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

BY EMAIL

June 12, 2019

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
P.O. Box 2319
27th Floor
2300 Yonge Street
Toronto ON M4P 1E4

Dear Ms. Walli:

Re: **Toronto Hydro-Electric System Limited (Toronto Hydro)**
Application for 2020-2024 Rates
OEB Staff Interrogatories on PSE's Reply Report to PEG Evidence
Board File Number: EB-2018-0165

In accordance with the Procedural Order No. 8, please find attached OEB staff's interrogatories with respect to PSE's Reply Report to PEG Evidence, filed as Exhibit M3, in the above noted proceeding.

The interrogatories are labelled as Exhibit L3, and the numbering of the interrogatories begins at "198", following the numbering sequence of the interrogatories filed on Toronto Hydro's updated evidence (Exhibit U). OEB staff submits that the labelling of the interrogatory responses should be as:

Exhibit L3/Tab 1/Schedule <interrogatory #>

Toronto Hydro's responses to interrogatories are due by June 21, 2019.

Toronto Hydro and all intervenors have been copied on this filing.

Any questions relating to this letter should be directed to Keith Ritchie at keith.ritchie@oeb.ca or at 416-440-8124. The Board's toll-free number is 1-888-632-6273.

Yours truly,

Original Signed By

Keith C. Ritchie

Project Advisor – Application Policy and Climate Change

cc: All parties in EB-2018-0165

TORONTO HYDRO-ELECTRIC SYSTEM LIMITED

2020-2024 RATES

EB-2018-0165

OEB STAFF INTERROGATORIES ON PSE's Reply Report to PEG Evidence

June 12, 2019

L3-Staff-1 Ratcheted Peak Demand

Ref: PSE's Reply Report, p. 7

Preamble:

PSE states on page 7 that

> There are two output variables included in both PEG's and PSE's total cost model. These are: (1) the number of customers served, and (2) ratcheted peak demand … PEG's ratcheted peak demand variable takes the highest peak demand value for each U.S. utility, starting in 1995. However, for Toronto Hydro, PEG's variable takes the highest peak demand value, starting in 2002. This provides the U.S. utilities the advantage of seven more years to raise their ratcheted peak demand variable. PEG agreed that this inconsistency is present in their model (see PEG's response to M1-TH-018) but has not, to our knowledge, corrected for this inconsistency in the PEG Revised Report. PSE acknowledges that PEG (or any other consultant) is unable to identify the historical peak demands for Toronto Hydro prior to 2002. However, if PEG continues to include U.S. observations prior to 2002 in its sample (which PSE believes is unhelpful), PEG should be defining one of the most important variables in its model consistently. PEG's inconsistency biases the results against Toronto Hydro.

Toronto Hydro, in its present form, was established in the merging of six former municipal electric utilities under municipal restructuring, on January 1, 1998.

Questions:

a) Please confirm that PEG begins computing the ratcheted peak demand variable for the US utilities in 1995 rather than 2002 because it begins its US sample in 1995. How then could it "correct" for this inconsistency without losing the 1995-

2001 US data?

b) Please confirm that formal CDM programs for Toronto Hydro and other Ontario distributors, under guidance from the Ontario Government, did not begin until 2005. From 1995 to 2004, Toronto Hydro and the predecessor utilities experienced a rising demand trend (e.g., more than 2% average annual customer growth). If this is the case, please explain why a ratcheted peak demand established in 2002 would not be reasonably applicable to the later years of the sample period for the cost benchmarking?

Exhibit L3

L3-Staff-2 Asset Price Index Levelization

Ref: PSE's Reply Report, pp. 6-7

Preamble:

On pages 6-7 of the report, PSE states that:

> In PEG's original study, Toronto Hydro's levelization occurred in 2012, whereas the rest of the sample was levelized in 2008. In the interrogatory M1-TH-026 (d) we pointed out this error, and PEG then acknowledged this error and its inconsistency with the rest of the sample in their response. Accordingly, PEG revised its results after correcting for this error in parts (e) and (f) of the same interrogatory. Part (e) of the response used the older 2008 capital levelization, part (f) used the newer 2012 capital levelization year. Correcting the inconsistency by using the older 2008 levelization year improved Toronto Hydro's total cost benchmarking score by about 5% relative to PEG's original report. Correcting the inconsistency with the newer 2012 levelization year improved the company's score by about 9% relative to the total cost results reported in the initial PEG Report.

Questions:

a) Did PSE use the *RSMeans Heavy Construction Cost* book from 2012 as the source of the City Cost Indexes it used to levelize its asset price indexes? If not, what was the source of these data?

b) For whichever edition of the RSMeans book that PSE used, please provide a copy of the two-page introduction to the City Cost Indexes titled "How to Use the City Cost Indexes." Does the introduction contain the year of data used in the construction of the indexes? For example, PEG's 2010 edition of this series reads "Index figures for both material and installation are based on 30 major city average of 100 and represent the cost relationship as of July 1, 2008." If not available, what was the year of the data underlying the City Cost Indexes that PSE used in the study?

c) According to PSE's reasoning, would 2015 be an even better year than 2012 to levelize the asset price indexes? If not, why not?

L3-Staff-3 Asset Price Index Trend

Ref: PSE's Reply Report, p. 14
Figure L3-Staff-3

Preamble:

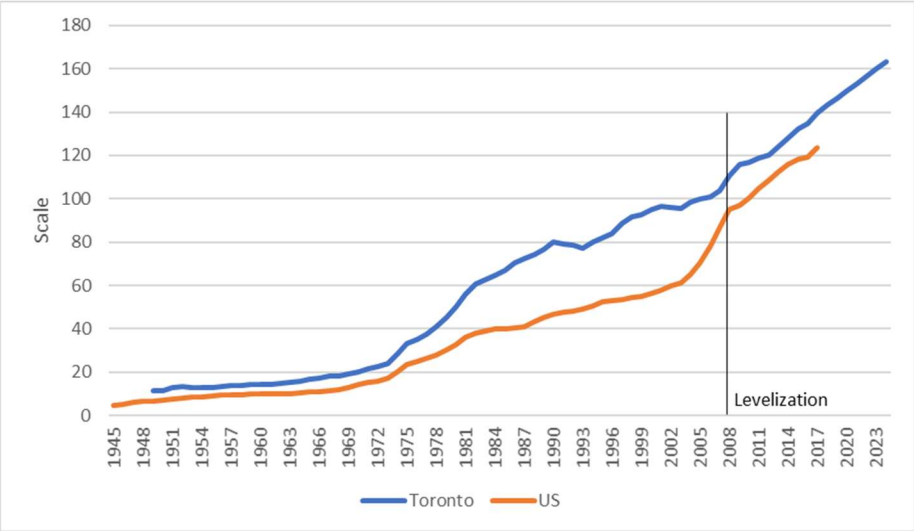
PSE states on page 14 of its report that:

> PEG's chosen index includes natural gas distribution, water and sewer, and electric generation, transmission, and distribution. We also note in Section 2.1.3 that PEG's choice for Toronto Hydro's price index is inconsistent with the rest of the sample, because the rest of PEG's sample is using an index specific to the electric distribution sector. This inconsistency produces the unreasonable result in the PEG dataset that Toronto Hydro has a capital price inflation rate from 2005 to 2017 of 0.5%, versus much higher growth rates for the rest of the sample. This improper assumption means Toronto Hydro has, by far, the lowest capital price inflation in PEG's entire dataset. This is simply unreasonable, especially given the City of Toronto's brisk construction growth during the sample period.
>
> The Handy-Whitman Indexes ("HWI") used by PSE for all utilities, including Toronto Hydro, are specific to the electric distribution sector, and are a better depiction of the inflationary pressures of an electric distributor like Toronto Hydro. Toronto Hydro purchases assets in a global market, and electric distribution has specific commodities that are more relevant to electric distribution than other types of utilities, such as water and sewer or gas distribution. For example,

electric distributors require a higher input of copper than most other utility sectors. The asset inflation index should reflect that reality.

PEG prepared the following figure to aid in the verification of the above statements.

Figure L3-Staff-3
Comparing the Asset Price Levels of Toronto Hydro and Sampled US Utilities



Questions:

a) Please confirm that the goal of the statistical cost research in this proceeding is to benchmark the recent and projected future cost *levels* of Toronto Hydro and not the cost or productivity *trends* of the utility or sector.

b) Please confirm that, in such a cost benchmarking study, the chief consideration in choosing asset price indexes is the reasonableness of price *levels* and not their *trends*.

c) Please confirm that, since 2008 is the year that PEG chose to levelize the asset price indexes, the slower growth in PEG's asset price index for Toronto Hydro from 2006 to 2008 has the consequence of making the *level of* Toronto Hydro's asset prices considerably *higher* than the norm for sampled US utilities in the years before 2008. Insofar as this biases PEG's benchmarking results, doesn't the bias actually *favour* Toronto Hydro? If not, why not?

d) Please confirm that, in seeking to illustrate the importance of PEG's choice of an asset price index for Toronto Hydro, PSE cited the trend in the resultant *capital*

price index, which includes a capital gains term and is therefore very sensitive to the choice of the sample period. Doesn't capital cost rise and fall with capital gains as well?

e) Please provide your understanding of how the weights on the Handy Whitman Construction Cost Indexes have changed over time (e.g., in what years were the weights set or reset?). To the extent that weights are reset infrequently, won't this tend to *overstate* the growth in distribution construction costs?

f) Has the mix of Toronto Hydro's capital expenditures on copper and aluminum conductors changed substantially since 1975?

L3-Staff-4 Imputations in Ontario Capital Cost Data

Ref: PSE's Reply Report, p. 13
M1-TH-032

Preamble:

PSE states on page 13 of its report that:

> For PEG to go back to the 1989 capital benchmark year for Toronto Hydro, it required PEG to make certain assumptions and imputations on the capital addition series from 1989 to 2002, since directly reported data was not available for all years … PEG's imputations produce an implausible hypothetical result for Toronto Hydro in 1996, where PEG's imputations resulted in an estimate of Toronto Hydro having plant additions of over $450 million. This was quadruple the typical number in the 1990s, and was not exceeded in any year until 2014.

PEG stated the following in response to M1-TH-032

> The cited value does not appear to be implausible to PEG. Two years prior there was a value that was very low and on balance the two average to a more typical value. The early 1990s were recession years and it is not unreasonable that capex would be low. By the mid-1990s, a renewed boom in construction was happening in Toronto. The source of the increase in the additions was due to a large increase in the plant balance for account 75 (using the pre-Accounting Price Handbook/Reporting and Recordkeeping Requirements account numbers) which is Distribution Lines and Feeders – Underground. Subsequent values in

this account remained at the higher levels as did the corresponding successor accounts used currently.

Questions:

a) Please confirm that PSE used a 1989 benchmark year for capital quantity indexes of Ontario utilities in several public studies, including its previous benchmarking study for Toronto Hydro filed in EB-2014-0116.

b) Given PEG's response in M1-TH-032 on the 1996 capital additions, please explain why PSE still considers this an "implausible hypothetical result".

c) Please confirm that PSE used the same value of over $450 million in its 2014 study for Toronto Hydro.

L3-Staff-5 Quadratic and Interaction Terms for Business Condition Variables

Ref: PSE's Reply Report, pages 9, 11-12
Exhibit D-1-1 Attachment 1

Preamble:

PSE states on p. 9 of its report that

> PEG's model does not contain quadratic business condition variables, including two PEG states are significant cost drivers.

PSE states on p. 12 of its report that

> PEG chose not to include any of the quadratic variables despite finding statistical evidence that two of them are important and statistically significant cost drivers. Not including these variables creates bias in PEG's model—omitted variable bias. PEG says in their response that they did not include the variables "to avoid the possibility of overfitting the model." However, they are underfitting the model, and this impacts the accuracy of their reported results. If PEG were to include the two quadratic terms they found to be significant, their results for Toronto Hydro would materially improve.

Questions:

a) Please confirm that it is generally difficult to predict the value for the quadratic term of a business condition (aka Z) variable.

b) Please confirm that it would have been equally reasonable, *ex ante,* for PSE to

- interact the trend variable with the other Z variables in its cost model
- interact the Z variables with the scale variables
- include a quadratic term for the trend variable.

c) If all possible quadratic and interaction terms for Z variables are included in a cost model, isn't it likely that the model will produce an implausibly large dispersion of performance results?

d) Given the numerous possible quadratic and interaction terms that are possible with Z variables, how can the OEB establish that the inclusion of a particular subset of such terms are not chosen to produce favorable results for a client?

e) Where in PEG's evidence is it revealed that two quadratic business condition variables were statistically significant in PEG's modelling research?

L3-Staff-6 Sample Period

Ref: PSE's Reply Report, p. 9
1B-STAFF-45

Preamble:

PSE states on page 9 of its report that

> **PEG's sample period starts in 1995.** PEG begins their U.S. sample period in 1995. PSE began the U.S. sample in 2002. Beyond the inconsistency impact this decision had on PEG's ratcheted peak demand variable, expanding an already large sample that already contained over 1,300 observations to include the years of 1995 to 2001 is unnecessary and inserts observations that are less reflective of the current-day industry. The benchmarking results are mainly used to examine Toronto Hydro's recent and projected cost performance, and including observations from the 1990s detracts from that objective. Technology advances, regulatory requirements, and reliability and service quality expectations have evolved throughout the years. A more contemporary sample is more reflective of the current day reality within the industry.

PSE states in Interrogatory Request Response 1B-STAFF-45, pages 3-4, that:

> The strength of econometric benchmarking method is that heterogeneity or diversity in the characteristics of the utilities can be accommodated and adjusted for through the econometric process. Heterogeneity or diversity should be helpful to the model, rather than a detriment.

Questions:

a) Please confirm that the time trend parameter of a cost model captures the net effect on the costs of sampled utilities of changes in technology and other external business conditions over the years of the sample period.

b) Does PSE's statement on the heterogeneity of data being helpful in model estimation apply only across utilities and not across time? For example, wouldn't zero values for the AMI variable before 2002 help to sharpen the precision of its parameter estimate?

c) Please confirm that consistent estimators are unbiased only as the sample size approaches infinity. Accordingly, a longer sample period that increases the size of the sample increases the precision of model parameter estimates.

d) Did PSE conduct a statistical test (e.g., a Chow test) for a structural break in the data that would substantiate their contention that US data before 2002 should not be used in cost model development?

L3-Staff-7 C-Factor Methodology

Ref: PSE's Reply Report, p. 17

Preamble:

PSE states on page 17 of its report that

> Our understanding is that any ratemaking regulatory reforms would normally be considered by the Board at a generic proceeding, with stakeholder involvement and proper consideration of any proposals.

Questions:

a) Please confirm that the current form of Custom IR used by Toronto Hydro, and including a Custom Capital Factor was approved in Toronto Hydro's previous

Custom IR case (EB-2014-0116), and not through a generic consultative process.

b) Please confirm that a similar Custom Capital Factor was proposed by Hydro One Networks and, subsequently, approved with changes by the OEB in another rate application (EB-2017-0049)?

c) Does PSE believe that THESL's form of Custom IR, including the C-factor, should not be reconsidered in this proceeding? If so, please provide PSE's reasons for this view.

L3-Staff-8 Stretch Factor

Ref: PSE's Reply Report, pp. 17-18

Preamble:

PSE states on pages 17-18 of its Reply Report that:

> PEG's commentary on pp.62-63 of their report states that customers would never receive the full benefit of the industry's productivity trend in the long run. This statement ignores the reality of Ontario incentive regulation containing a stretch factor. On average, utilities must exceed the industry's long run productivity by 0.30% due to the stretch factor. A higher cost utility will need to exceed the industry's MFP by even more on an annual basis. While numbers like 0.30% might not appear large at first, this expectation of exceeding the industry's MFP is compounded annually and results in a considerable cost savings to ratepayers over time.
>
> …
>
> PEG correctly states that the stretch factors themselves already provide a "materiality threshold and dead zone for capital revenue". Not only does the stretch factor already serve as a materiality threshold for capital revenue in the company's Custom IR proposal but the presence of the C factor also creates a larger stretch factor and reduced revenue on the OM&A portion of the revenue requirement. [footnote omitted] Further, the increased stretch factor due to the proposed capital spending will not only increase the stretch factor in this plan but will tend to increase it in future plans as well as the capital cost portion of the measured total costs will continue to include the depreciated portion of the additional capex spending for decades to come.

All of this to say, stretch factors do contain substantial incentive properties. These properties are eliminated or diminished if the stretch factors are not formulaic and mechanistic but become arbitrary. Stretch factors will also have long-lasting effects on the company's revenues and C factors will tend to raise stretch factors both in the current and subsequent plans. This will influence the allowed revenue requirement for years to come. The productivity expectation on the company in future plans will be higher due to the current proposed C factor, again, assuming stretch factors remain formulaic.

Questions:

a) Please provide any and all citations from past Ontario Energy Board decisions where the Board states that the goal of the stretch factor is to ensure that customers receive the benefit of the industry productivity trend rather than to receive a benefit that is superior to the industry trend.

b) If this is an additional role of stretch factors, are they properly calibrated at present?

c) Please explain how the C-factor, as posed by Toronto Hydro in this application, and as approved by the OEB in Toronto Hydro's previous Custom IR application (EB-2014-0116) raises the stretch factor in current and subsequent plans.