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BY EMAIL

December 16, 2020

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

Dear Ms. Long:

**Re: Hydro One Networks Inc. (Hydro One)
Leave to Construct Application – Power Downtown Toronto
OEB Staff Interrogatories**

Ontario Energy Board File Number: EB-2020-0188

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

Hydro One is reminded that its responses to interrogatories are due by January 18, 2021. Responses to interrogatories, including supporting documentation, must not include personal information unless filed in accordance with rule 9A of the OEB's Rules of Practice and Procedure.

Yours truly,

Original Signed By

Andrew Pietrewicz
Project Advisor, Generation & Transmission

Encl.

Hydro One Networks Inc.
Leave to Construct Application – Power Downtown Toronto
EB-2020-0188
December 16, 2020

OEB Staff-1:

Ref: (1) Exhibit B, Tab 3, Schedule 1
(2) Exhibit B, Tab 2, Schedule 1

Preamble:

Reference 1 above provides evidence in support of the need for the Power Downtown Toronto project.

Reference 2 above states that the proposed 230kV cables will continue to operate at 115 kV but their 230 kV rating will be more able to accommodate high temporary overvoltages during fault conditions, reducing the likelihood of damage requiring repair and improving long-term reliability.

Question(s):

- a) Please clarify whether the Power Downtown Toronto project was recommended in a regional plan. If not, why not?
- b) What criteria stipulate the overvoltage withstand capability required for circuits C5E/C7E? Would 115 kV rated cables be acceptable based on these criteria?
- c) What is the statistical frequency of line-to-ground faults that cause a temporary overvoltage on the unfaulted cable and how does it compare to applicable criteria?
- d) What is the potential that a temporary overvoltage could exceed the voltage withstand capability of the selected 230 kV cable?
- e) If the 230 kV cables were converted to 230 kV operation during their service how would the potential for temporary overvoltage be addressed?
- f) In Hydro One's view, what, if any, OEB approvals will be required to convert the 230 kV cables to 230 kV operation?

OEB Staff-2:

Ref: (1) Exhibit B, Tab 5, Schedule 1, pages 1-3

Preamble:

The above noted reference outlines transmission alternatives considered by Hydro One.

Question(s):

- a) What alternatives to replacing C5E/C7E, such as non-wires alternatives, or distribution system alternatives, were considered?
- b) Why was a transmission wires alternative recommended?

OEB Staff-3:

Ref: (1) Exhibit B, Tab 5, Schedule 1, pages 1-3

Preamble:

The above noted reference outlines transmission alternatives considered by Hydro One. The XLPE cable variant of alternative 3 was rejected because it did not address risks related to temporary overvoltages under fault conditions.

Question(s):

- a) Please explain whether any reasonable alternatives to the proposed 230 kV cable could be employed in conjunction with a 115 kV XLPE cable to address temporary overvoltages. If any such alternatives exist, please explain whether they were considered and why they were not recommended.

OEB Staff-4:

Ref: (1) Exhibit B, Tab 5, Schedule 1, pages 1-3

Preamble:

The above noted reference outlines transmission alternatives considered by Hydro One. Hydro One states that it considered multiple installation methods and routes.

Question(s):

- a) Did Hydro One consider an alternative that follows the same route as the existing line to be replaced? If yes, please estimate the cost of that alternative and explain in detail why Hydro One did not recommend it. If the alternative was not considered, please explain why not.

- b) Please provide a table which compares the project costs of the alternatives at reference 1.

OEB Staff-5:

Ref: (1) Exhibit C, Tab 1, Schedule 1, pages 1-2
(2) Exhibit B, Tab 1, Schedule 1, page 2

Preamble:

At reference 1 above, Hydro One outlines a variety of works that will occur “[...] regardless of whether Hydro One proceeds with the cable upgrade solution proposed in this leave to construct application for the PDT Project, or, alternatively, proceeds with a like-for-like sustainment solution [...]”. These include a tunnel between Terauley TS and Esplanade TS and access shafts.

At reference 2 above, Hydro One states that as part of the Power Downtown Toronto project, it “[...] will be spending approximately \$500k more than what would otherwise be incurred under a pure sustainment project solution [...]”.

Question(s):

- a) Please explain why the works outlined at reference 1 will occur whether Hydro One proceeds with the Power Downtown Toronto project as proposed or, alternatively, proceeds with a like-for-like sustainment solution.
- b) Please explain whether (and why, if applicable) the works outlined at reference 1 would occur if Hydro One were to proceed with a like-for-like sustainment solution along the route of the existing cable.
- c) What are the two costs that are the basis for the \$500k difference at reference 2? Please provide the rated voltage, cable length in kilometres, cable type, and any other material factors for the two costs.
- d) In calculating the \$500k incremental cost at reference 2, did Hydro One include the cost of the works outlined at reference 1 in both the Power Downtown Toronto project and in the “pure sustainment project solution”? (i.e. does the incremental cost compare a solution with a tunnel to a solution without a tunnel?)
- e) Are the tunnelling costs included in Hydro One’s estimate of the Power Downtown Toronto project cost? If so, what are they? If not, please explain.
- f) Please indicate the incremental cost of the proposed Power Downtown Toronto project compared to a sustainment solution alternative that does not involve the construction of a new tunnel and please also comment on the appropriateness of this alternative. Please express the incremental cost with respect to both a 115kV and a 230kV sustainment solution alternative.

OEB Staff-6:

Ref: (1) Exhibit B, Tab 6, Schedule 1, page 3

Preamble:

Hydro One states at the above noted reference that “in the event of future expansion or replacement of nearby underground assets, if practical and feasible, the tunnel may be used to accommodate two additional circuits.”

Question(s):

- a) Is the future utilization of the tunnel to accommodate an additional circuit part of a transmission system plan?
- b) If not, please estimate whether a smaller diameter tunnel could be feasibly constructed at a lower cost and comment on why a smaller tunnel was not proposed.
- c) If the tunnel may be used to accommodate additional circuits or other underground assets in the future, please comment on the appropriateness of Hydro One’s proposal to allocate the full tunnel cost to the Power Downtown Toronto project, instead of only the portion of the tunnel necessary to accommodate the replacement of circuits C5E/C7E?
- d) In Hydro One’s view, what fraction of the cost of the proposed tunnel might reasonably correspond to its incremental capacity to accommodate future expansion or replacement of nearby underground assets?
- e) Please comment on whether Hydro One has engaged with other potential utilities or service providers who might also use the proposed tunnel and help defray some of its costs.

OEB Staff-7:

Ref: (1) Exhibit G, Tab 1, Schedule 1, Figure A-2, page 7

Preamble:

The reference above contains a simplified single-line diagram of circuits C5E/C7E. C5E/C7E runs between Esplanade TS, Terauley TS and Cecil TS. The Power Downtown Project would replace only the section of C5E/C7E between Esplanade TS and Terauley TS. Hydro One advises that the section of C5E/C7E between Esplanade TS and Terauley TS is at end of life.

Question(s):

- a) Please clarify how the condition of the section of C5E/C7E between Terauley TS and Cecil TS compares to the condition of the section to be replaced as part of the Power Downtown Toronto project. For instance, are the two sections of comparable vintage, technology and degree of deterioration?
- b) When will the section of C5E/C7E between Terauley TS and Cecil TS require replacement?
- c) Please comment on the extent to which Hydro One has considered coordinating or combining the replacement of C5E/C7E between Esplanade TS and Terauley TS with the replacement of C5E/C7E between Terauley TS and Cecil TS. In Hydro One's view, would this kind of coordination or combination offer potential project synergies?
- d) Why is Hydro One not proposing to replace the section of C5E/C7E between Terauley TS and Cecil TS as part of the Power Downtown Toronto project or as part of another project along with C5E/C7E between Esplanade TS and Terauley TS?

OEB Staff-8:

Ref: (1) Exhibit B, Tab 7, Schedule 1, Table 1, page 1
(2) Exhibit B, Tab 9, Schedule 1, Table 1, pages 4-6
(3) Hydro One 2020 - 2022 transmission revenue requirements application, EB-2019-0082, Exhibit-B-1-1, Investment Summary Document-SR-27, Table 1, page 4

Preamble:

Reference 1 states the estimated total project cost of the Power Downtown Toronto Project.

Reference 2 shows the pre-tax revenue requirement for the Power Downtown Toronto Project in each year between 2025 and 2049.

Reference 3 summarizes Hydro One's "C5E/C7E Underground Cable Replacement Project" and states that "the projected costs of the Project are estimated to be \$62.8 million over the 2020-2022 Test period." An additional \$61 million in project costs was estimated for the 2023-2024 period; \$4.5 million in project costs was identified for the period prior to 2020. A total project cost of \$128.7 million is shown.

Question(s):

- a) Please explain and reconcile the values in the tables at references 1, 2 and 3.
- b) In light of reference 3, please clarify whether there have been or will be any in-service additions related to the Power Downtown Toronto project before its projected in-service in 2024. If yes, please confirm whether these amounts are in addition to the \$107.2 million project cost shown at references 1 and 2 and restate the total project cost, including costs prior to the projected in-service.

OEB Staff-9

Ref: (1) Exhibit B, Tab 7, Schedule 1, Table 1, page 1

Preamble:

The above noted reference states the total estimated project cost of \$107.208 million, which includes a contingency cost estimate of \$8.266 million. This contingency cost estimate represents approximately 8.4% of the pre-contingency estimate.

Question(s):

- a) Please describe the basis for the contingency cost estimate for the project and why it is appropriate.
- b) Please describe how the contingency cost estimate for the Power Downtown Toronto project compares to contingency cost estimates developed for other Hydro One projects.
- c) How would Hydro One characterize the confidence of the cost estimate for the Power Downtown Toronto project? What method did Hydro One use to estimate its confidence?
- d) How did Hydro One develop its estimates for project material, labour, equipment rental and contractor costs?
- e) How would Hydro One characterize the confidence of its estimates for project material, labour, equipment rental and contractor costs? What method did Hydro One use to estimate its confidence?

OEB Staff-10

Ref: (1) Exhibit B, Tab 7, Schedule 1, page 2
(2) Exhibit B, Tab 7, Schedule 1, page 1

Preamble:

The first reference above outlines project risks, including Hydro One's estimated top three project risks. The second reference above states Hydro One's contingency cost estimate.

Question(s):

- a) Please explain the methods Hydro One used to assess project risks for the Power Downtown Toronto project and please clarify how Hydro One's contingency estimate relates to that analysis.

OEB Staff-11

Ref: (1) Exhibit B, Tab 7, Schedule 1, Table 1, page 1

Preamble:

The above noted reference shows an estimated sundry cost of \$7.941 million. It represents nearly 8% of the pre-sundry estimate.

Question(s):

- a) Please describe what a sundry cost is and describe the basis for the sundry cost estimate for the project and why it is appropriate.
- b) Please describe how the sundry cost estimate for the Power Downtown Toronto project compares to sundry cost estimates developed for other Hydro One projects.

OEB Staff-12

Ref: (1) Exhibit B, Tab 7, Schedule 1, Table 2, page 3
(2) Post Construction Financial Report, Toronto Midtown Transmission Reinforcement Project, EB-2009-0425, May 2018

Preamble:

Reference 1 shows the costs of comparable projects.

Reference 2 is Hydro One's Post Construction Financial Report for the Midtown Tunnel project which provides actual capital costs of the project and explains all significant variances from the estimates filed with the OEB.

Question(s):

- a) Please clarify whether the values cited for the Midtown Tunnel at reference 1 above represent estimates or actual costs and reconcile them with the actual costs reported by Hydro One in reference 2.

- b) At reference 2 above, Hydro One describes various challenges it encountered with the construction of the tunnel from Bayview Junction to Birch Junction and with the construction of the main tunnel shaft at the Rose Hill site adjacent to Mount Pleasant Road. Hydro One explains how these and other challenges caused scheduling delays and cost increase. Please comment on how Hydro One will incorporate any lessons learned from the Midtown Tunnel project to the Power Downtown Toronto project regarding project estimation (including contingency) and implementation within schedule and budget.

OEB Staff-13

Ref: (1) Exhibit B, Tab 7, Schedule 1, Table 2, page 3
(2) Decision and Order on the John x Esplanade tunnel project, EB-2004-0436,
March 2005

Preamble:

Reference 1 shows the costs of comparable projects.

Reference 2 is the OEB's Decision and Order on Hydro One's application for the John x Esplanade tunnel project that was cited by Hydro One at reference 1. The Decision required Hydro One to file a Post Construction Financial Report within 15 months of the completion of construction.

Question(s):

- a) Please briefly summarize how actual John x Esplanade tunnel project costs and in-service date compared to estimates used for the leave to construct application. If applicable, please comment on drivers for any key differences.
- b) If applicable, please comment on how Hydro One will incorporate any lessons learned from the John x Esplanade tunnel project to the Power Downtown Toronto project regarding project estimation (including contingency) and implementation within schedule and budget.
- c) Please clarify why the Power Downtown project is expected to cost 26% less per circuit km than the Esplanade TS to John TS project cited at reference 1 above (i.e. \$21,442k vs \$28,980k per circuit/km).

OEB Staff-14

Ref: (1) Exhibit B, Tab 9, Schedule 1, page 2

Preamble:

Hydro One states at the above noted reference that the Power Downtown Toronto project addresses end-of-life assets, is not tied to any load increase or customer load applications and does not require any customer contributions “consistent with the provisions of Section 6.3.5 of the Transmission System Code.” Section 6.3.5 of the Transmission System Code (TSC) states that “A transmitter shall not require any customer to make a capital contribution for the construction of or modifications to the transmitter’s network facilities that may be required to accommodate a new or modified connection.”

OEB staff notes that Section 6.7.2 of the TSC describes circumstances where end-of-life assets are replaced, and a capital contribution is required:

6.7.2 Where a transmitter-owned connection facility has reached its end-of-life and is planned to be retired and replacement with a new connection facility is determined to be the optimal solution, the transmitter shall undertake an assessment, in consultation with any affected customers, to determine the appropriate capacity of the replacement connection facility. Where the asset is replaced, the transmitter shall either:

- (a) not recover a capital contribution from a customer to replace that connection facility, where the new facility is the same capacity or lower capacity; or
- (b) recover a capital contribution from a customer to replace the connection facility, where the customer requires additional capacity. The capital contribution shall be limited to the incremental cost relative to the cost of a like-for-like replacement facility.

Question(s):

- a) Please confirm that Hydro One consulted with Toronto Hydro to determine the appropriate capacity of the replacement facilities and briefly describe the conclusions of that consultation.
- b) In light of section 6.7.2 of the TSC, please comment on why Hydro One is not requesting a capital contribution from Toronto Hydro even though Hydro One is proposing a larger capacity cable.

OEB Staff-15

Ref: (1) Exhibit B, Tab 9, Schedule 1, Table 2, page 7
(2) OEB Decision and Order on Hydro One 2020-2022 transmission revenue requirements, EB-2019-0082, April 23, 2020

Preamble:

Table 2 at the above noted reference specifies an assumed 4.42% forecast cost of long-term debt, which is higher than the long-term debt rate of 4.33% approved for Hydro One Networks Inc. at EB-2019-0082 for the period 2020 to 2022.

Question(s):

- a) Please comment on how the assumed 4.42% relates to the 4.33% long-term debt rate approved for Hydro One Networks Inc. at EB-2019-0082.

OEB Staff-16

Ref: (1) Exhibit B, Tab 9, Schedule 1, Table 1, pages 4-5

Preamble:

The title of Table 1 at the above noted reference refers to the “Network Pool Rate Impact,” whereas the table itself refers to the “Line Pool Rate Impact.”

Question(s):

- a) Please confirm that the reference to “Network Pool” is an oversight/typo. Otherwise, please clarify.

OEB Staff-17

Ref: (1) Exhibit B, Tab 9, Schedule 1, page 3

Preamble:

The table at the above noted reference estimates the impact of the Power Downtown Toronto project on the typical residential customer. The estimate assumes a residential consumption of 1,000 kWh per month.

Question(s):

- a) Please recalculate the table assuming a residential consumption of 700 kWh per month.

OEB Staff-18

Ref: (1) Exhibit D, Tab 1, Schedule 1, page 1
(2) Exhibit G, Tab 1, Schedule 1, Attachment 1, page 4

Preamble:

At reference 1 above, Hydro One states that “Toronto Hydro-Electric System Limited is the only customer and will remain connected to the same locations at Esplanade TS and Terauley TS.”

At reference 2 above, Hydro One states that “the new cables will be routed in a different path than that of the existing cables. Therefore, no major outages are expected to impact the supply of customer’s load.”

Question(s):

- a) Please clarify how continuity of service will be provided for Toronto Hydro during the replacement of the existing circuits C5E and C7E, including in the event that unforeseen delays arise during the replacement work.
- b) If not already addressed in response to question a) above, please clarify what outages are expected and how they will impact the supply to Toronto Hydro.

OEB Staff-19

Ref: (1) Exhibit F, Tab 1, Schedule 1, page 1, Attachment 2, page 7

Preamble:

The SIA at the above noted reference states that “the transmitter confirmed that the functionality and operating times of the protection system will remain the same.”

Question(s):

- a) Please confirm that the functionality and operating times of the protection system will remain the same even though the new cable will follow a different route. Otherwise, please clarify.

OEB Staff-20

Ref: (1) Exhibit E, Tab 1, Schedule 1, pages 2-3
(2) Exhibit E, Tab 1, Schedule 1, Attachment 3
(3) Exhibit E, Tab 1, Schedule 1, Attachment 4
(4) EB-2018-0117, Exhibit E, Tab 1, Schedule 1, Attachment 3
(5) EB-2018-0117, Exhibit E, Tab 1, Schedule 1, Attachment 7

Preamble:

Hydro One has applied for approval of the forms of the agreement offered or to be offered to affected landowners pursuant to s.97 of the OEB Act. Hydro One states that its proposed land agreements were approved by the OEB as part of Hydro One’s Barrie Area Transmission Upgrade Project under docket EB-2018-0117.

Question(s):

- a) Please confirm that the forms Hydro One seeks approval of at references 2 and 3 correspond, respectively, to the forms approved under docket EB-2018-0117 at references 4 and 5 above.
- b) Please advise whether there are any substantive differences between the previously approved forms referenced above and the forms that Hydro One requests approval of as part of the Power Downtown Toronto project.

OEB Staff-21

Ref: (1) Exhibit E, Tab 1, Schedule 1, Attachment 3 and 4

Preamble:

The reference above contains the land right agreements that Hydro One proposes to use to obtain any identified land rights for the Power Downtown Toronto project.

Question(s):

- a) Please confirm that all impacted landowners will have the option to receive independent legal advice regarding the proposed land agreements.
- b) Please clarify whether Hydro One has committed to or will commit to reimbursing landowners for reasonably incurred legal fees associated with the review and completion of the necessary land rights agreements.

OEB Staff-22

Ref: (1) Exhibit B, Tab 1, Schedule 1

Preamble:

Hydro One has applied for leave to construct approval pursuant to s.92 of the OEB Act.

Question(s):

- a) Please comment on the following draft conditions of approval proposed by OEB staff. If Hydro One does not agree with any of the specific draft conditions of approval noted below, please identify the specific conditions that Hydro One disagrees with and explain why. For conditions in respect of which Hydro One would like to recommend changes, please provide the proposed changes.
 - 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.