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BY EMAIL AND RESS

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Mr. Musab Qureshi
Manager - Generation & Transmission
Ontario Energy Board
Suite 2700, 2300 Yonge Street
P.O. Box 2319
Toronto, ON M4P 1E4

Dear Mr. Qureshi,

EB-2021-0136 – Hydro One Networks Inc. Section 92 – Richview to Trafalgar Reconductoring Project - Update on Project Cost

In accordance with the Ontario Energy Board's ("OEB") Decision and Order and Condition of Approval #3 regarding Hydro One's leave to construct application for the Richview to Trafalgar Reconductoring Project ("RxT Project" or "Project"), dated December 2, 2021, Hydro One is providing the OEB with an update regarding an increase in the Project's cost. The Project in-service date is not expected to change from that approved in Hydro One's s.92 Application, namely April 2026. Hydro One's revised Project forecast cost total is $92.8M versus $60.9M, as approved in EB-2021-0163

The updated Project cost estimate of $92.8M was derived from applying the Association for Advancement of Cost Engineering (AACE) Class 3 estimate (+30% / -20%) principles and processes. The Project is approximately 55% complete resulting in the elimination of some of the execution risks that were considered and included in the Project's s.92 Application cost estimate, done prior to construction commencement. Major risks that are now eliminated include: the completion of Project designs of the four circuit upgrades (i.e. R14T, R17T, R19TH and, R21TH) and OPGW installation atop the towers carrying circuits R14T and R17T, and the procurement of all Project materials.

The RxT Project remains the preferred alternative, consistent with the options considered and analysis provided in Hydro One's s.92 Application at Exhibit B, Tab 5, Schedule 1. The RxT Project will provide benefits consistent with the evidence provided to the OEB in the S.92 leave to construct hearing, that being increased capacity and reliability along this critical major transmission corridor. During Project development and construction execution Hydro One has and will continue to maintain regular communication with the IESO regarding Project updates, including forecast cost and in-service timing. The IESO continues to support the Project as the preferred option to meet the required 2026 need date and maintain the circuit's reliability standards.

Based on the updated Project cost forecast a typical residential customer's 2024 monthly bill, based on the OEB-approved average residential consumption of 750 kWh, would increase $0.03 per month to $150.79[1]

[1] Appendix A, Table 2, Row A, Average monthly bill amount of $150.76, plus, the $0.03 increase resulting from the updated Project forecast costs = $150.79 per month.

versus $0.02 per month shown in the s.92 application. Details of the economic impact comparative information for 2024 and 2021 respectively (the period of analysis applicable when the application was filed), are provided below in **Tables 1** and **2** of **Appendix A.**

Variance Explanation

The increase in Project cost, compared to the OEB-approved level is mainly attributable to changes in, 1) Project definition assumptions ($22.1M), 2) hardware product development and installation challenges ($4.5M), and 3) additional contingency, overhead, and interest ($5.3M).

1. Changes in Project Definition Assumptions - $22.1M

Conductor Installation Challenges: This Project is utilizing the Aluminium Conductor Steel Supported (ACSS)-type conductor. The ACSS conductor has not historically been widely used by Hydro One, however, it was selected for this Project because of the need to meet the circuit's ampacity requirements without replacing the existing towers, which would otherwise have been required for a comparatively heavier Aluminium Conductor Steel Reinforced ("ACSR") conductor that would also have the required Project ampacity rating. The smaller ACSS diameter conductor is lighter weight which will negate the need to replace the existing towers entirely, saving considerable structure replacement cost. Other advantages of the ACSS compared to standard ACSR conductors include its ability to operate at elevated temperatures and has excellent self-damping properties. Utilizing the ACSS conductor maximized the ability to utilize the existing infrastructure without costly and operationally prohibitive tower replacements.

Due to the limited use of ACSS conductors on Hydro One's system, during Project execution it was discovered that initial benchmarks for installation were under-estimated due to larger and comparatively more expensive hardware than assumed and to the increase in installation labour for splicing requirements associated with ACSS. To support the additional installation effort, maintain the original schedule commitments to the IESO, and manage labour market conditions causing limited availability of experienced skilled trades in Ontario for transmission lines construction work, significantly higher construction costs are included in the updated Project forecast. This has resulted in an **$8.3M** increase to the Project's cost.

Labour and Equipment Rate Refresh compared to the s.92 Estimate: Following the completion of the Project definition and AACE Class 3 estimate, the labour and equipment rates, as included in the leave to construct application were refreshed, resulting in an increase of **$2.3M**. This increase only reflects the rates used to estimate labour and equipment hours. It does not include incremental increases in labour effort, or equipment usage levels beyond the original forecast plan. Information related to incremental labour effort and equipment use required, beyond the original forecast, is described below, and in the details regarding Conductor Installations Challenges, above.

Commodity and Hardware Procurement Costs: Higher procurement costs of **$3.0M** are directly tied to the volatility of the global supply chain and higher than anticipated inflation for raw commodity prices required for the Project, such as steel, aluminium, ACSS conductor, and other associated Project materials. These commodities have seen material cost increases post-OEB s.92 Project approval. Despite the supply chain

constraints, manufacturing capacity was secured early enough in the Project's execution phase, such that Hydro One does not expect a delay to the Project's in-service date.

Utility Infrastructure within the Transmission Corridor: The transmission corridor for this Project contains eight different pipelines owned by five different companies, including vital gas mains regulated by the Canadian Energy Regulator. The alignment of the gas pipeline was known during the Project planning phase and temporary access routes, crossing locations and required permits were considered, consistent with Hydro One's prior comparable projects. However, permit requirements specific to this Project, pertaining to other parameters such as, age, condition, depth of the pipeline/s, and the pipe design capacity, were unknown until specific permits were sought and acquired by Hydro One, prior to Project construction. The detailed temporary access and protection measures requirements for existing third-party assets are not typically captured in the design package completed prior to construction execution. After having obtained clarifications for the facilities that co-exist on the adjacent Right of Way, and after consultation and engagement with gas pipeline owners, Hydro One's application for permits/approvals, included the need for a more extensive and robust protection and safety measures - in multiple locations - in order to mitigate risk of damage to existing pipelines from the use of heavy construction equipment adjacent or overtop of the pipelines. These measures include air bridges, wooden mats, and steel plates and more than the single layer of aggregate atop the pipeline crossing locations that was originally budgeted. As a result, the Project's workplan augmentation and protective measures resulted in additional costs of **$2.2M**

Urban Project Complexity: The Project's transmission corridor spans within urban areas, including multiple road crossings, pedestrian trails, and distribution feeder crossings. The work plan developed during the Project definition phase accounted for many anticipated urban complexities of the work specific to this corridor, however, the actual level of effort required to navigate the multitude of urban execution areas was underestimated. Municipal and Provincial authorities only granted permission for overnight highways and major roadway closures. This resulted in unplanned labour increases due to overtime-premium rates combined with additional Ministry of Transportation construction methodology requirements for installation of additional guiderails at highway crossings for public safety and accident prevention prior to the work commencing. These measures, consistent with Hydro One's safety procedures and industry best-practices, are required for the safe and efficient stringing of conductors across provincial highways, municipal roadways, park trails, transit stations, and waterbodies. During Project execution in the highly urbanized areas, the access challenges required specialized vehicle hire, including the use of cranes with modified boom tips and more rider poles designed to maintain public safety around road crossings. Also, cover-ups[2] on low voltage lines to eliminate areas of potential contact with low voltage lines during conductor stringing operations, were necessary. These unforeseen measures increased Project costs by **$3.1M** more than originally estimated.

[2] Refers to the construction measure to protect live low voltage distribution circuits beneath the transmission circuit project.

Additional Tower Structure Requirements: The use of the ACSS conductor, as discussed above, negated the need to replace towers in their entirely, however certain individual steel components of each tower still required modifications due to the larger sized conductor. Although the estimate underpinning the s.92 Application included upgrades to the towers to a higher security class (i.e. stronger load baring capability), the size and volume of steel members were underestimated, as were the on-site drilling work-methods for the installation of the new steel members. The incremental costs for the steel and labour effort for these reinforcements is **$2.1M**.

Construction Yard: The siting and operating costs of the Project's construction yard ("Yard") were impacted by a suitability assessment – prior to Project execution – regarding the adequacy of the planned construction setup, laydown and materials storage yard. The original cost estimate assumed the Yard adjacent to Tomken TS would be used, however, that location proved inadequate due to the interference from nearby low voltage distribution lines, oil and natural gas pipelines, as well as additional permitting requirements from the Toronto Region Conservation Authority. The Yard Hydro One ultimately selected was set up at the Erin Mills Athletic Fields, a location further west of Tomken TS due to better suitability i.e. resolving challenges to the prior planning location and having additional space and improved accessibility. However, this Yard site lacked nearby electrical supply, requiring a portable diesel generator to be brought to the Yard site. Generator rental and fuel costs were not accounted for in the original cost estimate. Additionally, a security monitoring system was installed for the facilities that was also not previously budgeted for. The additional costs to revise the Yard site and operate the construction Yard have resulted in an additional **$1.1M**.

2. Hardware Development, and Installation Challenges - $4.5M

Hardware Development: Connectors for ACSS conductors that could meet Hydro One's thermal-mechanical requirements and the newly updated American National Standards Institute specifications were not readily available commercially. For this reason, new components were designed and tested by a third party, resulting in an initial six-month delay to the start of the conductor installation. The additional testing and development costs, the additional time for construction personnel to be trained and become familiar with the installation procedure of the new hardware, and the overtime effort to recover lost time and maintain the in-service date resulted in an additional **$4.5M** of costs to the Project.

3. Contingency, Interest, and Overhead – $5.3M

The Project cost variance includes additional contingency of **$3.5M** (which represents 8.1% of the remaining $43.0M of forecast gross costs remaining), additional forecast overhead of **$1.3M**, and additional forecast interest of **$0.5M**. The contingency amount increases are a result of having conducted a refreshed risk workshop and a probabilistic assessment to quantify known risks, consistent with the current process.

This Project is eligible for, and meets the criteria of, Hydro One's OEB-approved Externally Driven Work Account, whereby Hydro One will record, once placed in-service, any revenue requirement incremental

beyond amounts embedded in the 2023-27 Joint Rate Application[3], until the next opportunity to have this Project's total in-service additions included in its rate base.

Sincerely,

Joanne Richardson

c/ Intervenors of record in EB-2021-0136 (electronic only)

[3] EB-2021-0110.

APPENDIX A – ECONOMIC RATE IMPACT ANALAYSIS

For comparison purposes, Hydro One updated the 2021 analysis underpinning its S.92 Application evidence utilizing the updated Project cost estimate included in this letter. The results of the analysis, as it related to the impact on those customer bills, is provided below in Table 1.

Table 1
Rate Impact Using the S.92 Average Residential Consumption as per Prefiled Evidence (700 kWh[4])

Rate Impact Year of Comparison	**2021 Rate Impact**	
Cost Estimate Utilized	**2021 Estimate as Filed in S.92**	**2024 Updated Cost Estimate**
A. Typical monthly bill	$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 Network Connection Pool Provincial Uniform Rates	0.51%	0.77%
G. Increase in Transmission costs for typical monthly bill (C x D)	$0.03 per month or $0.38 per year	$0.05 per month or $0.57 per year
H. Net increase on typical residential customer bill (E / A)	0.02%	0.03%

*Items A to E are based on Typical monthly bill prior to analysis the impact of the Project's cost on rates.

[4] This Average Residential Consumption represents the OEB's 2021 assumed amount.

Additionally, Hydro One is providing an analysis of the cost increase included in this letter using the OEB-assumed 2024 average residential consumption, of 750 kWh. The results of the analysis, as it related to the impact on those customer bills, is provided below in Table 2.

Table 2
Rate Impact Using Current Average Residential Consumption (750 kWh[5])

Rate Impact Year of Comparison	**2024 Rate Impact**	
Cost Estimate Utilized	**2021 Estimate as Filed in S.92**	**2024 Updated Cost Estimate**
A. Typical monthly bill	$150.76 per month	
B. Transmission component of monthly bill	$16.54 per month	
C. Line Connection Pool share of Transmission component	$1.60 per month	
D. Transformation Connection Pool share of Transmission component	$5.42 per month	
E. Network Connection Pool share of Transmission component	$9.52 per month	
F. Impact on Network Connection Pool Provincial Uniform Rates	0.17%	0.35%
G. Increase in Transmission costs for typical monthly bill (C x D)	$0.02 per month or $0.19 per year	$0.03 per month or $0.4 per year
H. Net increase on typical residential customer bill (E / A)	0.01%	0.02%

* Items A to E are based on Typical monthly bill prior to analysis the impact of the Project's cost on rates.

[5] As per OEB Report - Defining Ontario's Typical Electricity Residential Customer 2023 Update (EB-2023-0311)