

Ontario Energy Board

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 or fixing just and reasonable distribution rates and other charges, effective May 1, 2020 to December 31, 2024.

Energy Probe Research Foundation

Interrogatories to Toronto Hydro

December 18, 2018

All References are to Original 2018 Evidence unless otherwise noted.

1B-EP-1

Reference: Exhibit 1B, Tab 2, Schedule 2, Page 3

- a) Please expand on the definitions used for SAIDI and SAIFI in the above reference.
- b) Please provide a Table and graphical presentation of the SAIDI and SAIFI reliability measures with the 2017 and 2018 data added
- c) Please reconcile the data to the following
 - i. TH evidence at Exhibit 1B, Tab 2, Schedule 5 and other evidence
 - ii. PSE Evidence

1B-EP-2

Reference: Exhibit 1B, Tab 2, Schedule 2, Page 3

- a) Please expand on the definitions used for Cost Control in the above reference.
- b) Please provide a table and graphical presentation of the cost per customer and per kM of line reliability measures with the 2017 and 2018 data added.
- c) Reconcile the above data to
 - i. Exhibit 1B, Tab 2, Schedule 1, Appendix C, OEB Appendix 5A,
 - ii. PSE Evidence.

1B-EP-3

Reference: Exhibit 1B, Tab 2, Schedule 1, Appendix B, UMS Benchmarking Table IV-1

- a) For the 12 asset costs in the referenced Table, please provide a list of those that are within $\pm 10\%$ of the Benchmarks for Median 1 and Median 2
- b) List those that are outside $\pm 10\%$.
- c) What opinion has UMS regarding TH position in the Peer Group?
- d) Please provide an opinion on trends/outlook in unit costs for these utility assets.

1B-EP-4

Reference: Exhibit 1B, Tab 2, Schedule 1, Pages 6/7, Table 1

- a) For Reliability Targets please provide the numeric targets associated with “Maintain” or “improve” for SAIDI, SAIFI, FESI-6 and FESI-7.
- b) Please compare the result to the data for SAIDI, SAIFI/CAIDI provided to PSE for its 2020-2024 reliability projections.
- c) Does TH have Targets for the following reliability measures? If so please provide these. If not please discuss why not:
 - i. CAIDI,
 - ii. MAIFI and
 - iii. Worst/poor Performing Circuits

1B-EP-5

Reference: Exhibit 1B, Tab 2, Schedule 1, Page 6/7, Table 1

- a) For Cost Control please provide the baseline cost numbers for Wood Poles and Vegetation Management associated with “Monitor”.
- b) Why has TH not set quantitative Targets for these costs? Please explain.

1B-EP-6

Reference: Exhibit 1B, Tab 2, Schedule 2, Page 17, Figure 1

- a) Please discuss why the CAIDI trend in Figure 1 is “Flat”?
- b) Please provide the CAIDI Metrics for each year 2013-2017
- c) Please provide the latest SAIDI/SAIFI/CAIDI data for 2018

1B-EP-7

Reference: Exhibit 1B, Tab 2, Schedule 2, Page 18, Figure 2

- a) Please provide more information on Momentary Interruptions since 2013 Specifically,
 - i. Please provide the Cause Codes for MAIFI
 - ii. Please explain Why MAIFI is/is not improving with replacement of defective equipment.

- b) Is the definition/use of one minute interruption appropriate, given customers' sensitive power equipment such as Computers/Modems, Microwaves, Digital Clocks, Smart TVs etc.?
- c) Please comment and specifically indicate if Toronto Hydro is advocating battery back-up for all such equipment.
- d) In EB-2013-0116 in its IR responses TH indicated it would monitor and track momentary interruptions. Please provide a summary of the Data 2013-2018E.
- e) Please discuss if Toronto Hydro is able to measure momentary interruptions of less than one minute? Please define/indicate current technical limits.

1B-EP-8

Reference: Exhibit 1B, Tab 2, Schedule 4, Page 10

- a) Confirm Figures 11 and 12 show a reduction in outages due to defective equipment of ~8% (SAIFI) and ~5% (SAIDI).
- b) Discuss reasons why Toronto Hydro attributes this improvement to increased Replacement Capital investment.
- c) Confirm that for SAIFI, unknown cause events have increased from ~20% to 30% apparently offsetting gains from replacing defective equipment.
- d) Has Toronto Hydro attempted to determine the reasons/causes for this trend? Please discuss.
- e) Discuss if the "unknown" designation used by TH is appropriate.
- f) Please discuss how TH is attempting to diagnose and remedy increased frequency of unknown events/interruptions.

1B-EP-9

Reference: Exhibit 1B, Tab 2, Schedule 4, Page 10, Poor Performing Circuits- Innovative Survey, Appendix 2.1, Page 32, Exhibit 2B, Section E6.7.

- a) Please define Poor Performing Circuits per IEEE or CEA and/or if TH has different definition to that accepted by the Board. Delineate Overhead vs Underground if possible.
- b) Please list/group PPCs by type(s) and for each type/group, the remedial actions 2013-2017 and 5 year Capital Investment.
- c) Please add the 2018 YTD Performance re PPC Customer Interruptions.

- d) For the CIR Period 2020-2024 provide the list of Poor Performing circuits to be dealt with under the DSP, and the associated capital investments.
- e) Please provide the specific performance Targets for PPCs for the 5 year CIR period 2020-24. Are these on the Scorecard?
- f) How many PPCs will remain after the CIR period?

1B-EP-10

Reference: Exhibit 1B, Tab 4, Schedule 2, Tables 6 and 7

Preamble: EP wishes to understand better the 2018 PSE Econometric Model at a similar level of detail as provided in the 2014 Report and Evidence (EB-2014-0116 Exhibit B, Tab 2, Schedule 5).

- a) Please provide the full PSE Econometric Model specification and formulation in reasonable detail with explanatory notes.
- b) Please provide additional information as to how the T-statistic for the Explanatory Variables was calculated and the significance of each of the Statistics.
- c) Please provide more information on the Trend, Constant, Coefficients and the calculation of the adjusted R-Squared.
- d) Please provide a Comparison Table with the 2014 Model/Report Table 4 and the 2018 Model/Report Table 6. List and discuss the rationale for, the changes to the Explanatory Variables, including specifically addition of Congested Urban and Ontario Binary variables and elimination of Capital Price and Density.
- e) Explain how these changes specifically address the Board's concerns expressed in the EB-2014-0116 Decision.
- f) Please describe/provide the THESL data for each of the variables underlying each of the coefficients and projections corresponding to the results presented in Table 7.
- g) How did PSE determine the appropriate Coefficient for each cost variable? Please provide details of the methods.
- h) Is the structure/formulation of the PSE model "standard" and used for other utilities (examples) or "custom" for Toronto Hydro please explain in terms of the Model specifications and variables.
- i) Please indicate and show if and which variables/coefficients were changed to provide different/alternative benchmark costs and the associated statistics. Compare to the results in Table 7.

- j) Please clarify how the Congestion and Underground plant variables are related. Please provide examples.

1B-EP-11

References: EB-2018-0165, Exhibit 1B, Tab 4, Schedule 2, Table 7
EB-2014-0116, Exhibit B, Tab 2 Schedule 5, Table 6

- a) With reference to the Total Cost projections provided in Table 6 and Figure 3 of the 2014 Report, please provide a comparison in graphical form to Total Costs to 2018 and the projection for 2019 and then to the current historic and projection in Table 7 and Figure 5 in the 2018 Report.
- b) Comment on the differences and if these relate to
- i. Changes to the Peer group
 - ii. Performance of the peer group (industry Total Cost/productivity)
 - iii. or TH performance/productivity.
- c) Please discuss in detail why, based on the latest model results, in 2019 TH is still 18.6% lower cost relative to the peer group, even though its costs are similar to those projected in the 2014 Report for the IRM period.
- d) Please provide a discussion regarding what the models indicate regarding trends in industry Total Cost and TFP since 2010 and projections for the next 5 years.

1B-EP-12

References: Exhibit 1B, Tab 4, Schedule 2, PSE Report Pages 4 and 15/16
Exhibit 1B, Tab 4, Schedule 3, PEG Benchmarking Data

- a) Please compare the Input Parameters listed and, in particular, the Ontario Sample to those in the PEG Report. Please provide a Tabulation of the TH data set (including 2018-2024 projections) and provide sources and explanations for each of the values.
- b) For CSI/CDM costs please provide a Table that shows for the Sample the amounts eliminated for each and as a percentage of cost.
- c) Please explain in detail why PSEs result shows TH Total Costs are 18.7% below the PSE Benchmark moving to 6% less in 2024 compared to the PEG Benchmark showing Toronto Hydro Cost Performance is 54% of peer group that is above.
- d) Discuss which result (PEG or PSE) should ratepayers and the OEB use in setting the CIR rate plan and the X/stretch factor and list all of the reasons why the Board should adopt the PSE recommendation?

1B-EP-13

Reference: EB-2018-0165 Exhibit 1B, Tab 4 Schedule 2, Page 44 ff, Tables 2 & 3, Figures 2 and 3, EB-2014-0116 Exhibit B, Tab 2, Schedule 5, Table 15 and Figures 4&5

Preamble: PSE States: We find that Toronto Hydro's 2015-2017 average SAIFI is 47.2% above the benchmark value. Our research on Toronto Hydro's 2015-2017 average CAIDI indicates that the reliability level is 63.4% below the benchmark value.

- a) Please provide the full specification/details of 2018 PSE Reliability Econometric Model including the TH input values for variables and the coefficients.
- b) Please provide a Comparison Summary Table with the 2014 Model.
- c) Please confirm the definition(s) used for CAIDI dataset.
- d) With reference to the Reliability (SAIDI/SAIFI) projections Provided in Table 15 and Figures 4 and 5 of the 2014 Report: please provide a comparison in graphical form to the current projection in the 2018 Report.
- e) Please comment on the differences and if/how these relate to the Peer group or TH.
- f) How does the Model provide Reliability projections for the 2018-2024 forecast period? Please explain the approach and methodology in reasonable detail. Specifically indicate if regression of historic data is used to generate the projections.
- g) If the projections are provided by TH please provide a copy of these and discuss how using these data differs from a statistical projection.
- h) Please provide a discussion regarding if the models show Reliability is/is not improving as shown for each indicator
 - i. For the Industry Peer group sample
 - ii. For TH (given the increase in TH capital investment).

1B-EP-14

Reference: Exhibit 1B, Tab 2, Schedule 2, Tables 2 and 3 and Figures 2, 3, 6&7.

Preamble: PSE's reliability benchmarking analysis indicates the following findings:

- 1. Historical SAIFI metrics for T H are considerably higher than the benchmark values.
- 2. Projected SAIFI metrics remain higher than the benchmarks.
- 3. Historical CAIDI metrics for TH are considerably lower than the benchmark values.
- 4. Projected CAIDI metrics for TH continue to be lower than the benchmark values.

- a) Please confirm/clarify if the PSE historic and projected SAIFI and CAIDI chart data sets are
 - i. with or without LoS

- ii. with or without MEDs
 - iii. with or without scheduled maintenance
 - iv. with or without sustained outage (excluding MAIFI outages < 1 min).
- b) Please provide a data set that uses identical data as projections set out in the TH evidence without LoS and MEDs.
- c) Please revise Figures 2 and 3 and 6 and 7 to be consistent the SAIDI/SAIFI charts in the DSP.
- d) Confirm/amend your conclusions as appropriate.

1C-EP-15

Reference: Exhibit 1C, Tab 3, Schedule 6, page 31

Preamble: Under “Regulatory Risk” one of the bullet points states “the OEB will allow recovery for revenue lost as a consequence of unanticipated effects of CDM”.

- a) What are unanticipated effects of CDM?
- b) Has Toronto Hydro ever incurred unanticipated effects of CDM?
- c) If the answer is yes, please explain when, what were they, and did the OEB allow recovery?

1C-EP-16

Reference: Exhibit 1C, Tab 3, Schedule 6, page 33

Preamble: *“In addition, as the City, Ontario and the Government of Canada implement policies and programs to respond to climate change, the pressures on Toronto Hydro’s system will only increase. Widespread adoption of electric vehicles, fuel switching and changing emissions standards make electricity the comparatively clean energy choice. This drives the need for significant capital expenditures for system upgrades so that the grid can handle such increased load.”*

- a) Please explain the risk faced by Toronto Hydro due to widespread adoption of electric vehicles.
- b) What are potential cost consequences of the adoption of electric vehicles?
- c) Does Toronto Hydro have a 5 year forecast of the costs and revenues of providing charging services to electric vehicles? If the answer is yes, please provide the forecast. If the answer is no, please explain why.

- d) Is Toronto Hydro concerned that the revenue requirement of providing charging services for electric vehicles will exceed the revenues collected from electric vehicle customers resulting in an annual revenue deficiency that the OEB will not allow Toronto hydro to collect from its ratepayers? Please give reasons for your answer.
- e) Is Toronto Hydro willing to make a commitment that it will not seek OEB approval for an ICM in a future application to provide charging facilities for electric vehicles? Please give reasons for your answer.

1C-EP-17

Reference: Exhibit 1C, Tab 3, Schedule 7, Appendix A, Page 20

Why is there no mention of Toronto Hydro's concerns about climate change risk in this document?

1C-EP-18

Reference: Exhibit 1C, Tab 3, Schedule 8, Appendix B, Page 6

Why is there no mention of Toronto Hydro's concerns about climate change in this report by S&P? Did Toronto Hydro share its concerns about climate change with S&P?

1C-EP-19

Reference: Exhibit 1C, Tab 3, Schedule 10, Original, page 31

Preamble: *"We collaborated with Metrolinx on plans to build a battery energy storage system for the Eglinton Crosstown light rail transit (LRT) line, which will increase reliability of the line, lower operating costs and reduce emissions. The power system will be capable of providing backup and emergency power to the LRT line in the event of a widespread power outage, and will also benefit local residents by providing additional reliability to customers in the area. The system will have the power capacity of 10 MW – enough to power the equivalent of approximately 11,000 homes – making it the largest battery energy storage project we've been involved with to date."*

- a) Does Toronto Hydro have a contract with Metrolinx that covers this collaboration for a battery storage system? If the answer is yes, please file it. If the answer is no please explain why?
- b) Does Toronto Hydro have a contract with Metrolinx that deals with relocation of Toronto Hydro's facilities to accommodate Metrolinx projects?
- c) Does Toronto Hydro consider Metrolinx to be a "road authority" as defined by the Public Service Works on Highways Act? Please provide reasons for your answer.

1C-EP-20

Reference: Exhibit 1C, Tab 3, Schedule 10, Original, page 32

This section is titled “Sustainability Initiatives”. Please provide Toronto Hydro’s definition of “sustainability”.

1C-EP-21

Reference: Exhibit 1C, Tab 3, Schedule 10, page 33

Preamble: *“Our President and CEO, Anthony Haines, was recognized as a Responsible CEO of the Year Award by Corporate Responsibility (CR) Magazine, which marked the first time a Canadian CEO has been given this prestigious award. The award is presented to CEOs who visibly exceed standards in the areas of employee relations, environmental impact, sustainability, human rights, philanthropy and corporate responsibility practices”*

- a) Please explain how Mr. Haines exceeded standards in each of the following areas:
 - i. employee relations,
 - ii. environmental impact,
 - iii. sustainability,
 - iv. human rights,
 - v. philanthropy
 - vi. corporate responsibility practices.
- b) For each area in (a) please list specific standard that Mr. Haines exceeded? Please provide details with supporting numerical information.
- c) Considering that the OEB does not allow electricity distributors to recover the costs of charitable donations from ratepayers, please confirm that Toronto Hydro has not recovered from ratepayers the cost of philanthropic activities in the past and is not seeking OEB approval to recover it in this application.

1C-EP-22

Reference: Exhibit 1C, Tab 3, Schedule 10, page 34

Preamble: *“In order to encourage our employees to transition to electric vehicles (EVs), we installed four charging stations at our 500 Commissioners Street location in 2017, and there are plans to install charging stations at 71 Rexdale Boulevard and 715 Milner Avenue in 2018. We also initiated a project to replace small cars in our fleet with fully-electric vehicles.”*

- a) Why does Toronto Hydro need to encourage its employees to transition to electric vehicles?
- b) Is there a business case for this initiative? If there is, please file it. If not, please explain why.

1C-EP-23

Reference: Exhibit 1C, Tab 3, Schedule 10, Original, page 34

Preamble: *“We sponsored Plug’n Drive, a non-profit organization committed to accelerating the adoption of EVs. We also powered two charging stations in the test drive zone at the Plug’n Drive Electric Vehicle Discovery Centre in Toronto, the world’s first experiential learning facility dedicated to EV education and awareness.*

We contributed to advancing the transition to EVs through participation in various working groups and associations, including the City of Toronto’s EV Working Group and the Canadian Urban Transit Research & Innovation Consortium.”

- a) Why is Toronto Hydro promoting the use of electric vehicles if it considers widespread adoption of electric vehicles to be a business risk?
- b) Does Toronto Hydro have a contract with Plug’n Drive? If the answer is yes, please file the contract. If the answer is no, please explain why.
- c) Please provide more details of Toronto Hydro’s sponsorship of Plug’n Drive including costs.
- d) Is Toronto Hydro providing free public EV charging stations at any location on its system? If the answer is yes, please provide details.

1C-EP-24

Reference: Exhibit 1C, Tab 3, Schedule 10, page 36

Preamble: According to the document, energy saved through CDM programs increased from 273.2 GWh in 2016 to 353.0 GWh in 2017, a 29% increase.

Please provide the average cost of CDM per GWh saved in 2016 and 2017.

1C-EP-25

Reference: Exhibit 1C, Tab 3, Schedule 10, Financial Report, December 31, 2017, page 27

Preamble: *“Among other things, there can be no assurance that: ...the OEB will allow recovery for revenue lost as a consequence of unanticipated effects of CDM.”*

- a) What are the unanticipated effects of CDM?
- b) Has the OEB ever denied recovery of such effects? If the answer is yes, please provide details of each event.
- c) Why is Toronto Hydro promoting CDM if it poses a business risk?

1C-EP-26

Reference: Exhibit 1C, Tab 3, Schedule 10, Financial Report, December 31, 2017, page 28

Preamble: *“One of LDC's largest capital initiatives currently in progress is the construction of Copeland Station, which is also one of the most complex projects ever undertaken by the Corporation. Due to unforeseen delays, the expected completion date for the Copeland Station project has been extended to 2018 and it is currently anticipated that the total expenditure required to complete the project will increase from \$195.0 million to approximately \$200.0 million, plus capitalized borrowing costs as applicable. There may be additional unforeseen delays and expenditures prior to the completion of the project. On January 25, 2017, the Corporation was informed that Carillion Construction Inc., the general contractor for the Copeland Station Project, filed for creditor protection under the Companies' Creditors Arrangement Act after its affiliate, Carillion plc, went into compulsory liquidation in the United Kingdom.”*

- a) What is the current status of the Copeland Station Project? Please provide the costs to date, the expected date of completion, and the total costs at completion.
- b) What were the “unforeseen delays” that caused the completion date to be extended?
- c) Have there been any other unforeseen delays since the December 31, 2017 date of the referenced document? If the answer is yes, please provide details of each one including its impact on cost and schedule.
- d) Please file a table that compares the original OEB approved cost and schedule for the Copeland Station Project and the current forecast of cost and schedule.
- e) What was the impact of the bankruptcy of Carillion Construction Inc. on the cost and schedule of the project?
- f) What was the amount of Carillion's performance bond?
- g) Is Carillion still the project contractor or has Toronto Hydro engaged another contractor to do the work?
- h) The bankruptcy of Carillion raises questions about the due diligence performed Toronto Hydro on potential bidders at the time of contract award. Please describe the due diligence work of Toronto Hydro on Carillion prior to the award of the contract to the company.

2A-EP-27

Reference: Exhibit 2A, Tab 1, Schedule 1, Table 2

Preamble: Land and Buildings gross plant increased from \$76.2 million in 2015 to \$165.4 million in 2018.

Please explain the reasons for this 117% increase in Land and Buildings gross plant in just three years including the names and amounts of three largest projects that caused this increase.

2A-EP-28

Reference: Exhibit 2A, Tab 1, Schedule 1, Table 2

Preamble: TS Primary Above 50 gross plant increased from \$6 million in 2016 to \$36.9 million in 2017.

Please explain the reasons for this 515% increase in TS Primary Above 50 gross plant in just one year.

2A-EP-29

Reference: Exhibit 2A, Tab 4, Schedule 1, page 3, Table 1

- a) Please confirm that the costs of construction of the Copeland Station Project are included in the table.
- b) Please prepare and file a similar table that only shows the Copeland Station Project costs.

2A-EP-30

Reference: Exhibit 2A, Tab 5, Schedule 3, page 2

Preamble: *“As part of a continuous review process, Toronto Hydro evaluates its policies and practices to incorporate new IFRS pronouncements.”*

Has Toronto Hydro incorporated any new IFRS pronouncements since the last rebasing application. If the answer is yes, please provide details.

2A-EP-31

Reference: Exhibit 2A, Tab 5, Sched 1,

- a) Please confirm that some capital projects are constructed by Toronto Hydro crews while others are contracted out.
- b) Please explain Toronto Hydro’s practice for contracting out capital construction work. If Toronto Hydro has a written policy that deals with contracting out, please file it. If it does not, please explain why.

2B-EP-32

Reference: Exhibit 2B, Section C2.3, Table 4

Preamble: *“Between 2013 and 2017 outages caused by defective equipment was the main contributor to SAIDI and SAIFI performance. As Figures 6 and 7, demonstrate, there was a slight improvement in the level of reliability in these years. This is directly attributable to Toronto Hydro’s efforts to address aging and obsolete assets”.*

- a) Please provide for SAIDI and SAIFI, the average interruption cause codes for the 5 year period 2013-2017. Specifically indicate the percentages related to defective equipment. In addition to defective equipment list in declining order, the other contributors to interruptions/outages.
- b) If available, please provide the percentage of interruptions related to each of transformation and lines and compare to defective equipment total.
- c) In EB-2013-0116 TH indicated it would monitor Momentary Interruptions. Please provide, in summary and chart form, the MAIFI data for the 5 years 2013-2017.
- d) What are the cause codes for MAIFI? Please provide these in Table and Pie Chart form.
- e) What measures/level of investment 2020-2024 is aimed at maintaining/improving MAIFI?

2B-EP-33

Reference: Exhibit 2B, Section C2.3, Table 4, and Figures 6&7

Preamble: Toronto Hydro states its proposed investments during the 2020-2024 plan period, are aimed at improving asset condition and demographics in order to mitigate reliability risks associated with defective equipment. Reliability results, as measured by SAIDI and SAIFI-Defective Equipment, are expected to decrease if the requisite investments are not made.

- a) How much is invested to achieve each of the 4 reliability goals in the Reliability Scorecard? Please provide the linkage to investment and estimated 5-year cumulative amounts for each.
- b) Confirm that according to PSEs Benchmarking Study, TH SAIFI is above that of the peer group.
- c) Please provide the levels in # hours/customer for the Peer group and TH.
- d) Why is maintaining SAIFI and SAIDI an appropriate Goal for 2020-2024 What investment levels were examined? Please provide the data and discussion.
- e) What is TH’s Strategy and Goal to address momentary interruptions (MAIFI) in the CIR period? Please discuss.

2B-EP-34

Reference: Exhibit 2B, Section C2.3, Table 4, and Figures 8&9

Preamble: For the 2020-2024 plan period, Toronto Hydro expects to improve performance for FESI-7 System measure and maintain performance for FESI-6 Large Customers.

- a) Why is improving FESI-7 but not FESI-6 an appropriate strategy? Please discuss.
- b) In addition to # feeders please provide the # customers and loads associated with each goal.
- c) Please provide the estimated 5 year investments for achieving the FESI-7 and FESI-6 goals.

2B-EP-35

Reference: Exhibit 2B, Section D, Appendix D, Toronto Hydro-Electric System Limited Climate Change Vulnerability Assessment

- a) Did Toronto Hydro issue an RFP for this report? If it did, please file it. If it did not please explain why?
- b) What was the cost of this report and is Toronto Hydro seeking OEB approval to recover it from ratepayers? If Toronto Hydro is seeking to recover the cost from ratepayers please explain the recovery mechanism and the recovery period.
- c) Did Toronto Hydro issue a statement of work, terms of reference, engagement letter or any other similar document that described the purpose and the scope of the report to the consultants who prepared the report? If the answer is yes, please file all such documents. If the answer is no, please explain why.

2B-EP-36

Reference: Exhibit 2B, Section D, Appendix D, page vii

Preamble: *"The probability of a climate parameter occurring during the study period was determined using global climate modelling (GCM) data obtained from the Intergovernmental Panel on Climate Change's 5th Assessment Report (IPCC AR5). In many cases, this information was validated or refined through the use of regional climate modelling data, statistical downscaling and climate analogues."*

- a) What is global climate modelling data?
- b) How and why was it validated and refined?
- c) What is regional climate modelling data?
- d) What is statistical downscaling?
- e) What are climate analogues?

2B-EP-37

Reference: Exhibit 2B, Section D, Appendix D, page viii, Table ES-1

- a) Which period is covered by the term “historical” used in the table?
- b) Please provide years and source of information for each historical parameter.
- c) Considering that this application deals with the 2020 to 2024 period why is there no specific forecast for that period?

2B-EP-38

Reference: Exhibit 2B, Section D, Appendix D, Original, page ix, Figure ES-1

- a) Why is the risk of freezing rain lower in the former City of Toronto than in the former Borough of East York?
- b) Why is the risk of lightning significantly lower in the former City of Toronto?
- c) Why is the risk of high ambient temperatures highest in High Park?

2B-EP-39

Reference: Exhibit 2B, Section D, Appendix D, page 15

Preamble: *“The evaluation was carried out for the study period (2015 to 2050), but with specific focus on the possible state of the electrical system at the 2030’s and 2050’s time horizons.”*

Considering that three years in that period, 2015, 2016 and 2017 are now in the past and a fourth year, 2018, is almost over, please provide the predictions of the authors for those years with actual results of all parameters listed in Table ES-1. If the authors are unable to provide the comparison, please explain why not and provide a detail explanation for your answer.

2B-EP-40

Reference: Exhibit 2B, Section D, Appendix D, Table 2-2, page 16

- a) Table 2-2 shows projected loads in 2030’s and 2050’s. Why are current loads not shown for comparison?
- b) Please expand the table to show current loads.
- c) What do the 2030’s and 2050’s mean? Are these projected loads for the beginning, midpoint or end of these two decades? Why are 2020’s and 2040’s not shown?

2B-EP-41

Reference: Exhibit 2B, Section D, Appendix D, page 20

Preamble: *“Individual GCMs contain inherent biases when attempting to recreate historical climate, for example being either too cool or warm compared to historical averages. To compensate for this effect, the “Delta-method” was employed. First, GCMs were evaluated to determine changes from their own respective baselines. This difference between model baseline and projected conditions is then applied to the observed historical climate baseline. For example, if the GCM ensemble indicated an average increase of 2 degrees between the baseline period and the 2050’s, and a given station shows an average annual temperature of 3°C, then the projected annual average temperature for that location for the 2050’s becomes 5°C. This represents the “delta”, or the change in climate parameter based on the difference projected by the GCM ensemble applied to historical baseline data.”*

To demonstrate the accuracy of the method please recreate historical climate for Toronto for each decade from 1920 to 2010 using each one of the GCMs that the authors used in this report and compare it to actual historical averages for that decade.

2B-EP-42

Reference: Exhibit 2B, Section D, Appendix D, page 27, Table 4-2

Please confirm that the equal to or greater than 100% load for the stations in the Horseshoe Area in 2050’s are a scenario used in computer modelling by the authors and not a forecast by Toronto Hydro.

2B-EP-43

Reference: Exhibit 2B, Section D, Appendix D, Appendices

- a) Please explain the reasons for not filing the Appendices and, in particular, the statement regarding Appendix A: *“This information has been removed from the public version of this report”*. Why are some parts of this report being kept away from the public?
- b) Please file all missing appendices included redacted versions of confidential documents.

2B-EP-44

Reference: Exhibit 2B, Section D, Appendix D, Appendix B, B.3.1

Preamble: *“To establish reliable statistics on the frequency of events, long term records are preferred and with this area, there are some stations available. It is generally accepted that to establish a ‘normal’ climate, a minimum of 30 years of data as required. This supposedly ensures that short term natural variability is averaged out. Detailed hourly observations are usually only available at airport locations such as Toronto Pearson, Buttonville and Toronto Island. These airport locations are also typically the only source of variables other than*

temperature and precipitation (such as wind or weather observations). Of these, Toronto Pearson has the lengthiest reliable data record. Those regional stations for which normals data was calculated for 1981-2010 are shown in Figure B.2.”

- a) Who has “generally accepted” that 30 years of data is required to establish a “normal” climate?
- b) Why would the period from 1981 to 2020 represent the normal climate for Toronto? Why exclude the warm period in the 1930’s and the cold period in the 1970’s ?

2B-EP-45

Reference: Exhibit 2B, Section D, Appendix D, Appendix B, B.3.2.3

Preamble: *“Each of the last three decades has been successively warmer at the Earth’s surface than any preceding decade since 1850.”*

Please provide the average Toronto temperature for each decade from 1850 to 2010 and compare it to the average temperature at the Earth’s surface for the entire planet for every decade from 1850 to 2020. If the authors are unable to provide this information please explain why.

2B-EP-46

Reference: Exhibit 2B, Section D, Appendix D, Original, Appendix C

Preamble: On October 15, 1954, Hurricane Hazel hit Toronto. There was widespread flooding, power outages and 35 people lost their lives.

- a) Are the authors of the report aware of that storm?
- b) Have they taken it into account in their analysis?

2B-EP-47

Reference: Exhibit 2B, Section E8.3.4.1, Tables 6 and 7

Preamble: For the period 2015-2019, Toronto Hydro requested funding of \$16.9 million for fleet vehicles, \$11 million on heavy duty and \$5.9 million on light duty vehicles. In the current plan period, Toronto Hydro plans to invest \$32.8 million on heavy duty, and \$8.2 million on light duty vehicles.

- a) Please provide the 2020 and 2024 Vehicle distribution and age profiles for each of LDVs and HDVs.
- b) Please provide the distribution/profiles of leased vs purchased vehicles in 2020 and 2024.
- c) Please provide the salvage value of the fleet replacements for each of LDV and HDV 2020-2024.

- d) How are the salvage values realized? How much (estimated) is
 - i. Applied as down payment on new vehicles;
 - ii. Used for lease buy out and;
 - iii. Used Vehicle Sales in the used vehicles market;
 - iv. Other?

2B-EP-48

Reference: Exhibit 2B, Section E8.4.5, Options Analysis/Business Case Evaluation (“BCE”),
Page 24

Preamble: Over the 2020 to 2024 period, Toronto Hydro forecasts spending \$281.4 million across the three IT/OT Program segments. This represents an increase of \$50.2 million, or approximately 22%, compared to 2015 to 2019 spending,

Please file the Summary of the 2020-2024 Business Plan for IT.

2B-EP-49

Reference: Exhibit 2B, Section E8.4 Appendix A -Gartner Report

- a) Please provide a copy of the Scope provided to Gartner by TH.
- b) Please Define “Budget” and relate to the TH evidence at Exhibit 2B Section E8.4 Page 14 Table 5.
“Over the 2020 to 2024 period, Toronto Hydro forecasts spending \$281.4 million across the three IT/OT Program segments. This represents an increase of \$50.2 million (or approximately 22 percent) compared to 2015 to 2019 spending.”
- c) What is meant by “Industry” be specific e.g. are the peer group all urban distribution utilities?
- d) Why is Revenue a good indicator? Please explain relative to other benchmarks.
- e) Please provide the following additional Benchmarks for TH and Peer Group 25-75% Range and Average and tabulate and chart the results.
 - i. IT budget per Gross Assets
 - ii. IT budget per Customer
 - iii. IT Budget per Employee
- f) Comment on the result, including whether TH is, or is not, a good/cost-effective IT performer

4A-EP-50

Reference: Exhibit 4A, Tab 1, Schedule 1, Page 2, Table 1

Preamble: Energy Probe seeks more information and explanations for O&M changes over historic period and potential loading for 2020 base year.

- a) Fleet and Equipment Services staying at \$11 million, despite a large increase in fleet replacement capital investments,
- b) Customer care increase of \$8.4 million growing at rate greater than customer additions despite increase in E-billing
- c) Information Technology \$10 million increase over historic period.
- d) Legal and Regulatory Increase \$3.8 million (\$12-\$15 million) over last 4 years with further increase in 2020.

4A-EP-51

Reference: Exhibit 4A, Tab 2, Schedule 11, Page 6; Exhibit 2B. Section E8.3.4, Tables 4,6.7.

Preamble: Toronto Hydro has invested in fuel-saving technologies and opts for electric and hybrid vehicles, where possible, to further save on fuel and engine-related maintenance costs. The overall fleet size has also been decreased from 660 in 2013 to 588 in 2017, which reduces maintenance, repair, and administrative costs. However, given that the average age profile of the fleet continues to escalate, these savings do not fully offset the operating costs required to sustain the current fleet.

- a) Please provide the numbers and age profiles of the light and heavy duty vehicles in the fleet in each of 2013, 2020F and 2024F.
- b) Please comment on how the change in Fleet Age Profile(s) relates to
 - i. The change in Fleet Capital/Leasing cost 2013-2020
 - ii. The change in Fleet Maintenance costs 2013-2020.
 - iii. The change in Fleet Capital/Leasing cost 2020-2024
 - iv. The change in Fleet Maintenance costs 2020-2024

4A-EP-52

Reference: Exhibit 4A, Tab 2, Schedule 11, Page 6; Exhibit 2B, Section E8.3.5

- a) For each the 3 options examined please provide the 5-year cost estimates for Capital Replacement and Operation costs. Provide appropriate comments.
- b) Please provide the equivalent charts to Figure 6 for the Managed Fleet Replacement and Life Cycle options. Provide explanatory notes/comments.

4A-EP-53

Reference: Exhibit 4A, Tab 2, Schedule 14, Pages 4, 5

Preamble: Toronto Hydro's "meter-to-cash" process that transforms customer consumption and other billable activities into customer bills, facilitates accuracy of bills, and processes customer payments and refunds. During the fourth quarter of 2016, Toronto Hydro converted all customers to monthly billing, and by the end of 2019 expects to issue over 9.4 million bills annually for a projected 780,000 customers

- a) For the period 2013-2020 please provide
 - i. Annual number of of customer bills,
 - ii. Annual number e-bills,
 - iii. Percentage growth in customer bills,
 - iv. Percentage of e- bills,
 - v. 2020F Unit costs for processing regular bills and e-bills.
- b) Please explain the \$5 million increase in Billing Remittance and Meter Data Management costs to \$20.7 million in 2020. Specifically of the listed drivers indicate which are primarily responsible for higher unit costs for customer bills.
- c) Please provide a projection of the number of regular and e-bills over the CIR period.

4A-EP-54

Reference: Exhibit 4A, Tab 2, Schedule 1, Page 36, Table 7

- a) Please confirm that approximately 217,000 Meters will have seals expired and need to be serviced in 2024.
- b) What is the estimated cost and how will this impact operational O&M costs and Capital Costs in 2024?
- c) Has TH made provision for these costs in its CIR Plan? Please discuss and provide supporting information?

4A-EP-55

References: Exhibit 4A, Tab 2, Schedule 18, Page 6, Table 3

Exhibit 4A, Tab 2, Schedule 18, Appendix A, OEB Appendix 2-M

- a) Please provide an explanation of higher regulatory costs in 2016-2018 compared to the last CIR year.
- b) Please explain why the amortization of CIR costs 2020-24 is \$1.7 million vs \$1.0 million for the last CIR.

- c) With reference to OEB Appendix 2M, One Time costs lines 1-3, please provide a cost breakdown (by contract with names omitted) for 2020 for each category and comparison to the last rebasing application of the legal and consulting costs.
- d) Please explain why these costs are higher given the similarity of the two applications and TH having a regulatory precedent regarding CIR structure for 2020 Application.
- e) Please explain why Intervenor Costs are estimated at \$1.2 million compared to the 2015 actual of \$0.84 million-a 50% increase.

4A-EP-56

Reference: Exhibit 4A, Schedule 2, Form 2K

- a) Please provide a breakout of Executive Compensation from line 1 of Form 2K.
- b) For Executives Please provide a Total Compensation (“TC”) breakdown between Senior Executives and other Executives and the number of positions in each group.
- c) Please provide a comparison of Executive Positions and TC to EB-2013-0116 and/or the last Board-approved Executive TC.
- d) Please provide a copy of the latest Executive TC Benchmarking Study for TH.
- e) Please provide a detailed explanation for the basis/rationale for the approximately \$5 million (~21%) increase in Executive and Management TC over the 5year period 2015-2020.
- f) Include information/discussion of industry benchmarks for comparable positions.

4A-EP-57

Reference: Exhibit 4A, Tab 4, Schedule 5, Mercer Report, Pages 4 and 5

Preamble: On base salaries for union and non-unionized positions, Toronto Hydro is generally competitive, *except for the Y3, Y1, W2 and U1 AND Z salary grades* that are outside of the competitive range relative to both the energy peer group and general industry peer group. The *W2 salary grade* with the supervisory positions exceeds the market median due to upward pay pressures between management and directly supervised unionized positions. Society represented positions roles are paid above the competitive range relative to the energy peer group.

- a) Please provide a list (titles and level) of the six highlighted above TH Management positions in the sample and indicate specifically, which if any, are “Senior Management and/or Executive positions”.

- b) Provide the annual total and average TC for the listed positions and indicate the amount of incentive pay as a percentage of Salaries and Wages (“S&W”) and TC and compare to peer group.
- c) If the S&W and TC of any positions are above the peer group median please identify the average amounts and range of the premium.
- d) Specifically show how much of the premium relates to incentive pay.
- e) Comment/discuss if these positions require skills and other characteristics to support the above market compensation premium(s)

4A-EP-58

Reference: Exhibit 4A, Tab 5, Schedule 1, Appendix 2N

Preamble: EP wishes to understand the evolution of Corporate Cost Allocations, Charges and services between THESL and THC 2015-2018 and the projections for 2019, and 2020-2024.

- a) Please provide a Schedule showing for each service, the Inbound and Outbound Corporate Cost allocations and amounts between THC and THESL for years 2015-2019 (forecast).
- b) Please provide the service schedules and explanations for services/amounts with any material (>10%) change 2015-2019.
- c) Please provide the service schedules and explanations for services/amounts with any material (>10%) change 2020-2024.

6-EP-59

Reference: Exhibit 6, Tab1, Schedule 6, Page 16

Preamble: The referenced Exhibit shows a 2019 Service Revenue Requirement of \$977,885,705 with other Revenue of \$49,422,752, for Net SRR of \$928,462,953 and a Revenue Sufficiency of \$37,752,811.

- a) Accordingly, please confirm/explain
 - i. TH forecasts a 2019 revenue surplus of ~\$38 million (and will have over-earned in 2019).
 - ii. TH is also forecasting a \$25.4 million revenue deficiency in 2020.
- b) What are the primary drivers for the 2019 forecasted surplus - OPEX and CAPEX etc. Please provide a breakdown.
- c) Has TH reduced its 2019 Revenue Requirement in its EB-2018-0171 Rate Application? Please provide the 2019 RR summary and discuss.

- d) Is there any Earnings sharing in 2019? Please provide and discuss the estimate.
- e) Please provide the annual surpluses or deficiencies for the 2013-2019F CIR Period.
- f) Please provide the allowed and actual ROE for the 2013-2019F period.
- g) Please provide the ESM amounts for the 2013-2019 CIR Period.
- h) Given a forecast surplus in 2019, why is TH not freezing rates in 2020? Please discuss.

7-EP-60

Reference: Exhibit 6, Tab 1, Schedule 6, Pages 11 and 12
Exhibit 7, Tab1, Schedule 3, Page 5, R/C Ratios

- a) Please explain why the revenues collected and the resulting R/C ratios are appropriate for each of the residential and CSMUR Classes for 2020-2024.
- b) Please provide revised cost allocations that produce R/C ratios of ~100% for Residential and CSMUR and as necessary, adjust the other classes particularly GS and Large Use to compensate.
- c) Specifically adjust the fixed charges for each class to maintain an RC/Ratio of ~1.0

8-EP-61

Reference: Exhibit 8, Tab 1, Schedule 1, page 3

Preamble: *"In its EB-2010-0142 decision, the OEB directed Toronto Hydro to set rates for the CSMUR class so that the revenue-to-cost ratio for this class is 1.0. In the 2020 cost allocation exercise, based on current rates (adjusted for the 2020 revenue requirement) the CSMUR class would have a revenue-to-cost ratio of 1.014. In order to maintain the revenue-to-cost ratio at exactly 1.0, rates are adjusted downwards for this class. The extra revenue requirement is allocated to those classes with revenue-to-cost ratios."*

Please reconcile this statement with the proposed CSMUR R/C ratios in 2021-2024.

9-EP-62

Reference: Exhibit 9, Tab 1, Schedule 1, Page 8

Preamble: Toronto Hydro is seeking recovery of this balance in the current application as changes in the underlying actuarial assumptions, in particular changes in discount rate, are not expected to substantially offset the actuarial loss incurred to date.

- a) Confirm the differential between LC Bond rates and CAI FIERA Capital rate for the period 2016-2017

- b) Confirm the discount rate for the most recent period
- c) When was the last TH Actuarial Assessment Completed?
- d) Please provide the consultants specific recommendations regarding the Valuation and discount rate.
- e) Why did following the Valuation did not Toronto Hydro not raise the 3.5% discount rate to 4% to reduce the actuarial loss? Please explain in detail.

9-EP-63

Reference: Exhibit 9, Tab 1, Schedule 1, Page 36

The RSVA accounts are not being cleared until 2019 CIR proceeding. Will the resulting Rate rider be added to current Dispositions?