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

DECISION AND ORDER

EB-2023-0197

HYDRO ONE NETWORKS INC.

Application for leave to construct: refurbishment of the existing section of electricity transmission line between Kirkland Lake Transformer Station and Matachewan Junction

BEFORE: Patrick Moran
Presiding Commissioner

Robert Dodds
Commissioner

April 25, 2024

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

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1 OVERVIEW

This is a Decision and Order of the Ontario Energy Board (OEB) on an application filed by Hydro One Networks Inc. (Hydro One) for an order granting leave to refurbish an existing single-circuit electricity transmission line between Kirkland Lake Transformer Station and Matachewan Junction in the municipality of Kirkland Lake in Northeast Ontario. The transmission line and associated station modifications proposed by Hydro One are collectively referred to as the Project. A map showing the location of the Project is attached as Schedule A to this Decision and Order.

Hydro One also applied for approval of the form of land use agreements it has offered, or will offer, to landowners affected by the route of the Project.

For the reasons provided in this Decision and Order, the OEB grants Hydro One's application for leave to construct the Project. The OEB finds that the Project is in the public interest based on an examination of the Project need, alternatives, cost, customer impacts, reliability and quality of electricity service, and land matters.

The OEB accepts the total estimated capital cost of the Project of $13.9 million, which includes an additional operating, maintenance, and administration expenditure of $1.0M for removals.

The OEB approves the proposed forms of agreements that Hydro One has offered, or will offer, to landowners affected by the routing and construction of the Project.

This leave to construct is subject to the OEB's standard conditions of approval, attached as Schedule B to this Decision and Order.

2 PROCESS

Hydro One applied to the OEB on November 13, 2023, under section 92 of the *Ontario Energy Board Act*, *1998* (OEB Act), for an order granting leave to refurbish approximately 10 kilometres of an existing 115 kilovolt single-circuit electricity transmission line between Kirkland Lake Transformer Station and Matachewan Junction and associated station modifications in the municipality of Kirkland Lake, in Northeast Ontario.

Hydro One also applied under section 97 of the OEB Act for approval of the forms of agreement it offers to landowners affected by the route of the Project.

The OEB issued a Notice of Hearing on December 8, 2023. Environmental Defence applied for intervenor status and cost eligibility.

In Procedural Order No.1, the OEB approved intervenor status and cost eligibility for Environmental Defence. Procedural Order No. 1 also established the schedule for interrogatories from OEB staff and Environmental Defence. Hydro One was required to file responses to all interrogatories with the OEB and serve them on intervenors by March 7, 2024.

On March 5, 2024, Environmental Defence requested an extension of time to file its interrogatories by the same day, with Hydro One's deadline to respond extended to March 18, 2024. Hydro One consented to this revised timeline and the OEB approved this extension.

Final submissions on the application were filed by OEB staff, Environmental Defence and Hydro One.

3 DECISION

Section 92 of the OEB Act provides that leave of the OEB must be obtained for the construction, expansion or reinforcement of electricity transmission lines. Section 96(2) of the OEB Act limits the scope of the OEB's review in an application under section 92 to the interests of consumers with respect to prices and the reliability and quality of electricity service.

The OEB has considered the impact of the Project on prices and the reliability and quality of electricity service. As part of its review of a project's impact on prices, the OEB typically considers the need for a project and alternatives to the proposed project.

The OEB's findings on the Project's impacts on prices (which includes an analysis of Project need and alternatives), reliability, quality of service, land matters, and conditions of approval are addressed in this chapter.

3.1 Project Need and Alternatives

Circuit K4 is a 115 kV single-circuit transmission line that is 97 km long and provides a radial connection between Kirkland Lake Transformer Station and the Young-Davidson Customer Transformer Station. The circuit primarily supplies electricity to mining operations in the Kirkland Lake area. Hydro One owns and manages 64 km of the line, while the remaining portion is customer owned. The 10 km section of the Hydro One-owned and operated line proposed for refurbishment in this Project was constructed in 1924 and is of original vintage.

The need for Hydro One to conduct sustainment work on circuit K4 is identified in the Independent Electricity System Operator's (IESO's) study titled "North & East of Sudbury Scoping Assessment Outcome Report".[1] The report highlighted numerous facilities in the study area approaching end of life over the next 10 years. The section of circuit K4 subject of this Project was identified as having reached end of life and requiring refurbishment in 2023.[2] Circuit K4 has not been considered by the IESO in recent Integrated Regional Resource Plans, Regional Infrastructure Plans, or Bulk System Plans.

The proposed Project includes the replacement of existing wood pole structures, and the installation of a new 997 kcmil aluminum-conductor steel-reinforced cable (ACSR) conductor and shieldwire to replace the existing 411 kcmil conductor. Additionally, twelve wood pole structures not in end-of-life condition will be replaced to accommodate the new conductor. A 5 km section of the Project requires a new wood pole line to be constructed to the east of the existing line, resulting in a change of the circuit center-line by approximately 15 metres. This section will also involve the installation of a new lattice switch structure, where a new manually operated load breaking circuit switch will be installed. Hydro One stated that its proposed construction methodology is preferred based on the reliability benefits to its industrial customers.

In response to OEB staff interrogatories, Hydro One confirmed that it had explored an "in-situ" refurbishment option but this would require four or more outages, which could not be tolerated by the connected customers.[3] The parallel and adjacent construction of this new section will allow customer connection to be maintained during the construction period, with less interruptions than an in-situ alternative.[4]

[1] North & East of Sudbury Scoping Assessment Outcome Report, August 13, 2021.
[2] Ibid., pg.10
[3] Application Evidence, Exhibit B-2-1, pg.1.
[4] Application evidence, Exhibit B-6-1, pg.1.

Hydro One considered five incrementally larger conductor options as part of the nondiscretionary portion of the Project. The five alternatives were assessed on which provides the most favourable results in terms of total annual cost and Net Present Value (NPV). All alternatives involve replacing the end-of-life assets of the existing circuit K4 section. Hydro One's preferred option for this Project is Alternative 4, as it offers the lowest cost when considering the annual cost of line losses. The analysis of line losses for all five alternatives have been summarized in Table 1 below:

Table 1 – Peak Flow Analysis of Line Losses for Alternatives

	Alt. #1 411 kcmil	Alt. #2 477 kcmil	Alt. #3 732 kcmil	Alt. #4 997 kcmil	Alt. #5 1443.7 kcmil
Capital Cost ($M)	13.56	13.57	13.74	13.90	14.65
Losses at Peak Flow (MW)	0.31	0.27	0.18	0.13	0.09
Annual Revenue Costs ($M)	1.03	1.03	1.04	1.05	1.11
Annual Cost of losses ($M)	0.13	0.11	0.08	0.06	0.04
Total Annual Cost ($M)	1.16	1.14	1.12	1.11	1.15

Hydro One conducted a 50-year NPV analysis using a 5.65% discount rate and an NPV sensitivity analysis using varying values for the Hourly Ontario Energy Price (HOEP) to evaluate which conductor alternative provided the best NPV result over the expected life of the facility. The results of the study indicated that Alternative 4 had the lowest NPV when line losses are included for a range of the HOEP up to a value of $133/MWHR.

OEB staff submitted that the evidence demonstrates the need for the Project to replace end-of-life facilities so that the area continues to receive a safe and reliable supply of electricity. OEB staff also agreed with Hydro One's approach to adopt larger conductor sizes relative to minimum standards where cost-effective and supported Alternative 4 as the preferred option, as it had the lowest total annual cost, when the cost of line losses is considered.

Environmental Defence submitted that it was satisfied that Hydro One had established the need for the Project. Furthermore, Environmental Defence acknowledged that Hydro One's analysis and choice of conductor size was reasonable and appropriate for the purposes of this proceeding.

Findings

The OEB finds that Hydro One has established the need for the Project.

The OEB is satisfied that Hydro One has examined alternatives appropriately and that the Project is the most reasonable alternative. OEB staff submitted that Hydro One had carried out an appropriate analysis of alternatives, and that Hydro One's analysis established that adoption of a larger conductor size relative to minimum standards is the best alternative, as it has the lowest total annual cost, when the cost of line losses is considered. Environmental Defence commended the analysis carried out by Hydro One to support the choice to increase the size of the conductor.

The OEB is also satisfied that the proposal to refurbish parallel to the existing line is the more effective option for providing uninterrupted service to the line-connected industrial customers by reducing the number of required outages.

3.2 Project Cost

The estimated capital cost of the Project is $12.9 million, with an additional operating, maintenance and administration expenditure of $1.0M for removals. The cost estimates are based on a project definition equivalent to a Class 3 (with a range of -20%/+30%) under the American Association of Cost Engineering (AACE) International estimate classification system.

Hydro One presented three comparable projects where single circuit 115 kV wood pole lines were refurbished in Northern Ontario: Circuit A6P Refurbishment, Circuit X2Y Refurbishment, and Circuit H9K Reinforcement Project. The costs of comparable line projects are summarized in Table 2 below.

Table 2 – Costs of Comparable Projects

	Circuit A6P Refurbishment	Circuit X2Y Refurbishment	Circuit H9K Reinforcement	Circuit K4 (proposed Project)
Scope/Type	Refurbish in-situ	Refurbish in-situ	Refurbish in-situ	Partial Refurbish in-situ
Voltage	115 kV	115 kV	115 kV	115 kV
Structure Type	Wood Pole	Wood Pole	Wood Pole	Wood Pole

Single/Double Circuit	Single	Single	Single	Single
Route Length	15.0	7.6	32.0	10.0
Conductor	411 kcmil	411 kcmil	411 kcmil	997 kcmil
In-Service Year	June 2020	June 2020	March 2020	July 2024
Total Cost before adjustment	$6,034K	$5,100K	$11,900K	$13,900K
Unit Cost/per km	$455K/km	$759K/km	$423K/km	$854K/km

The total project costs per circuit km for the comparator projects range from $423K to $759K. In contrast, Hydro One estimated that the Project will incur a cost of $854K per circuit km. While OEB-approved inflation factors have been applied to provide a cost comparable price escalation to the circuit K4 refurbishment, Hydro One stated that this level of cost increase does not reflect true inflation.[5] Hydro One attributes this disparity to industry changes driven by global factors such as supply chain issues, interest rate hikes, and inflation, which have significantly impacted the comparability of costs.[6]

Hydro One stated that the rationale for the increased costs as compared to previous comparable projects, is that the proposed Project necessitates more complex construction methods not required by the comparator projects. These methods include rock-drilled foundations for structure installation, the rental of off-road vehicles, and other specialized construction equipment, as well as the need for real estate acquisitions to accommodate the new right-of-way for a section of the line.[7]

In response to OEB staff interrogatories, Hydro One explained that the difference in costs between comparator projects was also due to the tower structure required for the Project. The pole structures designed for the Project include double pole structures and Hframe structures, used to carry a larger size conductor than what was used for the H9K comparator project. Hydro One stated that the double pole structures, (i.e. those that require 2 holes and 2 vertical structures to be installed simultaneously) involve

[5] OEB Staff IR Responses, Exhibit 1-1-6, pg.3.
[6] Ibid.
[7] Ibid.

additional complexity/adjustments when constructing.[8] Additionally, Hydro One noted that topography played a role in the increased costs for the Project, with certain sections of circuit K4 requiring the use of a helicopter to place structures in areas where access is challenging.[9]

Hydro One also emphasized that longer transmission line projects benefit from greater efficiencies due to the ability to spread fixed costs. In contrast, the proposed Project, which involves refurbishing a 10 km span, does not have these efficiency advantages.

OEB staff submitted that Hydro One's process for developing the project cost estimate was reasonable. OEB staff submitted that despite the higher cost of $854K per circuit km, the costs were justified due to factors such as complex construction methods, real estate acquisitions, increased material costs, and the absence of economies of scale.

Environmental Defence did not make submissions on the Project's cost.

Findings

The OEB finds that Hydro One followed a reasonable process for developing its Project cost estimate. Accordingly, the total estimated capital cost of the Project of $13.9 million, which includes an additional operating, maintenance and administration expenditure of $1.0 million for removals, is accepted as reasonable by the OEB.

The OEB agrees that the cost differential relative to the comparator projects is justified on the basis that:

- the circumstances of this project includes the need for complex construction methods and real estate acquisitions
- there has been an increase in the cost of materials due to economic conditions, including inflation
- there is a lack of economies of scale due to the shorter project length

The OEB accepts that this Project is required to mitigate safety and reliability risks associated with operating deteriorated and obsolete assets.

3.3 Impact on Price of Electricity Service

Hydro One has stated that the costs for the Project will be included in the line connection pool for cost classification purposes and not allocated to any individual

[8] Ibid.
[9] Ibid.

customer. Additionally, as the Project is not being driven by additional load requirements/requests from connected customers, no customer contribution is required.

Hydro One also stated that the total Project cost of $13.9 million, includes no anticipated incremental operating or maintenance costs in the future. Additionally, there will be an immaterial change in the line pool revenue requirement once the Project's impacts are reflected in the transmission rate base at the projected in-service date of October 2024.

The Project is also expected to have no impact on the rates of a typical residential customer under the Regulated Price Plan.

OEB staff and Environmental Defence did not raise any concerns with respect to customer bill impacts.

Findings

The OEB accepts the assessment of Hydro One that there will be no material change in the line pool revenue requirement once the Project's impacts are reflected in the transmission rate base at the projected in-service date of October 2024. Accordingly, the Project is also expected to have no impact on the rates of a typical residential customer under the Regulated Price Plan.

The OEB further finds Hydro One's proposed allocation of project costs to the line connection pool to be appropriate and that no customer contributions are required.

3.4 Impact on Reliability and Quality of Service

Hydro One filed the Final Expedited System Impact Assessment prepared by the IESO and the Final Customer Impact Assessment prepared by Hydro One.

The IESO's final System Impact Assessment concluded that the Project is expected to have no material adverse impact on the reliability of the integrated power system.

Hydro One's final Customer Impact Assessment concluded that the Project will not have any adverse effects on the transmission-connected customers in the area. Hydro One also noted that the Project will increase supply reliability of customers in the Kirkland Lake area.

OEB staff did not have any concerns about the reliability and quality of service associated with the Project.

Environmental Defence did not raise any concerns with respect to reliability and quality of service.

Findings

The OEB accepts the conclusion in IESO's Final Expedited System Impact Assessment that the Project will have no material adverse impact on the reliability of the integrated power system. The OEB also accepts the conclusion of Hydro One's Customer Impact Assessment that the Project will not have any adverse impact on customers in the Kirkland Lake area with respect to reliability and quality of electricity service. Once the Project is completed, reliability and quality of service will be maintained as a result of the replacement of an aging and deteriorating asset.

3.5 Land Matters

Hydro One filed a map of the route for the Project with the Application. The proposed Project will expand the existing corridor and requires additional permanent land rights.

The new Project corridor will include a combination of the following land rights requirements:

- Hydro One statutory easements on Provincial owned (Bill 58) lands (no new land right required)
- Easement or fee simple rights on private and municipal properties (new land rights required)
- Rail crossing agreements (new land rights required)
- Temporary access and/or construction rights on provincially owned and private properties for access roads, temporary work headquarters, laydown areas and material storage facilities (new land rights required).

Hydro One stated there are 20 affected properties, all of which are presently vacant, and the proposed transmission corridor avoids traversing any dwellings or significant farm buildings. For the majority of these properties, Hydro One requires a permanent easement.

Table 3 lists the different land rights agreements that Hydro One has stated may be required, including details on the extent to which the agreements have previously been approved by the OEB. Hydro One has indicated that the forms remain materially unchanged.

Table 3. Land Rights Agreements and Prior OEB Approval

Form of Agreement	Past OEB Approval
Early Access Agreement	Prior approval in EB-2022-0140, no substantive changes proposed
Agreement for Temporary Rights	Prior approval in EB-2022-0140, no substantive changes proposed
Damage Claim Agreement/Waiver	Prior approval in EB-2022-0140, no substantive changes proposed
Option to Purchase a Limited Interest - Easement	Prior approval in EB-2022-0140, no substantive changes proposed

Compensation and Incentive Agreement- Easement	Prior approval in EB-2022-0140, no substantive changes proposed
Option to Purchase – Fee Simple	Prior approval in EB-2022-0140, no substantive changes proposed
Compensation and Incentive Agreement – Fee Simple	Prior approval in EB-2022-0140, no substantive changes proposed
Off Corridor Access	Prior approval in EB-2022-0140, no substantive changes proposed

In response to OEB staff interrogatories, Hydro One confirmed that it had secured option agreements on 19 of the affected 20 properties. Hydro One has yet to secure rights for Property PIN# 612280472, a private property currently requiring title rectification from the Ministry of Mines.[10] However, Hydro One states that efforts to acquire those rights remain underway and Hydro One expects to be able to secure those rights in a timely manner that will maintain the Project's in-service date.[11]

OEB staff reviewed the proposed agreements and submitted they were generally consistent with the form of agreement in past approvals, with the exception of one change that lacked rationale. OEB staff noted the change in the Compensation and Incentive Agreement- Easement, specifically the removal of one of the conditions, "Valuation 1.(b)," which addressed compensation adjustments based on market changes (Market Top-up). In its submission, OEB staff invited Hydro One to clarify the rationale for this change.

In its reply submission, Hydro One stated that the rationale for removing the 'Market Top-Up' incentive from this Project's real estate acquisition program was based on the geographic location of the Project. Hydro One noted that land values in the area had remained flat, and property prices were not as dynamic as in other geographical areas in the Province.[12] Additionally, Hydro One stated that increasing interest rates had discouraged sales transactions in the area, contributing to relatively unchanged property values between the timing of the option agreement execution by the landowner and when the OEB's approval for this application was expected to be granted. [13]

Environmental Defence made no submissions on this issue.

[10] OEB Staff IR Responses, Exhibit 1-1-3, pg.1.
[11] Ibid.
[12] Hydro One Reply Submission, Pg. 5.
[13] Ibid.

Findings

The OEB finds that the proposed forms of agreement are generally consistent with those approved by the OEB through previous proceedings and therefore approves them.

OEB staff identified one change whereby the 'Market Top-Up' incentive for this Project's real estate acquisition program was removed. The OEB accepts Hydro One's rationale for the change and finds it is not a material change to the forms of agreement for the purposes of this Project.

3.6 Conditions of Approval

The OEB Act permits the OEB, when making an order, to impose such conditions as it considers proper. The OEB has established a set of standard conditions of approval for transmission Leave to Construct applications.

OEB staff proposed that the standard conditions of approval be placed on Hydro One. Environmental Defence made no submissions on this issue.

Findings

The OEB grants leave to construct the Project subject to the standard conditions of approval set out in Schedule B of this Decision and Order. Hydro One has confirmed that it agrees with the standard conditions of approval.[14] There is nothing in the evidence to suggest that any other conditions of approval are required.

[14] OEB Staff IR Responses, Exhibit 1-1-4, pg.1.

4 ORDER

THE ONTARIO ENERGY BOARD ORDERS THAT:

1. Hydro One Networks Inc. is granted leave, pursuant to section 92 of the *Ontario Energy Board Act, 1998*, to refurbish the electricity transmission line between Kirkland Lake Transformer Station and Matachewan Junction, as described in the Application.

2. Leave to construct is subject to Hydro One Networks Inc. complying with the Conditions of Approval set forth in Schedule B.

3. The OEB approves the proposed forms of agreements that Hydro One Networks Inc. has offered or will offer to each owner of land affected by the Project.

4. Environmental Defence shall file with the OEB and forward to Hydro One Networks Inc. its cost claims in accordance with the OEB's *Practice Direction on Cost Awards* on or before **May 6, 2024.**

5. Hydro One Networks Inc. shall file with the OEB and forward to Environmental Defence any objection to the claimed costs on or before **May 13, 2024.**

6. If Hydro One Networks Inc. objects to costs claimed, Environmental Defence shall file with the OEB and forward to Hydro One Networks Inc. their responses, if any, to the objections to cost claims on or before **May 20, 2024**.

7. Hydro One Networks Inc. shall pay the OEB's costs of, and incidental to, this proceeding upon receipt of the OEB's invoice.

Parties are responsible for ensuring that any documents they file with the OEB, such as applicant and intervenor evidence, interrogatories and responses to interrogatories or any other type of document, **do not include personal information** (as that phrase is defined in the *Freedom of Information and Protection of Privacy Act*), unless filed in accordance with rule 9A of the OEB's Rules of Practice and Procedure.

Please quote file number, **EB-2023-0197** for all materials filed and submit them in searchable/unrestricted PDF format with a digital signature through the OEB's online filing portal.

- Filings should clearly state the sender's name, postal address, telephone number and e-mail address.
- Please use the document naming conventions and document submission standards outlined in the Regulatory Electronic Submission System (RESS)

Document Guidelines found at the File documents online page on the OEB's website.

- Parties are encouraged to use RESS. Those who have not yet set up an account, or require assistance using the online filing portal can contact registrar@oeb.ca for assistance.
- Cost claims are filed through the OEB's online filing portal. Please visit the File documents online page of the OEB's website for more information. All participants shall download a copy of their submitted cost claim and serve it on all required parties as per the Practice Direction on Cost Awards.

All communications should be directed to the attention of the Registrar and be received by end of business, 4:45 p.m., on the required date.

Email: registrar@oeb.ca

Tel: 1-877-632-2727 (Toll free)

DATED at Toronto April 25, 2024

ONTARIO ENERGY BOARD

Nancy Marconi

Digitally signed by Nancy Marconi
Date: 2024.04.25 13:18:46 -04'00'

Nancy Marconi
Registrar

SCHEDULE A

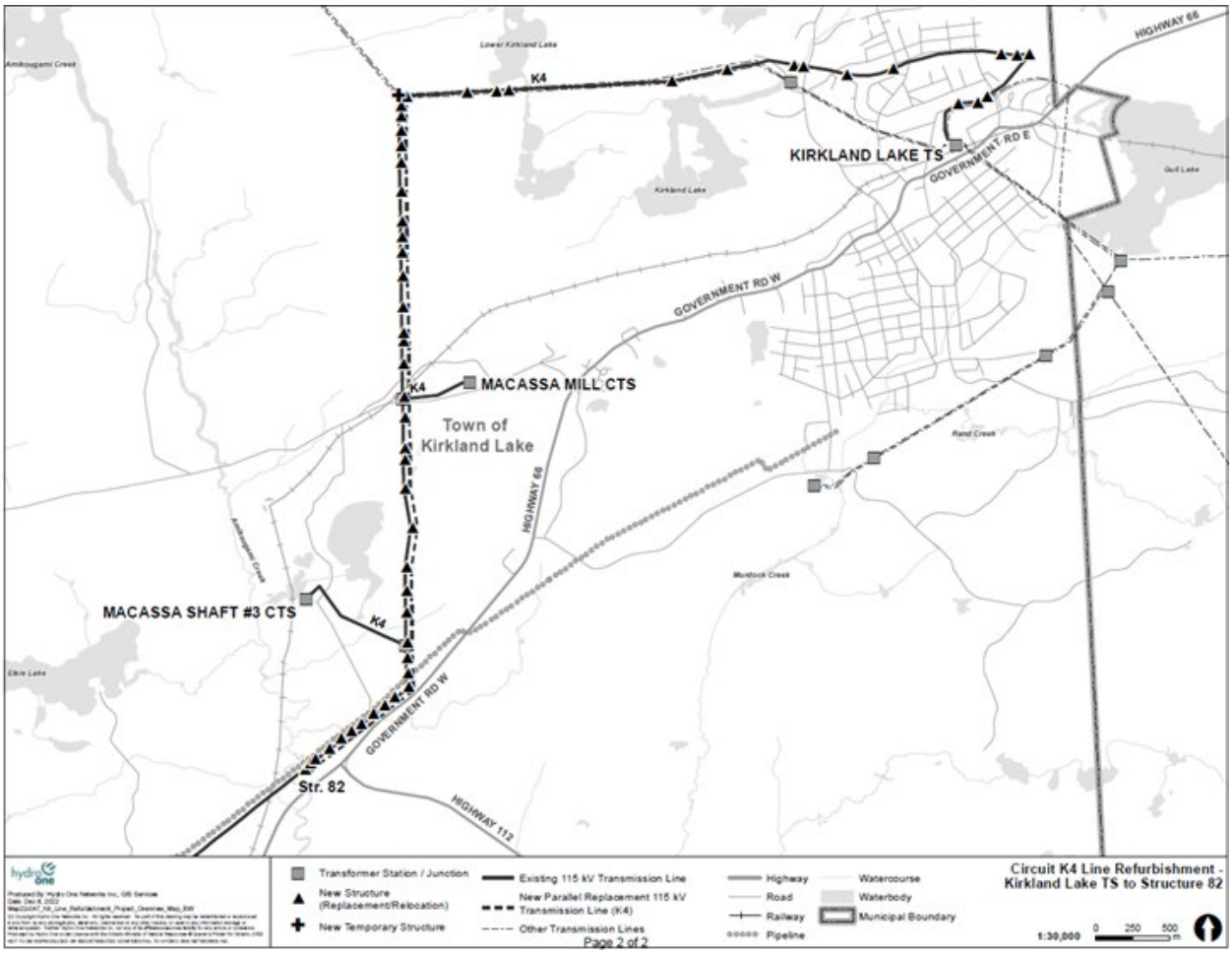
DECISION AND ORDER

HYDRO ONE NETWORKS INC.

EB-2023-0197

APRIL 25, 2024

SCHEDULE A – K4 RECONDUCTORING PROJECT MAP
HYDRO ONE NETWORKS INC.
EB-2023-0197
APRIL 25, 2024



SCHEDULE B

DECISION AND ORDER

HYDRO ONE NETWORKS INC.

EB-2023-0197

APRIL 25, 2024

SCHEDULE B: STANDARD CONDITIONS OF APPROVAL FOR ELECTRICITY LEAVE TO CONSTRUCT APPLICATIONS HYDRO ONE NETWORKS INC. EB-2023-0197

1. Hydro One shall fulfill any requirements of the SIA and the CIA, and shall obtain all necessary approvals, permits, licences, certificates, agreements, and rights required to construct, operate and maintain the project.

2. Unless otherwise ordered by the OEB, authorization for leave to construct shall terminate 12 months from the date of the Decision and Order, unless construction has commenced prior to that date.

3. Hydro One shall advise the OEB of any proposed material change in the project, including but not limited to changes in: the proposed route, construction schedule, necessary environmental assessment approvals, and all other approvals, permits, licences, certificates and rights required to construct the project.

4. Hydro One shall submit to the OEB written confirmation of the completion of the project construction. This written confirmation shall be provided within one month of the completion of construction.

5. Hydro One shall designate one of their employees as project manager who will be the point of contact for these conditions and shall provide the employee's name and contact information to the OEB and to all affected landowners, and shall clearly post the project manager's contact information in a prominent place at the construction site.