a combined-cycle configuration, with 3 gas turbines (G1, G2 and G4) and 2 steam turbines (G3 and G5). Unit G6 is a standalone simple cycle gas turbine.

Figure 1 | The Kirkland Lake Area and Surrounding Area



3. Planning Context and Drivers

The following sections outline the planning context and drivers underpinning the reliability study of the Area.

3.1 Hydro One Sustainment Plans for A8K and A9K

Hydro One has indicated that the 115 kV transmission circuits A8K/A9K, between Ansonville TS and Kirkland Lake TS, are reaching end-of-life and require replacement. When an asset reaches end-of-life, a decision must be made on how best to replace the asset. For example, an asset can be replaced like-for-like, right-sized in accordance with reliability needs, or decommissioned if it is no longer needed[1]. End-of-life replacements offer an opportunity to align an asset's replacement strategy with the needs of the system in a cost-efficient manner.

In this context, the IESO has considered the ability of Hydro One's base sustainment plan to meet reliability in the Area, when considering planning assumptions for demand and capability of local generation, as outlined in this report. The base sustainment plan includes replacing circuits A8K/A9K with like-for-like conductors that would result in increased circuit ratings to a summer planning rating of 390 Amperes for both circuits; this is termed the "Base Option" throughout. The opportunity to right-size the circuits, or further upgrade them beyond the Base Option, has also been considered as an alternative to meet the Area's reliability needs outlined in this report.

3.2 Demand Growth in the Kirkland Lake Area

The customer mix in the Area is predominantly industrial with relatively flat load profiles and limited seasonal variation. The non-coincident peak demand of the existing customers in the Area is approximately 112 MW in the winter and 100 MW in the summer. Based on submitted connection assessment applications, the peak demand in the Area is expected to grow significantly due to customer expansions and a potential new mining development as per Table 1. Note that the expected peak demand increase is approximately 23 MW higher by 2029 than the expected peak demand increase at the time the August 2019 and May 2020 letters from the IESO to Hydro One were issued (Attachment 1 and 2 to Exhibit B-03-01). This increase reflects updated information with respect to customer expansion plans. The demand forecast used for this work was extended until 2031 and is shown in the table below.

Table 1 | Demand Forecast (Non-Coincident, Summer Peak in MW)

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
MW	120.2[2]	136.7	140.7	195.7	203.7	203.7	205.7	207.7	211.7	211.7	211.7

3.3 Generation Assumptions

As per the IESO's System Impact Assessment (SIA) CAA ID: 2020-680, Kirkland Lake Power Corporation[3], a counterparty to the IESO Kirkland Lake G1-G5 NUG contract, has proposed to change the configuration of its units to enable modifications internal to the generating facility.

[1] Decommissioning is not an acceptable option in this case.
[2] This value includes a planned expansion at an existing facility, in 2021.
[3] Kirkland Lake Power Corporation is a subsidiary of Northland Power.

Phase 1 of these modifications included swapping the G1-G3 circuit connections with the circuit connections for G4-G5 and is complete. Phase 2 will include providing dual circuit connection (both K2 and D3K) to G6 and is expected to be complete in Q2 2022.

These configuration changes were not represented in the original planning study underpinning the IESO's recommendation to Hydro One, but are considered herein. The updated capability of NPKL CGS is set out in Table 2.

Table 2 | Maximum Generation Support

Units	Circuit	MW
G1-G3	K2	54.5
G4-G5	D3K	27.5
G6	D3K or K2	33.2

Note also that in March 2021, the IESO executed a replacement[4] contract with Northland Power for NPKL CGS G1-G5. Per the revised contract, NPKL CGS began market based operation in July 2021, with contract expiry in August 2030. The replacement contract was considered as an input into the analysis summarized in this report in order to reflect the cost of utilizing NPKL CGS to support the Area's needs.

4. Kirkland Lake Area Reliability Needs

This section outlines the reliability needs in the Area when considering Hydro One's base sustainment plans for circuits A8K/A9K, anticipated demand growth, and generation assumptions resulting from changes to NPKL CGS. This study assumes the Base Option is in-service, i.e., circuits A8K/A9K are replaced with like-for-like conductors that would result in an increased circuit rating to a summer planning rating of 390 Amperes. The needs outlined in this section reflect the additional requirements, above and beyond the Base Option, to ensure reliability in the Area.

4.1 Planning Criteria

The study of the Area needs applied planning criteria in accordance with planning events and performance as detailed by:

- North American Electric Reliability Corporation ("NERC") TPL-001 "Transmission System Planning Performance Requirements" ("TPL-001"); and,

[4] Replacement to the contract with the Ontario Electricity Financial Corporation.

- IESO Ontario Resource and Transmission Assessment Criteria ("ORTAC").

4.2 Planning Ratings

The summer non-coincident peak load and summer thermal ratings of transmission equipment were used in the study as they were deemed to be more conservative than studying winter conditions (i.e., winter peak load with winter thermal ratings). This is based on historical observations that mining load profiles are generally flat with limited seasonal variation and that summer thermal ratings of transmission equipment are more limiting than winter ratings.

4.3 Additional Needs Beyond the Base Option

The study results show that the most limiting scenario in the Area occurs following the loss of a single transmission element (typically referred to as an N-1). Specifically, following the loss of circuit A9K, the companion circuit A8K will experience thermal overload starting in 2023, as soon as the line is in-service; this is represented as a capacity gap shown in Table 3 below. Based on this assessment, the reliability of the Area will not be maintained under the Base Option unless there are other measures to reduce the thermal overload as explored in Section 5.

Table 3 | Kirkland Lake Reliability Needs with A8K/A9K Upgraded to 390 Amperes

	2023	2024	2025	2026	2027	2028	2029	2030	2031
Capacity Gap (MW)	49	104	112	112	114	116	120	120	120

5. Alternatives to Address Reliability Needs

This section outlines the alternatives considered to address the reliability needs in the Area above the Base Option, as shown in Table 3.

5.1 Non-Wires Alternatives

An option was considered by the IESO whereby baseload generation support is provided in the local area to supplement the Base Option and ensure reliability. Table 4 shows the amount of generation support required throughout the planning horizon, starting in 2023 when the line is in-service. This generation support is considered to be provided by a combination of NPKL CGS G1-G5, and either G6, or a new resource with costs and performance on par with a new combined cycle gas turbine ("CCGT")[5], once the required amount of local generation support exceeds the capability of NPKL G1-G5.

[5] Any further reference to CCGT is meant in this respect.

Table 4 | Local Generation Amounts to Meet Kirkland Lake Reliability Needs with A8K/A9K Upgraded to 390 Amperes

Total Local Generation Support Required 2023-2031 (MW)	Maximum Generation Support Provided by NPKL CGS G1-G5 (MW)	Other Generation Support Required 2024-2031 (MW)
49-120	82	22-38

Note that unit G6 is a quick-start peaking facility, and is not intended for continuous operation. Running G6 in this manner would be inefficient given its high heat rate, would likely cause additional maintenance costs and forced outages due to the atypical mode of operation, and would ultimately remove a source of flexibility from the electricity system.

Other resources were screened out from the analysis based on feasibility.

5.2 Wires Alternative

In the context of end-of-life replacement decisions, an option was evaluated in which circuits A8K/A9K are right-sized, i.e., further upgraded when they are replaced. This alternative is called the "Upgrade Option" and includes upgrading A8K/A9K to a summer planning rating of 550 Amperes. The IESO understands that a conductor with a summer planning rating of 550 Amperes is the highest rated conductor that can be installed using the existing tower structures. Hydro One has indicated that the incremental cost of the Upgrade Option over the Base Option is estimated to be approximately $20 Million. Note that this cost reflects the most recent information from Hydro One, and is an update to the incremental cost noted in the IESO's letters to Hydro One recommending the upgrade.

Transmission studies show that following the loss of circuit A9K, the companion circuit A8K would experience thermal overload starting in 2024 with the Upgrade Option; however, the resulting capacity gap is reduced when compared to that in the Base Option (refer to Table 5).

Table 5 | Kirkland Lake Reliability Needs with A8K/A9K Upgraded to 550 Amperes

	2023	2024	2025	2026	2027	2028	2029	2030	2031
Capacity Gap (MW)	0	52	60	60	62	64	68	68	68

Local generation support would still be required to support the Upgrade Option under anticipated demand growth conditions; however, the local generation support can be fully provided by NPKL CGS G1-G5 as the required amount is within the capability of these units. This provides a cost advantage for this alternative, as it does not require the same level of support from G6, which is a peaking unit.

Table 6 | Local Generation Amounts to Meet Kirkland Lake Reliability Needs with A8K/A9K Upgraded to 550 Amperes

Total Local Generation Support Required 2024-2031 (MW)	Maximum Generation Support Provided by NPKL CGS G1-G5 (MW)	Other Generation Support Required (MW)
49-120	82	n/a

5.3 Economic Study Assumptions

The following are the key economic assumptions used in the analysis:

- Study Period: 2023 to 2092, covering the full life of the circuit upgrades (70 years);
- Results Metric: NPV to 2020 using a 4% real Social Discount Rate, and in 2020 Canadian Dollars; and
- Generation Replacement: NPKL CGS units are replaced with local new-build CCGT following contract expiry.

5.4 Economic Performance of Alternatives

Based on the economic study assumptions, the overall benefit of the Upgrade Option (plus local generation support) was found to be approximately $451 Million versus the Base Option (plus local generation support), which requires reliance of G6. This benefit increases to approximately $513 Million should new local CCGT be built to supplement the Area in place of G6 in the Base Option. These estimates factor in the value of the NPKL CGS G1-G5 replacement contract given the anticipated utilization of these units in each of the options.

5.5 Sensitivity Analysis

The economic performance of the options was also assessed under lower demand growth in order to test whether there are scenarios in which the Base Option (plus local generation support) becomes more economic. The lower growth scenario considered demand from existing customers in the Area and their planned expansions, and excluded demand from new customers recognizing the inherent uncertainty in their development. Under this scenario, the Upgrade Option (plus local generation support) remains to provide an overall benefit of approximately $472 Million versus the Base Option (plus local generation support).

5.6 Preferred Alternative

Based on the economic and technical performance of the alternatives, the preferred alternative is to upgrade circuits A8K/A9K to a summer planning rating of 550 Amperes at their planned end-of-life replacement.

6. Conclusion

The IESO recommends that Hydro One proceed with the Upgrade Option as part of the planned end-of-life replacement of A8K/A9K. This alternative, together with support from local generation, will ensure reliability of the Area at the least cost.

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Apportioning Project Costs & Risks

The estimated capital cost of the A8K A9K Project, including overheads and capitalized interest, is shown below:

Table 1 - Project Cost

	Estimated Cost ($000's)
Materials	18,260
Labour	36,852
Equipment Rental & Contractor Costs	344
Sundry	10
Contingencies	6,184
Overhead [1]	6,600
Allowance for Funds Used During Construction [2]	1,436
Total Line Work	**$69,686**

The cost of the work provided above allows for the schedule of approval, design and construction activities provided in **Exhibit B, Tab 11, Schedule 1**.

[1] Overhead Costs allocated to the project are for corporate services costs. These costs are charged to capital projects through a standard overhead capitalization rate. As such they are considered "Indirect Overheads".

[2] Capitalized Interest is calculated using the Board's approved interest rate methodology (EB-2016-0160) to the Project's forecast monthly cash flow and carrying forward closing balances from the preceding month.

1.0 RISKS AND CONTINGENCIES

As with most projects, there are risks associated with estimating costs. Hydro One's cost estimate includes an allowance for contingencies in recognition of these risks.

The top 3 project risks are outlined below. These risks are the major contributors to the total contingency suggested for this project.

- **Outage constraints –** there is a risk that securing an outage will not be supported by customers in the area and this may result in schedule delays and additional costs.
- **Scope Additions** – An estimate with AACE Class 3 (-20% / +30%) level of accuracy has been completed at the time of the leave to construct application. Until a detailed line inspection and additional studies and surveys are completed, there is a risk of scope changes, including structural and foundation refurbishment resulting in increased cost and a delayed in-service date.
- **Approvals and Permits** – there is a risk of delays being encountered in obtaining required approvals including Environmental Assessment and Leave to Construct.

Cost contingencies that have not been included, due to the unlikelihood or uncertainty of occurrence, include:

- Labour disputes;
- Safety or environmental incidents;
- Significant changes in costs of materials since the estimate preparation;
- Any other unforeseen and potentially significant event/occurrence.

2.0 COSTS OF COMPARABLE PROJECTS

The OEB Filing Requirements for Electricity Transmission and Distribution Applications, Chapter 4, requires the Applicant to provide information about a cost comparable project constructed by the Applicant. For lines cost comparisons, Table 2 compares the line refurbishment cost of A8K A9K Project with two other recently completed line refurbishment projects in Northern Ontario.

Table 2 - Costs of Comparable Line Projects

Project	Kapuskasing Area Reinforcement - H9K Upgrade	D2L - DymondxUpper+MartinxCrystal-Line Refurbishment	A8/9K, Str.141 X Kirkland Lake TS, Tx Ln Refurbishment Alternative 1 (Uprate)
Circuit Operating Designation(s)	H9K	D2L	A8K and A9K
Voltage	115 kV	115 kV	115 kV
Structure Type	Wood Pole	Wood Pole	Single-Circuit Wood Pole (~179 cct-kms); Double-Circuit Steel Lattice (~7.4 km)
Single or Double Circuit	Single	Single	
Location	Northern Ontario	Northern Ontario	Northern Ontario
In-Service Year	2020	2017	2023
Estimate or Actual	Actual	Actual	Estimate
Cost	**$12,846K**	**$16,437K**	**$75,656K**
Approximate Length	32 km	42.2 km	179 km
Approximate Unit Cost	$401K/km	$390K/km	$423K/km
Inflated at 2% Per Year for 2023 Nominal Dollars	$425k/km	$439k/km	$423k/km

The two comparable projects have been provided to illustrate the reasonableness of the estimate to complete this Project. The Projects provided are the D2L – Martin River Jct x Crystal Falls SS Line Refurbishment and the Kapuskasing Area Reinforcement.

The variances in the unadjusted per/km cost to execute these projects are based on timing differences in the in-service date and the fact that the A8K/A9K circuits are carried on two separate structures for the majority of the route. Outage constraints due to the importance of the A8K/A9K circuits to the system, limit outages to one circuit at a time for this project, therefore the A8K circuit will be refurbished in its entirety and put in service before beginning work on the A9K circuit. This significantly reduces the line cost efficiencies that can be obtained on this parallel work since activities such as mobilization and stringing setup will double compared to a single setup approach required on comparator projects shown on table above. The A8K A9K Project also includes a 7.4km stretch of double circuit steel lattice structures which increases the project cost per km. The cost for the wood pole section of the D2L project was lower, relative to the A8K A9K Project, due to D2L Project requiring fewer wood pole refurbishment/replacements percentage per line section.

When cost per km on Table 2 above is adjusted to 2023 dollars considering a 2% inflation factor, the comparables demonstrate that the estimate is consistent with the cost to complete recent transmission line works and should be considered reasonable.

Connection Projects Requiring Network Reinforcement

This is not a connection project and facilities being upgraded as a result of this Project are limited to those discussed in the details of the work being undertaken in **Exhibit C, Tab 1, Schedule 1.**

Transmission Rate Impact Assessment

1.0 ECONOMIC FEASIBILITY

Hydro One's proposed A8K A9K Project involves the replacement of approximately 180 kilometres of 115 kV circuits A8K and A9K while increasing each circuit's summer long term emergency rating to 550 A, as requested by the IESO. The costs for the upgrade of the circuits will be included in the network and line connection pools for cost classification purposes and not allocated to any individual customer. See **Exhibit B, Tab 1, Schedule 1**, for information on the proposed work. No customer contribution is required for this project.

There are no incremental operating and maintenance costs as a result of the proposed project. The project will also have no impact on provincial peak load resulting in zero incremental network and line connection revenue over the 25-year evaluation period.

Transmission Pool Costs

$M	Capital Costs	Removal Costs	Total Pool Costs*	Net Present Value
Network Pool	64.0	5.5	69.5	(60.2)
Line Connection Pool	5.7	0.4	6.1	(5.3)
Project Cost	**69.7**	**5.9**	**75.6**	

** Figures in the table are rounded to one decimal place.*

A 25-year discounted cash flow analysis of the network pool work was conducted. The results show that based on the estimated initial cost of $69.5[1] million, plus the assumed impact on the future capital cost allowance and Hydro One corporate income tax, this

[1] Initial costs of $69.5 million include $64.0 million of up front capital costs plus $5.5 million cost of removals.

capacity enhancement project will have a negative net present value of $60.2 million on the network pool as seen in Table 1 and 2. This amount will be fully recovered via the network rates.

A 25-year discounted cash flow analysis of the line connection pool work was conducted. The results show that based on the estimated initial cost of $6.1[2] million, plus the assumed impact on the future capital cost allowance and Hydro One corporate income tax, this capacity enhancement project will have a negative net present value of $5.3 million on the line connection pool as seen in Table 3 and 4. This amount will be fully recovered via the line connection rates.

2.0 COST RESPONSIBILITY

Network Pool and Line Connection Pool

The Hydro One circuit A8K is a network 115 kV transmission line between Ansonville TS and Kirkland Lake TS. While, 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. Based on the cost allocation methodology as approved by the Board[3] and detailed in Hydro One's most recent transmission rate filing[4] circuit A8K is allocated 100% to the Network Pool and the A9K circuit is allocated 85% to the network pool and 15% to the line connection pool.

Sustaining circuits A8K and A9K is the responsibility of Hydro One. The need to upgrade these circuits is as per IESO's request for meeting present system transfer capabilities. Therefore the cost of the Project is not to be applied to any particular customer.

[2] Initial costs of $6.1 million include $5.7 million of up front capital costs plus $0.4 million cost of removals.
[3] EB-2016-0160
[4] EB-2019-0082, Exhibit I, Tab 10, Schedule 50, Page 2 of 2, Filed August 2, 2019

3.0 RATE IMPACT ASSESSMENT

The analysis of the network and line connection pool rate impacts has been carried out on the basis of Hydro One's transmission revenue requirement for the year 2020, and the 2020 approved Ontario Transmission Rate Schedules. The network and line connection pool revenue requirements would be affected by the line upgrade based on the project cost allocation.

The 2020 OEB-approved rates have been used to measure the Project's customer impacts on rates. 2020 rates were used because, unlike 2021 OEB-approved rates, they do not include any foregone revenue that Hydro One is currently recovering in the 2021 rates.

Network Pool

Based on the project's initial cost of $69.5 million and the associated network pool incremental cash flows, there will be a change in the network pool revenue requirement once the project's impacts are reflected in the transmission rate base at the projected in-service date of April 4, 2023. Over a 25-year time horizon, this change in the network pool revenue requirement has a 0.51% incremental impact, increasing the 2020 OEB approved rate of $3.92 kW/month to $3.94 kW/month. If the 2021 OEB approved rates were used, there would be a 0.41% incremental impact, increasing the 2021 OEB approved rate of $4.90 kW/month to $4.92 kW/month. The maximum revenue shortfall related to the proposed facilities will be $4.8 million in the year 2031. The detailed analysis illustrating the calculation of the incremental network revenue shortfall and rate impact is provided in Table 5 and 6 below.

Line Connection Pool

Based on the project's initial cost of $6.1 million and the associated line connection pool incremental cash flows, there will be a change in the line connection pool revenue

requirement once the project's impacts are reflected in the transmission rate base at the projected in-service date of April 4, 2023. Over a 25-year time horizon, this change in the line connection pool revenue requirement is not material enough to shift the 2020 OEB approved rate of $0.97 kW/month. If the 2021 OEB approved rates were used, the impact is not material enough to shift the 2021 OEB approved rate of $0.81 kW/month. The maximum revenue shortfall related to the proposed facilities will be $0.4 million in the year 2031. The detailed analysis illustrating the calculation of the incremental line connection revenue shortfall and rate impact is provided in Table 7 and 8 below.

Impact on Typical Residential Customer

Based on the load forecast, initial capital costs and ongoing maintenance costs, adding the costs of the replacement of the required facilities to the network and line connection pools will cause $0.03 per month increase in a typical residential customer's rates under the Regulated Price Plan ("RPP"). The table below shows this result for a typical residential customer who is under the RPP utilizing the maximum impact by rate pool regardless of year.

A. Typical monthly bill (Residential R1 at 700 kWh consumption per month)	$148.68 per month
B. Transmission component of monthly bill	$11.65 per month
C. Line Connection Pool share of Transmission component	$1.61 per month
D. Transformation Connection Pool share of Transmission component	$3.86 per month
E. Network Connection Pool share of Transmission component	$6.19 per month
F. Impact on Line Connection Pool Provincial Uniform Rates	0.00%
G. Impact on Network Connection Pool Provincial Uniform Rates	0.51%
H. Net impact on typical residential customer bill [(C x F) + (E x G)]	$0.03 per month or $0.38 per year
I. Net increase on typical residential customer bill (H / A)	0.02%

Note: If 2021 OEB approved rates were used, the net impact on the typical residential customer bill would be the same with an increase of $0.03 per month or $0.38 per year, resulting in 0.02% net increase. Values rounded to two significant digits.

Table 1 - Net Present Value, Network Pool, page 1

			In-Service Date	<------- Project year ended - annualized from In-Service Date ------->											
		Month / Year	Apr-4 2023	Apr-4 2024	Apr-4 2025	Apr-4 2026	Apr-4 2027	Apr-4 2028	Apr-4 2029	Apr-4 2030	Apr-4 2031	Apr-4 2032	Apr-4 2033	Apr-4 2034	Apr-4 2035
			0	1	2	3	4	5	6	7	8	9	10	11	12
Revenue & Expense Forecast															
Load Forecast (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Load adjustments (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tariff Applied ($/kW/Month)				3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
Incremental Revenue - $M				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Removal Costs - $M			(5.5)												
On-going OM&A Costs - $M			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Municipal Tax - $M				(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Net Revenue/(Costs) before taxes - $M			(5.5)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Income Taxes			1.5	0.7	1.4	1.2	1.2	1.1	1.0	0.9	0.8	0.8	0.7	0.7	0.6
Operating Cash Flow (after taxes) - $M			(4.1)	0.5	1.1	1.0	0.9	0.8	0.8	0.7	0.6	0.6	0.5	0.5	0.4
		Cumulative PV @ 5.31%													
PV Operating Cash Flow (after taxes) - $M	**(A)**	**3.5**	**(4.1)**	**0.5**	**1.0**	**0.9**	**0.8**	**0.7**	**0.6**	**0.5**	**0.4**	**0.4**	**0.3**	**0.3**	**0.2**
Capital Expenditures - $M															
Upfront - capital cost before overheads & AFUDC			(56.5)												
- Overheads			(6.1)												
- AFUDC			(1.3)												
Total upfront capital expenditures			**(64.0)**												
On-going capital expenditures				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PV On-going capital expenditures			0.0												
Total capital expenditures - $M			**(64.0)**												
Capital Expenditures - $M															
PV CCA Residual Tax Shield - $M			**0.4**												
PV Working Capital - $M			**0.0**												
PV Capital (after taxes) - $M	**(B)**	**(63.6)**	**(63.6)**												
Cumulative PV Cash Flow (after taxes) - $M	**(A) + (B)**	**(60.2)**	**(67.7)**	**(67.2)**	**(66.1)**	**(65.2)**	**(64.5)**	**(63.8)**	**(63.2)**	**(62.7)**	**(62.3)**	**(61.9)**	**(61.6)**	**(61.4)**	**(61.1)**

Discounted Cash Flow Summary

Economic Study Horizon - Years:		**25**
Discount Rate - %		**5.31%**
		Before Cont $M
PV Incremental Revenue		0.0
PV OM&A Costs		(5.5)
PV Municipal Tax		(3.0)
PV Income Taxes		2.3
PV CCA Tax Shield		10.1
PV Capital - Upfront	(64.0)	
Add: PV **Capital Contribution**	**0.0**	(64.0)
PV Capital - On-going		0.0
PV Working Capital		0.0
PV Surplus / (Shortfall)		**(60.2)**
Profitability Index*		**0.1**

Notes:
*PV of total cash flow, excluding net capital expenditure & on-going capital & proceeds on disposal / PV of net capital expenditure & on-going capital & proceeds on disposal

Other Assumptions

In-Service Date:	04-Apr-23
Payback Year:	2048
No. of years required for payback:	25

Table 2 - Net Present Value, Network Pool, page 2

	Month Year	Apr-4 2036	Apr-4 2037	Apr-4 2038	Apr-4 2039	Apr-4 2040	Apr-4 2041	Apr-4 2042	Apr-4 2043	Apr-4 2044	Apr-4 2045	Apr-4 2046	Apr-4 2047	Apr-4 2048
		<------- Project year ended - annualized from In-Service Date -------->												
		13	14	15	16	17	18	19	20	21	22	23	24	25
Revenue & Expense Forecast														
Load Forecast (MW)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Load adjustments (MW)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tariff Applied ($/kW/Month)		3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
Incremental Revenue - $M		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Removal Costs - $M														
On-going OM&A Costs - $M		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Municipal Tax - $M		(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Net Revenue/(Costs) before taxes - $M		(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Income Taxes		0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.2
Operating Cash Flow (after taxes) - $M		0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0
PV Operating Cash Flow (after taxes) - $M	**(A)**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Capital Expenditures - $M														
Upfront - capital cost before overheads & AFUDC														
- Overheads														
- AFUDC														
Total upfront capital expenditures														
On-going capital expenditures		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PV On-going capital expenditures														
Total capital expenditures - $M														
Capital Expenditures - $M														
PV CCA Residual Tax Shield - $M														
PV Working Capital - $M														
PV Capital (after taxes) - $M	**(B)**													
Cumulative PV Cash Flow (after taxes) - $M	**(A) + (B)**	**(61.0)**	**(60.8)**	**(60.7)**	**(60.6)**	**(60.5)**	**(60.4)**	**(60.3)**	**(60.3)**	**(60.2)**	**(60.2)**	**(60.2)**	**(60.2)**	**(60.2)**

Table 3 - Net Present Value, Line Connection Pool, page 1

		Month Year	In-Service Date Apr-4 2023	Apr-4 2024	Apr-4 2025	Apr-4 2026	Apr-4 2027	Apr-4 2028	Apr-4 2029	Apr-4 2030	Apr-4 2031	Apr-4 2032	Apr-4 2033	Apr-4 2034	Apr-4 2035
			0	1	2	3	4	5	6	7	8	9	10	11	12
Revenue & Expense Forecast															
Load Forecast (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Load adjustments (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tariff Applied ($/kW/Month)				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Incremental Revenue - $M				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Removal Costs - $M			(0.4)												
On-going OM&A Costs - $M			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Municipal Tax - $M				(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Net Revenue/(Costs) before taxes - $M			(0.4)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Income Taxes			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Operating Cash Flow (after taxes) - $M			(0.3)	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
		Cumulative PV @ 5.31%													
PV Operating Cash Flow (after taxes) - $M	**(A)**	**0.3**	**(0.3)**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Capital Expenditures - $M															
Upfront - capital cost before overheads & AFUDC			(5.1)												
- Overheads			(0.5)												
- AFUDC			(0.1)												
Total upfront capital expenditures			**(5.7)**												
On-going capital expenditures				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PV On-going capital expenditures			0.0												
Total capital expenditures - $M			**(5.7)**												
Capital Expenditures - $M															
PV CCA Residual Tax Shield - $M			**0.0**												
PV Working Capital - $M			**0.0**												
PV Capital (after taxes) - $M	**(B)**	**(5.7)**	**(5.7)**												
Cumulative PV Cash Flow (after taxes) - $M	**(A) + (B)**	**(5.3)**	**(6.0)**	**(5.9)**	**(5.8)**	**(5.8)**	**(5.7)**	**(5.6)**	**(5.6)**	**(5.5)**	**(5.5)**	**(5.5)**	**(5.4)**	**(5.4)**	**(5.4)**

Discounted Cash Flow Summary

Economic Study Horizon - Years:		**25**
Discount Rate - %		**5.31%**
		Before Cont $M
PV Incremental Revenue		0.0
PV OM&A Costs		(0.4)
PV Municipal Tax		(0.3)
PV Income Taxes		0.2
PV CCA Tax Shield		0.9
PV Capital - Upfront	(5.7)	
Add: PV **Capital Contribution**	**0.0**	(5.7)
PV Capital - On-going		0.0
PV Working Capital		0.0
PV Surplus / (Shortfall)		**(5.3)**
Profitability Index*		**0.1**

Notes:
*PV of total cash flow, excluding net capital expenditure & on-going capital & proceeds on disposal / PV of net capital expenditure & on-going capital & proceeds on disposal

Other Assumptions

In-Service Date:	04-Apr-23
Payback Year:	2048
No. of years required for payback:	25

Table 4 - Net Present Value, Line Connection Pool, page 2

		<------- Project year ended - annualized from In-Service Date -------->												
Month / Year		Apr-4 2036	Apr-4 2037	Apr-4 2038	Apr-4 2039	Apr-4 2040	Apr-4 2041	Apr-4 2042	Apr-4 2043	Apr-4 2044	Apr-4 2045	Apr-4 2046	Apr-4 2047	Apr-4 2048
		13	14	15	16	17	18	19	20	21	22	23	24	25
Revenue & Expense Forecast														
Load Forecast (MW)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Load adjustments (MW)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tariff Applied ($/kW/Month)		0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Incremental Revenue - $M		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Removal Costs - $M														
On-going OM&A Costs - $M		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Municipal Tax - $M		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Net Revenue/(Costs) before taxes - $M		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Income Taxes		0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Operating Cash Flow (after taxes) - $M		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PV Operating Cash Flow (after taxes) - $M	**(A)**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Capital Expenditures - $M														
Upfront - capital cost before overheads & AFUDC														
- Overheads														
- AFUDC														
Total upfront capital expenditures														
On-going capital expenditures		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PV On-going capital expenditures														
Total capital expenditures - $M														
Capital Expenditures - $M														
PV CCA Residual Tax Shield - $M														
PV Working Capital - $M														
PV Capital (after taxes) - $M	**(B)**													
Cumulative PV Cash Flow (after taxes) - $M	**(A) + (B)**	**(5.4)**	**(5.4)**	**(5.4)**	**(5.3)**	**(5.3)**	**(5.3)**	**(5.3)**	**(5.3)**	**(5.3)**	**(5.3)**	**(5.3)**	**(5.3)**	**(5.3)**

Table 5 - Revenue Requirement and Network Pool Rate Impact, page 1

Revenue Requirement and Network Pool Rate Impact

A8K A9K Refurbishment Project		Project YE 04-Apr 2024	04-Apr 2025	04-Apr 2026	04-Apr 2027	04-Apr 2028	04-Apr 2029	04-Apr 2030	04-Apr 2031	04-Apr 2032	04-Apr 2033	04-Apr 2034	04-Apr 2035
Calculation of Incremental Revenue Requirement ($000)		1	2	3	4	5	6	7	8	9	10	11	12
In-service date	04-Apr-23												
Capital Cost	63,999												
Less: Capital Contribution Required	-												
Net Project Capital Cost	63,999												
Average Rate Base		31,364	62,092	60,821	59,550	58,279	57,008	55,737	54,466	53,195	51,924	50,653	49,382
Incremental OM&A Costs		0	0	0	0	0	0	0	0	0	0	0	0
Grants in Lieu of Municipal tax		217	217	217	217	217	217	217	217	217	217	217	217
Depreciation		1,271	1,271	1,271	1,271	1,271	1,271	1,271	1,271	1,271	1,271	1,271	1,271
Interest and Return on Rate Base		1,880	3,721	3,645	3,569	3,493	3,417	3,340	3,264	3,188	3,112	3,036	2,960
Income Tax Provision		-73	-539	-413	-299	-196	-102	-17	60	130	193	250	301
REVENUE REQUIREMENT PRE-TAX		**3,295**	**4,671**	**4,720**	**4,758**	**4,785**	**4,803**	**4,812**	**4,813**	**4,806**	**4,793**	**4,774**	**4,748**
Incremental Revenue		0	0	0	0	0	0	0	0	0	0	0	0
SUFFICIENCY/(DEFICIENCY)		**-3,295**	**-4,671**	**-4,720**	**-4,758**	**-4,785**	**-4,803**	**-4,812**	**-4,813**	**-4,806**	**-4,793**	**-4,774**	**-4,748**
	Base Year												
Network Pool Revenue Requirement including sufficiency/(deficiency)	977,674	980,969	982,345	982,394	982,431	982,459	982,477	982,486	982,487	982,480	982,467	982,447	982,422
Network MW	249,176	249,176	249,176	249,176	249,176	249,176	249,176	249,176	249,176	249,176	249,176	249,176	249,176
Network Pool Rate ($/kw/month)	3.92	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94
Increase/(Decrease) in Network Pool Rate ($/kw/month), relative to base year		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
RATE IMPACT relative to base year		**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**

Assumptions

Incremental OM&A		N.A.
Grants in Lieu of Municipal tax	0.34%	Transmission system average
Depreciation	2.00%	Reflects 50 year average service life for towers, conductors and station equipment, excluding land
Interest and Return on Rate Base	5.99%	Includes OEB-approved ROE of 8.52%, 2.75% on ST debt, and 4.42% on LT debt. 40/4/56 equity/ST debt/ LT debt split
Income Tax Provision	26.50%	2020 federal and provincial corporate income tax rate
Capital Cost Allowance	8.00%	100% Class 47 assets except for Land

Table 6 - Revenue Requirement and Network Pool Rate Impact, page 2

Revenue Requirement and Network Pool Rate Impact

A8K A9K Refurbishment Project		04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr
		2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
Calculation of Incremental Revenue Requirement ($000)		13	14	15	16	17	18	19	20	21	22	23	24	25
In-service date	04-Apr-23													
Capital Cost	63,999													
Less: Capital Contribution Required	-													
Net Project Capital Cost	63,999													
Average Rate Base		48,111	46,839	45,568	44,297	43,026	41,755	40,484	39,213	37,942	36,671	35,400	34,129	32,858
Incremental OM&A Costs		0	0	0	0	0	0	0	0	0	0	0	0	0
Grants in Lieu of Municipal tax		217	217	217	217	217	217	217	217	217	217	217	217	217
Depreciation		1,271	1,271	1,271	1,271	1,271	1,271	1,271	1,271	1,271	1,271	1,271	1,271	1,271
Interest and Return on Rate Base		2,883	2,807	2,731	2,655	2,579	2,502	2,426	2,350	2,274	2,198	2,122	2,045	1,969
Income Tax Provision		346	387	423	455	483	508	529	548	564	577	588	597	603
REVENUE REQUIREMENT PRE-TAX		**4,718**	**4,682**	**4,642**	**4,598**	**4,550**	**4,498**	**4,444**	**4,386**	**4,326**	**4,263**	**4,197**	**4,130**	**4,061**
Incremental Revenue		0	0	0	0	0	0	0	0	0	0	0	0	0
SUFFICIENCY/(DEFICIENCY)		**-4,718**	**-4,682**	**-4,642**	**-4,598**	**-4,550**	**-4,498**	**-4,444**	**-4,386**	**-4,326**	**-4,263**	**-4,197**	**-4,130**	**-4,061**
	Base Year													
Network Pool Revenue Requirement including sufficiency/(deficiency)	977,674	982,391	982,356	982,316	982,272	982,224	982,172	982,117	982,060	981,999	981,936	981,871	981,804	981,735
Network MW	249,176	249,176	249,176	249,176	249,176	249,176	249,176	249,176	249,176	249,176	249,176	249,176	249,176	249,176
Network Pool Rate ($/kw/month)	3.92	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94
Increase/(Decrease) in Network Pool Rate ($/kw/month), relative to base year		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
RATE IMPACT relative to base year		**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**	**0.51%**

Table 7 - Revenue Requirement and Line Connection Pool Rate Impact, page 1

Revenue Requirement and Line Pool Rate Impact

A8K A9K Refurbishment Project		Project YE 04-Apr 2024	04-Apr 2025	04-Apr 2026	04-Apr 2027	04-Apr 2028	04-Apr 2029	04-Apr 2030	04-Apr 2031	04-Apr 2032	04-Apr 2033	04-Apr 2034	04-Apr 2035
Calculation of Incremental Revenue Requirement ($000)		1	2	3	4	5	6	7	8	9	10	11	12
In-service date	04-Apr-23												
Capital Cost	5,686												
Less: Capital Contribution Required	-												
Net Project Capital Cost	5,686												
Average Rate Base		2,787	5,517	5,404	5,291	5,178	5,065	4,952	4,839	4,726	4,613	4,500	4,387
Incremental OM&A Costs		0	0	0	0	0	0	0	0	0	0	0	0
Grants in Lieu of Municipal tax		19	19	19	19	19	19	19	19	19	19	19	19
Depreciation		113	113	113	113	113	113	113	113	113	113	113	113
Interest and Return on Rate Base		167	331	324	317	310	304	297	290	283	276	270	263
Income Tax Provision		-7	-48	-37	-27	-17	-9	-2	5	12	17	22	27
REVENUE REQUIREMENT PRE-TAX		**293**	**415**	**419**	**423**	**425**	**427**	**428**	**428**	**427**	**426**	**424**	**422**
Incremental Revenue		0	0	0	0	0	0	0	0	0	0	0	0
SUFFICIENCY/(DEFICIENCY)		**-293**	**-415**	**-419**	**-423**	**-425**	**-427**	**-428**	**-428**	**-427**	**-426**	**-424**	**-422**
	Base Year												
Line Pool Revenue Requirement including sufficiency/(deficiency)	233,295	233,588	233,710	233,714	233,718	233,720	233,722	233,722	233,723	233,722	233,721	233,719	233,717
Line MW	240,481	240,481	240,481	240,481	240,481	240,481	240,481	240,481	240,481	240,481	240,481	240,481	240,481
Line Pool Rate ($/kw/month)	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Increase/(Decrease) in Line Pool Rate ($/kw/month), relative to base year		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RATE IMPACT relative to base year		**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Assumptions

Incremental OM&A		N.A.
Grants in Lieu of Municipal tax	0.34%	Transmission system average
Depreciation	2.00%	Reflects 50 year average service life for towers, conductors and station equipment, excluding land
Interest and Return on Rate Base	5.99%	Includes OEB-approved ROE of 8.52%, 2.75% on ST debt, and 4.42% on LT debt. 40/4/56 equity/ST debt/ LT debt split
Income Tax Provision	26.50%	2020 federal and provincial corporate income tax rate
Capital Cost Allowance	8.00%	100% Class 47 assets except for Land

Table 8 - Revenue Requirement and Line Connection Pool Rate Impact, page 2

Revenue Requirement and Line Pool Rate Impact

A8K A9K Refurbishment Project		04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr	04-Apr
		2036	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**	**2045**	**2046**	**2047**	**2048**
Calculation of Incremental Revenue Requirement ($000)		13	14	15	16	17	18	19	20	21	22	23	24	25
In-service date	04-Apr-23													
Capital Cost	5,686													
Less: Capital Contribution Required	-													
Net Project Capital Cost	5,686													
Average Rate Base		4,274	4,161	4,048	3,935	3,822	3,709	3,596	3,483	3,370	3,257	3,144	3,031	2,918
Incremental OM&A Costs		0	0	0	0	0	0	0	0	0	0	0	0	0
Grants in Lieu of Municipal tax		19	19	19	19	19	19	19	19	19	19	19	19	19
Depreciation		113	113	113	113	113	113	113	113	113	113	113	113	113
Interest and Return on Rate Base		256	249	243	236	229	222	215	209	202	195	188	182	175
Income Tax Provision		31	34	38	40	43	45	47	49	50	51	52	53	54
REVENUE REQUIREMENT PRE-TAX		**419**	**416**	**412**	**408**	**404**	**400**	**395**	**390**	**384**	**379**	**373**	**367**	**361**
Incremental Revenue		0	0	0	0	0	0	0	0	0	0	0	0	0
SUFFICIENCY/(DEFICIENCY)		**-419**	**-416**	**-412**	**-408**	**-404**	**-400**	**-395**	**-390**	**-384**	**-379**	**-373**	**-367**	**-361**
	Base Year													
Line Pool Revenue Requirement including sufficiency/(deficiency)	233,295	233,714	233,711	233,707	233,703	233,699	233,695	233,690	233,685	233,679	233,674	233,668	233,662	233,656
Line MW	240,481	240,481	240,481	240,481	240,481	240,481	240,481	240,481	240,481	240,481	240,481	240,481	240,481	240,481
Line Pool Rate ($/kw/month)	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Increase/(Decrease) in Line Pool Rate ($/kw/month), relative to base year		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RATE IMPACT relative to base year		**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Table 9 - DCF Assumptions

Hydro One Networks -- Transmission Connection Economic Evaluation Model
2020 Parameters and Assumptions

Transmission rates are based on 2020 OEB-approved uniform provincial transmission rates.

	Monthly Rate ($ per kW)
Network	**3.92**
Transformation	**2.33**
Line	**0.97**

Grants in lieu of Municipal tax (% of up-front capital expenditure, a proxy for property value):		**0.34%**	Based on Transmission system average
Income taxes:			
Basic Federal Tax Rate - % of taxable income:	2020	**15.00%**	Current rate
Ontario corporation income tax - % of taxable income:	2020	**11.50%**	Current rate
Capital Cost Allowance Rate: Class 47 costs	2020	**8%**	Current rate
After-tax Discount rate:		**5.31%**	Based on OEB-approved ROE of 8.52% on common equity and 2.75% on short-term debt, 4.42% forecast cost of long-term debt and 40/60 equity/debt split, and current enacted income tax rate of 26.5%

Deferral Account Requests

There are no new deferral account requests being made as part of this Application.

Project Schedule

TASK	START	FINISH
Submit Section 92		25-Aug-21
Projected Section 92 Approval	25-Aug-21	29-Oct-21
LINES		
Detailed Engineering	10-Dec-18	31-Mar-21
Procurement	10-Sep-21	03-Dec-22
Receive Material	03-Jan-22	01-Apr-22
Construction	03-Jan-22	14-Mar-23
IN SERVICE		**28-Apr-23****

*** This is the final in-service date for both circuits however, for contextual purposes, the current execution plan is to stagger the in-service date of the circuits with A8K in-service by the end of August 2022. These two circuits provide a critical path for transmission services in the north therefore, to mitigate constraints (outage availability or otherwise) the execution plan is to fully upgrade and energize the A8K circuit first.*

Descriptions of the Physical Design

1.0 LINE FACILITIES

Details of Proposed Line Facilities

Hydro One is proposing to increase the transmission capacity of the 115 kilovolt ("**kV**") circuits A8K and A9K between Ansonville TS to Kirkland Lake TS. The line sections involved are primarily wood and composite pole but includes 18 lattice towers. Currently, it is strung with obsolete copper conductor along with 3/0, 4/0, 211.6, 336, 468.3 and 477 kcmil Aluminum Conductor Steel Reinforced (ACSR) type conductor. Line sections along these circuits currently have a continuous ampacity limit of 230A (A8K) and 290 A (A9K) between Ansonville TS x Kirkland Lake TS. However, due to the need for increased power transfer capability identified by the IESO, it is necessary to increase the ampacity of the A8K and A9K circuits to 550 A. Approximately 180 circuit km of 115kV wood pole transmission line has been identified for line refurbishment and upgrade to meet the required 550 A ampacity. A map indicating the geographic location and route of the Project is provided as **Exhibit B, Tab 2, Schedule 1, Attachment 1**. A schematic diagram of the proposed facilities is included in **Exhibit B, Tab 2, Schedule 1**.

Hydro One is seeking OEB Leave-to-Construct approval for the following upgrade work on existing transmission facilities:

- To upgrade 89.1km and 89.9km of transmission circuit A8K and A9K respectively between Ansonville TS to Kirkland Lake TS, using 411.4 kcmil Aluminum Conductor Steel Reinforced (Trapezoidal) (ACSR/TW) Compact Conductor. This will allow the circuit to meet a required summer Long Term Emergency rating of 550 A between Ansonville TS and Kirkland Lake TS;
- To replace existing deteriorated galvanized steel shieldwire with 7#10 Alumoweld shieldwire;

- To replace old porcelain and polymeric insulators and associated hardware;
- To adjust line protections due to the change in conductor;
- To replace pole structures that are in poor condition, or to replace pole structures that currently violate clearance or design load requirements. The total number of structures to be replaced is approximately 1,246. The replacement structures will be mostly like-for-like. The majority of the structures (1,031 of them) are single-pole suspension structures with steel harp arms. This type of structure is shown in **Figure 1** below.

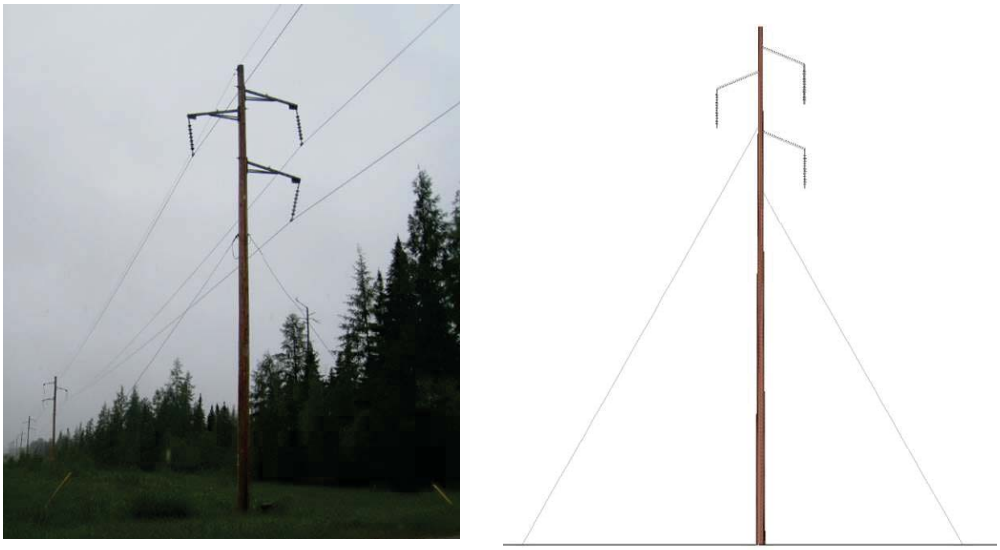

Figure 1: Picture of a single-pole suspension structure along the A8K and A9K circuit with steel harp arms adjacent to a virtual rendition of the same structure.

- 50 structures would be H-frame suspension type. In some locations, Hydro One will change suspension structures with dead-end type in order to reduce the risk of cascading failure of the line. A virtual rendering of the dead-end type structure is provided in **Figure 2** on the following page.

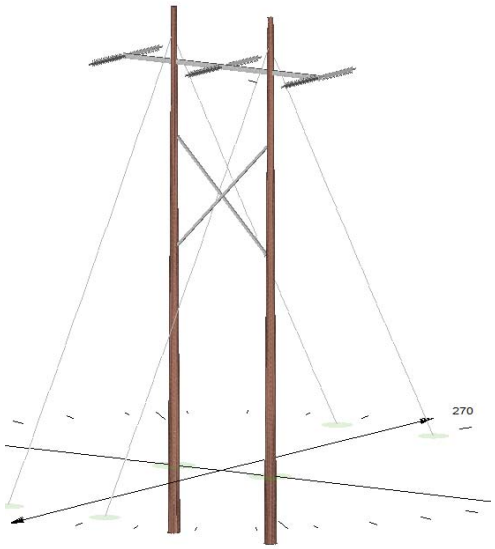

Figure 2: Two-Pole Dead End Structure.

As discussed above, the 115 kV A8K and A9K sections are strung primarily on wood and composite poles. The existing obsolete copper conductors, along with poor condition ACSR conductors, and existing ACSR conductors that cannot achieve the required 550 A will be replaced with 411.4 kcmil ACSR/TW. The 411.4 kcmil ACSR/TW conductor is Hydro One's smallest standard transmission conductor and is heavier with a larger diameter than the existing obsolete copper, as well as 3/0, 4/0 and 211.6 kcmil ACSR conductors, therefore approximately 407 structures will need to be replaced to maintain adequate clearance and design loading. Additionally, approximately 839 of the existing pole structures are in bad condition and considered end of life which will need to be replaced. For most of the replacement structures, replacements will be undertaken on a like for like configuration replacement approach.

Operational Details

This Project will refurbish all deteriorated line sections of circuits A8K and A9K, while increasing each circuit's Long Term Emergency operating rating to 550 A, as requested by the IESO. This entails component replacement work on approximately 180 circuit km of 115 kV wood pole transmission line. No portion of the circuits will be relocated or reconfigured, and as a result, there will be no change to the operation of the circuits. The terminal stations connecting circuits A8K and A9K will remain as Ansonville Transmission Station ("TS") and Kirkland Lake TS.

The existing customers connected to circuits A8K and A9K will remain connected to the same electrical location after the refurbishment work is completed. These customers include Hydro One Distribution via Ramore TS and Monteith DS.

Land Matters

As referenced in the Application, the A8K A9K Refurbishment Project will involve line work on the existing 115 kilovolt ("**kV**") circuits on a line section between Kirkland Lake Transformer Station ("**TS**") and Ansonville TS. The existing right of way varies in width over the length of the line. Predominantly the right of way is 33ft from centerline, but widens to 50ft from centre in some locations.

The existing transmission corridor crosses an estimated 157 parcels of land, which consists of:

- Hydro One fee simple ownership;
- Easement corridor over privately-owned and municipally-owned properties;
- Lands under the jurisdiction of the Ministry of Natural Resources and Forestry, which Hydro One holds a Master Land Use Permit for its transmission and distribution facilities;
- Crossings over highways under the jurisdiction of the Ministry of Transportation, as well as local Municipalities, Townships and Counties; and,
- Crossings over railways.

Hydro One has identified ten properties on the right of way that do not have easements registered on title. Hydro One will look to register easements on these properties, however the right of way over the properties is not expected to change. The proposed transmission facility work is not expected to require additions to the right of way on any adjacent properties.

Required Land Easements

The existing corridors of the A8K and A9K circuits are predominantly located on privately-owned properties, which Hydro One has existing easement rights. The ten

properties noted without a registered easement area are owned by private individuals. The right of way width will not change as a result of the registered easement. Under section 41 of the *Electricity Act*, *1998*, Hydro One may locate within public streets or highways. Hydro One will work with road authorities as necessary to obtain work permits as required for the line refurbishment work. Railway and waterway crossing permits may be updated as necessary to accommodate construction and stringing activities. Any additional temporary off-corridor requirements (including but not limited to construction staging areas, access, flagging and permitting) will be communicated with affected property owners.

Early Access to Land

The line refurbishment work falls within the existing corridor. Hydro One does not anticipate a requirement for early access to the lands.

Land Acquisition Process

Hydro One will be looking to register easements on the ten privately held properties that are currently without registered rights. Hydro One plans on acquiring a registered easement on the ten properties reflecting fair market value of the land as determined by an independent Land Value Study. Hydro One will pay reasonable legal fees incurred by the owner as well as all survey and registration costs. Should any updates of crossing permits be required, Hydro One will work with the authority under the transmission lines to appropriately update the existing crossing permits. It is anticipated that the reinforcement work will be accommodated by the existing corridor. Further temporary off-corridor access or construction requirements will be negotiated with the necessary affected land owners as required.

Copies of the Offer to Grant An Easement, Off-Corridor Temporary Access and Temporary Access Road, Construction License Agreement for construction staging, and a Damage Claim Agreement and Release Form (which will be used as the basis for

compensation related to construction impacts, such as crop or property damage) are included at the end of this schedule as **Attachments 1 through 4**. The form of these agreements is similar to those previously approved by the OEB in previous Hydro One leave to construct application proceedings[1].

[1] Such as EB-2019-0077 and EB-2018-0117

OFFER TO GRANT AN EASEMENT TO
HYDRO ONE NETWORKS INC.

I, *INSERT NAME* (the "Transferor"),

Being the owner of *INSERT LEGAL DESCRIPTION OF PROPERTY* (herein called the "Lands") in consideration of payment of the sum of $*INSERT VALUE* (*INSERT VALUE*) (THE "**OFFER CONSIDERATION**"), and other good and valuable consideration (the sufficiency of which consideration is hereby acknowledged), hereby covenants and agrees as follows:

1. (a) THE Transferor hereby grants to Hydro One Networks Inc. its successors and assigns (the "Transferee") the exclusive right, irrevocable during the periods of time below specified in paragraph 2, (the **"Offer")** to purchase, free from all encumbrances and upon the terms and conditions hereinafter set out, the perpetual rights, easements and privileges set out in the Transfer and Grant of Easement document (the **"Transfer of Easement"** annexed hereto as Schedule "A" (the **"Rights")** in, through, under , over, across, along and upon that portion of the above Lands as shown highlighted in red in Schedule "B" (the **"Strip"**).

(b) THE purchase price for the Rights shall be the sum of *INSERT VALUE* **DOLLARS ($ *INSERT VALUE*)** lawful money of Canada to be paid by cash or uncertified cheque to the Transferor on Closing (the "**Purchase Price**").

2. THIS Offer may be accepted by the Transferee any time within 60 Days from the date of this Agreement by a letter delivered or facsimile transmission or mailed postage prepaid and registered, to the Transferor at the address set out in paragraph 12. If this Offer is not accepted within this time frame, this Agreement and everything herein contained shall be null, void and of no further force or effect. If this Offer is accepted by the Transferee in the manner aforesaid, this Agreement and the letter accepting such Offer shall then become a binding contract between the parities, and the same shall be completed upon the terms herein provided for.

3. THE Transfer of Easement arising from the acceptance of this Offer shall be executed and delivered to the Transferee on or before the One Hundred and Twentieth (120^{th}) day after the date of Transferee's acceptance of this Offer (the "**Closing**") and time shall in all respects be of the essence hereof.

4. IF the Transferee accepts the Offer herein: a) the Transferee shall not grant or transfer an easement or permit, or create any encumbrance over or in respect of the Strip prior to registration of the Transfer of Easement, and b) the Transferee has permission to approach prior encumbrancers or any third parties who have existing interests in the strip to obtain all necessary consents, postponements or subordinations (in registrable form) from all current and future prior encumbrancers and third parties, if necessary, consenting to this Transfer of Easement, and/or postponing their respective rights, title and interest so as to place such Rights and Transfer of Easement in first priority on title to the Strip.

5. TITLE to the Strip shall at Closing be good and free from all registered restrictions, charges, liens, easements and encumbrances of any kind whatsoever except for those matters disclosed in Schedule "C" annexed hereto.

6. The Transfer of Easement and all ancillary documents necessary to register same on title shall be prepared by and at the expense of the Transferee and shall be substantially in the form as the annexed Schedule "A". The Transferor hereby covenants and agrees that the Transferee may, at its option, register this Agreement or Notice thereof, and the Transfer of Easement on title to the Lands, and the Transferor hereby covenants and agrees to execute, at not further cost or condition to the Transferee, such other instruments, plans and documents as may reasonably be required by the transferee to effect registration of this Agreement or Notice thereof prior to closing and the Transfer of Easement at any time hereafter.

7. THE Transferor covenants and agrees with Transferee that it has the right to convey the Rights without restriction and that Transferee will quietly possess and enjoy the Rights and that the Transferor will execute upon request such further assurances of the Rights as may be requisite to give effect to the provisions of this Agreement.

8. AS of the date of the Transferee's acceptance of the Offer, the Transferor grants to the Transferee, in consideration of the Offer Consideration, free from all encumbrances, easements and restrictions the following unobstructed and exclusive rights, easements, rights of way, covenants, agreements and privileges in, through, under, over, across, along and upon the Strip:

(a) To enter and lay down, install, construct, erect, maintain, open, inspect, add to, enlarge, alter, repair and keep in good condition, move, remove, replace, reinstall, reconstruct, relocate, supplement and operate and maintain at all times in, through, under, over, across, along and upon the strip an electrical transmission system and telecommunications system consisting in both instances of pole structures, steel towers, anchors, guys and braces and all such aboveground or underground lines, wires, cables, telecommunication cables, grounding electrodes, conductors, apparatus, works accessories, associated material and equipment, and appurtenances pertaining to or required by either such system (all or any of which are herein individually or collectively called the **"Works")** as in the opinion of the Transferee are necessary or convenient thereto for use as required by Transferee in its undertaking from time to time, or a related business venture.

(b) To enter on and selectively cut or prune, and to clear and keep clear, and remove all trees (subject to compensation to Owners for merchantable wood values), branches, bush and shrubs and other obstructions and materials in, over or upon the Strip, and without limitation, to cut and remove all leaning or decayed trees located on the Lands whose proximity to the Works renders them liable to fall and come in contact with the Works or which may in any way interfere with the safe, efficient or serviceable operation of the Works or this easement by the Transferee.

(c) To conduct all engineering, legal surveys, and make soil tests, soil compaction and environmental studies and audits in, under, on and over the Strip as the Transferee in its discretion considers requisite.

(d) To erect, install, construct, maintain, repair and keep in good condition, move, remove, replace and use bridges and such gates in all fences which are now or may hereafter be on the Strip as the Transferee may form time to time consider necessary.

(e) To clear the Strip and keep it clear of all buildings, structures and other obstructions of any nature whatever including removal of any materials which in the opinion of the Transferee are hazardous to the line. Notwithstanding the foregoing, in all cases where in the sole discretion of the Transferee the safe operation and maintenance of the line is not endangered or interfered with, the Transferor from time to time or the person or persons entitled thereto, may with prior written approval of the Transferee, at his or her own expense, construct and maintain roads, lanes, walks drains, sewers, water pipes, oil and gas pipelines, and fences (not to exceed 2 metres in height) on or under the Strip or any portion thereof, provided that prior to commencing any such installation, the Transferor shall give the Transferee 30 days notice in writing so as to enable Transferee to have a representative inspect the site and be present during the performance of the work and that the Transferor complies with any instructions which may be given by such representative in order that such work may be carried out ins such a manner as not to endanger, damage or interfere with the line.

(f) To enter on, and exit from, and to pass and repass at any and all times in, over, along, upon, across, through and under the Strip and so much of the Lands as may be reasonably necessary, at all reasonable times, for the Transferee and its respective officers, employees, workers, permittees, servants, agents, contractors and subcontractors, with or without vehicles, supplies, machinery, plant, material and equipment for all purposes necessary or convenient to the exercise and enjoyment of the said rights and easement subject to payment by the Transferee of compensation for any crop or other physical damage only to the Land caused by the exercise of this right of entry and passageway; and

(g) To remove, relocate and reconstruct the line on or under the Strip, subject to payment by the Transferee of additional compensation for any damage caused thereby.

9. THIS Agreement and Grant of Easement Rights shall both be subject to the condition that the provisions of the *Planning Act*, R.S.O. 1990, c. P. 13, as amended, have, in the opinion of Transferee, been satisfactorily complied with. If after consultation with Provincial agencies and Municipalities, Hydro One Networks Inc., decides that the provisions of the *Planning Act*, R.S.O., c.P. 13, and amendments thereto, have not been or cannot be complied with, it may , at its option, cancel this Agreement.

10. ANY documents or money payable hereunder may be tendered upon the parties hereto or their respective solicitors and money may be tendered by negotiable uncertified cheque or cash.

11. ANY acceptance of this Offer, demand, notice or other communication to be given in connection with this Agreement shall be given in writing and shall be given by personal deliver, by registered mail postage prepaid,or by facsimile transmission, addressed to the recipient as follows:

TO TRANSFEROR:	**TO TRANSFEREE:**
	Hydro One Networks Inc.
NAME	**Real Estate Services**
ADDRESS	**PO BOX 1050**
PHONE NUMBER	**Milton, ON, L9T 5B9**
	Attention:
	Fax:

or to such other address, facsimile number or individual as may be designated by notice given by either party to the other. Any acceptance of this offer, demand notice or other communication shall be conclusively deemed to have been given when actually received by the addressee or upon the second day after the day of mailing.

12. THE Transferor represents that he is not now and at the time of Closing shall not be a spouse within the meaning of the *Family Law Act*, R.S.O. 1990, c.F. 3, as amended, failing which, the Transferor shall cause this Agreement and all related documents to be accepted and consented to in writing by the spouse of the Transferor to the satisfaction of the Transferee and at not further cost or condition.

13. IN the event of and upon acceptance of this Offer by Hydro One Networks Inc. in manner aforesaid this Agreement and the letter accepting such Offer shall then become a binding contract of sale and purchase between the parties, and the same shall be completed upon the terms herein provided for.

14. THE Transferor covenants and agrees that if and before the Transferor sells, transfers, assigns, disposes (or otherwise parts with possession) of all or part of the Lands to a third party(the “Third Party”) the Transferor shall use best efforts to ensure that the third party assumes the burden and benefit of this Agreement, and agrees to be bound by it. Accordingly the Transferor covenants and agrees to use best efforts to obtain from the Third Party a written acknowledgement and agreement that the Third Party is aware of this Agreement and will continue to be bound by the terms, conditions and stipulations of this Agreement.

15. ALL covenants herein contained shall be construed to be several as well as joint, and wherever the singular and the masculine are used in this Agreement, the same shall be construed as meaning the plural or the feminine or neuter, where the context or the identity of the Transferor/Transferee so requires.

16. THE burden and benefit of this Agreement shall run with the Strip and the works and undertaking of the Transferee and shall be binding upon and enure to the befit of the parties hereto and their respective heirs, executors, administrators, successors and assigns.

IN WITNESS WHEREOF the Transferor has hereunto set his hand and seal to this Agreement, this _____day of _____, 2015.

SIGNED, SEALED AND DELIVERED
In the presence of

)
)
) _____
INSERT NAME

SIGNED, SEALED AND DELIVERED
In the presence of) Consent Signature & Release of
) Transferor's Spouse, if non-owner
)
)
) _____

[TRANSFEROR NAME IF CORPORATION]

Per: _____
Name:
Title:

I have authority to bind the Corporation

HYDRO ONE NETWORKS INC.

Per: _____
Name:
Title:

I have authority to bind the Corporation

SCHEDULE "A"

TRANSFER AND GRANT OF EASEMENT

The Transferor is the owner in fee simple and in possession of *INSERT LEGAL DESCRIPTION OF PROPERTY* (The **"Lands"**).

The Transferee has erected, or is about to erect, certain Works (as more particularly described in paragraph 1(a) in, through, under, over, across, along and upon the Lands.

1. THE Transferor hereby grants and conveys to Hydro One Networks Inc., its successors and assigns the rights and easement, free from all encumbrances and restrictions, the following unobstructed and exclusive rights, easements, rights-of-way, covenants, agreements and privileges in perpetuity (the **"Rights")** in, through, under, over across, along and upon that portion of the Lands of the Transferor described herein as *INSERT DESCRIPTION* (the **"Strip"**) for the following purposes:

(a) To enter and lay down, install, construct, erect, maintain, open, inspect, add to, enlarge, alter, repair and keep in good condition, move, remove, replace, reinstall, reconstruct, relocate, supplement and operate and maintain at all times in, through, under, over, across, along and upon the Strip an electrical transmission systems and telecommunications systems consisting in both instances of pole structures, steel towers, anchors, guys and braces and all such aboveground or underground lines, wires, cables, telecommunications cables, grounding electrodes, conductors, apparatus, works, accessories, associated material and equipment, and appurtenances pertaining to or required by either such system (all or any of which are herein individually or collectively called the ("**Works**") as in the opinion of the Transferee are necessary or convenient thereto for use as required by Transferee in its undertaking from time to time, or a related business venture.

(b) To enter on and selectively cut or prune, and to clear and keep clear, and remove all trees (subject to compensation to Transferor for merchantable wood values), branches, bush and shrubs and other obstructions and materials, over or upon the Strip, and without limitation, to cut and remove all leaning or decayed trees located on the Lands whose proximity to the Works renders them liable to fall and come in contact with the Works or which may in any way interfere with the safe, efficient or serviceable operation of the Works or this easement by the Transferee.

(c) To conduct all engineering, legal surveys, and make soil tests, soil compaction and environmental studies and audits in, under, on and over the Strip as the Transferee in its discretion considers requisite.

(d) To erect, install, construct, maintain, repair and keep in good condition, move, remove, replace and use bridges and such gates in all fences which are now or may hereafter be on the Strip as the Transferee may from time to time consider necessary.

(e) Except for fences and permitted paragraph 2(a) installations, to clear the Strip and keep it clear of all buildings, structures, erections, installations, or other obstructions of any nature (hereinafter collectively called the **"obstruction"**) whether above or below ground, including removal of any materials and equipment or plants and natural growth, which in the opinion of the Transferee, endanger its Works or any person or property or which may be likely to become a hazard to any Works of the Transferee or to any person or property or which do or may in any way interfere with the safe, efficient or serviceable operation of the Works or this easement by the Transferee.

(f) To enter on and exit by the Transferor's access routes and to pass and repass at all times in, over, along, upon and across the Strip and so much of the Lands as is reasonably required, for Transferee, its respective officers, employees, agents, servants, contractors, subcontractors, workmen and permittees with or without all plant machinery, material, supplies, vehicles and equipment for all purposes necessary or convenient to the exercise and enjoyment of this easement subject to compensation afterwards for any crop or other physical damage only to the Lands or permitted structures sustained by the Transferor caused by the exercise of this right of entry and passageway.

(g) To remove, relocate and reconstruct the line on or under the Strip subject to payment by the Transferee of additional compensation for any damage caused thereby.

2. THE Transferor agrees that:

(a) It will not interfere with any Works established on or in the Strip and shall not, without the Transferee's consent in writing erect or cause to be erected or permit in, under or upon the Strip any obstruction or plant or permit any trees, bush, shrubs, plants or natural growth which does or may interfere with the Rights granted herein. The Transferor agrees it shall not, without the Transferee's consent in writing, change or permit the existing configuration, grade or elevation of the Strip to be changed and the Transferor further agrees that no excavation or opening or work which may disturb or interfere with the existing surface of the Strip shall be done or made unless consent therefore in writing has been obtained from Transferee, provided however, that the Transferor shall not be required to obtain such permission in case of emergency. Notwithstanding the foregoing, in cases where in the reasonable discretion of the Transferee, there is no danger or likelihood of danger to the Works of the Transferee or to any persons or property and the safe or serviceable operation of this easement by the Transferee is not interfered with, the Transferor may at its expense and with the prior written approval of the Transferee, construct and maintain roads, lanes walks, drains, sewers water pipes, oil and gas pipelines, fences (not to exceed 2 metres in height) and service cables on or under the Strip (the **"Installation"**) or any portion thereof; provided that prior to commencing such Installation, the transferor shall give to the Transferee thirty (30) days notice in writing thereof to enable the Transferee to have a representative present to inspect the proposed Installation during the performance of such work, and provided further that Transferor comply with all instructions given by such representative and that all such work shall be done to the reasonable satisfaction of such representative. In the event of any unauthorised interference aforesaid or contravention of this paragraph, or if any authorised interference, obstruction or Installation is not maintained in accordance with the Transferee's instructions or in the Transferee's reasonable opinion, may subsequently interfere with the Rights granted herein, the Transferee may at the Transferor's expense, forthwith remove, relocate, clear or correct the offending interference, obstruction , Installation or contravention complained of from the Strip, without being liable for any damages cause thereby.

(b) notwithstanding any rule of law or equity, the Works installed by the Transferee shall at all times remain the property of the Transferee, notwithstanding that such Works are or may become annexed or affixed to the Strip and shall at anytime and from time to time be removable in whole or in part by Transferee.

(c) no other easement or permission will be transferred or granted and no encumbrances will be created over or in respect to the Strip, prior to the registration of a Transfer of this grant of Rights.

(d) The Transferor will execute such further assurances of the Rights in respect of this grant of easement as may be requisite.

(e) The Rights hereby granted:

(i) shall be of the same force and effect to all intents and purposes as a covenant running with the Strip

(ii) is declared hereby to be appurtenant to and for the benefit of the Works and undertaking of the Transferee described in paragraph 1(a)

3. THE Transferee covenants and agrees to obtain at its sole cost and expense all necessary postponements and subordinations (in registrable form) from all current and future prior encumbrancers, postponing their respective rights, title and interest to the transfer of Easement herein so as to place such Rights and easement in first priority on title to the Lands.

4. THERE are no representations, covenants agreements, warranties and conditions in any way relating to the subject matter of this grant of Rights whether expressed or implied, collateral or otherwise except those set forth herein.

5. NO waiver of a breach or any of the covenants of this grant of Rights shall be construed to be a waiver of any succeeding breach of the same or any other covenant.

6. THE burden and benefit of this transfer of Rights shall run with the Strip and the Works and undertaking of the Transferee and shall extend to, be binding upon and enure to the

benefit of the parties hereto and their respective heirs, executors, administrators, successors and assigns.

SCHEDULE “B”

SKETCH

SCHEDULE "C"

PERMITTED EMCUMBRANCES

NIL

File: EB-2018-0117

THIS AGREEMENT made in duplicate the XXXXX day of XXXXXX 202X.

BETWEEN:

(INSERT NAME)

[NTD – ENSURE FULL LEGAL NAMES OF ALL OWNERS INSERTED]
[NTD – IF MORE THAN 1 OWNER THEN AMEND TO "(collectively the "**Owner**")"

(the **"Owner"**)
OF THE FIRST PART

AND:

HYDRO ONE NETWORKS INC.

(**"HONI"**)
OF THE SECOND PART

WHEREAS:

1. The Owner is the registered owner of lands legally described as ***(INSERT LEGAL DESCRIPTION)*** (the "Lands")

2. The Owner is agreeable in allowing HONI to enter onto a portion of the Lands highlighted in yellow as shown on the sketch attached hereto as Schedule "A" (the "Strip"), for the purposes of certain construction activities in conjunction with the XXXXXX (the "Project"), which shall include but are not limited to a temporary material storage yard for the purposes of storage of materials and equipment, including but not limited to construction equipment and machinery, requisite to the construction on the Strip subject to the terms and conditions contained herein (collectively the "Activities").

NOW THEREFORE THIS AGREEMENT WITNESSES THAT in consideration of Two Dollars ($2.00) now paid by HONI to the Owner, and the respective covenants and agreements of the parties hereinafter contained and other valuable consideration, the receipt and sufficiency of which are hereby acknowledged by the parties hereto, the parties hereto agree as follows:

1. The Owner hereby grants to HONI and its respective officers, employees, workers, permittees, servants, agents, contractors and subcontractors, with or without vehicles, supplies, machinery, plant, material and equipment, as of the date this Agreement, (i) the right to commence the Activities on the Strip; and (ii) the right to enter upon and exit from, and to pass and repass at any and all times in, over, along, upon, across, and through the Strip and so much of the Lands as may be reasonably necessary.

2. The permission granted herein shall commence as of the date this Agreement (the "Commencement Date") and shall terminate three (3) years from the Commencement Date (the "Initial Term").

3. The Initial Term may be extended upon 60 days prior written notice from HONI to the Owner for an additional two (2) years on the same terms and conditions contained herein save for this right to extend (the "Extended Term").

4. All agents, representatives, officers, directors, employees and contractors and property of HONI located at any time on the Lands shall be at the sole risk of HONI and the Owner shall not be liable for any loss or damage or injury (including loss of life) to them or it however occurring except and to the extent to which such loss, damage or injury is caused by the negligence or willful misconduct of the Owner.

5. Upon execution of this Agreement by all parties, HONI shall pay to the Owner the amount of XXXXX Dollars ($XXXX), which is compensation for the permission granted herein.

6. HONI shall repair any physical damage to the Lands resulting from the Activities and, shall restore the Lands to its original condition so far as possible and practicable to the satisfaction of the Owner, acting reasonably.

7. HONI agrees that it shall indemnify and save harmless the Owner from and against all claims, demands, costs, damages, expenses and liabilities (collectively the "Costs") whatsoever arising out of HONI's presence on the Lands or of its activities on or in connection with the Lands arising out of the

permission granted herein except to the extent any of such Costs arise out of the negligence or willful misconduct of the Owner.

8. This Agreement does not commit the Owner to enter into any further agreements with HONI in conjunction with the Project.

9. This Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario and the laws of Canada applicable herein. The parties hereto submit themselves to the exclusive jurisdiction of the Courts of the Province of Ontario.

IN WITNESS WHEREOF the Parties have hereunto set their respective hands and seals to this Agreement of Purchase and Sale.

SIGNED, SEALED AND DELIVERED
In the presence of)
)
)
)
)
)
_____) _____ (seal)
Print Name of Witness ***(INSERT NAME)***

)
)
)
)
)
)
_____) _____ (seal)
Print Name of Witness ***(INSERT NAME)***

IF OWNER IS CORPORATION – USE THE FOLLOWING

[INSERT FULL LEGAL NAME]

Per: _____
Print Name:
Print Title:

Per: _____
Print Name:
Print Title:

We/I have authority to bind the Corporation

HYDRO ONE NETWORKS INC.

Per: _____
Print Name:
Title:

I have authority to bind the Corporation

SCHEDULE "A"

SETTLEMENT AGREEMENT AND RELEASE

THIS AGEEMENT AND RELEASE IS made as of the _____ day of _____ _____ , 202X

Between:

[INSERT FULL LEGAL NAME OF INDIVIDUAL(S)]

(the "Claimant")

- and-

HYDRO ONE NETWORKS INC.

("Hydro One")

WHEREAS the Claimant is the registered owner of the lands legally described as _____ _____being PIN • (LT) (the "**Claimant's Lands**").

AND WHEREAS the Claimant alleges that he/she/they suffered damages in the form of _____ _____ as a result of construction, maintenance or other work carried out by Hydro One on the Claimant's Lands in or around _____ _____ (the **"Work**").

AND WHEREAS Hydro One has agreed to pay to the Claimant the sum of • Dollars ($0.00) in settlement of all claims related, in any manner whatsoever, to the Work (the "**Settlement Amount**"), which settlement precludes any litigation between the parties in respect of any cause of action, of any nature or kind whatsoever, whether known or unknown, in connection with the Work.

AND WHEREAS the calculation of the Settlement Amount is detailed on Schedule "A" attached hereto.

NOW THEREFORE, IN CONSIDERATION of payment by Hydro One to the Claimant of the Settlement Amount, and for other good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, the parties hereto hereby agree as follows:

THE Claimant, for his/her heirs, administrators, successors, assigns, agents, servants, and on behalf of any parties who claim a right or interest through them, does hereby irrevocable release and forever discharge Hydro One and its administrators, successors, assigns, agents, servants, officers, directors, employees, shareholders, associates, including its parent, affiliates and subsidiary corporations, of, from and against any and all manner of actions, causes of action,

suits, proceedings, liabilities, debts, sums of money, claims, damages and demands which the Claimant ever had now has, can, shall or may hereafter have against Hydro One existing by any reason or by any act, cause, matter or thing whatsoever relating to, or connected with the Work.

AND FOR THE SAID CONSIDERATION, the Claimant further agrees not to make any claim or take any proceedings against any other person or corporation who might claim contribution or indemnity under the provisions of the *Negligence Act* and any amendments thereto from the persons or corporations discharged by this Agreement.

AND IT IS UNDERSTOOD AND AGREED that if any action is commenced in connection with any of the claims released herein and if Hydro One is added to such proceedings in any manner whatsoever, whether justified in law or not, the proceedings will immediately be discontinued and any legal costs incurred in any such proceedings shall be paid on a full indemnity basis to Hydro One.

AND IT IS FURTHER UNDERSTOOD AND AGREED that this Agreement is intended to cover and does cover not only all known injuries, losses and damages arising from the Work, but all future injuries, losses and damages arising from the Work, save and except any damages to drainage tiles, that are not now known or anticipated but which may later develop or be discovered, including all the effects and consequences thereof.

AND IT IS UNDERSTOOD AND AGREED that any claim for damages arising from the Work to drainage tiles on the Claimant's Land must be brought to Hydro One's attention within two (2) years from the date of this Agreement (the "Drainage Tile Damage"),

AND IT IS UNDERSTOOD AND AGREED the parties will negotiate a separate settlement agreement for any Drainage Tile Damage.

AND IT IS UNDERSTOOD AND AGREED that the fact and terms of this Agreement and the settlement underlying it will be held in confidence and will not be disclosed either orally or in writing, directly or indirectly, by any of the parties to this Agreement, unless in accordance with auditors' or accountants' written advice for financial statement or income tax purposes, or for the purpose of any judicial, legal or regulatory proceeding, process or requirement.

AND THE CLAIMANT hereby acknowledges, declares, and agrees that he/she understands the terms of this Agreement and voluntarily accepts the consideration referred to above, that he/she has had a full opportunity to obtain independent legal advice prior to execution of this Agreement, and that no party has been induced to enter into this Agreement by reason of any representation or warranty of any nature or kind whatsoever and that there is no condition, express or implied, or collateral agreement affecting this Agreement.

IT IS FURTHER UNDERSTOOD AND AGREED that the Settlement Amount shall be paid by Hydro One to the Claimant within 30 days from the date of this Agreement as written above.

IT IS UNDERSTOOD AND AGREED that the payment of the Settlement Amount is deemed to be no admission whatsoever of liability on the part of Hydro One.

IT IS FURTHER UNDERSTOOD AND AGREED that this Agreement may be transmitted by e-mail or facsimile, and that a copy so transmitted shall be valid and binding as if it were an original copy.

IT IS FURTHER UNDERSTOOD AND AGREED that this Agreement may be executed in any number of counterparts with the same effect as if the parties had signed the same Agreement. All counterparts shall constitute one and the same Agreement.

IN WITNESS WHEREOF, the parties have set their hands this _____ day of _____ _____, 20____.

WITNESS:

_____
Name:

_____
Address:

CLAIMANT:

_____
Name:

_____
Name:

HYDRO ONE NETWORKS INC.

Per:_____
Name:
Title:

I have authority to bind the corporation

SCHEDULE "A"

Settlement Amount Calculation

FULL AND FINAL RELEASE

IN CONSIDERATION of • DOLLARS ($•.00) by **[INSERT CONTRACTOR NAME]** as Hydro One Networks Inc.'s contractor to • **[NOTE – INSERT THE FULL LEGAL NAME OF THE RELEASOR]** and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the undersigned on behalf of itself and its officers, directors, employees, servants, agents, partners and affiliates and their successors and assigns (hereinafter collectively referred to as the "Releasors") hereby releases and forever discharges **[INSERT CONTRACTOR NAME]** and Hydro One Networks Inc. and their respective officers, directors, employees, servants, agents, partners and affiliates and their successors and assigns (hereinafter referred to collectively as the "Releasee"), jointly and severally from any and all actions, causes of action, contracts and covenants, whether express or implied, claims and demands for damages, indemnity, costs, interest, loss or injury of every nature and kind whatsoever and howsoever arising which each of the undersigned, heretofore have had, may now have or may hereinafter have in any way relating to or arising out of the •. **[NOTE – NEED DESCRIPTION OF THE WORK PERFORMED BY [INSERT CONTRACTOR NAME] AT THE PROPERTY AND INCLUDE PROPERTY ADDRESS OR LEGAL DESCRIPTION]**

EACH OF THE UNDERSIGNED represents and warrants that he/she has never assigned or transferred, or purported to assign or transfer, any claim or right which is based on or referable to any matter referred to or contemplated in the preceding paragraph and which he/she had or may have had at any time up to or on the date hereof against the Releasee, and covenants that he/she will not assign or transfer, or purport to assign or transfer, any claim or right which is based on or referable to any matter referred to or contemplated in the preceding paragraph and which he/she has had or may have had at any time up to or on the date hereof against the Releasee and that each of the undersigned shall indemnify, defend and hold the Releasee harmless in respect of any such assignment or transfer or purported assignment or transfer made by the undersigned.

AND FOR THE SAME CONSIDERATION the each of the Releasors further agrees not to make claim or take proceedings against the Releasee or any other person or entity which might claim contribution or indemnity from the Releasee or the parties aforesaid under the provisions of any statute or otherwise.

IT IS UNDERSTOOD AND AGREED that neither the execution of this Release nor the payment of the said consideration by the Releasee shall be construed to be an admission of any liability, whatsoever, on the part of the Releasee.

AND EACH OF THE RELEASORS HEREBY DECLARES, COVENANTS AND AGREES that he/she reviewed and fully understands the terms and binding effect of the settlement which have prompted the giving of this Release; not to disclose the terms of this Release and the settlement on which it is based to anyone except to the extent necessary to review its terms with its/her legal advisors; that the Releasors each have had the opportunity of seeking independent legal advice with respect to same; that they are spouses of one another; that the said sum is accepted voluntarily for the purpose of making full and final compromise, adjustment and settlement of all claims as aforesaid, that the agreements, covenants, representations and warranties herein shall survive completion of the settlement and will continue to remain in full force and effect.

IN WITNESS WHEREOF the Releasor has executed this Full and Final Release at _____, Ontario, this _____ day of _____, 201__.

[IF CORPORATE OWNER – USE THE FOLLOWING]

[FULL LEGAL NAME OF ENTITY]

Per: _____
Name:
Title:

Per: _____
Name:
Title:

We/I have authority to bind the Corporation.

[IF OWNERS ARE INDIVIDUALS – USE THE FOLLOWING]

SIGNED, SEALED AND DELIVERED)
in the presence of)
)
)
)

_____

_____
Print Name:

Print Witness Name:)
Print Witness Address:)

SIGNED, SEALED AND DELIVERED)
in the presence of)
)
)
_____)
Print Witness Name:)
Print Witness Address:)

_____
Print Name:

System Impact Assessment

Please refer to **Attachment 1** for the Notification of Conditional Approval of Connection Proposal and **Attachment 2** for the Final System Impact Assessment ("SIA") prepared by the Independent Electricity System Operator (SIA reference # CAA 2020-EX1146).

The SIA concludes that the proposed connection of the project is expected to have no material adverse impact on the reliability of the integrated power system, provided that all requirements in this report are implemented.

Hydro One confirms that it will implement the requirements noted by the IESO in the SIA.

Connecting Today.
Powering Tomorrow.

Independent Electricity System Operator
Station A, Box 4474
Toronto, ON M5W 4E5
t 905.403.6900
www.ieso.ca

February 12, 2021

Prasath Suppiah
Manager, Transmission Lines Sustainment
Hydro One Networks Inc.
483 Bay Street, 13th Floor, North Tower
Toronto, ON
M5G 2P5

Dear Prasath Suppiah:

A8K & A9K Transmission Line Refurbishment and Uprate (the "project")
Notification of Conditional Approval of Connection Proposal
CAA ID Number: 2020-EX1146

Thank you for the information regarding the project. The IESO has concluded that the proposed changes will not result in a material adverse impact on the reliability of the integrated power system. The IESO is therefore pleased to grant **conditional** approval as detailed in the attached expedited System Impact Assessment report. Please note that any material changes to your proposal, or changes to the information available to or system assumptions made by the IESO at the time the assessment for the project was carried out may require a re-assessment by the IESO and may nullify your conditional approval.

The likelihood of your project being re-assessed due to changes in the system assumptions made by the IESO will be reduced once your project attains the "committed" status as per Section 3.3 of Market Manual 1.4: Connection Assessment and Approval (formerly Market Manual 2.10). Therefore, if your project is not "committed" at this point, you are reminded of your obligation to provide updates and notifications in order for the IESO to give your project this classification. Meanwhile, in the event you are required to make a project related decision and are concerned about the validity of the Notification of Conditional Approval of this project and the connection requirements presented in the System Impact Assessment, please contact us at connection.assessments@ieso.ca.

You may now initiate the IESO's **Market Registration** process. To do so, please contact Market Registration at market.registration@ieso.ca as soon as possible/at least eight months prior to your expected energization date. The SIA report, attached hereto, details the requirements that your company must fulfill during this process, including demonstrating that the equipment *as installed* will not be materially different from the equipment *as approved* by the IESO.

Your conditional right to connect is balanced by an obligation to demonstrate installed equipment meets performance requirements. During the **Market Registration** process, you shall be required to demonstrate this obligation has been fulfilled in accordance with Market Manual 1.6: Performance Validation (formerly Market Manual 2.20).

When your company has successfully completed the IESO's **Market Registration** process, the IESO will provide you with a **final approval**, in the form of a Registration Approval Notification (RAN) document, thereby confirming that the equipment is fully authorized to connect to the IESO-controlled grid.

If you have any questions or require further information, please contact me via connection.assessments@ieso.ca.

Yours truly,

Sam Jager

Digitally signed by Sam Jager
Date: 2021.02.16 12:17:32
-05'00'

Samuel Jager, P.Eng.
Engineering Manager – Connection Assessments
Telephone: *(905) 855-6331*
E-mail: samuel.jager@ieso.ca
cc: *IESO Records*

Expedited System Impact Assessment Report

Final Report – Public

CAA ID: 2020-EX1146
Project: A8K & A9K Transmission Line Refurbishment and Uprate
Connection Applicant: Hydro One Networks Inc.

February 12, 2021

ieso
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Powering Tomorrow.

Acknowledgement

The IESO wishes to acknowledge the assistance of Hydro One in completing this assessment.

Disclaimer

This report has been prepared solely for the purpose of assessing whether the connection applicant's proposed connection with the IESO-controlled grid would have an adverse impact on the reliability of the integrated power system and whether the IESO should issue a notice of conditional approval or disapproval of the proposed connection under Chapter 4, section 6 of the Market Rules.

Conditional approval of the project is based on information provided to the IESO by the connection applicant and Hydro One at the time the assessment was carried out. The IESO assumes no responsibility for the accuracy or completeness of such information, including the results of studies carried out by Hydro One at the request of the IESO. Furthermore, the conditional approval is subject to further consideration due to changes to this information, or to additional information that may become available after the conditional approval has been granted.

If the connection applicant has engaged a consultant to perform connection assessment studies, the connection applicant acknowledges that the IESO will be relying on such studies in conducting its assessment and that the IESO assumes no responsibility for the accuracy or completeness of such studies including, without limitation, any changes to IESO base case models made by the consultant. The IESO reserves the right to repeat any or all connection studies performed by the consultant if necessary to meet IESO requirements.

Conditional approval of the proposed connection means that there are no significant reliability issues or concerns that would prevent connection of the proposed project to the IESO-controlled grid. However, the conditional approval does not ensure that a project will meet all connection requirements. In addition, further issues or concerns may be identified by the transmitter(s) during the detailed design phase that may require changes to equipment characteristics and/or configuration to ensure compliance with physical or equipment limitations, or with the Transmission System Code, before connection can be made.

This report has not been prepared for any other purpose and should not be used or relied upon by any person for another purpose. This report has been prepared solely for use by the connection applicant and the IESO in accordance with Chapter 4, section 6 of the Market Rules. This report does not in any way constitute an endorsement of the proposed connection for the purposes of obtaining a contract with the IESO for the procurement of supply, generation, demand response, demand management or ancillary services.

The IESO assumes no responsibility to any third party for any use, which it makes of this report. Any liability which the IESO may have to the connection applicant in respect of this report is governed by Chapter 1, section 13 of the Market Rules. In the event that the IESO provides a draft of this report to the connection applicant, the connection applicant must be aware that the IESO may revise drafts of this report at any time in its sole discretion without notice to the connection applicant. Although the IESO will use its best efforts to advise you of any such changes, it is the responsibility of the connection applicant to ensure that the most recent version of this report is being used.

Project Description

Hydro One Networks Inc. (the "connection applicant" and "transmitter") is proposing to refurbish and uprate 115 kV transmission lines A8K and A9K (the "project"). The transmission lines are being refurbished as part of end-of-life replacement plans and uprated as per recommendations provided by the IESO to maintain reliability in the surrounding area. The transmission lines are in the northeastern zone of the IESO-Controlled Grid (ICG) and connect Ansonville transformer station (TS) to Kirkland Lake TS which are both owned by the transmitter.

The proposed in-service date is Q1 2023.

Notice of Conditional Approval

This assessment concludes that the proposed connection of the project is expected to have no material adverse impact on the reliability of the integrated power system, provided that all requirements in this report are implemented. Therefore, the assessment supports the release of the Notification of Conditional Approval for connection of the project.

IESO Requirements for Connection

General Requirements: The connection applicant shall satisfy all applicable requirements specified in the Market Rules, the Transmission System Code and reliability standards. The most relevant requirements are presented in Appendix A: General Requirements of this report.

Appendix A: General Requirements

The connection applicant shall satisfy all applicable requirements specified in the Market Rules, the Transmission System Code and reliability standards. This Section highlights some of the general requirements that are applicable to the project.

1. The connection applicant must notify the IESO at connection.assessments@ieso.ca as soon as they become aware of any changes to the project scope or data used in this assessment. The IESO will determine whether these changes require a re-assessment.
2. The connection applicant shall ensure that the project's equipment meet the voltage requirements specified in section 4.2 and section 4.3 of the Ontario Resource and Transmission Assessment Criteria (ORTAC).
3. According to Section 6.1.2 of the TSC, the connection applicant must ensure the project's transmission connection equipment is designed to withstand the fault levels in the area. According to Section 6.4.4 of the TSC, if any future system changes result in an increased fault level higher than the project's equipment capability, the connection applicant is required to replace that equipment with higher rated equipment capable of withstanding the increased fault level, up to the maximum fault level specified in Appendix 2 of the TSC.
4. It is the connection applicant's responsibility to verify that all equipment and circuit breakers within the project are appropriately sized for the local fault levels.
5. The connection applicant must initiate the IESO's Market Registration process at least four months prior to the commencement of any project related outages. Once the IESO's Market Registration process has been successfully completed, the IESO will provide the connection applicant with a Registration Approval Notification (RAN) document, confirming that the project is fully authorized to connect to the IESO-controlled grid. For more details about this process, the connection applicant is encouraged to contact IESO's Market Registration at market.registration@ieso.ca
6. The connection applicant is required to provide "as-built" equipment data for the project during the IESO Market Registration process. If the "as-built" equipment data differs materially from the ones used in this assessment, then the IESO may decide that further analysis of the project is required.
7. As per Market Manual 1.4: Connection Assessment and Approval (formerly Market Manual 2.10), the connection applicant will be required to provide a status report of its proposed project with respect to its progress upon request of the IESO using the project status report form on the IESO website. Failure to comply with project status requirements listed in Market Manual 1.4: Connection Assessment and Approval (formerly Market Manual 2.10) will result in the project being withdrawn.

Independent Electricity System Operator
1600-120 Adelaide Street West
Toronto, Ontario M5H 1T1

Phone: 905.403.6900
Toll-free: 1.888.448.7777
E-mail: customer.relations@ieso.ca

ieso.ca

@IESO_Tweets
facebook.com/OntarioIESO
linkedin.com/company/IESO

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Powering Tomorrow.

Customer Impact Assessment

Please refer to **Attachment 1** for the Final Customer Impact Assessment prepared by Hydro One.

Hydro One Networks Inc.
483 Bay Street
Toronto, Ontario
M5G 2P5

CUSTOMER IMPACT ASSESSMENT

Transmission Line Refurbishment and Uprate:

A8K and A9K, between Ansonville TS and Kirkland Lake TS

Revision:	Final
Date:	February 23, 2021
Issued by:	Transmission Asset Management Hydro One Networks Inc.

Prepared by:

Deniz Turkben, P.Eng
Sr. Network Management Engineer
Transmission Asset Management
Hydro One Networks Inc.

Approved by:

Prasath Suppiah, P.Eng
Senior Manager
Transmission Asset Management
Hydro One Networks Inc.

Disclaimer

This Customer Impact Assessment was prepared based on preliminary information available about the proposed refurbishment and uprate of circuits A8K and A9K between Ansonville TS and Kirkland Lake TS in Northern Ontario. It is intended to highlight significant impacts, if any, to affected transmission customers early in the project development process and thus allow an opportunity for these parties to bring forward any concerns that they may have including those needed for the review of the connection and for any possible application for leave to construct. Subsequent changes to the required modifications or the implementation plan may affect the impacts of the proposed connection identified in this Customer Impact Assessment. The results of this Customer Impact Assessment and the estimate of the outage requirements are also subject to change to accommodate the requirements of the IESO and other regulatory or municipal authority requirements. The fault levels computed as part of this Customer Impact Assessment are meant to assess current conditions in the study horizon and are not intended to be for the purposes of sizing equipment or making other project design decisions.

Hydro One Networks shall not be liable to any third party which uses the results of the Customer Impact Assessment under any circumstances whatsoever, for any indirect or consequential damages, loss of profit or revenues, business interruption losses, loss of contract or loss of goodwill, special damages, punitive or exemplary damages, whether any of the said liability, loss or damages, arises in contract, tort or otherwise.

CUSTOMER IMPACT ASSESSMENT

TRANSMISSION LINE REFURBISHMENT AND UPRATE: A8K AND A9K, BETWEEN ANSONVILLE TS AND KIRKLAND LAKE TS

1.0 INTRODUCTION

This project will refurbish and uprate Hydro One's 115kV A8K and A9K circuits (approx. 90km/cct) to address end of life asset condition and increase its Long Term Emergency rating to 550A.

In accordance with section 6 of the Ontario Energy Board's Transmission System Code ("TSC"), Hydro One Networks Inc. (Hydro One) is to carry out a Customer Impact Assessment ("CIA") study to assess the impact of this transmission line refurbishment and uprate on existing customers in the affected area.

This report presents the results of a Customer Impact Assessment (CIA) study completed by Hydro One to assess the potential impact of this proposed transmission line refurbishment and uprate to connected transmission customers in the local vicinity.

2.0 BACKGROUND

The 115 kV circuits A8K and A9K span between Ansonville TS and Kirkland Lake TS (approx. 90km/circuit). For the most part, these circuits run in parallel, but have locations of slight deviation, where one circuit feeds or bypasses intermediate or tapping stations Ramore TS and Monteith DS. These circuits were constructed in the 1930s and have numerous components that have deteriorated to end of life condition, including copper and ACSR conductors, wood pole structures, porcelain insulators and steel shieldwire. Hydro One will be replacing these conductors to address their poor condition. While refurbishing these lines, Hydro One will also increase the long term emergency (LTE) thermal rating of the lines to 550 A.

3.0 CUSTOMER LIST

The focus of this study is on transmission customers connected that may be impacted by the proposed project. The stations supplied by these circuits and their corresponding connected customers are listed in Table 1 below.

Table 1 - Connected Customers

Station	Customer
Kirkland Lake TS	Hydro One Distribution
Ramore TS	Hydro One Distribution
Monteith DS	Hydro One Distribution
H20 Power Iroquois Falls CTS	H20 Power – via A93I
Iroquois Falls Power CGS	Iroquois Falls Power Corp – via A94N

4.0 TECHNICAL STUDIES

Hydro One assessed the proposed project on area customer buses. In addition, IESO Expedited System Impact Assessment (CAA ID: 2020-EX1146) has been completed to assess the performance of the IESO Controlled Grid following implementation of this project.

4.1 Short-circuit Assessment

Short circuit results of the proposed project are identified in Appendix B. The incorporation of the proposed project into the Hydro One transmission system does not have any adverse impact on area short circuit levels. Area 115kV and 44kV values remain within the limits described the Transmission System Code, and remain within Hydro One equipment ratings. See Table 2 below.

Table 2: Transmission System Code: Transmission System Connection Point Performance Standards

Nominal Voltage (kV)	Maximum 3ph Fault (kA)	Maximum SLG Fault (kA)
230	63	80
115	50	50
44	20	19 (usually limited to 8)

4.2 Voltage Assessment

Voltage performance on the high voltage buses and Hydro One customer delivery points remain within the limits specified in Section 4.2 and 4.3 of ORTAC following the implementation of this project.

4.3 Customer Reliability

It is expected that the proposed project will increase supply reliability for area customers by reducing future interruptions caused by component failure on the A8K or A9K circuits.

4.4 Preliminary Outage Impact Assessment

To perform this refurbishment, outages on circuits A8K and A9K will be taken in a manner that results in no major impact to supplied customers. Outage schedule will be made available during the execution phase of the project and will be established in consultation with connected customers in the area. The outage duration, if any, will be minimized and risk managed with proper outage planning and co-ordination.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This Customer Impact Assessment (CIA) concludes that the proposed project does not have any adverse impact on connected Hydro One Transmission customers.

It is recommended that area customers review the impact of the short circuit change on their facilities and take appropriate and timely action to address any safety/technical issues arising out of the changes following incorporation of this project.

6.0 APPENDIX A – A8K/A9K TRANSMISSION LINE ROUTE

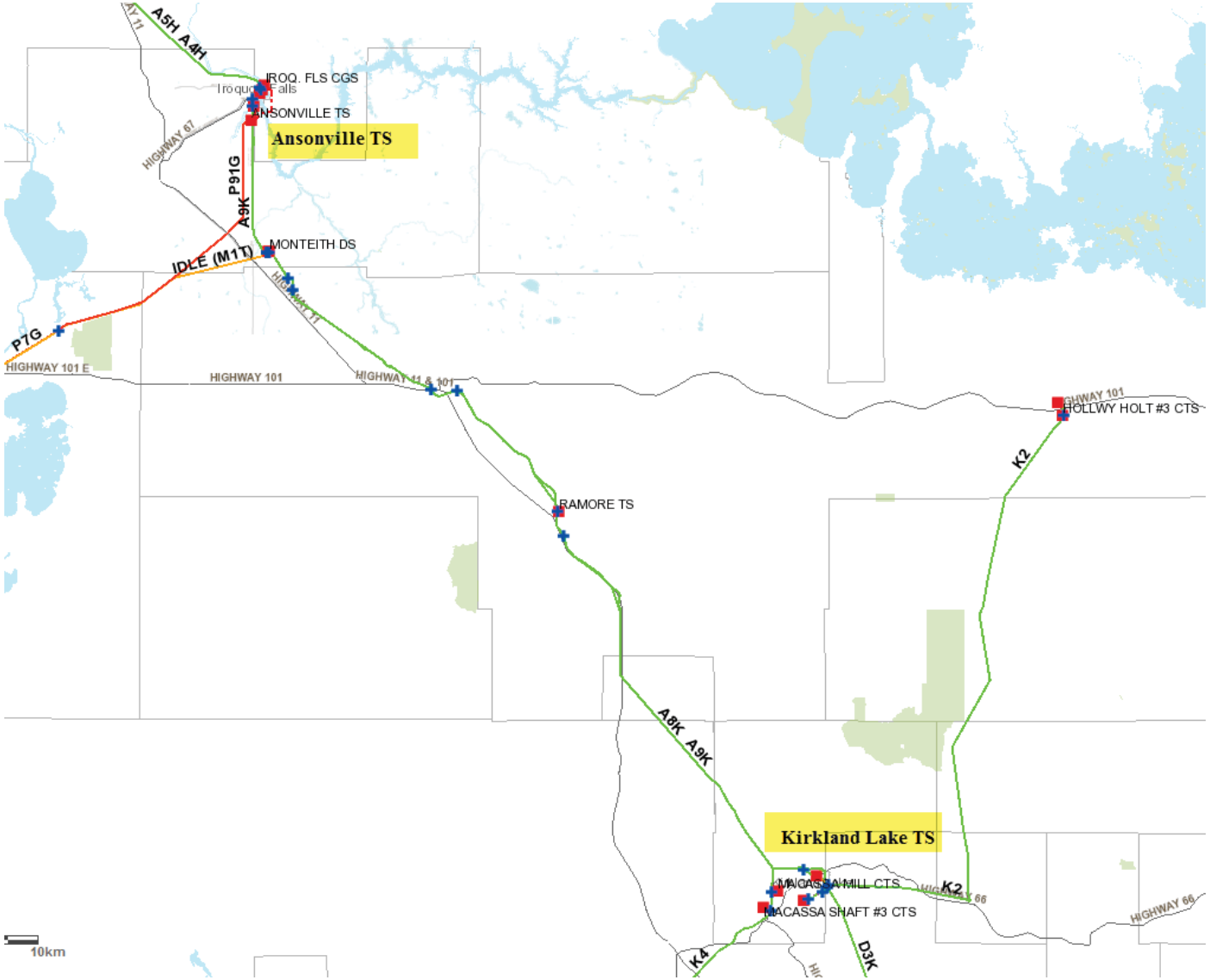

Figure 11 – Map of Circuits A8K and A9K between Ansonville TS and Kirkland Lake TS

APPENDIX B – SHORT CIRCUIT RESULTS

Station Bus	Voltage (kV)	Existing				Post – A8K/A9K Refurbishment / Upgrade			
		3-ph (kA)		L-G (kA)		3-ph (kA)		L-G (kA)	
		Symm	Asymm	Symm	Asymm	Symm	Asymm	Symm	Asymm
Ansonville TS	230	5.78	7.29	6.41	8.37	5.79	7.33	6.43	8.40
Ansonville TS	115	8.96	10.13	9.26	11.02	9.07	10.28	9.35	11.17
Kirkland Lake TS	115	6.99	8.00	8.09	9.69	7.13	8.19	8.22	9.88
Monteith DS	115	6.07	6.21	4.58	4.69	6.17	6.37	4.83	4.93
Ramore DS	115	4.00	4.01	2.69	2.69	4.36	4.43	2.96	2.97
Kirkalnd Lake TS	44	6.55	6.55	5.07	5.93	6.60	7.09	5.08	5.96
Monteith DS	12.5	3.59	3.59	3.70	4.21	3.59	3.84	3.70	4.23
Ramore DS	27.6	2.57	2.57	2.76	3.01	2.59	2.70	2.78	3.12