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BY EMAIL

November 16, 2018

Ms. Linda Gibbons
Senior Regulatory Coordinator – Regulatory Affairs
Hydro One Networks Inc.
7th Floor, South Tower
483 Bay Street
Toronto, Ontario
M5G 2P5
regulatory@hydroone.com

Dear Ms. Gibbons:

Re: Hydro One Sault Ste. Marie LP (Hydro One SSM)
Application for 2019 transmission rates and related matters
Ontario Energy Board File Number: EB-2018-0218

Please find attached the OEB staff interrogatories in the above proceeding.

Yours truly,

Original Signed By

Fiona O'Connell
Project Advisor, Major Applications
Encl.

Hydro One Sault Ste. Marie LP
Application for 2019 transmission rates and related matters – EB-2018-0218
OEB Staff Interrogatories
November 16, 2018

A1-Staff-1

Ref: Letters of Comment
Filing Requirements, pages 11 & 13, sections 2.3.2 & 2.3.4

Preamble:

OEB staff notes that Hydro One SSM has not received any letters of comment to date regarding this proceeding. However, sections 2.3.2 and 2.3.4 of the Filing Requirements[1] indicate that transmitters are expected to file with the OEB their response to the matters raised in any letters of comment sent to the OEB related to the transmitter's application.

Question:

a) Going forward, please ensure that responses to any matters raised in subsequent comments or letter are filed in this proceeding. All responses must be filed before the argument (submission) phase of this proceeding.

A2-Staff-2

Ref: Exhibit A, Tab 2, Schedule 1, Page 3

Preamble:

In the above-noted first reference, Hydro One SSM stated the following:

> HOSSM also requests an accounting order to establish a sub-account within deferral account 1574 to record revenue deficiencies incurred from January 1, 2019 until HOSSM's proposed 2019 rates are implemented, if necessary.

[1] Filing Requirements For Electricity Transmission Applications Chapter 2 Revenue Requirement Applications, February 11, 2016

Question:

a) Please provide a draft accounting order reflecting Hydro One SSM's above-noted request.

A2-OEB Staff-3

Ref: Exhibit A, Tab 2, Schedule 1, page 4

Preamble:

In paragraph 14 of the above-noted reference Hydro One SSM stated:

> As outlined in the OEB Handbook to Electricity Distributor and Transmitter Consolidations, dated January 19, 2016, HOSSM will apply for an Incremental Capital Module ("ICM") funding in the event HOSSM encounters unplanned capital expenditures prior to any rebasing application to be filed for 2026 rates.

Any application for an ICM is dependent on calculation of a materiality threshold which determines that amount of capital expenditure which is presumed to be funded or fundable through existing rates, accounting for the formulaic adjustment to rates for inflation less expected productivity, and also growth in demand. These are explicitly shown in the materiality threshold for the ICM formula as documented in the Report of the Board on New Policy Options for the Funding of Capital Investments: Supplemental Report (EB-2014-0219), January 22, 2016:

$$Threshold\ Value\ (\%) = \left(1 + \left[\left(\frac{RB}{d}\right) \times \left(g + PCI \times (1+g)\right)\right]\right) \times \left((1+g) \times (1+PCI)\right)^{n-1} + X\%$$

Where:

- *RB* is the rate base from the last CoS rebasing application
- *d* is depreciation expense from the last CoS rebasing application
- n is the number of years since the cost of service rebasing
- the growth factor g is annualized. *g* represents the change is demand (customers, kWh and kW). It is not the change in revenues – rates are held constant.

- *PCI* (Price Cap Index) is the current *I – X* price cap adjustment for electricity distributors
- the stretch factor used in the *PCI* will be the factor assigned to the middle cohort (currently 0.3%) for all distributors
- the dead band X is 10%

Hydro One SSM has proposed a revenue cap, and its revenue requirement is aggregated with revenue requirements of other electricity transmitters, including Hydro One Networks, to determine Uniform Transmission Rates (UTRs) to be paid by all Ontario electricity ratepayers. Each transmitter's revenue requirement is recovered through UTR revenues as allocated to each transmitter.

Questions:

a) Given the differences of Hydro One SSM's proposed revenue cap (as opposed to price cap) plan, and the recovery of the revenue requirement through the UTR approach, what, if any, changes to the ICM materiality threshold may be necessary should Hydro One SSM apply for an ICM?

b) In Hydro One SSM's view, are there any other changes needed to be able to apply the ICM policy and mechanism if Hydro One SSM's revenue cap proposal is approved? Please explain your response.

A2-OEB Staff-4

Ref: Exhibit A, Tab 2, Schedule 2, page 2-3
Exhibit D, Tab 2, Schedule 1, page 3-5
Exhibit D, Tab 1, Schedule 1
Exhibit D, Tab 1, Schedule 1, Attachment 1, page 16-17

Preamble:

Hydro One SSM notes that it was directed to produce a detailed updated load forecast by the OEB in the Decision EB-2016-0356. Hydro One SSM states that it engaged an external consultant to produce a load forecast in 2016. However, it has not filed the load forecast before, and also states that it has not filed the load forecast in this application. Hydro One SSM states that the reason for not doing this is that its application is for a revenue cap to formulaically adjust the annual revenue requirement through an (inflation less productivity), and that it is not rebasing its revenue requirement from a bottom-up

cost of-service based methodology, in accordance with the deferred rebased approved in the Decision and Order EB-2016-0050 approving the acquisition of Great Lakes Power Limited's transmission assets and operations.

Further, Hydro One SSM's revenue requirement is not translated into rates directly, but is aggregated with the revenue requirements of other Ontario electricity transmitters to calculate UTRs.

Hydro One SSM has proposed a revenue cap approach for annually updating the revenue requirement. However, a traditional revenue cap includes a growth factor g to account for growth in capital and operating costs due to added investments and associated operating expenses to serve additional customers and demand:

$$RR_t = RR_{t-1} \times (1 + (I - X + g \pm Z))$$

where:

RR_t is the revenue requirement for year t
I is the inflation (IPI) for that year
X is the X-factor, incorporating both base X and any approved stretch factor (formally, consumer productivity dividend)
g is growth in demand
Z is for an adjustments for approved exogenous factors.

Hydro One SSM has not included a growth factor in its revenue cap proposal, and PSE documents that a growth factor in the revenue cap formulation for Hydro One Networks Transmission is not proposed on the basis that, due to natural conservation, CDM, and economic patterns in its service territory, there is not appreciable growth in demand from a transmission system perspective.

While Hydro One SSM's revenue requirement is not directly calculated into Hydro One SSM-specific transmission rates, OEB staff believes that knowledge of a transmitter's forecasted demand would be informative for assessing the reasonableness of its revenue requirement on a stand-alone basis and as part of the aggregated revenue requirement for purposes of calculating the UTRs.

Questions:

a) Please provide Hydro One SSM's updated load forecast, along with sufficient explanation and supporting data and evidence, in accordance with the OEB's direction in EB-2016-0356.

b) As noted in A2-OEB Staff-3, the materiality threshold for the ICM includes growth ("*g*"), as a parameter. In the event that Hydro One SSM applies for an ICM or a Z-factor, please provide Hydro One SSM's views, with reasons, on whether its load forecast, or actual growth should be taken into account in determining the ICM or Z-factor materiality threshold.

c) For electricity distributors, growth is measured as a weighted average of changes in number of customers, kWh and kW, based on the revenue proportions for each and holding rates constant at current levels. Please provide Hydro One SSM's proposal for how growth should be measured for the ICM materiality threshold, in the context of the demand for a transmitter's products and services.

B1-Staff-5

Ref: Exhibit B1, Tab 1, Schedule 1, Page 10
Exhibit B1, Tab 1, Schedule 1, Page 109

Preamble:

In the above-noted first reference, Hydro One SSM stated the following:

> For the 2018-2026 Plan period, HOSSM plans to manage capital expenditures within the funding envelope provided by the depreciation funding embedded in the last (2016) rebasing proceeding, adjusted through application of the annual Revenue Cap Index.

In the above-noted second reference, Hydro One SSM stated the following:

> …HOSSM expects to manage its total annual OM&A expenditures within the envelope commensurate to historical levels.

Questions:

a) Please explain in more detail how Hydro One SSM has managed and plans to manage both its capital expenditures and OM&A expenses historically and going forward within the funding envelopes approved in its last (2016) rebasing proceeding.

b) Please provide an explanation if Hydro One SSM has not managed certain costs within the funding envelopes approved in its last (2016) rebasing proceeding.

B1-Staff-6

Ref: Exhibit B1, Tab 1, Schedule 1, Page 96

Preamble:

At the above-noted reference, Hydro One SSM stated the following:

> Accordingly, the table provides an indicative breakdown only, and should not be interpreted as a detailed forecast of capital additions across asset classes.

At the above-noted reference, the table that Hydro One SSM is referring to is titled "Table 4-1: Planned HOSSM Capital Expenditures by Major Asset Category ($M)."

Questions:

a) Please confirm that Hydro One SSM uses the term "capital addition" interchangeably with the term "capital expenditure" throughout the evidence. If this is not the case, please explain.

b) Please confirm that when the term "capital expenditures" is used, Hydro One SSM has presented all information on the basis of capital additions and has not included work in process in its numbers. If this is not the case, please explain and indicate areas of the evidence that are impacted.

B1-OEB Staff-7

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 2

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> HOSSM submits that this TSP is distinct from most Transmission and Distribution System Plans submitted to the OEB in that it is not being filed to support any additional capital funding requests.

Question:

a) Please confirm whether Hydro One SSM's TSP was filed to support the base projects and programs comprising the filed capital forecast.

B1-OEB Staff-8

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 2-3

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> Since it is not designed to support requests for additional capital funding, this Plan focuses to a greater extent on the dynamics underlying the operational integration of HOSSM's system planning, operation, and capital work execution activities with those of Hydro One. Operational integration is set to formally commence on October 1, 2018.

Questions:

a) Did the operational integration formally commence on October 1, 2018?
   i. If yes, please provide an update of the operational integration completed to date.
   ii. If no, what caused the delay and when does Hydro One SSM anticipate the formal operational integration to commence?

b) When does Hydro One SSM anticipate that operational integration with Hydro One will be complete?

B1-OEB Staff-9

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 10

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> For the 2018-2026 Plan period, HOSSM plans to manage capital expenditures within the funding envelope provided by the depreciation funding embedded in the last (2016) rebasing proceeding, adjusted through application of the annual Revenue Cap Index. For further discussion on the Revenue Cap Index see Exhibit D, Tab 1, Tab 1. The following Table 1-3 provides the breakdown of Historical and Plan period capital expenditures for the period covered in this TSP.

8 **Table 1-3: Historical and Plan Period Capital Expenditures Summary**

	Historical					Plan									Total Plan
Category ($M)	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	
System Access	$0	$0	$0	$0	$0	$0.0	$0.0	$0.0	$0.0	$0.0	$1.4	$3.4	$0.0	$0.0	**$4.8**
System Renewal	$2.3	$3.3	$7.1	$6.5	$10.2	$5.1	$3.0	$8.0	$7.9	$5.9	$7.6	$7.1	$8.7	$7.8	**$61.0**
System Service	$0.6	$0.2	$0.1	$0.5	$0.7	$1.3	$1.3	$2.6	$2.8	$5.5	$0.3	$0.3	$1.6	$0.6	**$16.0**
General Plant	$0.5	$0.5	$1.3	$1.9	$4.1	$0.1	$2.9	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	**$3.9**
Total	**$3.3**	**$4.0**	**$8.5**	**$8.9**	**$15.0**	**$6.5**	**$7.1**	**$10.7**	**$10.7**	**$11.5**	**$9.4**	**$10.8**	**$10.4**	**$8.5**	**$85.7**

Question:

a) Given that the depreciation funding is relatively linear and the capital spending varies significantly from year to year, there is not a 1:1 correspondence between these parameters. Please provide a table showing the annual delta between depreciation funding and capital spending for each forecast year over the plan period (2018-2026).

B1-OEB Staff-10

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 11

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> Notwithstanding potential updates, and subject to unforeseen circumstances beyond HOSSM's control, the company plans to manage the funding for the Plan period capital projects within the funding envelope displayed in Table 1-3.

Questions:

a) Please provide an example of an unforeseen circumstance beyond Hydro One SSM's control.

    i. How does Hydro One SSM plan to deal with unforeseen circumstance beyond Hydro One SSM's control?

b) Please provide an example of an unforeseen circumstance within Hydro One SSM's control.

    i. How does Hydro One SSM plan to deal with unforeseen circumstances within Hydro One SSM's control?

B1-OEB Staff-11

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 14

Preamble:

At the above noted reference, Hydro One SSM states the following:

> By virtue of acquisition of HOSSM's predecessor GLPT by Hydro One Inc. and through the ongoing integration with Hydro One's Asset Management function, the investments comprising this plan underwent assessment using a similar asset management and investment planning processes employed by the acquiring utility, modified to reflect the current state of integration of the two entities' information technology systems and the availability of pertinent data.

Questions:

a) Please provide an evaluation of the current state of integration of the two entities' information technology systems.

b) What are the most significant outstanding gaps, and what are the likely results of those gaps?

c) What still needs to be done to fully integrate the systems and what will it cost to do so?

d) Will fully integrating the information technology systems create operations and maintenance cost savings? Please quantify and elaborate.

B1-OEB Staff-12

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 18

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> **System Renewal:**
>
> Over the 2018-2026 Plan period, System Renewal represents the largest investment driver, amounting to approximately $61.0 million or 71% of the forecasted expenditures. Among the work program activities comprising the System Renewal budget are replacements of wooden support structures, conductor segments, transformers, and other types of station equipment found to be in deteriorating condition, exhibiting known operational or reliability performance issues, or otherwise determined to warrant replacement over the nine-year Plan period. Average annual planned System Renewal expenditures amount to approximately $6.8 million.

Questions:

a) What are the other possible drivers for replacement besides deteriorating condition or known operational or reliability performance issues?

b) What is the proportion of total replacements driven by each of the following:
   i. Deteriorating condition
   ii. Operational issues
   iii. Reliability performance issues and
   iv. Other drivers, as determined in part a)

B1-OEB Staff-13

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 19

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> The forecasted 15% increase in the average annual Renewal expenditures is primarily attributable to the fact that the Plan Period investments target replacement of larger (and more expensive) station assets such as transformers and breakers, whereas the station assets targeted in the last five years prioritized upgrades of ancillary electrical equipment, as shown in Table 2-3.

Questions:

a) What were the primary drivers of the discontinuity in focus towards larger and more expensive station asset replacements?

b) Are the assessed conditions of these asset classes significantly different?

B1-OEB Staff-14

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 20

Preamble:

At the above noted reference, Hydro One SSM stated the following:

Moreover, the Plan period line upgrade work includes replacement of conductor on the Sault Number 3 line, found to be in "Poor" condition based on the outcomes of a 2015 Kinectrics testing report (See Appendix C).

Question:

a) Did Hydro One SSM evaluate the risk of failure of the conductor on the Sault Number 3 line?
   i. If yes, what was the outcome of the risk assessment? Please provide details.
   ii. If no, why not?

B1-OEB Staff-15

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 30

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> **Weather / Climate-Related Challenges**
> The majority of System Service and System Renewal work underlying the planned capital work program require planning and coordination of outages on the relevant portions of the HOSSM system. Given the increasingly volatile weather patterns observed in recent years, HOSSM's ability to plan for and execute the requisite outages may be affected by the local, regional and inter-area transfer capability constraints that may emerge as a result of unpredictable weather patterns such as abnormal temperatures, major storms, or water levels affecting the operations of hydroelectric generators directly connected to the HOSSM system.

Questions:

a) Please describe which two periods are being compared in order to justify the following statement: *"Given the increasingly volatile weather patterns observed in recent years"*

b) Is Hydro One SSM able to quantify and show a trend of increasingly volatile weather patterns observed between the two periods described in part a)?

i. If yes, please provide this quantification and trend.
ii. If no, please explain how Hydro One SSM can use this reasoning to justify an inability to plan capital work.

c) Please describe how Hydro One SSM plans to address this risk if it materializes.

B1-OEB Staff-16

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 36

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> In preparing this Plan, HOSSM obtained a letter from the IESO (Appendix A), confirming that the 2014 process identified no need for regional planning, requiring no further actions such as the preparation of Scoping Assessments or the Integrated Regional Resource Plan. Consistent with the findings of the last Regional Planning Process, HOSSM's current TSP does not include any investments identified through this process. The next cycle of the Regional Planning work for the East Lake Superior region is scheduled to commence in 2019. HOSSM will participate in the process as the lead transmitter and incorporate any relevant findings into the subsequent iterations of this TSP as necessary.

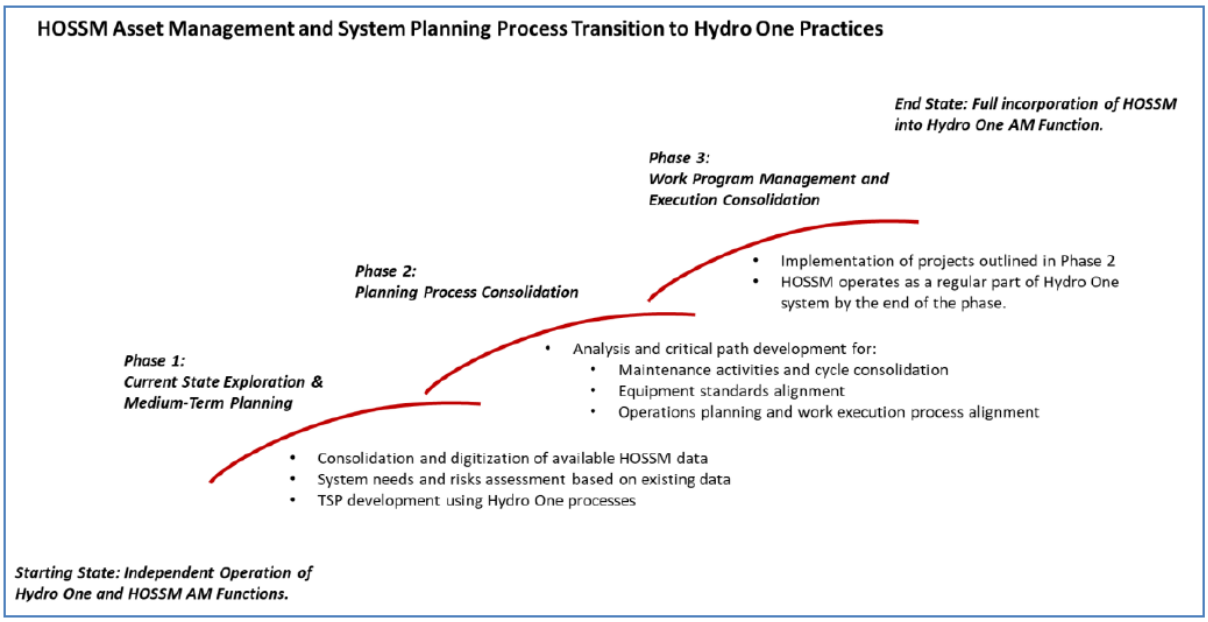
Questions:

a) Does Hydro One SSM anticipate that the commencement / completion of the East-West Tie line or any other projects presently under development will have a material impact upon Hydro One SSM capital plans?
   i. If yes, will those impacts likely be identified within the next Regional Planning cycle, or were they already addressed in the prior planning cycle?
   ii. If the impacts were already addressed if the prior planning cycle, please describe the outcomes reached.

B1-OEB Staff-17

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 44

Preamble:



3-1: HOSSM Asset Management Function Integration Process

Question:

a) Does Hydro One SSM anticipate that significant capital investments will be triggered in Phase 3 as a result of aligning its equipment standards with Hydro One's in Phase 2? Please elaborate.

B1-OEB Staff-18

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 50

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> HOSSM employs a systematic approach for conducting inspections, testing, and executing preventative maintenance tasks (vegetation management, insulator

washing, etc.) on a six-year cyclical basis, with some deviations for specific asset classes where more or less frequent maintenance is deemed necessary, or dictated by applicable statutory and regulatory requirements, such as the TSC or the North American Electric Reliability Corporation ("NERC").

Question:

a) Please confirm whether conducting vegetation management on a six-year cyclical basis is consistent with Hydro One's current vegetation management process.
    i. If not consistent, what steps is Hydro One SSM taking to integrate its current vegetation management program with Hydro One's, what is the associated timeline and are there any anticipated changes in program cost?

B1-OEB Staff-19

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 52

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> When examining Hydro One's assets, the ARA process includes an assessment using an integrated quantitative multi-factor Asset Analytics platform, which evaluates information drawn in real time from multiple Hydro One databases to identify the areas warranting further attention from planners. Given that the integration of HOSSM's asset management data with Hydro One's system is ongoing, planners relied on a modified version of the ARA process, reflective of its key assessment dimensions and available HOSSM system data.

Question:

a) Hydro One SSM relied on a modified version of the ARA process in this TSP as a result of the ongoing integration with Hydro One's system.
    i. What are the key difference between Hydro One SSM's modified ARA process and Hydro One's ARA process?
    ii. What is the current status of the ARA integration?

iii. What further steps are required to fully integrate Hydro One SSM's modified ARA process with Hydro One's ARA process?
iv. What is the anticipated timeline and what are the costs associated with completing this integration?

B1-OEB Staff-20

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 52-53

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> The ARA process evaluated system needs on the basis of the following five risk factors:
>
> - Condition - Risk related to the increased probability of failure that assets experience when their condition degrades over time. While methods to evaluate condition vary from asset type to asset type, the condition of all assets of a given type is evaluated consistently. Assets determined to have a comparatively high condition risk become candidates for intervention.
> - Demographics - Risk related to the increased probability of failure exhibited by assets of a particular make, manufacturer, or vintage. Typically, the probability of asset failure increases with age. In certain cases, assets of a particular make or year of manufacturing exhibit known performance issues, making them candidates for replacement, refurbishment or other form of intervention
> - Criticality - Represents the impact that the failure of 1 a specific asset would have on the transmission system, based on that asset's electrical location, the amount of load it supports, and the extent of available system redundancies. Criticality is a criterion that the analysis employs to further prioritize among assets identified as potential investment candidates on the basis of other assessment factors.
> - Performance - Risk that reflects the historical performance of an asset, as represented by the frequency and duration of past outages. Assets with a known history of material outages represent viable candidates for replacement, refurbishment or additional follow-up.

- Utilization - Risk associated with accelerated rate of deterioration experienced by assets that are consistently utilized at levels approaching or exceeding their normal operating capacity. The asset utilization risk for assets like transformers and circuit breakers attempts to consider their relative deterioration based on available loading and operational history, respectively.

Questions:

a) By what percentage (or amount) do the Condition and Demographics risk factors overlap one another?

b) Is Condition correlated with Demographics?
   i. If not, please explain how they are different and provide concrete examples to justify this difference.

c) By what percentage (or amount) do the Condition and Performance risk factors overlap one another?

d) Is Condition correlated with Performance?
   i. If not, please explain how they are different and provide concrete examples to justify this difference.

e) By what percentage (or amount) do the Utilization and Criticality risk factors overlap one another?

f) Is Utilization correlated with Criticality?
   i. If not, please explain how they are different and provide concrete examples to justify this difference.

g) Does Hydro One SSM adjust the scoring of Criticality or Utilization risk in the event of redundancy for the asset (or the system)?

h) Under Utilization risk, is it Hydro One SSM's experience that assets utilized in a manner that "approaches their normal operating capacity" presents an operational risk?
   i. If yes, please explain why.

B1-OEB Staff-21

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 67

Preamble:

Taxonomy to evaluate the probability of a failure event

Score	Frequency	OR	Expected time to event	OR	Prob. of event occurring in the next yr.	OR	Prob. of event occurring in the next 5 yr.	Example phrases you might hear during scoring
7	4+ per year		<3 months		100%		100%	This has happened 10 times every year for the last 5 years
6	1-4 times per year		3-12 months		100%		100%	Based on run time, the equipment life is over for 2 years, it will fail in the next year
5	1 every 1-3 years		1-3 years		33-100%		85-100%	We have to trench every 2 years, disturbing the habitat
4	1 every 3-10 years		3-10 years		10-33%		40-85%	We see this event about once a year on the whole system, which has 8 of these assets
3	1 every 10-25 years		10-25 years		4-10%		20-40%	This event happens on the system sometimes, and it's much more likely to happen here
2	1 every 25-100 years		25-100 years		1-4%		5-20%	This would happen on an APD (abnormal peak day), a 1/90 year event
1	Less than 1 every 100 years		>100 years		0-1%		0-5%	This has never happened, and I don't want to think about how we'd let it happen

Figure 3-7 – Probability Framework

Questions:

a) Are the probability parameters normalized to evaluate probability that a specific individual asset might fail, rather than the probability that one asset out of a portfolio will fail? For example, the probability that one of the poles in a long transmission line might fail over a given period is significantly higher than the probability that a specific pole will fail over the same period.

b) Could this probability table be applied in a manner that inadvertently overstates the risk attributable to failure of a specific asset in a large portfolio? Please discuss.

B1-OEB Staff-22

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 69

Preamble:

Risk score (risk unit)

Consequence								
	7	900	4,200	12,000	36,000	100,000	400,000	1,000,000
	6	430	1,900	5,000	17,000	50,000	200,000	500,000
	5	170	800	2,100	7,000	20,000	80,000	200,000
	4	60	280	800	2,400	7,000	28,000	70,000
	3	20	80	230	700	2,200	8,000	20,000
	2	4	20	50	150	460	1,700	4,200
	1	1	3	10	30	90	350	800
		1	2	3	4	5	6	7
		Probability						

Figure 3-8: Hydro One Risk Matrix Applied to HOSSM Projects

Questions:

a) Based on the above noted risk scores, please confirm that the higher probability of failure projects are addressed before the higher consequence projects.
   i. If not confirmed, please explain the reason for the following discrepancy:
      - Consequence of 6 * Probability of 7 = 500,000 Risk Score
      - Consequence of 7 * Probability of 6 = 400,000 Risk Score

b) How does Hydro One SSM determine the cut off risk score for projects moving forward versus those that are deferred?

c) What is the typical delta in risk score from one evaluation period to the next (i.e. how does asset deterioration impact overall risk score)?

B1-OEB Staff-23

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 76

Preamble:

Asset Class	Population	Sample Size	Health Index Distribution					Average Health Index
			Very Poor (< 25%)	Poor (25 - <50%)	Fair (50 - <70%)	Good (70 - <85%)	Very Good (85 - 100%)	
Power Transformers	20	20	0	0	9	3	8	74.00%
Oil Circuit Breakers	19	19	0	0	0	0	19	90.87%
Vacuum Circuit Breakers	16	16	0	0	0	0	16	93.19%
SF6 Circuit Breakers	70	60	0	0	0	9	51	94.21%
Relays	361	361	13	8	20	118	158	81.84%
Batteries	22	22	0	0	3	6	9	76.14%
Capacitor Banks	2	2	0	0	0	0	2	100%
Reactors	3	3	0	0	2	0	1	78.21%
Circuit Switchers	5	5	0	0	0	0	5	94.77%
Instrument Transformers	59	59	0	0	0	0	59	98.28%
Switches	163	147	2	12	20	43	70	73.92%

Table 3-9 Station Assets Average Health Index

Questions:

a) What is the average age of power transformers assessed as being in Fair condition?

b) What is the typical expected service life for Hydro One SSM power transformers?

c) Is Hydro One SSM a winter peaking or summer peaking system?

d) What is the typical ambient temperature when these power transformers experience peak loads?

e) Would the cold climate in Hydro One SSM's service area be expected to extend or reduce the expected service life for power transformers relative to the service life expectation for similar transformers located in warmer climatic zones? Please explain.

B1-OEB Staff-24

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 79

Preamble:

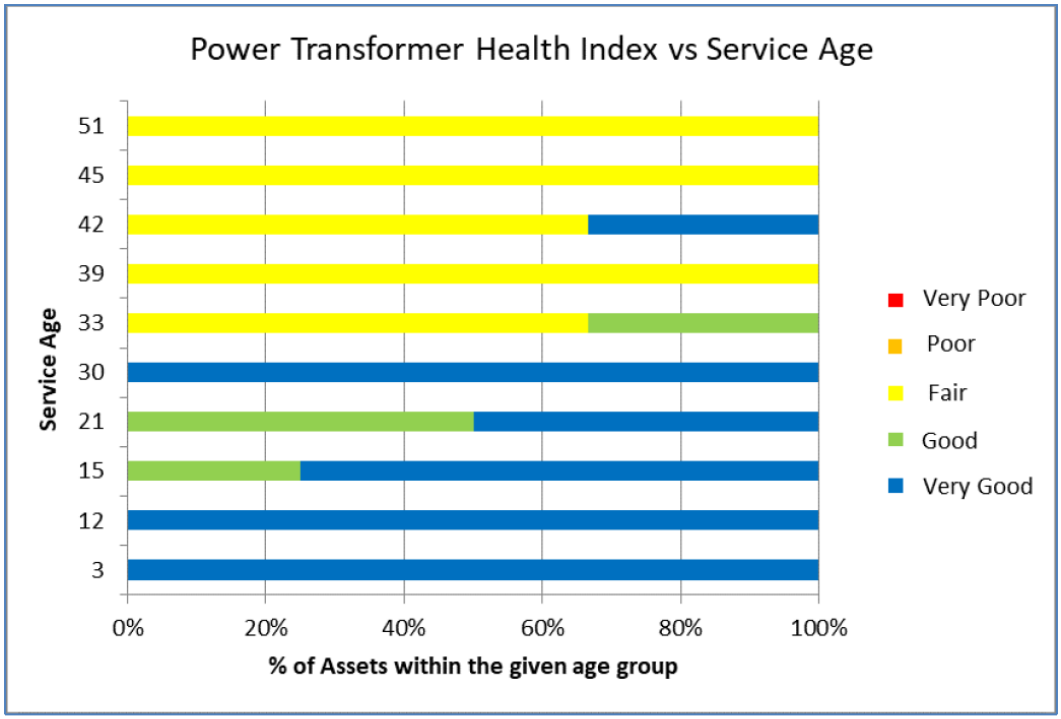


Figure 3-12: Power Transformer Health Index Scores vs. Unit Age

Question:

a) Please explain what is driving the following apparent discontinuities:
   i. The change from Very Good to Fair for older vintage transformers (42 years).
   ii. The abrupt change in typical condition between transformers aged 30 years or younger, versus the array of conditions for transformers aged 33 years and older.
   iii. Older vintage transformers being in better condition than younger vintage transformers (i.e. some 42 year old transformers are in Very Good condition while some 15 and 21 year old transformers are only in Good condition).

B1-OEB Staff-25

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 81

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> Of all station assets examined in the METSCO ACA study, the population of Protection Relays is the only asset class with units in Very Poor and Poor condition, with approximately 6% of the total Relay Population falling into these categories as shown in figure 3-14.

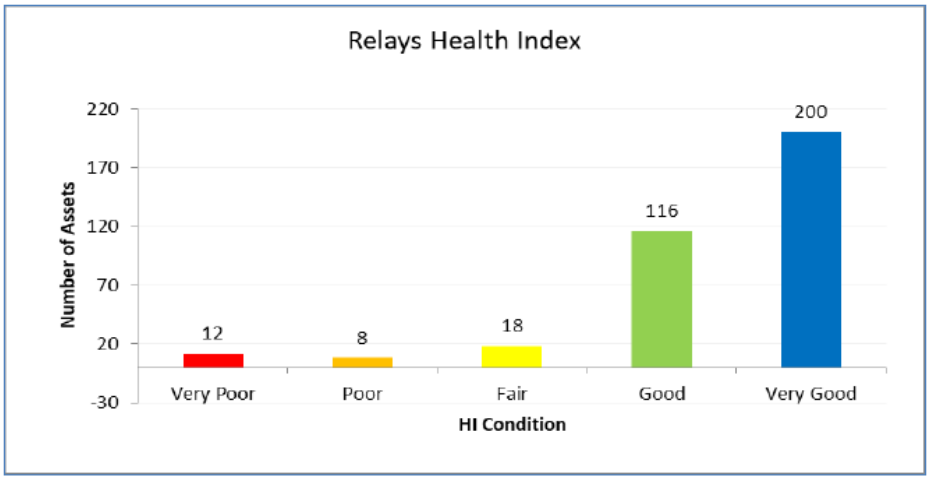


Figure 3-14: HOSSM Relay Population Health Index

> According to the METSCO study, a significant portion of the protection relay Health Index scoring is tied to their degree of obsolescence, as determined by ongoing vendor support, parts availability, and ability to support the utility's interoperability needs across the communication devices on their system.

Questions:

a) Please quantify the portion of protection relay Health Index scoring which is tied to their degree of obsolescence.

b) Please confirm whether there have been any outages or operational malfunctions associated with the 6% of relays in Very Poor and Poor condition.
   i. If yes, please quantify.

B1-OEB Staff-26

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 83

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> A notable exception is the conductor on the Sault #3 Line, which is discussed in Section 3.2.3. This line has historically been the worst-performing circuit on the HOSSM system; responsible for 39% of all outage minutes attributable to line equipment failures between 2012 and 2017. For comparison – the second worst-performing line accounts for 12% of total outage minutes over the same timeframe.

Questions:

a) Is the conductor condition the direct cause or primary cause of the poor performance on this circuit?
   i. If yes, what is the typical failure mechanism?
   ii. If no, what is the primary cause and the failure mechanism?

b) What percentage of the line reconductoring project (SR-02) will directly address the primary cause and failure mechanism?

B1-OEB Staff-27

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 86

Preamble:

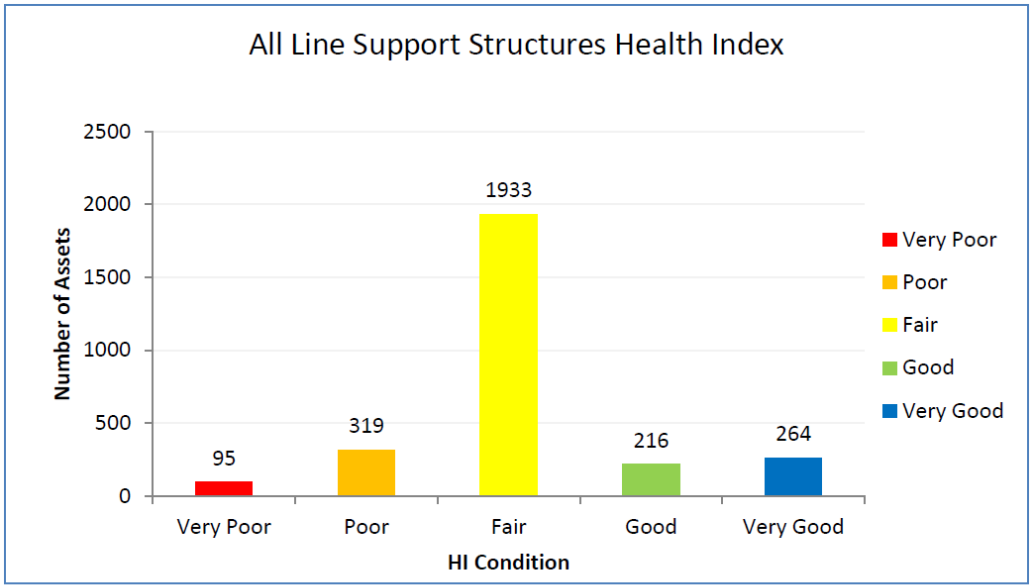


Figure 3-17: HOSSM Structures Health Index

Question:

a) Please explain the reasons for the atypical structure condition distribution shown in the above figure, which indicates that almost 70% of structures are in Fair condition.

B1-OEB Staff-28

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 88

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> **Line Equipment**
> Over the historical 2012-2017 period, HOSSM experienced defective equipment-related outages across 24 of its circuits. Five of these circuits, depicted on the figure 3-18, are responsible for 84% of total outage minutes over that timeframe.

Questions:

a) What percentage of outages relate to tree contact versus defective equipment?

b) Has the brushing program changed over the last 10 years?
    i. If yes, please describe the changes that were implemented, the associated costs, and the anticipated resulting impacts to reliability performance.

B1-OEB Staff-29

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 90-91

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> A notable example of HOSSM's attempt to prolong the lifecycle of installed assets is the utility's strategy for wood support structures. The factors associated with its service territory, such as large woodpecker populations, harsh weather conditions, among others, cause a comparably faster deterioration of wood structure populations that at times require replacement as early as 15-20 years after installation, based on historical data. Given these circumstances, the utility's management made a strategic decision approximately 15 years ago to replace deteriorated wood structures with composite fibreglass installations, which are expected to withstand the challenges offered by HOSSM's operating environment better than wooden structures, offering a more optimal economic outcome for the utility and its ratepayers.

Questions:

a) Does Hydro One SSM have data from peers in comparable climatic zones that indicates a similarly accelerated deterioration of wood structures?
    i. If yes, please provide this data.
    ii. If no, is it possible that the faster deterioration of wood structure populations in the Hydro One SSM service area is due to poor quality initial pole treatment, pole species that are not compatible with the region, or some other reason? Please elaborate.

b) Please provide the business case that supports the economics of transitioning from wood structures to composite counterparts.

c) Please provide the average unit installation cost for wood structures and the average unit installation costs for composite structures.

d) How old are the oldest composite structures in Hydro One SSM's fleet?

e) Does Hydro One SSM have data from peers in comparable climatic zones that indicates how long composite poles can be expected to last in this zone?

f) How do those average life expectancies compare with the typical survival curve for wood poles in Hydro One SSM's service area?

B1-OEB Staff-30

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 91

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> Another example concerning station assets, are the power transformers at Clergue TS. While METSCO's ACA study determined these units to be in the lower part of the Fair condition band (51% and 64% Health Indices), subsequent analysis determined that the low scores were related to a significant degree of oil leakage observed on transformer assets. HOSSM considered replacing both units over the course of this TSP, but as a part of the Needs Assessment process, opted for the replacement of transformer bushing gaskets – a significantly less costly solution expected to prolong the useful lives of the two transformers.

Questions:

a) Please confirm the anticipated condition rating of these transformers after the bushing gaskets have been replaced.

b) Could the Health Indices resulting from METSCO's ACA study be applied in a manner that leads to a premature replacement of an asset? Please discuss.

c) Are transformers the only asset class for which replacement of a component (such as bushings) can significantly improve the assessed condition or health index score? Please explain.

B1-OEB Staff-31

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 92

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> By adopting Hydro One's risk-based IPP approach for pacing and prioritization of its planned capital work program, HOSSM has significantly enhanced the rigour applied in the area of risk based asset intervention planning in respect to its assets, as in the past, equipment-related risk assessments were conducted in a more informal manner only. As detailed in Section 3.1.3.3 of this plan, the current approach adopted from Hydro One is grounded in evidence-based assessment of each project's risk mitigation potential on the basis of three core risk dimensions – reliability, safety and environment.

Question:

a) The above statements says that significant enhancements have materialized by adopting Hydro One's evidence-based approach. Are Hydro One's historic reliability numbers materially better than Hydro One SSM's historic reliability numbers? Please quantify.

B1-OEB Staff-32

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 105

Preamble:

Table 4-5: General Plant Investments

Project	Description	Driver(s)	Execution Timeline	Capital Cost
GP-01. Greenfield TS Land Purchase	Purchase a suitable land purchase in the area north of Sault Ste. Marie to enable the planned construction of the Greenfield TS (ISD #S1).	General Plant	2023	$2.0M
GP-02. Third Line TS Storage Building	Construct a permanent indoor climate-controlled storage facility on the Third Line TS grounds for spares and equipment.	General Plant, Operating Efficiency	2019	$0.8M
GP-03. General Plant Renewal Program	Enable regular upkeep and replacement of HOSSM's IT hardware and software, vehicle fleet, tools, and office equipment.	Genera Plant, Safety	2018-2026	$1.1M
Total General Plant				**$3.9M**

Question:

a) Has Hydro One SSM considered implementing ISD #S1 on one of the existing lots rather than spending $2.0M to purchase land for the construction of the Greenfield TS?
   i. If yes, why was this option discarded?
   ii. If no, why not?

B1-OEB Staff-33

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 107

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> All types of customers also express the preference for paced and gradual investments to help manage their electricity bills.

Questions:

a) Customers expressed the preference for paced and gradual investments relative to what other types of investment options? Did Hydro One SSM present the different investment options to customers and outline the pros and cons associated with each option?

b) If customers requested paced and gradual investments, please explain why Hydro One SSM is proposing significant inter-annual variability of System Renewal and System Service spending over the forecast period.

B1-OEB Staff-34

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, p. 109

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> While the ongoing integration with Hydro One creates opportunities to realize a number of potential operating and capital synergies discussed in Section 2.2.3, HOSSM expects that the gradual adoption of Hydro One's asset management policies and practices may result in the need for incremental increases to its current Maintenance expenditures in particular, as Hydro One asset management processes include a number of equipment maintenance and inspection procedures that HOSSM does not currently undertake on a regular basis.

Questions:

a) Is there evidence justifying that the additional procedures that Hydro One SSM does not currently undertake on a regular basis are necessarily required?
   i. If so, please provide this evidence.
   ii. If not, is it possible to achieve satisfactory performance without having to increase maintenance expenditures?

b) Please provide the business cases demonstrating that there will be a net benefit to customers prior to undertaking these investments.

c) Does Hydro One SSM anticipate that the increase in maintenance expenditures will be offset by a related decrease in capital expenditures or lower spending in other OM&A areas?
   i. If yes, please describe and quantify the anticipated tradeoffs.

d) Does Hydro One SSM expect any other tradeoffs between OM&A and Capital expenditures to materialize over the 9-year planning period? Please elaborate.

e) Please identify any initiatives considered and/or undertaken by Hydro One SSM, including any analysis conducted, to optimize plans and activities from a cost perspective, including balancing cost levels of OM&A versus capital.

f) To date, which asset management functions have been consolidated with Hydro One and have any additional maintenance expenditures emerged as a result?

B1-OEB Staff-35

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, ISD SS-01: New Greenfield TS, p. 160-168

Preamble:

Investment Results and RRF Outcomes:

Customer Focus	• Improves local area reliability by addressing two locations with extensive equipment condition deterioration issues.
Operational Effectiveness	• Provides opportunities maintenance savings through, reducing travel requirements for proactive and reactive maintenance combining maintenance activities and simplifying outage coordination for maintenance work.
	• Enhances Employee Safety by addressing historical issues with equipment clearances that could not be addressed at the legacy sites.
Financial Performance	• Introduces opportunities for capital asset consolidation by leveraging ability to deploy common station infrastructure at a single location instead of having two sets of similar equipment at two discrete locations.

Question:

a) Does Hydro One SSM perform any actual cost-benefit analysis when evaluating the RRF outcomes?
   i. If no, why not?
   ii. If yes, please provide the actual financial cost-benefit analysis of the four alternatives considered:
      - Alternative #1: “Do Nothing”

- Alternative #2: Replace aging transformers and other equipment at the individual locations
- Alternative #3: Build a consolidated new station served by a single transformer
- Alternative #4: Build new station with two transformers

B1-OEB Staff-36

Ref: Exhibit B1, Tab 1, Schedule 1 – Transmission System Plan, ISD GP-01 Greenfield TS Land Purchase, p. 183 -184

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> **Alternative #2: Lease a Land Parcel**
> Leasing land parcels for the expected lifetime of a new station (40-60 years, with potential subsequent extensions through equipment replacement) introduces substantial risks to HOSSM's lifetime cost of ownership and continued site access, should the land owner choose to modify the terms of the arrangement during its time. This alternative is not recommended

Question:

a) Was the lifetime cost of ownership for leasing land parcels mentioned above quantified?
   i. If yes, please provide the financial analysis.

B2-Staff-37

Ref: Exhibit B2, Tab 1, Schedule 1, Attachment 1, Page 1

Preamble:

At the above-noted reference, Hydro One SSM showed that Appendix 2-AA, Capital Projects Table, reflects a reporting reference of MIFRS for the years 2013 through 2018.

Questions:

a) Please provide a summary of changes to Hydro One SSM's accounting policies made since Hydro One SSM's last revenue requirement application, and the associated revenue requirement impacts.

b) Please confirm that Hydro One SSM has used MIFRS for the numbers underlying the proposed revenue requirement requested in the application. Please explain.

c) If Hydro One SSM has not used MIFRS for the numbers underlying the proposed revenue requirement requested in the application, please explain.

d) It is OEB staff's understanding that Hydro One Networks uses US GAAP as its financial reporting standard and regulatory reporting standard. Please describe the impact on Hydro One SSM's proposed revenue requirement requested in the application, if Hydro One SSM proposes to change from MIFRS to US GAAP at any point in time in the future, including the use of Account 1575 or Account 1576, where appropriate.

B2-Staff-38

Ref: Exhibit B2, Tab 3, Schedule 1, Page 1
Exhibit C, Tab 1, Schedule 1, Page 19

Preamble:

At the first above-noted reference, Hydro One SSM stated the following:

> Hydro One Sault Ste. Marie ("HOSSM") undertakes to determine its customers' needs and preferences, which help to inform its Transmission System Plan ("TSP"), investment plan and business objectives.

At the second above-noted reference, Hydro One SSM stated the following:

> As HOSSM integrates with Hydro One, HOSSM customers will be included in Hydro One's customer satisfaction surveys online, followed by computer-assisted telephone interviews based on customer preference or availability.

Questions:

a) Please describe any specific customer engagement, if any, that was performed that might have affected the preparation of this application.

b) Please describe whether Hydro One SSM has undertaken any customer satisfaction surveys in the past and any planned future customer engagement activities that are not described in the application.

B2-Staff-39

Ref: Exhibit B2, Tab 2, Schedule 1, Page 1

Preamble:

At the above-noted reference Hydro One SSM stated the following:

> Throughout the integration process, Hydro One and Hydro One Sault Ste. Marie ("HOSSM") have committed to investigating areas of opportunity to realize savings through productivity, efficiency and synergies. HOSSM will operationally integrate on October 1, 2018 and will financially integrate at a later time. One of the areas targeted for full review was the Capital Investment Plan.

Question:

a) Please describe when financial integration is expected to occur.

B2-OEB Staff-40

Ref: Exhibit B2, Tab 1, Schedule 1, Attachment 2 – Capital Expenditure Summary from Chapter 5 Consolidated, p. 1

Preamble:

Table 2 - Capital Expenditure Summary from Chapter 5 Consolidated

First year of Forecast Period: *2018*

CATEGORY	Historical Period (previous plan[1] & actual)															Forecast Period (planned)				
	2013			2014			2015			2016			2017			2018	2019	2020	2021	2022
	Plan	Actual	Var	Plan	Actual	Var	Plan	Actual	Var	Plan	Actual	Var	Plan	Actual[2]	Var					
	$ '000		%	$ '000		%	$ '000		%	$ '000		%	$ '000		%	$ '000				
System Access	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	-	-	-
System Renewal	1,860,387	2,378,253	27.8%	3,183,457	3,274,880	2.9%	5,780,000	6,081,360	5.2%	4,486,188	4,318,404	-3.8%	5,813,700	5,949,171	6.0%	5,100,000	3,000,000	8,000,000	7,900,000	5,900,000
System Service	1,284,996	1,266,948	-1.4%	340,000	349,776	0.3%	1,162,800	1,149,674	-0.3%	3,298,913	2,622,523	-20.5%	3,703,000	4,643,658	25.4%	1,300,000	1,300,000	2,600,000	2,800,000	6,500,000
General Plant	1,341,275	811,870	-39.5%	912,317	787,213	-13.7%	2,527,197	1,512,544	-40.1%	1,983,583	2,618,930	32.0%	975,402	3,895,498	299.4%	100,000	2,900,000	100,000	1,000,000	1,000,000
TOTAL EXPENDITURE	4,486,658	4,457,071	-0.7%	4,344,774	4,311,869	-0.8%	9,459,997	8,743,578	-7.6%	9,768,684	9,557,937	-2.2%	10,291,102	14,488,177	40.8%	6,500,000	7,200,000	10,700,000	11,700,000	12,400,000
System O&M	$ 10,100,000	$ 10,210,900	1.1%	$ 10,305,535	$ 10,304,457	0.0%	$ 10,821,095	$ 10,424,380	-3.7%	$ 11,121,876	$ 10,941,448	-1.6%	$ 11,121,876	$ 9,492,821	-14.6%	$ 9,449,000	$ 10,700,000	$ 11,000,000	$ 11,200,000	$ 11,400,000

Questions:

a) Please explain the reason for the drop in System O&M in 2017, and the subsequent increase in 2019.

b) Please provide an updated table with the anticipated System O&M expenditures for the complete 9-year forecast period (2018 – 2026).

B2-OEB Staff-41

Ref: Exhibit B2, Tab 2, Schedule 1 – Capital Plan Evolution, p. 1-20

Questions:

a) Hydro One SSM has provided evidence within the Capital Plan Evolution of projected savings of over $76 million over the 2017-2025 period relative to GLPT's draft capital plans:

Table Reference in Application	**Projected Savings 2017 – 2025 (in C$ in thousands)**
Table 3 – Capital Investment Removed from Plan Due to Redundancy with Hydro One	24,994.5
Table 4 - Projects Removed from the Plan Due to Investment Prioritization	2,373.2
Table 5 – Adjustments to Align with Current Capital Investment Plan	35,128.8
Table 6 – Other Adjustments	14,072.1
Total Projected Savings (2016 – 2025):	**76,568.6**

Please confirm that the projected savings are based on comparing Hydro One SSM current capital plans with a draft capital plan that has never been presented to or approved by the OEB. If Hydro One SSM asserts that the draft capital plan has been presented to or approved by the OEB, please provide particulars.

b) Does Hydro One SSM agree that the above noted savings may not be a fair representation of the realistic savings accruing to ratepayers?
   i. If no, please explain why not.
   ii. If yes, what would be a fair representation of the realistic savings?

C1-Staff-42

Ref: EB-2016-0356, Decision and Order September 28, 2017, page 9
Exhibit C, Tab 1, Schedule 1, Page 12
Exhibit C, Tab 1, Schedule 1, Figure 5
Exhibit C, Tab 1, Schedule 1, Page 35
Exhibit C, Tab 1, Schedule 1, Page 15

Preamble:

In its Decision and Order in Hydro One SSM's previous revenue requirement proceeding,[2] the OEB determined that the proposed scorecard for 2017 was incomplete. Specifically the OEB stated that Hydro One SSM falls short of the OEB expectations for performance measure metrics, each with specific performance outcomes and implementation timelines. The OEB also noted that while a scorecard submitted after 2019 may reflect future operational changes, the current application must comply with the scorecard requirements in 2017, the year in which rate increase is proposed.

In the second above-noted reference, Hydro One SSM stated the following:

> Figure 5, HOSSM's proposed scorecard, shows the performance metrics HOSSM expects to be measured against and the associated annual results, targets and trending of each metric. The descriptions of the various metrics can be found in section 1.6 of this exhibit.

[2] EB-2016-0356, September 28, 2017, page 9

In the third above-noted reference, Hydro One SSM has included its proposed scorecard in "Figure 5 - Proposed Hydro One Sault Ste. Marie Scorecard."

In the last above-noted reference, Hydro One SSM stated the following:

> The following sections include a description of each metric on the proposed scorecard. For each metric, there is a current description and a description of how the metric will evolve as HOSSM adopts Hydro One's methodologies and continues to migrate its records and data into Hydro One's systems through the integration process. Annual targets for 2023 have been proposed for each metric that coincides with the five years included in the Transmission System Plan ("TSP") and is aligned with Hydro One's 2023 transmission scorecard targets.

Questions:

a) OEB staff notes that Hydro One SSM's proposed scorecard in Figure 5 does not specify improvement initiatives, as well as business drivers. Please explain.

b) Hydro One SSM stated that annual targets for 2023 have been proposed to align with the five years included in the TSP and Hydro One's 2023 transmission scorecard. OEB staff notes that Hydro One SSM's proposed scorecard in Figure 5 includes targets of 2023 for some metrics, and does not include a target for other metrics. Please provide a description of the targets, an explanation as to how the targets were derived, and also address the metrics that do not have any targets.

c) Please explain whether Hydro One SSM expects to have the necessary systems and processes in place to report on all of the measures in the proposed scorecard by the end of 2018.

d) If this is not the case, please explain which measures and associated systems and processes will not be in place by the end of 2018, as well as when Hydro One SSM expects to be able to report on these measures.

e) Please explain if Hydro One SSM consulted with any external stakeholders and/or customers in the development of its proposed scorecard. Please outline the nature of the consultation.

f) Please explain whether Hydro One SSM has benchmarked its performance with respect to any of the scorecard measures against the performance of its peers. If so, please provide the results.

g) Please explain whether or not Hydro One SSM has any plans to further benchmark its performance with respect to its proposed scorecard measures against that of its peers. If this is the case, please outline such plans. If this not the case, please explain.

h) Please list and explain any additional data that would be beneficial to customers and submitted going forward under the OEB's *Reporting and Record-Keeping Requirements* (RRR).

i) Please indicate how Hydro One SSM has complied with the current OEB scorecard requirements.

j) Please explain whether Hydro One SSM has considered any of the following items in its scorecard, as well as other items typically addressed in OEB distributor scorecards:

   i. No Management Discussion and Analysis (MD&A) was included
   ii. Some metrics still show N/A instead of actual values
   iii. Some additional measures found in the typical OEB electricity distributor scorecards such as:

      i. Scheduled Appointments Met On Time
      ii. Telephone Calls Answered On Time
      iii. First Contact Resolution
      iv. Billing Accuracy
      v. Level of Public Awareness
      vi. Transmission System Plan Implementation Progress
      vii. Any other items that Hydro One SSM is of the view would be beneficial

k) Please explain if Hydro One SSM believes that the changes it has made to its scorecard have addressed the deficiencies noted by the OEB in its decision.[3] Please also explain how these deficiencies were addressed.

[3] EB-2016-0356, September 28, 2017, page 9

C1-Staff-43

Ref: Exhibit C, Tab 1, Schedule 1, Page 2 & 3

Preamble:

At the above-noted reference, Hydro One SSM stated the following:

> HOSSM's KPIs have traditionally been separated into four corporate drivers:
>
> - Excellence in Health, Safety, Security and Environment ("HSSE")…
> - Continued Value Creation…
> - Risk Management…
> - Investment in our People…
>
> Certain KPIs have been adopted as metrics on the newly proposed corporate scorecard, described in Section 1.2 of this exhibit. Examples of corporate KPIs are described in Section 1.4 of this exhibit.

Questions:

a) Please provide a complete list of Hydro One SSM's historical KPIs.

b) Please provide Hydro One SSM's historical targets and actuals for each KPI for the years 2013 to 2017, if not already provided in Hydro One SSM's application.

c) Based on the results in part (b), please explain any significant trends in the data.

d) Please provide targets for each KPI for 2018 and 2019.

e) Please explain any significant differences between the KPIs and the scorecard metrics, including any timelines for alignment of these two groups of measurement.

C1-Staff-44

Ref: Exhibit C, Tab 1, Schedule 1, Page 1

Preamble:

At the above-noted reference, Hydro One SSM stated the following:

> Hydro One Sault Ste. Marie ("HOSSM") is committed to demonstrating continuous improvement in the transmission of electricity that is at a level expected by our customers. To measure the performance to this commitment, HOSSM has developed a balanced scorecard that is aligned with the OEB's Renewed Regulatory Framework ("RRF") and is substantially aligned with Hydro One's transmission scorecard. The scorecard combined with HOSSM's Key Performance Indicators ("KPIs") program will aid in identifying areas of opportunity to enhance the effectiveness of HOSSM's performance management program and will help to ensure that the objectives and goals of the company are being managed to create additional value for the rate payer. HOSSM maintains and tracks measures across the company to align work execution in each line of business with the corporate drivers.

Questions:

a) Please explain how Hydro One SSM's proposed scorecard is substantially aligned with Hydro One's transmission scorecard.

b) Please explain in more detail how Hydro One SSM's proposed scorecard is aligned with the OEB's RRF.

c) Please explain how the scorecard combined with Hydro One SSM's KPIs program will aid in identifying areas of opportunity to enhance the effectiveness of its performance management program.

d) Please provide Hydro One SSM's goals and objectives for 2018 and 2019, in particular those relating to Hydro One SSM's scorecard metrics.

e) Please explain how the scorecard combined with Hydro One SSM's KPIs program will help to ensure that the objectives and goals of the company are being managed to create additional value for the rate payer.

C1-Staff-45

Ref: Exhibit C, Tab 1, Schedule 1, Page 3
Filing Requirements, page 25, section 2.8.1
Exhibit B1, Tab 1, Schedule 1, Page 15
Exhibit B1, Tab 1, Schedule 1, Page 25-30
Exhibit B2, Tab 2, Schedule 1

Preamble:

At the first above-noted reference, Hydro One SSM stated the following:

> HOSSM is committed to continuous improvement in productivity and efficiency to demonstrate value to customers…

Section 2.8.1 of the Filing Requirements state that a description of the continuous improvement or efficiency gains that will be achieved over the term is to be provided, together with the means by which those gains and savings will be achieved and the benefits assured for customers.

At the third above-noted reference, Hydro One SSM stated the following:

> Among the operating areas where HOSSM expects to leverage opportunities for efficiencies are the areas captured in Table 1-5.

The anticipated sources of efficiencies are explained in more detail at the fourth above-noted reference.

Although Table 1-5 Summary of Anticipated Sources of Efficiencies, provides a summary of efficiencies, and some amounts have been quantified in fifth above-noted reference (Capital Plan Evolution), not all of these amounts have been mapped from Table 1-5 to the Capital Plan Evolution evidence.

Questions:

a) Please provide an explanation of the means by which continuous improvement, gains and savings will be achieved and the benefits assured for customers.

b) Please map the above-noted Table 1-5 to the Capital Plan Evolution evidence.

c) Please confirm that the above-noted areas in Table 1-5 are capable of producing productivity gains and synergistic lowering of OM&A.

d) Given the above anticipated sources of efficiencies, please explain why Hydro One SSM's expected productivity factor is not greater than 0%.

C1-Staff-46

Ref: Exhibit C, Tab 1, Schedule 1, Page 9-10
EB-2016-0050, October 13, 2016, Decision and Order, Application for the acquisition of Great Lakes Power Transmission Inc. by Hydro One Inc. (MAADs Decision), page 11

Preamble:

In the above-noted first reference, Hydro One SSM stated the following:

> HOSSM strives to maintain compliance with reliability standards mandated by the North American Electric Reliability Corporation ("NERC") for an Electricity Transmitter. The tracking of this measure will also ensure the appropriate compliance program is in place. In 2016, HOSSM started tracking any incidents that required HOSSM to file a self-report of non-compliance. The target has been set a zero high-risk regulatory compliance and operational incidents.

At the above-noted second reference, page 11 of the MAADs decision stated the following:

> The OEB expects that both Hydro One and GLPT will continue to comply with rules set out for all transmitters and meet the reliability standards established by NERC and the OEB approved customer delivery point standards…

Question:

a) Please provide more detail as to how Hydro One SSM will meet the expectations articulated in the MAADs decision. In particular, please explain how Hydro One SSM is compliant with rules set out for all transmitters and meets the reliability standards established by NERC and the OEB approved customer delivery point standards.

C1-Staff-47

Ref: Exhibit C, Tab 1, Schedule 1, Page 32-33
EB-2016-0050, October 13, 2016, Decision and Order, Application for the acquisition of Great Lakes Power Transmission Inc. by Hydro One Inc. (MAADs Decision), page 3-4

Preamble:

In the above-noted first reference, Hydro One SSM stated the following:

> Leverage: Total Debt to Equity Ratio
>
> *Description*
>
> The debt-to-equity ratio is a measure of the company's financial leverage and serves to identify the ability to finance assets and fulfill obligations to creditors, while remaining within the OEB-mandated 60 per cent to 40 per cent debt-to-equity structure (a ratio of 1.5). This metric includes short-term and long-term debt.
>
> *Performance*
>
> HOSSM's annual Leverage: Total Debt to Equity Ratio is shown in Figure 13. HOSSM's average debt to equity ratio over the past five years was 1.05, and is trending downwards below the OEB-deemed ratio of 1.50. The ratio is trending downward primarily due to principal payments on long term debt trending from approximately $2 M to $2.5 M in annual principal repayments over the last 4 years.

At the second above-noted reference, page 3-4 of the MAADs decision stated the following:

> Following the completion of the share purchase transaction, GLPT and Hydro One will continue to operate as stand-alone licensed transmitters. Hydro One states that the existing GLPTLP debt covenants prevent GLPT from being amalgamated absent consent of the debt holders. This may involve renegotiation of the terms of the GLPTLP debt instruments which could result in substantial additional costs. Therefore, Hydro One intends to allow GLPT's outstanding debt

obligations to continue until they reach maturity in mid-2023. Amalgamation steps will be considered after this time.

Questions:

a) Please provide the current status of the existing GLPTLP debt covenants and debt instruments.

b) Please describe if there has been any renegotiation of the terms of the GLPTLP debt instruments and whether substantial additional costs have been incurred or will result in the future.

c) Please explain whether GLPT's outstanding debt obligations are still planned to continue until they reach maturity in mid-2023, as well as any future amalgamation steps, and the timing of these steps.

C1-OEB Staff-48

Ref: Exhibit C, Tab 1, Schedule 1 – Performance Measurement and Continuous Improvement, p.4

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> As stated in EB-2016-0050, "commencing in 2017 and 2018, HOSSM and Hydro One will begin to identify areas where longer-term operational synergies and savings may be achieved" as a result of consolidation. The outcome of this work is reflected in the proposed scorecard.

Question:

a) It is also stated in the EB-2016-0356 Decision and Order that *"The requirement for continuous improvement should not be delayed until the company's operational integration process is complete."*[4] Please demonstrate how both the

[4] EB-2016-0356 Decision and Order. Hydro One Sault Ste. Marie LLP Application for electricity transmission revenue requirement effective January 1, 2017. September 28, 2017. Page 8.

shorter-term and longer-term operational synergies and savings are reflected in HOSSM's scorecard and other evidence within the application.

C1-OEB Staff-49

Ref: Exhibit C, Tab 1, Schedule 1 – Performance Measurement and Continuous Improvement, p.5

Preamble:

Table 1 - HOSSM KPIs

Corporate Driver	Measurement
HSSE	High Risk Incidents (determined per HOSSM's Managed System)
	Preventable Motor Vehicle Accidents
	Safe Work Observations (% of total planned)
Continued Value Creation	OM&A at approved levels (actual as % of budget)
Risk Management	Self-Reports of Non-Compliance with NERC Standards
	Job Plan Quality Reviews (% of total planned)
Investment in our People	No measurement at this time

Questions:

a) Do the KPIs identified in Table 1 above directly align with Hydro One's KPIs?
   i. If no, please identify what is different and explain why.

b) With regards to HSSE, please explain why there is no metric associated with HSSE training or stats for non-high risk incidents.

c) Please describe the link (if any) between Continued Value Creation and productivity or efficiency gains.

d) Does Hydro One SSM link the Risk Management KPI to the actual Risk Management program?
   i. If no, why doesn't Hydro One SSM attempt to validate the projected risks of projects versus the reality that emerges in retrospect?

e) Has Hydro One SSM considered including training programs in safety, productivity gains and risk management under the "Investment in our People" KPI?

i. If yes, why did Hydro One SSM decide to exclude this measurement?
ii. If no, why not?

C1-OEB Staff-50

Ref: Exhibit C, Tab 1, Schedule 1 – Performance Measurement and Continuous Improvement, p. 10

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> **Job Plan Quality Assurance Reviews**
> The completion and maintenance of documented Job Plans is required by the Electrical Utility Safety Rule 107. The Job Plan process is "to establish a safe work area, by identifying the job steps, hazards and appropriate barriers."
>
> Job Plans therefore are to mitigate safety risks by hazard identification for workers in the field. To ensure the Job Plan is completed accurately and demonstrates a comprehensive knowledge of the work environment, HOSSM implemented a Quality Assurance ("QA") program. HOSSM started tracking the completion of QA reviews against the number of those targeted at the end of 2013 to ensure the right program is in place.

Question:

a) Based on the above provided description, please explain why the "Job Plan Quality Assurance Reviews" are included as a KPI under the Risk Management driver as opposed to the HSSE driver.

C1-OEB Staff-51

Ref: Exhibit C, Tab 1, Schedule 1 – Performance Measurement and Continuous Improvement, p. 13-14

Preamble:

Performance Outcomes	Performance Categories	Measures		Historical Years 2011	2012	2013	2014	2015	2016	2017	Trend	2023 Targets
Customer Focus Services are provided in a manner that responds to identified customer preferences.	Service Quality	Satisfaction with Outage Planning Procedures (% Satisfied)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	90%
		Customer Delivery Point Performance Standard Outliers as % of Total Delivery Points		33%	24%	25%	20%	16%	0%	0%	▲	11.80%
	Customer Satisfaction	Overall % Customer Satisfaction in Corporate Survey		N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	85%
Operational Effectiveness Continuous improvement in productivity and cost performance is achieved; and distributors deliver on system reliability and quality objectives.	Safety	Recordable Incidents (# of injuries/illnesses per 200,000 hours worked)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	<1.0
	System Reliability	T-SAIFI (Average # Power Interruptions per Delivery Point)		2.14	2.24	1.16	0.32	1.11	0.37	0.42	▲	0.53
		T-SAIDI (Average # Minutes of Power Interruptions per Delivery Point)		296.71	176.76	233.7	9.3	85.8	10.0	30.9	▲	42.1
		System Unavailability (%) - Lines		N/A	N/A	0.25	0.02	0.09	0.39	0.10	▲	0.38
		System Unavailability (%) - Stations		N/A	N/A	0.03	0.00	0.13	0.00	0.00	-	0.38
		Unsupplied Energy (minutes)		N/A	N/A	12.63	2.98	16.42	2.88	9.19	▲	11.4
	Asset Management	In-Service Additions (% of HOSSM's Capital Plan)		120%	111%	99%	99%	92%	98%	108.5 %	-	100%
		CapEx as % of Budget		97%	113%	95%	95%	100%	101%	129%	▲	100%
	Cost Control	Total OM&A and Capital per Gross Fixed Asset Value (%)		10.69 %	6.87%	4.38%	4.33%	5.76 %	5.81 %	6.23%	▲	7.80%
		Sustainment Capital per Gross Fixed Asset Value (%)		7.55%	4.03%	1.29%	1.25%	2.70 %	2.70 %	3.69%	▲	4.40%
		OM&A per Gross Fixed Asset Value (%)		3.15%	2.84%	3.09%	3.08%	3.06 %	3.10 %	2.54%	▲	1.80%
Public Policy Responsiveness Transmitters deliver on obligations mandated by government (e.g. in legislation and in regulatory requirements imposed further to Ministerial directives to the Board).	Connection of Renewable Generation	% on time completion of renewables connection impact assessments		100%	100%	100%	100%	100%	100%	100%	-	100%
	Regional Infrastructure	Regional Infrastructure Planning progress - % Deliverables met		N/A	N/A	N/A	100%	100%	100%	100%	-	100%
Financial Performance Financial viability is maintained; and savings from operational effectiveness are sustainable.	Financial Ratios	Liquidity: Current Ratio (Current Assets/Current Liabilities)		1.21	1.34	1.69	1.67	1.62	1.33	1.38	N/A	N/A
		Leverage: Total Debt (includes short-term & long-term debt) to Equity Ratio		1.13	1.10	1.09	1.12	1.04	1.03	0.97	N/A	N/A
		Profitability: Regulatory Return on Equity	Deemed (included in rates)	9.66%	9.42%	8.93%	9.36%	9.30 %	9.19 %	N/A	N/A	N/A
			Achieved	10.94 %	11.86 %	11.51 %	11.42 %	9.66 %	9.93 %	N/A	N/A	N/A

Figure 5 - Proposed Hydro One Sault Ste. Marie Scorecard

Questions:

a) Please provide a table of reliability figures that excludes the reliability impacts of major weather events and exogenous variables.

b) Please confirm whether the OM&A per Gross Fixed Asset Value is primarily a function of low OM&A or high Gross Fixed Asset Values.

c) Please describe why a target of 7.80% was selected for the Total OM&A and Capital per Gross Fixed Asset Value.

d) Will Hydro One SSM provide the OEB with an updated scorecard following the 2023 target year?

C2-Staff-52

Ref: Exhibit C, Tab 2, Schedule 1

Preamble:

At the first above-noted reference, Hydro One SSM has provided an overview of its reliability performance.

In the first above-noted reference, Hydro One SSM has also included the Canadian Electricity Association (CEA) composite for some measures from 2013 to 2016 but did not include the 2017 CEA measure. Hydro One SSM stated that "CEA statistics were not available for 2017 at the time of the development of this exhibit."

Questions:

a) Please provide additional evidence which highlights how Hydro One SSM has addressed the OEB's performance standards for transmitters, specifically as set out in Chapter 4 of the Transmission System Code.

b) Please provide additional evidence which shows how Hydro One SSM has compared it system performance to those of other systems, both nationally and internationally, where available. OEB staff notes that Hydro One SSM has provided some CEA data, but requests that Hydro One SSM also provide CEA data related to 2017.

C2-OEB Staff-53

Ref: Exhibit C, Tab 2, Schedule 1 – Reliability Performance, p. 3

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> The Standard Average and Minimum Standard of performance relates to the reliability of supply to the size of load being served at the delivery point measures for both frequency (total interruptions / load block) and duration (total minutes / load block) of interruption. The standard was established utilizing Hydro One Networks Inc.'s historical (1991-2000) statistics, shown in Table 1.

Table 1 - Delivery Point Performance Standards[2]

Performance Measures	Delivery Point Performance Standards (Based on a Delivery Point's Total Average Station Load)							
	0 to 15MW		>15 to 40MW		>40 to 80MW		>80MW	
	Standard (Average Performance)	Minimum Standard of Performance	Standard (Average Performance)	Minimum Standard of Performance	Standard (Average Performance)	Minimum Standard of Performance	Standard (Average Performance)	Minimum Standard of Performance
DP Frequency of Interruptions (Outages/yr)	**4.1**	**9.0**	**1.1**	**3.5**	**0.5**	**1.5**	**0.3**	**1.0**
DP Interruption Duration (min/yr)	**89**	**360**	**22**	**140**	**11**	**55**	**5**	**25**

Ref: Exhibit C, Tab 2, Schedule 1 – Reliability Performance, p. 4

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> Table 2 shows HOSSM's CDPP[5] Minimum Standards and Standard Averages for each load category. This is calculated as the number of DP[6]s in each of HOSSM's respective load category multiplied by each of the CDPP Standards for DP Frequency of Interruptions (Outages) and DP Interruption Duration (Minutes) found in table 1.

Table 2 - HOSSM CDPP Standards

Customer Deliver Point Load Categories	Number of Delivery Points	Standards	Interruption Frequency (Outages)	Interruption Duration (Minutes)
>80 MW	1	Minimum Standard	1.0	25
		Standard Average	0.3	5
40-80 MW	1	Minimum Standard	1.5	55
		Standard Average	0.5	11
15-40 MW	2	Minimum Standard	2	280
		Standard Average	2.2	44
0-15 MW	14	Minimum Standard	126	5,040
		Standard Average	57.4	1,246

[5] Customer Delivery Point Performance ("CDPP")
[6] Delivery Point ("DP")

Questions:

a) Please explain why Hydro One SSM is utilizing Hydro One Networks Inc.'s historical (1991-2000) performance statistics to establish current standards.

b) Can Hydro One SSM establish updated standards based on more modern statistics?
   i. If no, why not?
   ii. If yes, please provide an updated Table 1 and Table 2 reflecting the more modern statistics, and describe the resulting impacts on the filed evidence.

C3-Staff-54

Ref: Exhibit C, Tab 3, Schedule 1, Page 2
Exhibit B1, Tab 1, Schedule 1, Page 113
Filing Requirements, page 5, section 2.1

Preamble:

At the above-noted first reference, Hydro One SSM stated the following:

> As the definition of benchmarking is a standard against which something can be measured or assessed, HOSSM has also provided a proposed scorecard that includes metrics, annual results and proposed targets in Exhibit C, Tab 1, Schedule 1. The annual results of the scorecard metrics have also been provided on graphs to illustrate the year over year trending. Key Performance Indicators ("KPIs") that are currently tracked by HOSSM are also included in the same exhibit.
>
> It is expected that the next application submitted to the OEB will be after HOSSM's integration with Hydro One. At that time, HOSSM will be included as part of Hydro One for any benchmarking studies.
>
> HOSSM will also participate in any benchmarking studies undertaken by Hydro One in which it is requested to do so.

At the above-noted second reference, Hydro One SSM stated the following:

> Since the current Plan does not propose any capital or OM&A expenditures in excess of the levels already embedded into HOSSM's last approved Revenue

Requirement, a benchmarking study confirming the reasonableness of HOSSM's expenditures would not be instructive. However, in preparing this Plan, HOSSM staff referred to the Total Factor Productivity study prepared by Power System Engineering Inc. ("PSE") for Hydro One Transmission. Moreover, as the integration between HOSSM and Hydro One continues, HOSSM plans to utilize a range of studies prepared by the Electric Power Research Institute ("EPRI") on a number of topics concerning asset management best practices. HOSSM will leverage these insights to continually improve the efficiency and cost effectiveness of its operations.

Section 2.1 of the Filing Requirements also state that internal benchmarking[7] and external benchmarking[8] may be addressed.

Questions:

a) Please discuss which costs Hydro One SSM tracks/measures to benchmark its own internal cost performance over time. Please provide the data for the years 2013 to 2017.

b) Please discuss which costs Hydro One SSM tracks/measures to benchmark its cost performance versus external comparators over time (i.e. against other transmitters), if any. Please provide the data for the years 2013 to 2017.

c) Please confirm that Hydro One SSM has not participated in any benchmarking studies undertaken by Hydro One or another external comparator. If this is not the case, please explain.

d) Please provide more detail regarding why a benchmarking study would not be instructive, even given that Hydro One SSM does not propose any capital or OM&A expenditures in excess of the levels already embedded into its last approved revenue requirement.

D1-OEB Staff-55

Ref: Exhibit D, Tab 1, Schedule 1, Page 1

[7] Internal benchmarking: Against own cost performance over time to demonstrate continuous improvement
[8] External benchmarking: Against other transmitters, including rationale for selected comparators

Preamble:

At the above noted reference, Hydro One SSM stated the following:

> The Hydro One Sault Ste. Marie ("HOSSM") application is a Revenue Cap Incentive Rate-setting application ("RCIR"). As detailed in Chapter 2 of the Filing Requirements for Electricity Transmitter Applications, a transmitter can propose an incentive mechanism for adjusting the revenue requirement on an annual basis. A revenue cap refers to the mathematical formula used to set how much a utility's revenue can increase in a year when the utility is not having a full review of its rates through an OEB process. *The formula ensures that a utility's rates will increase at a rate which is less than inflation. [Emphasis added]*

As documented, the revenue cap adjusts the allowed revenues to be recovered to rates to inflation less expected productivity (with possibly some other adjustments such as Z-factors). Rates to recover the adjusted revenue cap are derived by allocating the revenue to customer classes and dividing the allocated revenues by billing determinants, such as number of accounts, kW or kWh, in each class. Depending on the growth in demand relative to the inflation less productivity adjustment to revenues, the rate of change of rates may be higher, lower, or equal to the rate of inflation.

Questions:

a) Please explain how Hydro One SSM believes generally that the revenue cap formula "ensures that a utility's rates will increase at a rate which is less than inflation".

b) Hydro One SSM's proposed revenue cap is for a transmission-specific 2-factor inflation measure (input price index or IPI) offset by an X-factor of 0%, composed of a base X-factor of 0% and a stretch factor of 0%. In this case, Hydro One SSM's revenues would increase annually at a rate **equal to** inflation, not less than it. Please explain how Hydro One SSM's proposed revenue cap plan and parameters "ensure that [Hydro One SSM's] rates will increase at a rate which is less than inflation".

D1-OEB Staff-56

Ref: Exhibit D, Tab 1, Schedule 1
Exhibit E, Tab 1, Schedule 1
Exhibit A, Tab 2, Schedule 4, page 4
Filing Requirements, page 3, section 2.0
EB-2016-0050, October 13, 2016, Decision and Order, Application for the acquisition of Great Lakes Power Transmission Inc. by Hydro One Inc. (MAADs Decision), page 11

Preamble:

Hydro One SSM has proposed a revenue cap index of the form:

$$Revenue_t = Revenue_{t-1} \times (1 + RCIR_t)$$

where:

$$RCIR_t = IPI_t^{Tx} - 0$$

In this formula, IPI^{Tx} refers to the proposed transmission-specific Input Price Index (IPI) measuring inflation in the input prices of labour, capital and materials.

Section 2.0 of the Filing Requirements states:

> In recognition of the forecasting uncertainty involved in longer terms, the OEB has included in section 2.8.12 a provision for a "Z-factor" claim, similar to that for electricity distributors operating under multi-year rate plans.
>
> In addition, the OEB will consider requests for a mechanism to fund significant incremental capital during the rate term from applicants proposing a Revenue Cap index. This will enable review during the cost of service application of the need and prudence of any significant, discrete projects coming into service over the plan term that are part of a transmitter's Transmission System Plan and which transmitters cannot manage through the revenue established through the index. Applicants must propose all criteria and parameters for approval of any capital module.

> The OEB will require from transmitters applying for approval of revenue requirements under a Custom IR or Revenue Cap application a proposal to mitigate the potential for any significant earning by the transmitter above the regulatory net income supported by the approved return on equity, such as a capital variance account or an earnings sharing mechanism.

In its Decision and Order EB-2016-0050, with respect to a Z-factor, the OEB stated:[9]

> The OEB finds that Hydro One will be granted recourse to file for recovery of Z-factor events, if required, through a separate rate application. The OEB expects in all cases that an applicant will have to demonstrate that failure to recover the sought-after amount would have significant impact on its operations.

In the same decision, the OEB considered the proposed rate-setting plan, including the proposed ESM, in section 4.2.[10] The OEB did not accept the proposed plan, but stated the following:

> The OEB accepts that the applicant's proposals for a 10 year deferred rebasing period and ESM are aligned with the Handbook. However, Hydro One's proposal for a resetting of rates at the beginning of the 10 year deferred rebasing period is not contemplated by the Handbook and the OEB does not accept it. Rate-setting policies associated with consolidation are predicated on the notion that the going-in rates are the rates intended to provide the revenues required as the starting point to achieve savings over the deferred rebasing period.
> …
>
> The OEB notes that a cost of service application was filed by GLPT on August 26, 2016. However, the OEB finds that GLPT can continue with its existing revenue requirement. and may bring forward a separate rate application to seek approval for the elements of a specific revenue cap index framework, for the deferral period. Such an application would be expected to encompass the following components as required by the Transmission Filing Requirements: the annual adjustment (expected

[9] Decision and Order EB-2016-0050, October 13, 2016, p. 20.
[10] *Ibid.*, pp. 12-19

inflation, productivity, stretch factors) and proposed performance reporting and monitoring (draft scorecard, RRR filings, etc).[11]

Questions:

a) Hydro One SSM has not addressed the Z-factor explicitly in its revenue cap proposal in the first above noted reference, but stated in the third above noted reference that: "HOSSM will seek to establish a new Z-factor deferral Account 1572 to recover the material costs, associated with any unforeseen event that is outside the control of HOSSM, and which meets the defined causation, materiality and prudence criteria in accordance with the OEB's Chapter 2, Filing Requirements for Electricity Transmission Applications dated February 11, 2016."

i. Please confirm that Hydro One SSM's proposal is for a sub-account of the existing Deferral and Variance Account 1572 – Extraordinary Regulatory Events in the event that provide Hydro One SSM experiences such an event that would justify Z-factor treatment.

ii. Please identify what Z-factor materiality threshold, on a revenue requirement basis, would apply, in accordance with the Filing Requirements.

b) The proposed ESM in EB-2016-0050 was as follows: "GLPT's revenue requirement will be adjusted so that prior year excess earnings are shared with ratepayers on a 50:50 basis for all earnings that exceed 300 basis points above the ROE approved by the Board for 2018 in GLPT's 2017-18 rates application."[12] Hydro One SSM notes in its evidence that the 2017-18 rate application (EB2016-0356) was denied by the OEB.[13]

i. What ROE is Hydro One SSM proposing should be used for the proposed ESM?

ii. Please confirm that the proposed ESM is i) unchanged from the EB-2016-0050 proposal except for the ROE; and ii) complies with the requirements

[11] Ibid., pp. 17,19
[12] Decision EB-2016-0050, op. cit., p. 12
[13] Exhibit A, Tab 2, Schedule 2, page 3-7

of the Handbook for Utility Rate Applications[14] (Rate Handbook) and the Filing Requirements. In the alternative, please explain.

D1-OEB Staff-57

Ref: Exhibit D, Tab 1, Schedule 1, page 2-4
Exhibit D, Tab 1, Schedule 1, Attachment 1, page 6(section 1.1.3), page 11 (section 1.4), page 15 (section 2.2.1) and page 49 (section 7)
Exhibit A, Tab 2, Schedule 2, page 5
Exhibit J5.2, EB-2017-0306/0307

Preamble:

Hydro One SSM and its consultant, PSE, have proposed a 2-factor IPI as the measure of inflation. Hydro One SSM's proposal is similar to the 2-factor IPI developed for electricity distributors and adopted since 2014, per the Report of the Board (EB-2010-0379). The proposed IPI would use the same two Statistics Canada data series of:

- Average Weekly Earnings, including Overtime, for Ontario, all Business Categories except Unclassified (AWE)

- Implicit Price Index for Gross Domestic Product (Final Domestic Demand) – Canada (GDP-IPI (FDD)),

but would use transmission-specific weights to average the contribution of the two (labour and non-labour) components. Hydro One SSM, based on analysis proposed by PSE, has proposed weights of 14% for labour and 86% for non-labour (capital and materials).

With this proposal, the OEB and the rate-regulated sectors it oversees would have four different IPI measures as follows:

[14] Issued on October 13, 2016

			Component	
			Labour	**Non-labour (capital and materials)**
Data Series			**AWE**	**GDP-IPI (FDD)**
Firm/Sector	**IPI measure**	**Regulatory Filing Reference No.**	**Weight**	
Electricity Distribution	IPI^{Dx}	EB-2010-0379	30%	70%
Ontario Power Generation (prescribed hydroelectric generation)	IPI^{OPG}	EB-2016-0152	12%	88%
Enbridge/Union Gas merger – Natural Gas	IPI^{NG}	EB-2017-0306/-0307		100%
Hydro One SSM – Electricity Transmission (proposed)	IPI^{Tx}	EB-2018-0218	14%	86%

While the inflation measure proposed and approved for natural gas distribution is explicitly defined as GDP-IPI (FDD), it can be mathematically represented as a version of the adopted 2-factor methodology where 0% is assigned to the labour component and 100% is the weighting factor for GDP-IPI (FDD). This is still sound conceptually, as the (rate of change of) GDP-IPI is actually a measure of the inflation of the output GDP, which depends on inflation of all inputs – labour as well and capital and materials. We thus have a potential to have four inflation measures specific to different energy sectors in Ontario. These measures in turn only rely on two external and publicly collected and reported data series. AWE and GDP-IPI are separate and do show different movements from year-to-year. At the same time, the series are not totally de-linked, as changes in labour prices do factor into GDP-IPI, which is a measure of output price inflation, as described above.

Based on the common data inputs and similarities of weights the four IPI measures will largely coincide, and may show difference of ±0.1% or 0.2%. This was demonstrated by an exhibit that Enbridge Gas Distribution/Union Gas filed in the recent EB-2017-0306/-

0307 hearing, showing how GDP-IPI and the two-factor electricity distribution IPI tracked over time.[15]

Questions:

a) Please provide Hydro One SSM's, and, if necessary, PSE's, views on the rationale for the proposed 2-factor transmission-specific IPI in light of the existing alternatives.

b) Are there any other measures of inflation that Hydro One SSM and/or PSE considered as alternatives? If so, please identify.

D1-OEB Staff-58

Ref: Exhibit D, Tab 1, Schedule 1, Attachment 1, page 11-12, page 50-52
Exhibit A, Tab 2, Schedule 1, page 4
Rate Handbook, page 27

Preamble:

In sections 1.4 and 8 of PSE's evidence, PSE provides its conclusions and recommendations with respect to a Custom IR plan based on a revenue cap approach for Hydro One Networks Transmission. There is no discussion of Hydro One SSM or its proposed revenue cap plan.

Questions:

a) Does PSE believe that the plan parameters that it is recommending for Hydro One Networks Transmission would also hold for Hydro One SSM's proposed plan? Please explain your response.

b) PSE's recommendations are with respect to a Custom IR plan for Hydro One Networks Transmission. Hydro One SSM's proposed plan is for a revenue cap, in accordance with the Filing Requirements. However, Hydro One SSM's proposal is not for a Custom IR plan. For example, Hydro One SSM is proposing that the ICM be available to it on the second above noted reference ; the ICM is not available for a Custom IR plan in accordance with the Rate Handbook. Does

[15] Exhibit J5.2, EB-2017-0306/0307, May 23, 2018.

PSE recommend any changes to the plan design or parameters for Hydro One SSM since its proposed revenue cap plan is not a Custom IR as PSE has assessed and recommended for Hydro One Networks Transmission? Please explain your response.

D1-OEB Staff-59

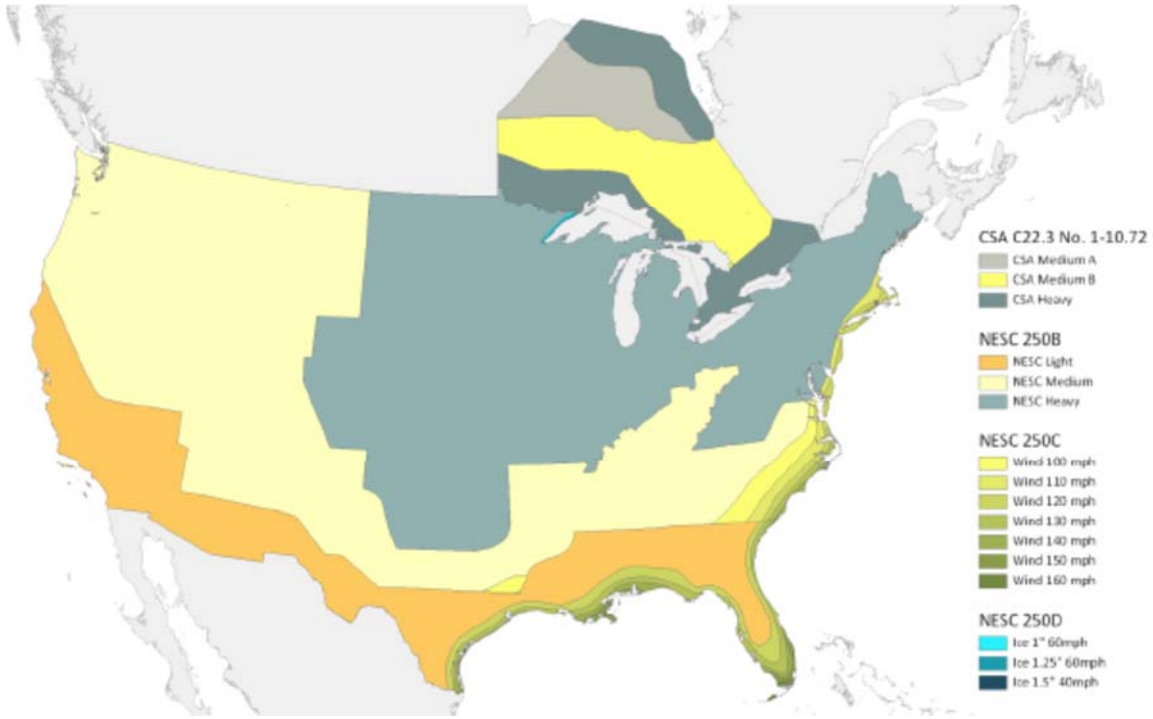
Ref: Exhibit D, Tab 1, Schedule 1, Attachment 1, Section 9, Appendix 1

Preamble:

In the above noted appendix, PSE describes its methodology for constructing a Transmission Loading Variable, which is intended to proxy the construction standard, and hence the cost, of a transmission line to withstand "a minimum combination of accumulated ice and wind based on local extreme historical weather conditions".

On the bottom of page 53 and most of page 54, PSE describes how CSA and NESC zones were mapped to the continental United States and Ontario, and provides the map replicated below:

Figure 8 CSA and NESC Loading Zones



PSE states the following: “Utility service territories were overlaid with the above loading zone map. GIS analysis revealed the percentage of a given utility’s service territory that fell into each loading zone.”

Questions:

With respect to the construction of the variable for Hydro One Networks Transmission:

a) Please confirm that Hydro One Networks Transmission has no transmission lines in service in the CSA Medium A zone shown in medium grey in the western and central portion of Northern Ontario.

b) With respect to the CSA Heavy zone in Northern Ontario running along the south shore of Hudson’s Bay and western shore of James Bay, please confirm that Hydro One Networks Transmission has one high voltage line running from Cochrane to Moosonee (at the southern tip of James Bay) and then for about 175 km north from Moosonee until it interconnects with the Five Nations Energy Inc. transmission line to supply the First Nations communities of Kasheschewan, Fort Albany and Attawapiskat, and the DeBeers mine near Attawapiskat.

c) OEB staff acknowledges that Hydro One Networks Transmission has some transmission lines in the yellow shaded area labelled CSA Medium B. These would primarily be in northeastern Ontario roughly corresponding around the northern part of Highway 11. However, it would appear that much of this zone is unserved by electricity, except in certain First Nations communities; these are not served through the IESO-controlled grid. Please identify the km. of lines, capacity and the approximate service area served in the CSA Medium B zone.

d) Please identify what PSE used as Hydro One Networks Transmission’s service territory for the purposes of constructing this variable. Did PSE take into account Hydro One’s service territory with actual transmission lines in its construction of this variable?

e) Do similar issues of service areas, unserved territory and mapping of zones to service area arise with respect to the U.S. utilities in the samples? If so, how has PSE addressed these?

More generally, with respect to the construction of this variable for Hydro One and U.S. utilities, on page 56 of its study, PSE states:

3. Loading values were calculated for each utility based on the area and loading percentages.
The area percentages derived from the zone map and utility service territory map were multiplied by loading value percentages from PLS-CADD analysis for each loading zone present in a given utility service territory. These values were summed to produce an overall loading value for each utility. This overall loading value represents (roughly) the minimum design/build structural strength required for the utility's service territory.

f) Was the utility service territory, both for Hydro One Networks and for U.S. utilities based on its distribution network service territory, or where each utility has high voltage transmission lines?

g) The location and capacity of transmission lines will depend on the location of supply (generation, inter-jurisdictional connection) and load (cities). Some forms of generation, particularly hydroelectric, will be located as dictated by nature (i.e., the location of rivers and falls which supply the "power" source for generators. Wind farms will be located where natural conditions (wind patterns, expanse of land) favour siting in certain areas. Other generation, particularly for coal- and natural gas-fired plants, may be located closer to load centers, as these are also often transportation hubs for the cities and communities that can also provide convenient delivery of the fuel (coal and gas) to supply the generators. Thus, transmission lines may be shorter or longer in distance, depending on the operating environment of that jurisdiction or service territory. Utilities, including Hydro One Networks and other Ontario distributors, may also build and operate sub-transmission lines as substitutes for high voltage transmission lines. Please explain how PSE satisfied itself that the "area percentages [, as] derived from the zone map and utility service territory map ... [and] … multiplied by loading value percentages from PLS-CADD analysis for each loading zone present in a given utility service territory … [and] summed to produce an overall loading value for each utility … [appropriately] represents (roughly) the minimum design/build structural strength required for the utility's service territory".

D1-OEB Staff-60

Ref: Exhibit D, Tab 1, Schedule 1, Attachment 1, Section 6

Preamble:

In its TFP analysis presented in its evidence, PSE calculated an average annual transmission industry TFP trend of -1.71% based on the sample of Hydro One Networks' and 53 U.S. utilities' transmission assets, operations, outputs, costs and revenues.

In section 6.1 of its evidence, PSE offers potential explanations for the observed negative TFP result, which can be summarized as follows:

1. Increase in the importance of outputs, such as reliability, safety, interconnectivity, power quality, connection of alternative generation sources such as wind and solar, which may be difficult to measure and for which growth and importance may differ from that of the main, traditional measures of kW and kWh.

2. Changes in operating environment characteristics, such as slower growth in developed western economies, aging population, natural conservation due to more energy efficient equipment and appliances by commercial and residential customers.

3. Related to 2 above, the aging of transmission assets which are due or overdue for replacement, and for which replacement costs and ongoing maintenance costs are increasing.

Questions:

a) With respect to bullet 1, please identify what other output measures PSE investigated for possible inclusion, and why PSE determined that these outputs be omitted from its analysis. For example, PSE incorporated reliability into its TFP and total cost benchmarking study filed in evidence in the current Hydro One Distribution application (EB-2017-0049), but has omitted it here.

b) With respect to bullet 3, PSE comments on increases in replacement costs and maintenance costs. Productivity trend indexes are the difference between the rate of change of outputs to the rate of change of inputs. "Inputs" and "outputs"

are expressed in dimensionless indices, and costs and revenues only enter into the weighting of input and output categories.

i. What evidence is PSE relying on in its statements that: "At several utilities throughout North America, a high proportion of capital infrastructure is now past its useful life and needs replacement"?

ii. It is accurate that TFP may show a decline when a firm shows major capital investment for growth and/or replacement of assets. However, in future years, productivity may recover as demand, including new demand, starts to utilize the capacity of the expanded or replaced system, and the firm typically requires less maintenance for newer assets than it did with original assets reaching or at end-of-life. In part for this, as well as to ensure that the TFP sample period covers at least one economic cycle, and other cyclical or random perturbations (e.g., weather), TFP is calculated on an extended period and not just based on short-term or single-year results. PSE's sample period from 2004 to 2016 would satisfy this, as it covers an economic downturn in the 2008 financial crisis, as well as the recovery starting in 2009 and continuing to date. However, declines in TFP due to major capital investment should be short term, and not persistent over a longer-term cycle of at least 12 years, in many cases. Please explain why PSE believes that reason 3 is persistent to the whole sample period and for the sample of U.S. transmitters and Hydro One Networks Transmission.

iii. In January 1998, Ontario, Québec and neighbouring U.S. states experienced a major ice storm. In southeastern Ontario, parts of Québec, and parts of several northeastern U.S. states, parts of the distribution and even transmission networks were destroyed, and required refurbishment or replacement. In southeastern Ontario, transmission lines north of Cornwall were toppled. The assets were rebuilt in the winter and spring of 1998. This is before PSE's sample period, but the replacement or rebuilt assets would show up in the capital stock formation for Hydro One Networks Transmission and for any similarly-affected U.S. utilities. With renewed assets, maintenance costs should be lower for these assets as they are in the earlier stages of their economic lives. It is not clear how material these are for any transmitter. For Ontario Hydro/Hydro One, the assets affected in Eastern Ontario were material, but still only a fraction of Ontario Hydro's/Hydro One's transmission network. Please confirm that rebuilding of assets following the 1998 Ice Storm should mitigate, over the

sample period from 2004 to 2016, declining productivity due to aging of assets (bullet 3) for those transmitters, including Hydro One Networks Transmission, impacted by the 1998 Ice Storm.

c) Please confirm that the -1.71% average annual TFP growth implies that transmission sector productivity has decreased by nearly 20% over the sample period from 2004 to 2016, as shown by the Industry TFP index declining from 1.000 in 2004 to 0.814 in 2016. Please confirm that, if this trend continued, by 2017, the index would have been 0.800, and 0.789 for 2018. Electricity generation and delivery is critical to our modern society for the health and growth of society. Transmission is one component, along with generation and distribution, but is an integral component of the electricity supply and delivery industry. Does PSE consider that a -1.71% TFP on a long-run base for the electricity transmission sector as being reasonable and sustainable? Please explain your answer.

d) In Table 8, PSE shows a -2.40% average annual TFP for the industry from 2010 to 2016. This is only for about half of the study range. However, while there are factors such as natural and targeted CDM and other technological and socioeconomic factors that may have altered and reduced electricity usage on a per capita basis, this was also a period of economic growth recovering from the 2008-9 financial crisis. In particular, economic growth in Canada, including Ontario, and the U.S. has been positive on a sustained basis for this period. Please provide PSE's basis for considering the -2.40% industry TFP reasonable and realistic for this period.

D1-Staff-61

Ref: Exhibit D, Tab 1, Schedule 1, Attachment 1

Preamble:

To date, electricity transmitters in Ontario have had their revenue requirements set through a cost of service approach that resets or rebases the revenue requirement. There is then, typically, a lag of several years before the next rebasing. The lag depends on each transmitter. Hydro One, as the largest transmitter in Ontario, has often rebased every other year, and more frequently than other, smaller transmitters.

Question:

a) For each of the U.S. utilities included in the TFP and total cost benchmarking sets (i.e., 57 in total), please identify the form of rate regulation that each is subject to, particularly with respect to transmission revenue requirements and rates to recover that revenue requirement.

D1-Staff-62

Ref: Exhibit A, Tab 2, Schedule 2, page 6
Exhibit A, Tab 3, Schedule 1, page 2
Exhibit D, Tab 1, Schedule 1, page 5
Exhibit D, Tab 1, Schedule 1, Attachment 1, page 6 (section 2.2.3) and page 50 (section 8.1)

Preamble:

As noted by Hydro One SSM in first above noted reference and the second above noted reference, the OEB denied the 2017 rate adjustment proposal in its Decision and Order EB-2016-0356, in part, on the absence of empirical evidence, such as benchmarking, to support the then proposed stretch factor of 0%. PSE's evidence in the four above noted reference provides the support in this application for the proposed revenue cap stretch factor of 0%, largely through PSE's total cost benchmarking analysis.

The stretch-factor is more formally termed a "consumer productivity dividend" as it represents the dividend of extra earnings that the firm has an opportunity to achieve, through improved performance possible by the lighter-handed regulatory oversight and the opportunity to achieve earnings in excess or what is approved, relative to the situation under traditional cost of service regulation. Thus, the move to incentive forms of regulation (often termed performance-based regulation or PBR outside of Ontario) from cost of service is one of the situations where a non-zero, positive stretch factor is often considered appropriate.

How long the stretch factor should persist is also a matter of analysis and, largely, informed judgement.

The OEB has a fairly lengthy history of forms of incentive regulation and PBR, going back nearly 20 years. Incentive regulation has long been applied to electricity and natural gas distribution, and more recently to OPG's regulated hydroelectric generation

assets in EB-2016-0152. Hydro One SSM's application is the first application for an incentive regulation rate adjustment mechanism for electricity transmission in Ontario.

To date, the OEB has approved or adopted a non-zero stretch-factor in all IR plans it has accepted. This has been both in the context of individual plans in utility-specific rate applications (e.g., OPG[16], plans for Enbridge Gas Distribution Inc.[17], Union Gas Limited[18], "Amalco"[19]), and in OEB Reports for generic electricity distribution plans[20].

The OEB stated the following in its EB-2017-0306/-0307 decision on the merger of Enbridge Gas Distribution and Union Gas (collectively, "Amalco"):[21]

> The applicants asserted that a stretch factor would not be appropriate as the applicants' productivity growth is in line with the economy as a whole and an economy-wide inflation is appropriate for setting rates during the deferred rebasing period. Further, the applicants expect to experience increasing cost pressures, depreciation increases, and interest rate increases that would put pressure on Amalco's earnings over the deferred rebasing period. The applicants relied on the expert evidence of NERA, which also concluded that a stretch factor of zero was appropriate. *NERA argued that stretch factors may be warranted in a transition period between cost-of-service and IRM regimes,* but not where IRM is firmly in place as it is with both Enbridge Gas and Union Gas.
>
> PEG argued that a stretch factor of 0.3% was appropriate. PEG noted that it was difficult to assess the appropriate stretch factor, as the stretch factor is ordinarily determined using benchmarking analysis, and the applicants had not conducted a thorough benchmarking analysis for this application. Based on the data that it had available, PEG concluded that Union Gas was perhaps slightly more efficient than average, and Enbridge Gas slightly less. Using the OEB's policies for the electricity sector as a guide, PEG therefore placed Amalco in the "middle" cohort, and recommended a corresponding stretch factor of 0.3%.

[16] EB-2016-0152
[17] Enbridge IRM
[18] Union Gas PBR
[19] EB-2017-0306/-0307
[20] RP-1999-0034, EB-2006-0089, EB-2008-0673, EB-2010-0373
[21] Decision and Order EB-2017-0306/-0307, August 30, 2018, pp. 26-28

Most interveners and OEB staff supported a stretch factor of at least 0.3%, and largely relied on the work of PEG. *OEB staff argued that the OEB's longstanding practice and policy was to apply a stretch factor, both in the electricity and gas sectors. OEB staff further noted that the Rate Handbook is also clear that both gas and electric utilities should have a stretch factor under a price cap plan. They also disagreed with NERA that a stretch factor cannot be employed beyond the initial transition to incentive regulation, and referred to the OEB's RRF which provides for a stretch factor in subsequent IRM plans.*
…

OEB Findings

The OEB finds that a stretch factor of 0.3% is appropriate during the deferred rebasing period.

In the absence of benchmarking evidence, the OEB is setting a stretch factor that is the mid-range of the stretch factors established for electricity distributors (0% to 0.6%). This is also the stretch factor approved in the decision for the hydroelectric generation business of Ontario Power Generation (OPG), where the OEB noted that it expects improved benchmarking going forward.[footnote omitted] The mid-range is the stretch factor for an average performer. Without benchmarking, there is no clear evidence on the performance of either Enbridge Gas or Union Gas. As stated by Dr. Lowry: "There is certainly no evidence that they are a bad performer, but no evidence that they're good".[footnote omitted]

A key objective of the OEB's incentive regulation is to drive improvements in cost efficiency. This would have been an expectation regardless of the amalgamation. The amalgamation provides additional opportunities to generate cost savings, and the applicants have proposed a number of initiatives for this purpose. The stretch factor provides incentive to find further efficiency improvements beyond those proposed. [Emphasis added]

OEB staff notes that Hydro One SSM has provided total cost benchmarking evidence in its application.

However, Hydro One SSM is essentially transitioning from traditional cost of service regulation.

Question:

a) Beyond the reason of negative sector TFP from PSE's TFP analysis, what other reasons does Hydro One SSM have for asserting that there should not be an expected positive (non-zero) stretch-factor, notwithstanding that the OEB has found positive (non-zero) stretch-factors appropriate for electricity and natural gas distributors and for OPG's prescribed hydroelectric assets?

D1-OEB staff-63

Ref: Exhibit D, Tab 1, Schedule 1, Attachment 1

Preamble:

In most econometric studies of TFP and cost benchmarking that have been filed by external experts for applicants in proceeding before the OEB, the evidence often contain a bibliography of research papers that the expert is aware of, read, and may be relying on to inform him or her on the soundness and appropriateness of the methodology and the results. PSE notes various reference papers in footnotes, but these are related generally to technical, methodological aspects.

This is the first study of electricity transmission TFP and total cost benchmarking study that has been filed before the OEB for consideration in a rate application.

Question:

a) Please provide a list of other electricity transmission TFP and/or total cost benchmarking studies of electricity transmission that PSE is aware of and has relied on for the methodology used in its evidence, and for assessing the reasonableness of its outcomes, as used in the analyses documented in its evidence. Where practicable, please provide links to each study or a copy of the study.

D1-OEB staff-64

Ref: Exhibit D, Tab 1, Schedule 1, Attachment 1, page 6 (footnote 3) and page 20 (section 3.1.2)

Preamble:

PSE notes that it has included more U.S. utilities in the total cost benchmarking sample, as it requires complete data for all years for each firm used in the TFP analysis, but can include utilities with missing years in the total cost benchmarking.

While PSE notes that it was unable to include suitable data from other Canadian utilities, Canadian utilities would also have data filed, generally on the public record, in rate applications in their respective provincial jurisdictions. In some provinces, the regulated utilities are integrated, with generation, transmission, and distribution operations together, while in others, there may be some separation (e.g., Alberta and Québec), similar to the situation in Ontario.

Question:

a) Did PSE attempt to seek out publicly available data for Canadian utilities from which transmission-related data was available or could be proxied, in order to augment its sample for the total cost benchmarking analysis? Please explain your response.

D1-OEB Staff-65

Ref: Exhibit D, Tab 1, Schedule 1, Attachment 1, Section 3.2 (Variables in the Benchmarking Model)

Questions:

With respect to the variables that PSE has used in its total cost benchmarking analysis comparing Hydro One Networks Transmission to a sample of U.S. electricity transmitters:

a) Please discuss the relative merits of the monthly peak demand variable on p. 401b of the FERC Form 1 vs. the monthly transmission system peak load on p. 400 that PSE used in its research. What criteria did you use for choosing one variable over the other?

b) Please note any known issues with the quality of reporting of the transmission peak load data. For example, why are the transmission peak demand values for Alabama Power and Gulf Power identical on table 6?

c) Is the limitation on the availability of earlier data for the transmission system peak on p. 400 of the Form 1 the sole reason for limiting the study to a 2004 start date? If not, please present other reasons.

d) Please discuss limitations of the available transmission substation data. Were these data obtained directly from the FERC or SNL? How were combined T&D stations and unknown/missing data handled? What percentage of substation MVa were either combined T&D or unknown?

e) Please provide any additional information and source data required to calculate the construction standards (loading) variable.

f) Please describe how the km of line variable for Hydro One Networks was calculated. Is it route-km, circuit-km, or another other measure of length?

g) Is the percentage of underground lines variable calculated using plant values or distance?

h) What other business condition variables were considered by PSE in the econometric research, and why were they rejected?

D1-OEB Staff-66

Ref: Exhibit D, Tab 1, Schedule 1, Attachment 1, Section 3.3 (Perpetual Inventory Capital Cost Model)

Questions:

With respect to Section 3.3 of PSE's evidence on its Perpetual inventory Capital Cost Model:

a) Which cities in the RSMeans *Heavy Construction Cost Data* were assigned to Hydro One? If multiple cities were used, how were the index values averaged?

b) What RSMeans cities were used for each sampled U.S. utility? If multiple cities were used, how were the index values averaged?

c) Which version of the city cost index (e.g. materials, installation, total) was used?

d) When calculating the depreciation rate, does the 1.65 declining balance parameter used refer to just equipment, just structures or both? What would be the appropriate declining balance parameter for each type of plant?

e) Why is a 1989 benchmark year adjustment used for the U.S. utilities?

D1-OEB Staff-67

Ref: Exhibit D, Tab 1, Schedule 1, Attachment 1, Section 4.3 (Input Quantity Index)

Questions:

With respect to the PSE's evidence on input quantity index construction:

a) Hydro One Networks does not Y-factor expenses for pensions and other benefits in its current rate-setting plans for distribution and transmission, and Hydro One SSM is not proposing any different treatment. Why then were these expenses excluded from the productivity study?

b) Please present productivity results that include pension and other benefit expenses.

c) Please provide evidence supporting the reasonableness of the assumed breakdown of OM&A expenses between labor and other OM&A expenses for the sampled U.S. utilities.

d) Why does PSE not use chain-weighting for the construction of the U.S. OM&A quantity indexing? Would this not produce more accurate results?

D1-OEB Staff-68

Ref: Exhibit D, Tab 1, Attachment 1, Section 6 (Productivity Results)

Questions:

With respect to PSE's TFP analysis of Hydro One Networks Transmission and U.S. electricity transmitters:

a) Please confirm that most U.S. power transmitters are regulated by the FERC using formula rate plans.

b) How do the performance incentives generated by formula rate plans differ from those of an IR mechanism such as Hydro One SSM has proposed? Can weak performance incentives be another cause of the negative productivity growth that you have reported?

c) Please provide all information in your possession about the importance of aging capital infrastructure as a reason for negative power transmission productivity growth. Has this been more important than system growth?

d) Please prepare tables decomposing the TFP growth rates of Hydro One Networks Transmission and the U.S. sample into O&M and capital productivity.

e) Please discuss the impact of conservation and other demand management programs on peak demand in Ontario. In your opinion, have conservation and other demand management efforts been more (or less) effective in containing maximum demand growth in Ontario versus the U.S.?

D1-OEB Staff-69

Ref: Exhibit D, Tab 1, Schedule 1, Attachment 1

Questions:

PEG would like to calculate an X factor using the Kahn Method and Hydro One Networks Transmission data. Please submit the following data required for this exercise for the years 2002-2017:

a) Total net plant value

b) Allowed and actual rate of return

c) Total depreciation and amortization expenses

d) Total OM&A expenses

e) Total taxes

f) km of transmission route, percentage km (and/or plant value) underground, ratcheted maximum peak demand, substation capacity, number of substations, MWh delivered (sales plus wheeling delivered), and number of customers

D1-OEB Staff-70

Ref: Exhibit D, Tab 1, Schedule 1, Attachment 1
Exhibit B, Tab 1, Schedule 1, Page 9

Table 1-2 HOSSM Electrical Assets Overview

System Components	Counts / Units
Transmission Lines (560 circuit km of overhead assets): Conductor and ancillary equipment supported by a mix of Wooden, Composite and Steel Structures.	
230 kV Lines	318 cct. km
115 kV Lines	232 cct. km
44 kV Lines*	11 cct. km
Transmission Stations (15 stations): 230/115 and 115/44 kV stations of various configurations, equipped with 1 to 3 power transformers and other standard operating and safety equipment.	
Station Transformers	20
Circuit Breakers	105
Switches	156
Protection Relays	338
Circuit Switchers	5
Shunt Reactors	3
Capacitor Banks	2

**HOSSM's 44 kV lines and equipment have been deemed by the OEB as serving transmission function under Section 84 of the Ontario Energy Board Act, 1998.*

Questions:

To better understand the Hydro One Networks transmission data that PSE has used in its TFP and total cost benchmarking analyses:

a) Please provide an analogous table for the entirety of Hydro One Networks Transmission.

b) Please also provide data on the length of the Company's 44 kV distribution lines.

c) Do any Hydro One Networks transmission lines operate with direct current?

d) Please provide maps of Hydro One Networks' transmission and distribution systems.

D1-OEB Staff-71

Ref: Exhibit D, Tab 1, Schedule 1, Attachment 1

Questions:

Please provide answers to the following general background questions about Hydro One Transmission:

a) How does the scope of transmission services provided by Hydro One Networks differ from those that are typically provided by U.S. transmitters?

b) Does Hydro One Networks or do the generators typically own the generation substations in Ontario? How does this differ from U.S. practice?

c) Does Hydro One Networks Transmission typically own and operate the substation when power is delivered directly to power distributors or large industrial customers? How does this differ from U.S. practice?

d) What rules does Hydro One Networks use to categorize its assets as transmission or distribution facilities?

e) Are lines of subtransmission voltage typically classified as transmission or distribution? Are these lines extensive?

f) What customer contributions are expected from generators, LDCs, and large industrial customers? How do these policies differ from those of U.S. transmitters?

g) Please provide data on the average age of transmission assets and the share of transmission assets that are close to replacement age.

h) On balance, does Hydro One Networks consider that its transmission system is older or younger than it was in 2004?

i) Does Hydro One Networks Transmission have in place an asset management program to contain the cost of capital expenditures? If so, when did it start?

j) Does Hydro One Networks participate in transmission reliability benchmarking studies undertaken by the Canadian Electricity Association or other organizations? If so, how does the Hydro One Networks' transmission reliability compare to its peers? Please provide details of pertinent studies.

k) What accounting standard does Hydro One Networks Transmission use? Did this change materially during the sample period? If yes, how were the cost data used in this study affected?

l) Please explain Hydro One Networks' capitalization policy. How does policy this differ from the typical policies of sampled U.S. transmitters?

D1-OEB Staff-72

Ref: PSE Working Papers

Preamble:

The OEB has determined that the PSE Working Papers will remain confidential. OEB staff and its consultant, Pacific Economics Group, have prepared the following questions in an appropriate format for the public record, but OEB staff understands that it may be necessary for the Applicant to request confidential treatment of all or part of its responses to these questions. It is not OEB staff's intention to have the Applicant place

information on the public record that should properly be treated as confidential as determined by the OEB in the Decision on Confidentiality and Procedural Order No. 2.

Questions:

a) Please provide a variable key and indicate which variables have been transformed e.g. by the natural log.

b) Please state each variable's source.

c) Please provide a brief explanation for why each company that filed a Form 1 and had transmission plant was excluded from each of the TFP and benchmarking samples.

d) Was any consideration given to excluding companies that have sizable transfers of plant between transmission and distribution classification?

e) Please list all *a priori* model assumptions and discuss their appropriateness. For example:

    a. Given the use of Driscoll-Kraay standard errors, it would appear PSE assumes the data to be spatially dependent. Please confirm this assumption. Please also confirm that this assumption was not made in the OEB's 4GIR[22] benchmarking methodology nor in PSE's benchmarking evidence[23] for Hydro One Distribution.

    b. A second order moving average model was selected for the structure of error autocorrelation. This implies that dependence in the error within panels drops off after 2 years. What was the reason for choosing 2 years?

f) The translog specification can be found in econometric output tables in the "Final Dataset and Tables Used" spreadsheet.

    a. Due to symmetry restrictions (i.e.$\beta_{ij} = \beta_{ji} \; \forall \; i \neq j$), is it correct to multiply the output interaction term (maxpeakm*totsnlm) by ½? If so, please state

[22] November 21, 2013, EB-2010-0379, *Report of the Board, Rate Setting Parameters and Benchmarking under the Renewed Regulatory Framework for Ontario's Electricity Distributors.*
[23] May 18, 2017. EB-2017-0049. *Econometric Benchmarking Study: Total Distribution Costs of Hydro One Network (Updated with 2016 Actual Hydro One Data and Projections to 2022).*

PSE's definition of the translog cost function using math language and derive the result with ½ on the interaction term.

g) Why was percent of transmission lines underground not logged in the cost function? If the presence of zeros in the variable prevented logging, was a percentage overhead variable considered?

h) It would appear that PSE used multiple programs to estimate the total cost models e.g. EViews and STATA. Please confirm that PSE used only STATA to estimate the model(s) submitted in the report[24] and whose output tables are shown in the "Econometric Model" tab of the "Final Dataset and Tables Used" spreadsheet.

   a. Please provide all non-proprietary[25] STATA code (or other program code) used to estimate the final total cost model.

i) Please explain the reasoning behind demeaning some variables but not others.

j) Please interpret the parameter estimate on LOG(TTOTSNLM) given that LOG(NSUB/TTOTSNL) is also in the model which is equivalent to adding and subtracting LOG(TTOTSNL).

k) How is "transmission" in transmission substation capacity variable defined? For example, perhaps by voltage or by individual company classification?

l) How is "transmission" in the number of transmission substations variable defined? For example, perhaps by voltage or by individual company classification?

m) Please confirm that substation data were only used for the years 2013-2016 in the model. If so, what is the interpretation of the parameter on average substation capacity in periods before 2013?

n) On page 31 of the PSE report[26], it says, "A statistical test of a cost efficiency hypothesis, based on the t-test, can also be constructed to identify whether the

[24] Filed 2018-07-26. EB-2018-0218. Exhibit D-1-1. Attachment 1. *Transmission Study for Hydro One Networks Inc.: Recommended CIR Parameters and Productivity Comparisons.*
[25] For example, the STATA program, xtscc, and commands therein are not proprietary to PSE.
[26] Filed 2018-07-26. EB-2018-0218. Exhibit D-1-1. Attachment 1. Transmission Study for Hydro One Networks Inc.: Recommended CIR Parameters and Productivity Comparisons.

cost performance identified…is statistically significantly different from average." Was the hypothesis test performed? If not, please perform the test and provide the results. If so, is the Company's cost performance "statistically significantly different from average?" Please also indicate the alpha level.

o) Please confirm there is no size-weighting in the cost benchmarking.

D2-Staff-73

Ref: Exhibit D, Tab 2, Schedule 1, Page 1
Exhibit D, Tab 2, Schedule 1, Page 6, Table 4 – Proposed 2019 UTRs

Preamble:

In the above-noted reference, Hydro One SSM stated the following:

> UTRs are established by aggregating the revenue requirement for the five transmitters and allocating the revenue requirements to the UTR Rate Pools: Network, Line Connection and Transformation Connection, based on a cost allocation study conducted by Hydro One on a regular basis. This study determines the proportionate allocation of the revenue requirement of the transmitters to the appropriate rate pools. The exception is B2M Limited Partnership whose costs are 100% allocated to the Network pool as the assets only provide Network services. The costs are then divided by forecast consumption (charge determinants) of each transmitter to establish the UTRs.

Questions:

a) Please describe the cost allocation study used by Hydro One SSM that was conducted by Hydro One.

b) Please describe in more detail how the cost allocation study determined the proportionate allocation of the revenue requirement of the transmitters to the appropriate rate pools, including the allocation of the Hydro One SSM proposed 2019 revenue requirement to the Network, Line Connection, and Transformation Connection rate pools, in Table 4 – Proposed 2019 UTRs.

c) Please indicate when the cost allocation study was completed and describe whether or not it has been tested in a prior Hydro One proceeding. Please explain.

E1-OEB Staff-74

Ref: Exhibit E, Tab 1, Schedule 2
Filing Requirements, page 11 (section 2.3.3), page 36 (section 2.10.1)

Questions:

a) Hydro One SSM has not provided non-consolidated audited financial statements of the utility. Please provide 2017 audited financial statements as required under the Filing Requirements.

b) Please provide a reconciliation between the audited financial statements and the regulatory financial results filed in the application. Reconciliation must include the separation of non-utility businesses.

c) Please provide a statement that the balances proposed for disposition before forecasted interest are consistent with the last Audited Financial Statements and provide explanations for any variances.

d) Hydro One SSM stated:

> HOSSM's cumulative in-service additions were less than the Board-approved amount of in-service additions for 2015 and 2016 of $19,228,700 by $927,203. Therefore, HOSSM has recorded a credit balance of $143,935, which is the calculated amount of revenue requirement owed to ratepayers to cover this shortfall.

Please provide 2015 and 2016 audited financial statements and reconcile in-service additions per the evidence provided to Hydro One SSM's audited financial statements for 2015 and 2016.

e) Please provide the calculation for Net Cumulative Asymmetrical Variance Account amounts recorded in 2015 and 2016 and reflected in the application.

E1-OEB Staff-75

Ref: Exhibit E, Tab 1, Schedule 1
Exhibit E, Tab 1, Schedule 2

Preamble:

The list of Account 1508 Sub-Accounts per Schedule 1 lists Infrastructure Investment as a separate Sub-Account. Schedule 2 lists this account as part of Infrastructure Investment, Green Energy Initiatives and Preliminary Planning Costs.

Question:

a) Please clarify whether Hydro One SSM has two separate Sub-accounts or just one.

E1-OEB Staff-76

Ref: Exhibit E, Tab 1, Schedule 2
Exhibit E, Tab 1, Schedule 4

Preamble:

On page 5, Hydro One SSM stated:

> In 2017, negotiations with Batchewana First Nations resulted in total costs incurred by HOSSM of $3,708,585. This cost is being tracked in this account.

Questions:

a) Where on the Continuity of Deferral and Variance Accounts is this amount reflected?

b) In which account is this amount reflected in Hydro One SSM's 3.1.1 reporting?

E1-OEB Staff-77

Ref: Exhibit E, Tab 1, Schedule 2
Exhibit E, Tab 1, Schedule 4

Preamble:

On page 5, Hydro One SSM stated:

> …HOSSM incurred a loss on disposal in both 2015 and 2016, net of proceeds from disposition. However, HOSSM is not seeking to disburse the balance of this account at this time as rate base will not be rebased as part of this application….

Questions:

a) How much loss on disposal was recorded in each year?

b) Where is it shown in this application?

c) In which account was it reported in 3.1.1 reporting, and how much for each year?

E1-OEB Staff-78

Ref: Exhibit E, Tab 1, Schedule 4, Tables 4 & 5
RRR section 3.1.1

Question:

a) Please reconcile the 2017 ending balances for each sub-account presented in the evidence to the 3.1.1 reporting as of December 31, 2017.

E1-OEB Staff-79

Ref: Exhibit E, Tab 1, Schedule 1

Preamble:

Hydro One SSM is proposing to dispose of a number of deferral and variance accounts for a total credit of $94,909. However, an annual recovery of approximately $0.8 million which was to be recovered to the end of 2017 has continued, and a credit balance of approximately $1 million has already built up in the account.

Question:

a) Please calculate the revenue requirement including the projected credit to December 31, 2018 in Account 1595 which was approved in 2015 with a 3-year recovery.