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December 22, 2014

via RESS – signed original to follow by courier

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
PO Box 2319
2300 Yonge Street, 27th floor
Toronto, ON M4P 1E4

Dear Ms. Walli:

Re: Toronto Hydro-Electric System Limited ("Toronto Hydro")
Custom Incentive Rate-setting Application for 2015-2019 Electricity Distribution Rates and Charges (the "Application") – Interrogatories with respect to the Pacific Economics Group ("PEG") December 8, 2014 Report.

Toronto Hydro writes to the Ontario Energy Board ("OEB") in respect of the above-noted matter.

Pursuant to the OEB's PO#3 of December 2, 2014, Toronto Hydro submits the attached interrogatories with respect to the December 8, 2014 Pacific Economics Group ("PEG") Report entitled "*Toronto Hydro Electric System Limited Custom IR Application and PSE Report Econometric Benchmarking of Toronto Hydro's Historical and Projected Total Cost and Reliability Levels*."

Please do not hesitate to contact me if you have any questions.

Yours truly,

[original signed by]

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:DC\db

cc: Charles Keizer and Crawford Smith
Maureen Helt
Ted Antonopoulos
Martin Davies
Intervenors of Record for EB-2014-0116

EB-2014-0116

IN THE MATTER OF the *Ontario Energy Board Act 1998*, Schedule B to the *Energy Competition Act*, 1998, S.O. 1998, c.15;

AND IN THE MATTER OF an Application by Toronto Hydro-Electric System Limited for an Order or Orders approving just and reasonable distribution rates and other service charges for the distribution of electricity, effective May 1, 2015.

INTERROGATORIES FROM
TORONTO HYDRO-ELECTRIC SYSTEM LIMITED

Note: All references to "the PEG Report" or "PEG's Report" in these interrogatories correspond to the December 8, 2014 Report entitled "*Toronto Hydro Electric System Limited Custom IR Application and PSE Report Econometric Benchmarking of Toronto Hydro's Historical and Projected Total Cost and Reliability Levels*," as updated by way of the OEB Staff letter of December 17, 2014.

1. Please confirm that the cost performance scores on page 1 of the PEG Report are calculated by taking the percentage difference between the predicted total costs and the actual total costs.

2. (a) Did PEG conduct any other statistical tests that would reveal the causes of THESL's higher or lower total cost performance besides testing the null hypothesis that the utility's costs were different than the benchmark level?

   (b) If yes, please provide the results of the tests and the underlying calculations.

3. Please state whether a 10-year old pole would add more or less to PSE's measure of capital costs compared with a two-year old pole, assuming the original costs for the pole were the same?

4. *Reference: PEG Report, p.7, paragraph 1: "PSE and PEG agree that THESL's SAIFI is far greater than what is expected for a utility operating under its business conditions. PEG's analysis also indicates that THESL is an average SAIDI performer. Since THESL displays poor cost performance and average to poor reliability performance, PEG believes a stretch factor in excess of 0.6% may even be appropriate for THESL.*"

   a) Please confirm that THESL's cost performance, as evaluated by PEG, is statistically inferior only for the forecasted time period, but statistically average during the historic 2010-2012 time period.

b) Please confirm that PEG's statements regarding THESL's reliability levels are based on the historic period of 2009-2011 only and not on projected data during the Custom IR period.

5. *Reference: PEG Report, p. 12, paragraph 2: "PSE's conclusion that 'the company's capital was in need of investment' is simply speculation; this conclusion does not follow logically or empirically from the benchmarking studies presented.*"

Please provide a citation from the PSE Report, which includes the entire context of the statement where PSE concluded that "the company's capital was in need of investment".

6. *Reference: PEG Report, p.3, paragraph 2.*

a) Please define how PEG is using the term "cost management".

b) Please state whether in PEG's view, a utility's cost management, as defined by PEG in part (a), may affect its reliability indexes?

i. If yes, how?
ii. If no, why not?

7. Please state whether in PEG's view, a lower overall total cost performance can have a negative impact on a company's reliability indexes?

8. *Reference: PEG Report, p. 14, paragraph "…PSE finds THESL's SAIFI to be reasonable because it is declining under Custom IR, even though SAIFI exceeds its benchmark level in every year of the plan*."

Please provide a citation from the PSE Report, including the entire context, where PSE states that it "finds THESL's SAIFI to be reasonable because it is declining under Custom IR".

9. *Reference: PEG Report, p.17, paragraph 5: "Figure Two illustrates why 'converging towards benchmark expectations' is not a reasonable regulatory objective*

Please specify the basis for PEG's conclusion that converging towards THESL's SAIFI benchmark expectation is not a reasonable regulatory objective?

10. Please state whether the capital costs per Kilometer of undergrounding power lines are constant for all utilities, or whether they would vary based on service territory conditions such as terrain or urbanization?

11. a) Please provide a price (or price range) for typical construction costs of one kilometer of direct buried underground cable line in a rural, agricultural area.

b) Please provide a price (or price range) for typical construction costs of one kilometer of underground line using encased concrete conduit in a highly urban area.

c) Please provide a price (or price range) for typical construction costs of one kilometer of an overhead line in a rural, agricultural area.

d) Please provide a price (or price range) for typical construction costs of one kilometer of an overhead line in a suburban area?

e) Please provide a price (or price range) for typical construction costs of one kilometer of an overhead line in a highly urban area?

12. Please provide PEG's views on installation/construction cost comparisons for the following asset categories:

a) Which is likely to cost more: installing 1 kilometer of direct buried cable in a rural area, or installing 1 kilometer of the equivalent cable in a highly urban area?

b) Please rank the following three asset categories from most to least expensive:

i. installing 1 km of overhead line in a rural area;

ii. installing 1 kilometer of equivalent overhead line in a suburban area; or

iii. installing 1 km of equivalent overhead line in a highly urban area?

13. Does PEG believe the costs of undergrounding one Kilometer of line is typically the same as rural areas as it is for highly urban areas? If yes, why? If no, why not?

14. a) Please provide all natural gas distribution benchmarking reports prepared by PEG in the last 10 years that contain urban density variables in their analysis.

b) Has PEG performed any electric or natural gas distribution benchmarking in the last ten years that includes a variable to distinguish between the costs of rural and urban distribution? If so, please provide copies of the resulting reports.

15. Please provide in Excel format the underlying data and calculations for the variable "MVA of transformer capacity for stations with primary voltage levels at or above 50 kV" used in PEG's Report.

16. Has PEG included a first-order variable in an econometric total cost model that had a p-value of 0.4 or above in any testimony filed in the past ten years? If yes, please provide the study reports.

17. In light of the changes to the sign, coefficient and p-value of the MVA of Transformer Capacity variable in the updated PEG Report, as communicated by way of the OEB Staff letter from December 17, 2014, does PEG believe that it needs to update its

argumentation and/or conclusions as to the appropriateness of using this variable in PEG's model?

18. The high voltage variable added by PEG into THESL's total cost benchmarking calculation has a p-value of 0.6522. Please provide a plain language explanation of what this number means relative to the null hypothesis that its true value is zero.

19. For PSE's original U.S. sample of 85 utilities, please list the utilities that have fully deployed smart meters (fully deployed defined by at least 95% of a utility's customers having a smart meter) by the end of the sample period in 2012.

20. a) Please confirm that the U.S utilities in PSE's sample include contributions in aid of construction (CIAC) in their FERC Form 1 data Reporting.

    b) If PEG provides confirmation in its answer to part (a), please indicate which FERC account number the CIAC is this placed in and provide documentation showing that CIAC meets the definition for inclusion in the indicated FERC account

    c) Please calculate and provide in Excel format the costs attributed to THESL's CIAC contributions that PEG added to the utility's total cost calculation for years 2002 through 2019.

21. Please calculate and provide in Excel format the costs attributed to smart meter expenses added to THESL's total cost definition by PEG for the years 2002 through 2019.

22. Please calculate and provide in Excel format any other cost additions PEG made to THESL's total cost definition for the years 2002 through 2019.

23. In its Report, PEG states that it subtracted the amounts related to uncollectible accounts from the U.S. data to make it comparable to the Ontario data (which excluded bad debt expenses).

    a) While performing these adjustments, did PEG also subtract the bad debt expenses included in the forecasted THESL data for the years 2013 through 2019? If not, why not?

    b) Please confirm whether the uncollectible amount costs subtracted from the U.S. utilities' total cost definitions include only the amounts associated with uncollected revenues themselves, and not the operating costs of arrears management and collection activities.

24. In its Report, PEG states that it subtracted all of the customer service and information expenses from the U.S. data to adjust for the fact that the Ontario data excluded CDM expenses.

a) Did PEG also subtract all of the corresponding customer service and information expenses not related to CDM from both the historical and/or the forecasted THESL cost data in its analysis? If not, why not?

b) Is PEG concerned that excluding the entire customer service and information expense category for the U.S. utilities might eliminate the data that corresponds to cost components included in THESL's total cost calculation, thus making the data for the US sample not comparable to THESL?

c) Why did PEG not simply add THESL's CDM expenses into the total cost definition, rather than excluding the entirety of the customer service and information expenses for 85 U.S. utilities?

d) On page 25 of its Report, PEG states that it excluded customer service and information expenses "(for which CDM often constitutes the largest expense)." Please provide the data and any documentation to support the claim that the CDM costs often constitute the largest expense item in the customer service expenses and information expenses category.

e) Please provide an Excel table showing the percent of CDM expenses in customer service and information expenses for each U.S. utility included in the PSE study sample for years 2002 through 2012 inclusively.

f) Please provide the full names and definitions of eligible cost items for all FERC accounts and sub-accounts classified collectively as Customer Service and Informational Expenses.

g) Please provide documentation showing that U.S. utilities should record, or routinely do record, CDM (DSM) expenses in the customer service and information cost category on FERC Form 1.

25. In its Report, PEG eliminated seven utilities from PSE's original dataset due to the fact that these utilities have undergone mergers during the 2002-2012 period, which, in PEG's contention, can impact the utilities' cost data if not properly controlled for the impact of mergers.

a) Did PEG undertake a statistical analysis showing how mergers impacted the 2002-2012 cost data for the excluded utilities? If yes, please provide the data, results, and calculations in Excel format.

b) *Reference: PEG Report, p.23, paragraph 3: "Mergers can impact a utility's reported cost data."* Please confirm that all of the excluded merged companies have their cost data impacted by the mergers. If not all merged companies had their costs data impacted by mergers, please list the companies whose data was so impacted.

c) Please provide the data and calculations used for each merger that enabled PEG to determine that the merger impacted the utility's reported cost data.

d) PSE notes that PEG's report did not include the list of U.S. utilities used in the final sample. Please list the utilities that PEG excluded on the basis they underwent a merger during the 2002-2012 time period. Please also provide the list of the utilities included in the final sample used to formulate Table Three on p. 32 of the PEG Report.

e) Has Dr. Kaufmann or PEG used in any previous study the utilities excluded from PSE's sample on the basis of having undergone mergers in 2002-2012? If so, please provide copies of those reports or testimony.

26. *Reference: PEG Report, p. 23, paragraph 5: "Appropriately controlling for mergers is often critical for obtaining accurate inferences on utilities' cost performance*".

a) Please discuss PEG's understanding of an appropriate way of controlling for utility mergers.

b) Did PEG include any business condition variables specific to mergers in its Ontario econometric total cost model for the 4th Generation IR study?

c) Please list all Ontario utilities that underwent mergers during the 2002-2012 period?

27. *Reference: PEG Report, p. 31, paragraph 1. PEG states that "approximately 67.4% of the share of transformer stations for U.S. utilities takes place at a primary voltage level of 50 kVA or above*".

a) Please state whether 50 kVA is equivalent to 50 kV

b) Please provide in Excel format the underlying data and calculations that enabled PEG to calculate the 67.4% number.

28. a) Please explain PEG's methodology for calculating the MVA capacity of substations with primary voltage of 50 kVA for THESL.

b) Are all of the station costs for THESL excluded in the total cost definition if the primary voltage exceeds 50 kVA?

29. a) Please confirm that all of the substations PEG used in its "greater than 50 kVA" variable construction are classified as Distribution Substations.

b) Please provide the details for stations comprising the "greater than 50 kVA" variable for each utility in the sample, including the functional classification of distribution or transmission, and the substations included in the variable calculation.

30. a) Please state whether the urban core variable as constructed and utilized in PSE's U.S. total cost econometric benchmarking model, was statistically significant in that model.

b) What was the p-value associated with the variable?

c) Please re-run and provide results for PEG's total cost model shown on Table Three of the PEG Report with the exact same variables, but with PSE's urban core variable included.

d) Is the urban variable statistically significant at the 90% confidence level? At the 95% confidence level?

31. Please confirm that PEG's model in Table Three includes neither a percent undergrounding nor an urban core variable.

32. *Reference: PEG Report, p. 29, paragraph 1: "Since PSE's model already includes a percent of plant underground variable, including an 'urban core dummy' would be redundant at best.*"

Please confirm that PEG has excluded both the Urban Core and the Undergrounding variables from the model's final run. Please provide the rationale for excluding both variables.

33. a) Does the final PEG model (Table Three) control for the cost impacts of undergrounding? If yes, please explain.

b) Does the final PEG model (Table Three) control for the added costs of serving urban environments? If yes, please explain.

c) Does the final PEG model (Table Three) control for the added costs of serving less dense rural environments? If yes, please explain.

34. *Reference: PEG Report, p. 31, paragraph 3: "The third and final step of PEG's updated analysis therefore reflects corrections to the THESL and US data, as well as changes in business conditions to control for US utilities' costs of owning HV transformation assets and to eliminate the urban core dummy.*"

a) Was the percent underground variable also eliminated in this third and final step? If so, please provide the reference in the PEG report where it states that this variable was eliminated from PSE's model.

b) Did PEG make any other changes in the model that are not clearly noted in the PEG report?

35. a) Is a variable for customer density included in PEG's final model found in Table Three?

b) If not, is PEG concerned that with no customer density variable, no urban variable, and no percent underground variable, PEG's model does not properly distinguish utilities serving rural, suburban, or urban environments?

36. *Reference: Appendix to PSE Benchmarking study (Exhibit 2B, Tab 2, Schedule 2, Appendix B).*

a. Does PEG agree or disagree with PSE's findings laid out in its engineering study submitted as an Appendix to its benchmarking report, which shows the different costs of serving environments with different customer densities (rural, suburban, urban)?
b. Please provide a detailed explanation for your answer to part a.

37. a) Has PEG produced a total cost econometric model for electric distribution anytime in the past ten years that included a customer density variable, line length, or percent undergrounding variable?

b) If the answer to part (a) is yes, please explain why PEG included such a variable or variables and provide the report(s).

38. a) Does PEG's Ontario model developed for 4th Generation IR have variables for either customer density, line length, or percent undergrounding?

b) If the answer to part (a) is yes, please explain why PEG chose to include such a variable or variables.

39. *Reference: PEG Report, p. 30, paragraph 2: "In July 2013, WPS was allowed to increase rates by approximately 4.36% to recover the costs of the SMRP."*

a) In the footnote 17 for the above-reference passage, PEG notes that the 4.36% increase was for the bundled rates. What was the rate increase on just the distribution portion of WPS's request?

b) Was the WPS rate request referenced by PEG on page 30 primarily driven by WPS increasing capital spending to improve reliability?

c) Did Dr. Kaufmann testify in this case?

d) If yes, by which party was he retained?

e) Please provide Dr. Kaufmann's testimony and transcripts in this case.

f) In the WPS rate case referred to by PEG on page 30, did Dr. Kaufmann find the increased rates were in the interests of customers? If yes, on what basis?

40. a) Please provide all of the analysis and calculations used to derive Dr. Kaufmann's results in the WPS rate case referred to by PEG on page 30 of its Report.

b) In this WPS case, did WPS request increased capital funding for a five-year period?

c) Was this added funding primarily for the purpose of improving the utility's reliability?

d) Did WPS gain approval for the 5-year SMRP? Please describe the outcome of the case.

41. a) In his oral or written testimony in the above-referenced WPS case, did Dr. Kaufmann ever suggest in written testimony that WPS could improve reliability without increasing costs?

b) Did Dr. Kaufmann ever suggest in the case that customers would be better off if the 5-year period was instead changed to a longer time period?

42. a) Based on WPS estimates in the case discussed in the previous question, how much would the SMRP raise WPS distribution rate base after the 5-year period was finished?

b) Was this increase seen as reasonable by PEG?

43. *Reference: PEG Report, p. 30, paragraph 1: "It so happens that, collectively, the four utilities selected as serving urban cores tend to be average to poor cost performers."*

How did PEG determine that these four utilities were average to poor cost performers as opposed to being four utilities that share a common business condition, a high degree of urbanization, that is raising each of their costs?

44. *Reference: PEG Report, p. 42, paragraphs 3-4.*

PEG's discussion of and conclusions regarding THESL's reliability levels were based on the assessment of the historic 2009-2011 period only.

a) Please provide THESL's projected SAIDI performance for every year up to and including 2019 using PEG's model.

b) Please provide THESL's projected SAIFI performance for every year up to and including 2019 using PEG's model.

c) Do the SAIDI and SAIFI results referenced in subs (a) and (b) change any of PEG's conclusions on THESL's reliability performance and the appropriate stretch factor for the utility?

d) Please provide the reliability performance scores for THESL in PEG's reliability models for the 2010-2012 period.

45. PEG's reliability models presented in Chapter Five exclude the forestation variable that PSE included in their models.

a) Does PEG agree that the level of vegetation on a system will have an impact on a utility's reliability performance?

46. PEG's reliability models presented in Chapter Five exclude the wind variable that PSE included in their models.

a) Does PEG agree that exposure to greater amounts of wind will have an impact on a utility's reliability indexes, all other things being equal?

47. PSE understands that PEG chose to substitute the percent undergrounding variable for customer density in the reliability models. Does PEG disagree that customer density will have an impact on a utility's reliability indexes?

48. *Reference, PEG Report, p. 43, paragraph 3. "PEG does not dispute this common-sense linkage…"* Please define and describe the common-sense linkage that PEG does not dispute.

49. In Chapter Five ("Simultaneous Cost and Reliability Benchmarking"), did PEG create a model of its own to present the results shown on Table Seven of PEG's Report (p. 47), or did it use PSE's model that was developed in a prior rate case for Wisconsin Public Service ("WPS")?

50. Please confirm that PEG used THESL's annual capital expenditure amounts when calculating the SAIDI impact estimates found in Table Seven of PEG's Report. (p.47)

51. a) Is it PEG's position that THESL's proposed custom IR plan is purely driven by reliability objectives?

b) If so, how does PEG regard the other stated reasons for the proposed IR plan, such as safety?

52. a) Does PEG agree that on page 2 of Mr. Fenrick's sur-surrebuttal testimony in the WPS case dated May 6, 2013, Mr. Fenrick clarified that the model uses the change in "electric net distribution plant," and not annual capital expenditures, to calculate the SAIDI impact benchmark?

b) Please verify that the WPS testimony states that WPS' electric net distribution plant was estimated to increase by 43% by 2019.

c) Did Dr. Kaufmann support the notion that this 43% increase in net distribution plant was in the interests of WPS customers because of the reliability benefits derived from the plan?

d) Please calculate the increase of THESL's net distribution plant from 2014 to 2019?

e) Assuming PEG agrees that PSE used net distribution plant as the basis for the reliability impact calculation, please revise Table Seven in the PEG report to correct for the differences between PEG's initial approach and the PSE approach.

f) Does the revised table change any of the PEG Report's conclusions?

53. Please indicate how many individual data points used as inputs for the purposes of econometric research in support of the 4th Generation IRM initiative have been based on assumptions to account for missing or unreliable data.

54. Please discuss PEG's understanding of the current OEB requirements for Ontario distributors with respect to their year-over-year reliability performance.

55. (a) Please state whether PEG's recommendation of extending the term of Toronto Hydro's proposed capital plan through to 2022 has considered the impact of such an adjustment on the safety of Toronto Hydro's distribution plant, service quality and reliability performance as prescribed by various OEB instruments, and legislative responsibilities to the utility's customers, shareholder and other parties.

(b) Please provide PEG's rationale for choosing to extend Toronto Hydro's proposed capital spending over an eight-year term?

(c) Did PEG consider any other term (e.g., six, seven or ten years)?

(d) If the answer to part "c" is yes, please provide the reasons why PEG concluded that an eight-year term was preferable?

56. *Reference: PEG Report, p.17 paragraph 4, and p.18 Figure 1 (Figure 6 in PSE Report): "However, if THESL was exhibiting continuous improvement in its reliability and cost performance, it would be moving in the southwest direction on PSE's Figure 6, towards the "reliability better, cost better" quadrant.*

Please state whether PEG believes that the cumulative effect of adjustments to Toronto Hydro's rate-setting formula proposed by PEG in its report would result in the utility's two-dimensional performance (cost and reliability) moving in the "southwest" direction on the PSE cost/reliability performance graph.

57. Please describe the concepts of "pacing" and "prioritization" as utilized by the OEB in the renewed Regulatory Framework for Electricity (RRFE) documentation. Please list the OEB's criteria and/or general direction with respect to integrating these concepts into the utilities' capital evidence.

58. a) Please provide PEG's definition of a comprehensive rate setting plan.

b) In PEG assessment, does a rate plan where a utility's base rates are adjusted using a Price Cap Index formula, while also utilizing an ICM/ACM mechanism to secure additional capital funding constitute a comprehensive rate-setting plan? If yes, please discuss why this is the case. If no, please elaborate as to why not.

59. Please confirm that PEG's total cost benchmarking analysis includes only US utilities and Toronto Hydro. Please further confirm that no other Ontario utilities are included in this data set.

60. Why did PEG choose to focus on the THESL-US dataset, rather than the "combined" dataset, which contains a larger number of observations and includes distribution utilities operating in Ontario's legislative, regulatory, economic and geographical context?

61. Please quantify the number of observations included in PEG's US-only data set (where a single observation constitutes one utility in one year). Please do the same for PSE's combined Ontario-U.S. data set

62. Please confirm whether PEG agrees that in general a single econometric study with a single data set would be less reliable than two econometric studies with two complementary subsets of that identical data set?

63. *Reference: PEG Report, p.21, paragraph 2: "PEG therefore confines our review to PSE results derived from the US-Only sample. This focus will streamline our review without any loss of substance*."

Please provide the basis for the statement that using the US-only sample approach will not lose any substance relative to a US-Ontario sample.

64. PEG's Report recommends a stretch factor for THESL ranging as high as 1.0%.

a) Please confirm that the 1% value is arrived at using only total cost econometric benchmarking results.

b) Toronto Hydro has proposed using PSE's total cost econometric benchmarking model using a combined US-Ontario data set to set the Toronto Hydro stretch factor. Please specify the exact study/studies and corresponding data set that form the basis of PEG's proposed stretch factor for Toronto Hydro.

c) Given that THESL's proposed stretch factor would be determined using the Board's stretch factor values and group demarcation points, please confirm whether in PEG's view a 1.0% stretch factor deviates from Board policy in this regard.

d) Please describe in detail the exact methodology that PEG used to arrive at the incremental 0.4% of stretch factor that it is proposing. Please explain in detail how this methodology rules out all other amounts of incremental stretch (i.e., 0.3%, 0.2%, 0.1% and any number in between these values).

65. *Reference: PEG Report, p. 42, paragraph 5.*

a) In the referenced passage PEG concludes that THESL's SAIDI is 20.6% *above* the benchmarks for the 2009-2011 period. Please review PEG's output and confirm its finding that THESL's SAIDI is actually 20.6% *below* the benchmark value for 2009-2011.

b) If PEG confirms that its finding that THESL's 2009-2011 SAIDI is 20.6% below the benchmark, does PEG's reliability finding better align with PSE's finding of THESL's SAIDI being historically below benchmark values?

66. Please confirm that PEG's SAIDI evaluation finds that THESL's SAIDI performance is projected to be 115.6% below benchmark values in 2019. Please comment on whether this level of performance constitutes a positive outcome for the utility and its ratepayers.