

Jonathan Myers  
jmyers@torys.com  
P. 416.865.7532

January 13, 2015

**RESS, EMAIL & COURIER**

Ontario Energy Board  
2300 Yonge Street  
27th Floor  
Toronto, Ontario  
M4P 1E4

Attention: Ms. K. Walli, Board Secretary

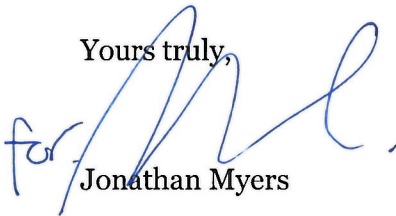
Dear Ms. Walli:

**Re: Toronto Hydro-Electric System Limited ("THESL") Custom Incentive Rate Application (EB-2014-0116)**

We are counsel to the applicant, THESL, in the above noted matter. Filed with this letter are THESL's responses to motions filed by Energy Probe and AMPCO on December 22 and 31, 2014, respectively. Paper copies of these documents will follow by courier.

Also filed is a native excel version of the spreadsheet attached to THESL's response to Energy Probe's motion.

Yours truly,

  
for Jonathan Myers

JM

cc: A. Klein and D. Coban, THESL  
C. Keizer and C. Smith, Torys LLP  
All Parties

**ONTARIO ENERGY BOARD**

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

**AND IN THE MATTER OF** an application by Toronto Hydro-Electric System Limited for an order approving just and reasonable rates and other charges for electricity distribution to be effective May 1, 2015 and for each following year effective January 1 through to December 31, 2019.

**RESPONDING SUBMISSIONS OF TORONTO HYDRO**  
**(on motions by Energy Probe and AMPCO returnable January 19)**

**Torys LLP**  
79 Wellington St. W., Suite 3000  
Box 270, TD Centre  
Toronto, Ontario  
M5K 1N2

Charles Keizer  
Crawford Smith  
Jonathan Myers  
Myriam Seers

Lawyers for Toronto Hydro-Electric  
System Limited

## TABLE OF CONTENTS

Tab	Document
1.	Responding submission of Toronto Hydro (on motion by Energy Probe returnable January 19, 2015)
A	Excel spreadsheet in response to Energy Probe motion
2.	Responding submission of Toronto Hydro (on motion by AMPCO returnable January 19, 2015)
A	Affidavit of Mike Walker sworn January 13, 2015

## **TAB 1**

**ONTARIO ENERGY BOARD**

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

**AND IN THE MATTER OF** an application by Toronto Hydro-Electric System Limited for an order approving just and reasonable rates and other charges for electricity distribution to be effective May 1, 2015 and for each following year effective January 1 through to December 31, 2019.

**RESPONDING SUBMISSION OF TORONTO HYDRO  
(on motion by Energy Probe returnable January 19)**

1. On December 22, 2014, Energy Probe filed a Notice of Motion seeking an order requiring Toronto Hydro-Electric System Limited (“Toronto Hydro”) to provide full and adequate responses to Technical Conference Undertaking No. J1.2-EP-49. This question asked Toronto Hydro to populate and validate a Draft Consolidated Financial Summary for the years 2011 to 2019.
2. Toronto Hydro remains of the view that J1.2 Energy Probe-49 seeks information that is not relevant to this proceeding. As set out in Toronto Hydro’s initial response, the premise underlying Energy Probe’s request is that Toronto Hydro is that has filed a five-year cost of service application, and accordingly possesses detailed forecasts of all the elements comprising the utility’s revenue requirement beyond the 2015 rebasing year. This is not Toronto Hydro’s proposal.
3. As discussed in Exhibit 1B, Tab 2, Schedule 3, Toronto Hydro proposes to set rates for 2016-2019 on the basis of a custom Price Cap Index that incorporates the Ontario Energy Board’s (“OEB”) inflation and productivity values, utilizes a custom stretch factor, and

includes a capital factor to fund Toronto Hydro's necessary investments. Toronto Hydro has not forecasted its Operations, Maintenance and Administration ("OM&A") and revenue offsets for 2016 to 2019.

4. Nevertheless, without admitting the relevance of Energy Probe's request, in the attached document, Toronto Hydro has verified the data provided by Energy Probe, corrected for errors (noted by entries in green), and populated those other aspects of the table where the requested information was available. Where a cell has been left blank, Toronto Hydro does not possess the requested information. These areas include the forecasted breakdown of the utility's OM&A expenditures by category beyond the 2015 Test Year, and categorization of the utility's past and future In-Service Additions by major Distribution System Plan ("DSP") investment type. In any event, in both instances the requested information is not required by the OEB's *Filing Requirements for Electricity Distribution Rate Applications*, nor would it provide probative value, incremental to the evidence already adduced by Toronto Hydro or provided through the discovery process.
5. Toronto Hydro is further unable to populate the column entitled "2014 Forecast," as distinct from the "2014 Estimate" column, which contains the information provided to the OEB in the course of Toronto Hydro's September 2014 application update. Since the utility does not currently possess the audited year-end financial information for 2014, the data contained in the "2014 Estimate" column continues to represent the utility's latest estimate for its 2014 financial performance.
6. Toronto Hydro also submits the following specific comments with respect to the information included into the table by Energy Probe.

#### **2016-2019 OM&A Projections**

7. The 2016-2019 OM&A projections (rows 8 and 57) reflect the application of Toronto Hydro's proposed incentive framework (Exhibit 1B, Tab 2, Schedule 3). Toronto Hydro

has not forecast its OM&A expenditures beyond the application of this framework. The OM&A projections provided are consistent with the information in the utility Business Plan filed with the OEB as an Appendix A to interrogatory 1A-CCC-01.

**Revenues and Rates Revenue Requirement: 2016-2019**

8. Toronto Hydro's proposal does not entail five separate revenue requirements over the 2015-2019 timeframe, as depicted in Energy Probe's Draft Consolidated Financial Summary (rows 19 – 21). Toronto Hydro's understand that this information reflects the sum of the OM&A forecast described above in paragraph 8 and the capital cost components of the Custom Capital Factor outlined in Exhibit 1B, Tab 2, Schedule 3. Toronto Hydro maintains the position that calculating the revenue requirements for the outer years of the plan is not consistent with the utility's proposal to set rates for 2016-2019 based on a Custom Price Index mechanism.

**Rates Revenue Requirement: 2012 -2014**

9. Toronto Hydro also notes that the utility's 2012-2014 rates were not set on the basis of a revenue requirement for those years, as suggested by Energy Probe in row 21 of Draft Consolidated Financial Summary. Over this timeframe, rates were determined by applying the OEB's 3<sup>rd</sup> Generation IRM Price Cap Index to the utility's 2011 base rates, and the incremental OEB-approved rate riders.

**Operating Revenues: 2012-2014**

10. Toronto Hydro's operating revenues for years 2012 and 2013 and the 2014 estimate (row 4 of the Draft Consolidated Financial Summary) are based on the methodology prescribed in the OEB's Reporting and Record Keeping Requirements.

**Past ISA Variation**

11. Toronto Hydro removed the Past ISA variances provided by Energy Probe in row 45 of the Draft Consolidated Financial Summary, as these values no longer correspond with the

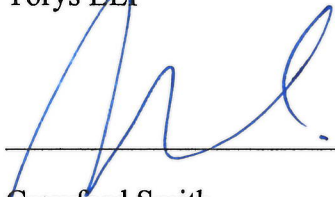
updated In-Service Addition values in row 44. In addition, Toronto Hydro submits that these values are inconsistent with the utility proposal to defer to the true-up the 2012-2014 Incremental Capital Module to a separate phase of this proceeding (Exhibit 2A, Tab 9, Schedule 1).

All of which is respectfully submitted this 13th day of January, 2015.

**TORONTO HYDRO-ELECTRIC SYSTEM LIMITED**

By its Counsel

Torys LLP

  
for Crawford Smith



## **TAB 1A**

1 **Energy Probe TCQ 49**  
2 Toronto Hydro Submission  
3  
4 Operating Revenues  
5 Other Revenues  
6 Total Revenue  
7  
8 Total OM&A Expense  
9 Rate Base  
10 **Capital Factor**  
11 Interest Expense  
12 Depreciation & Amortization  
13 Return on Capital (ROE)  
14 PILs/Income Taxes  
15 Subtotal Capital-Related RR  
16 *Cn*  
17 *Scap*  
18 *PCI*  
19 **Total Gross Revenue Requirement**  
20 **Other Revenues**  
21 **RATES REVENUE REQUIREMENT**  
22  
23  
24 Total Debt  
25 Common Equity  
26 Total Rate Base  
27  
28  
29  
30 **Capital Expenditures**  
31 Total System Access Capital  
32 Total System Renewal Capital  
33 Total System Service Capital  
34 Total General Plant Capital  
35 Other  
36 **Total Distribution Capital**  
37  
38 **In-Service Asset Additions**  
39 Total System Access Capital  
40 Total System Renewal Capital  
41 Total System Service Capital  
42 Total General Plant Capital  
43 Other  
44 **TOTAL ISAs**  
45  
46  
47  
48 **Description**  
49  
50 Operations  
51 Maintenance  
52 Billing and Collecting  
53 Community Relations  
54 Administrative and General  
55 Taxes Other Than Income Taxes  
56 Donations  
57 **TOTAL**  
58

Variation

Variation: Restructuring Costs

Consolidated Financial Summary 2013 ( <i>Sic</i> ) - 2019									
Approved	Actual	Actual	Estimate	Proposed		Proposed	Proposed	Proposed	Proposed
2011	2012	2013	2014	2015		2016	2017	2018	2019
522	524.2	546.05	546.5	661.2		691.5	747.0	800.1	843.5
26	19.4	25.4	25.7	46.1		46.8	47.4	48	48.7
548	543.6	571.45	572.2	707.3		738.3	794.4	848.1	892.2
238.6	215.8*	246.4	246.6	269.5		273.3	277.1	281	284.9
2298.2	2534.3	2658.4	2774.9	3313.5		3683.9	3977.9	4199.8	4415.2
				81.80		90.90	98.20	103.70	109.00
				208.20		222.00	248.20	266.70	287.20
				123.30		137.10	148.00	156.30	164.30
				24.4		14.90	22.80	40.50	46.70
				437.80		465.0	517.30	567.20	607.30
				-		4.11	7.57	6.68	5.01
				-		0.67	0.69	0.71	0.72
				-		4.57	8.00	7.09	5.41
548	543.6	571.45	572.2	707.3		738.3	794.4	848.1	892.1
-26	-19.4	-25.4	-25.7	-46.1		-46.8	-47.4	-48	-48.7
522	524.2	546.05	546.5	661.2		691.5	747	800.1	843.5
1378.9	1520.58	1595.04	1664.94	1988.1		2210.34	2386.74	2519.88	2649.12
919.3	1013.72	1063.36	1109.96	1325.4		1473.56	1591.16	1679.92	1766.08
2298.2	2534.3	2658.4	2774.9	3313.5		3683.9	3977.9	4199.8	4415.2
CAPEX and In Service Asset Additions									
58.3	53.2	86.6	76	86.1		93.5	100.9	90.4	85.5
219.3	157.2	231.1	286.4	251.7		235	246.3	260.1	265.5
75.6	38.4	83.7	104.1	86.8		56.5	62.5	49.5	73.9
67.7	29.3	33.8	109.5	104.6		99.4	28.9	32.1	27.9
24.6	9.9	10.5	13.3	10.3		19.8	28.6	37.9	49.4
445.5	288.0	445.7	589.2	539.6		504.2	467.4	470.0	502.2
439.1*	209.4	381.3	480.3	653.6		543.1	505.7	441	529.9
OM&A									
Bd Approv	Actual	Actual	Estimate	Test Base		Proposed	Proposed	Proposed	Proposed
2011	2012	2013	2014	2015		2016	2017	2018	2019
59.7	55.9	59.5	58.5	70.3					
56.1	54.8	66.8	59.3	61.2					
40.6	36.0	35.2	37.9	41.5					
2.9	2.9	2.9	2.7	2.7					
72.6	67.8	75.0	81.2	86.5					
5.9	-2.3	6.4	6.5	6.5					
0.7	0.7	0.7	0.7	0.8					
238.6	215.8	246.4	246.6	269.5		273.3	277.1	281	284.9
	27.7								

Comments

References

See Cover Letter Para 11

See Cover Letter Para 8

PCI=I-X+Cn-Scap\*(I-X)

See Cover Letter Para 9, 10

60.00% 4.11%  
40.00% 9.30%  
100.00% 6.19%

2015-2019: E1B\_T02\_S03  
2012-2014: Toronto Hydro RRR  
Filings and Supporting Materials

Past/Test Year data: E4A\_T01\_S01; \*2012 amount is net of 27.7 restructuring costs  
Information underlying E1B\_T02\_S03

E1B\_T02\_S03

Information underlying E1B\_T02\_S03

E3A-T06\_S02, App 2-AA

Interrogatory 2B-SEC-25. \*2011 ISA reflects the actual amount.

See Cover Letter Para 12

Categories/Taxonomy

See Cover Letter Para 8

Past/Test Year data: E4A\_T01\_S01;

## **TAB 2**

**ONTARIO ENERGY BOARD**

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

**AND IN THE MATTER OF** an application by Toronto Hydro-Electric System Limited for an order approving just and reasonable rates and other charges for electricity distribution to be effective May 1, 2015 and for each following year effective January 1 through to December 31, 2019.

**RESPONDING SUBMISSION OF TORONTO HYDRO**

**(on Motion by AMPCO returnable January 19, 2015)**

1. On December 31, 2014 the Association of Major Power Consumers in Ontario (“AMPCO”) filed a Notice of Motion seeking an order requiring Toronto Hydro-Electric System Limited (“Toronto Hydro”) to provide full and adequate responses to those questions posed by AMPCO at the Technical Conference in which it requested that Toronto Hydro provide historical information for the period 2010 to 2014 of the quantities of particular asset units replaced (e.g., switches, transformers, poles, etc.) and the spending for those particular units for a number of asset replacement programs.
2. This information is apparently required by AMPCO to derive an estimate of unit cost (e.g., \$/pole).
3. The specific information requested by AMPCO is not relevant because it would not properly permit the comparison of unit costs. In addition, the information sought cannot be extracted from the project information in an accurate manner in a reasonable time frame, even with significant effort and resources. Accordingly, it is Toronto Hydro’s submission that AMPCO’s motion should be dismissed.

### **Resulting Data Would Not be Relevant**

4. Even if the data sought could be obtained in a reasonable time frame (which it cannot), the unit cost information requested by AMPCO would not permit the meaningful comparison of unit costs over time since the data would not provide insights with respect to what happens on a particular project design or execution of a particular project (Technical Conference Transcript, Vol. 1, p. 101). As the requested information would not properly permit the comparison of unit costs, it is not relevant to the proceeding and its production should not be required.
5. By way of example, during the Technical Conference AMPCO suggested that Toronto Hydro could take the total number of poles to be installed over a period of time, break them out into wood and concrete and calculate the relevant unit cost. In response, Toronto Hydro's General Manager of Engineering and Investment Planning, Mr. Walker, indicated that while mathematically such a calculation was possible, the result would be a number that does not actually represent a standard unit cost (Technical Conference Transcript, Vol. 1, p. 97). This is because the associated costs relate to circumstances unique to that particular project in which the asset unit was used. Varying circumstances (such as an asset replacement in a suburban area versus the downtown core) will present different cost results even through the same asset is replaced. The asset and work undertaken each time an asset is employed or replaced are not uniform as in a manufacturing process where unit costs are more appropriately measured (Affidavit of Mike Walker, attached hereto as **Schedule "A"**, at para. 11).
6. By way of further example, when counsel for AMPCO asked about the possibility of calculating the dollars per kilometer of PILC cable replacement and whether the resulting information would be valuable in assessing the reasonableness of the proposed spending, Mr. Walker similarly indicated that while this would produce an average cost it would not produce a consistent cost or a cost that would be comparable as between prior completed jobs and planned future jobs. For example, Mr. Walker noted that while some work involves patching a small segment of cable length, in other jobs entire sections would be replaced, thereby rendering the proposed calculation meaningless (Technical

Conference Transcript Vol. 1, pp. 99-100). Similarly, when asked whether an historical average compared to the average of the planned future spending period would provide a meaningful number, Mr. Walker responded that an average would not be meaningful because the mix of work within a program or portfolio in a given year would differ year over year and so such numbers would be misleading (Technical Conference Transcript Vol. 1, p. 100; Affidavit, para. 9).

7. Toronto Hydro's approach to tracking project costs recognizes the diverse range of work environments and circumstances that are encountered by Toronto Hydro across its system. Given this approach and that the circumstances of each job varies greatly, it would be very challenging to reconcile the unit costs of particular assets as between different jobs (Technical Conference Transcript, Vol. 1, p. 94).
8. As described at para. 12 in the Affidavit of Mr. Walker, the range of variables that would be encountered, for example on a typical pole installation project, is broad and would include such aspects as the relevant ground conditions, location, number of circuits, voltage of those circuits, whether the poles will carry circuits with a single or multiple voltages, whether there will be a need for underground risers, transformer type, guying, work time restrictions, etc. Toronto Hydro can encounter any one or more of these variables in the field, which would affect the cost of the project. For example, a pole installation in concrete could cost more than a pole installation in soil, a pole installation outside of business hours could cost more than during regular business hours, and pole installation in the downtown core could cost more than in a suburban area of the city.
9. It is also important to note that approximately 81% of Toronto Hydro's distribution system capital costs (i.e. all electrical material costs, all civil construction costs, and a portion of electrical design and construction work) are subject to market driven pricing, and are therefore outside of Toronto Hydro's direct control (Affidavit, para. 7). In addition, the method by which a contractor accounts for costs or values assets to be replaced will vary between contractors and will be adapted to facilitate responses to Toronto Hydro's rigorous competitive procurement processes. As a result, the value to the Board of the data sought is further diminished.

### **Costs are Accounted for on a Project Basis**

10. As explained by Mr. Walker, Toronto Hydro measures, tracks and manages its project costs by comparing its actual costs for specific jobs within a project to its design estimate for each specific job within a project (Technical Conference Transcript, Vol. 1, p. 98). Following high-level project planning, Toronto Hydro's designers prepare a design estimate for each particular job or activity that forms part of the project. That estimate will take into account the specific requirements for that job or activity, having regard to the circumstances unique to that job or activity. These include factors such as its location, the number of circuits involved, parking or timing of work restrictions and other relevant circumstances that are specific to the planned job or activity. During and post-completion, Toronto Hydro measures its performance against the design estimate for the particular job or activity. If a significant variance is found, Toronto Hydro then conducts a project variance analysis to determine the cause(s) of the variance and any lessons learned that may be helpful for future projects.
11. Toronto Hydro experiences significant diversity in its project activities over time. It has been Toronto Hydro's experience that the mix of work within a program or portfolio in a given year may not be consistent from year to year (Affidavit, para. 9). Because of this diversity Toronto's practice is to measure, track and manage its project costs relative to the design estimates that are prepared on a project by project basis or job by job basis rather than by comparison of unit costs between programs or from year to year.
12. As further explained by Mr. Walker, Toronto Hydro does not consider costs on a per-asset basis (Technical Conference Transcript, Vol. 1, pp. 96-97 ). With respect to projects or jobs that are bid on by and awarded to outside contractors, the bid costs reflect logical groupings of assets, as well as associated material, labour, overhead and other costs that contractor will charge, regardless of their actual cost to construct. With respect to work that is performed using internal resources, Toronto Hydro instead tracks actual project costs through a detailed work order process (Affidavit, para. 6).
13. As a result of the foregoing, it would be extremely complex and time-consuming for Toronto Hydro to review each designed and completed job for the purpose of extracting

the asset units and related costs. In effect, the costs and asset units are woven into the project accounting.

14. This problem is further complicated by the functionality of Toronto Hydro's IT framework for managing project information. In particular, through Toronto Hydro's custom applications and existing enterprise resource planning ("ERP" or "Ellipse") system project information is transformed at various stages of a project's lifecycle. These transformations can involve changes in scope, the splitting or combining or phasing of scopes, advancing or deferring scopes between years, etc. Each transformation represents a new stage in the project lifecycle, which is not automatically reconciled to previous stages (Affidavit, para. 18).
15. This process of reconciling executed work and costs against the initially planned work and costs requires a labour-intensive and extensive mapping exercise so as to account for each of the transformational steps back to the original project scope that informed the underlying regulatory filing (Affidavit, para. 17-18).

**The Requested Information Can Only be Provided with Significant Time and Resources**

16. Having regard to the manner in which Toronto Hydro measures and tracks its project costs, as well as the limitations of its Ellipse system, the information requested by AMPCO could only be ascertained and provided if Toronto Hydro were to dedicate and divert considerable resources over a significant period of time.
17. As described in para. 18 of the Affidavit, it is estimated that this effort would require three full time resources and would take approximately one full year to complete. This level of resources and time commitment is required because, as explained in para. 16 of the Affidavit, the unit cost for installing or replacing a particular piece of equipment will not be apparent from any particular work order but must instead be derived from a labour-intensive process of manually allocating costs from numerous work orders to the relevant assets associated with a project, and repeating this for each project within a given program.



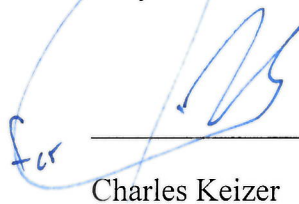
18. It is Toronto Hydro's submission that the level of resources and time needed to provide this information is unreasonable as it would require Toronto Hydro to divert significant resources away from normal business activities - including the execution of its capital program - and has real potential to cause delay in the proceeding. Given the relevance and usefulness of the data, and the foregoing complication with extracting the data, the production of such information should not be required.

All of which is respectfully submitted this 13th day of January, 2015.

**TORONTO HYDRO-ELECTRIC SYSTEM LIMITED**

By its Counsel

Torys LLP

  
\_\_\_\_\_  
Charles Keizer

## **TAB 2A**

**ONTARIO ENERGY BOARD**

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

**AND IN THE MATTER OF** an application by Toronto Hydro-Electric System Limited for an order approving just and reasonable rates and other charges for electricity distribution to be effective May 1, 2015 and for each following year effective January 1 through to December 31, 2019.

**AFFIDAVIT**

I, Mike Walker, of the City of Toronto, in the Province of Ontario, MAKE AN OATH AND SAY:

1. I am the General Manager, Engineering and Investment Planning, Toronto Hydro Electric System Limited ("Toronto Hydro") and, as such, have knowledge of the matters to which I herein depose.
2. As the General Manager, Engineering and Investment Planning, my responsibilities include capacity and generation planning, as well as asset lifecycle planning for all assets within Toronto Hydro's distribution system; annual capital investment planning; annual maintenance investment planning; design, material and equipment standards development and maintenance; and engineering policy development and maintenance.
3. In evidence filed on July 31, 2014 in support of its application in EB-2014-0116 (the "Pre-filed Evidence"), Toronto Hydro describes a number of discrete capital investment programs which together comprise Toronto Hydro's 2015-2019 Distribution System Plan ("DSP"). Toronto Hydro filed detailed business case evidence in support of each of these programs (Exhibit 2B, Sections E5.1 to E8.8).
4. For some of the capital investment programs,<sup>1</sup> Toronto Hydro provided forecast estimates of the quantities of certain asset units that it expected to replace, install or remove (depending on the nature of the program) in each year of the DSP. While Toronto Hydro was able to

---

<sup>1</sup> E6.1, E6.2, E6.4, E6.5, E6.6, E6.7, E6.8, E6.9.



provide these estimated asset quantities on a forecast basis at the program level, as a component of forecasting its cost estimates in the business cases, it did not provide the corresponding costs for the particular assets. In addition, its ability to provide estimated asset quantities does not speak to Toronto Hydro's ability to provide historical information on the quantities of particular asset units installed, removed or replaced, or the corresponding costs on a per-unit basis.

### **Measurement and Tracking of Project Costs**

5. Capital investment programs are implemented through the completion of specific projects. Toronto Hydro designs and executes its capital work on a project basis. A project consists of all of the activities that are involved in removing, replacing or installing a group of assets within a particular geographic location. A project's cost consists of the blended costs of the various activities that together comprise the project.
6. Project costs are measured and tracked differently, depending on whether the work is being performed internally or externally. If the work, or a portion of it, has been contracted, the costs reflect the contractor's bid price for the civil materials, labour, overhead and other costs necessary to execute the work (with the exception of electrical equipment that is provided by Toronto Hydro). The contractor is bound to their bid price even if their actual costs of completing the project differ. If the work is being performed using internal resources, the costs represent the actual material, labour and equipment costs incurred by Toronto Hydro to execute the work, which are tracked through a detailed work order process.
7. Approximately 81 percent of Toronto Hydro's capital costs in its electrical work program are subject to competitive market forces. This includes the costs of all electrical equipment, which Toronto Hydro procures for use on its system (whether or not such equipment is installed by internal resources or outside contractors), all civil construction related costs, and costs related to electrical design and construction work provided by outside contractors, all of which are sourced through competitive processes. The remaining 19 percent of Toronto Hydro's capital costs in its electrical work program are attributable to the internal labour and vehicle costs in connection with the relevant projects. As a consequence of there being a high proportion of Toronto Hydro's capital costs subject to competitive market forces, the level of those costs on a per unit basis is largely outside of Toronto Hydro's control. Competitive



market pressures already ensure that Toronto Hydro is able to obtain the lowest cost per unit that the market can bear, for the majority of its project spending.

8. Project costs are influenced by the variety of circumstances and factors that Toronto Hydro encounters across its large and diverse system. For example, pole installations as part of an Overhead Circuit Renewal project can be subject to variables such as the following: installation in soil or in concrete; location of the pole (i.e. downtown, suburban, road with or without parking); type and number of connected circuits (i.e. single phase, three-phase, 27.6 kV, 13.8 kV, 4.16 kV, or combination of these); type and number of other equipment installed on the pole (i.e. switches, risers, transformer, etc.); and the loading conditions and switching requirements applicable to the pole. These variables can change from project to project, or from pole to pole within a project. The unique combination of variables encountered on a particular project will affect the cost of that project. For example, on a pole installation project the cost of the project will be affected by such factors as whether the poles need to be installed in concrete as compared to soil, or whether the poles can be installed during regular business hours or must be installed outside of regular business hours.
9. Because of the diverse conditions and circumstances encountered across Toronto Hydro's system, the mix of work within a project and the mix of projects within a program vary considerably from year to year. As an example, the majority of projects in the Overhead Circuit Renewal program in a given year may be executed in the suburbs where crews generally encounter fewer restrictions and complexities when installing poles. The next year, the bulk of the work within the program may shift to the downtown core, where pole installations are typically more complex and time consuming. As a result of these geographical differences, the number of pole installations would likely be significantly higher but with much lower costs in the first year as compared to the second year. A comparison of the cost per pole installed in these years would not reflect the diverse conditions and circumstances encountered and, as a result, would not be meaningful.
10. Given the complexities described above, Toronto Hydro plans, designs and tracks work on a project by project basis, rather than on an asset by asset basis. As such, rather than considering the unit cost of a particular asset on one project or in one period relative to the unit cost of the same type of asset on another project or in another period, Toronto Hydro instead considers the actual costs of a project relative to the estimated costs for that particular



project, where the estimate will have taken into account the known circumstances and conditions unique to the particular project.

11. Unit costing is a common consideration in manufacturing, where the output is the production of consistent, uniform and repeatable units. In that context, unit costing enables the manufacturer to track the unit costs by standardizing production through an assembly line manufacturing process, with the objective of every product off the line being identical in form and quality, and every step in production being consistent and optimized.
12. Toronto Hydro is subject to many variables outside of its control in meeting its service requirements and managing its large and complex system. A unique combination of variables is encountered on each project and that unique combination of variables gives rise to a cost profile that is unique to the particular project. These include variables such as system configuration, system voltage, construction standards, number of circuits/phases, switching requirements, system loading, location within the City, type of street, site access restrictions, soil/ground conditions, seasonal/weather impacts, timing of work execution, condition of associated assets, third party coordination requirements, and presence of other utility plant.

### **Project Accounting Processes**

13. Toronto Hydro's capital projects begin as "scopes" of work that are created in a custom scoping application by planning engineers who have experience identifying, prioritizing and planning investments within one or more discrete capital programs. Using the utility's suite of planning tools and databases, these engineers exercise professional judgement to create project scopes that address discrete assets (e.g. stations circuit breakers), arrays of like assets (e.g. polymer SMD-20s), or geographic/feeder based investment needs (e.g. Overhead Circuit Renewal).
14. Once the investment needs within a particular project scope are fully specified, the engineer produces a "high-level estimate" of the project cost using the utility's Enterprise Resource Planning ("ERP") system (currently Ellipse). The engineer then delivers the scope package to a program management consultant, who reviews the scope and determines the resources and scheduling of the work. At this stage, the scope may be split, combined, phased, advanced or deferred based on the project management consultant's recommendations.

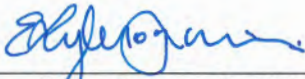


15. The project then moves to detailed design where a designer is tasked with assessing site-specific construction needs through field visits, the Geographic Information System (GIS) and other available records. The scope of the project could be modified at this point in the process. Using this information and their professional experience, designers produce construction drawings and an accompanying detailed design estimate in Ellipse. When the design is complete, the designer “packages” the estimate in Ellipse, which results in the creation of new identifiers called “Projects” and “Work Orders”. It is not until the estimate is packaged that Ellipse establishes a transactional record for the project.
16. As a result of the process described above, the “unit cost” for installing or replacing a particular piece of equipment, such as a pole installation, will not be apparent from any particular work order. Rather, the cost of each installed or replaced asset unit will be made up of costs that would be found in multiple work orders, each of which addresses a discrete set of tasks that contributes to that installation or replacement (i.e. one work order for setting the poles, another for framing them, etc.). As such, deriving the unit cost for the installation or replacement of a particular asset will involve allocating the costs of those multiple work orders to the relevant assets, which on account of the diverse conditions and circumstances encountered in the field may require certain estimates or assumptions to be made. It is not uncommon for there to be dozens of work orders associated with a particular project. As such, the process would be expected to be very labour-intensive, given that a program is made up of a number of individual projects.
17. Toronto Hydro’s ERP system does not provide the capability to create or manage a master record for a capital project throughout its entire lifecycle. Toronto Hydro can track project execution costs against Ellipse projects and work orders, and can be compared to packaged design estimates. However, in order to report project variances or historical unit costs on a program basis, the utility must manually map this transactional record back to the original project scopes. As mentioned previously, these scopes are created in a custom application with no linkage to Ellipse. Scopes are subsequently managed in different custom tools as the project information is transformed at various stages in its lifecycle. The reconciliation of each of the previous steps in the lifecycle of the project requires significant manual effort, which is further compounded by the process described in paragraph 16 above.

#### **Feasibility of Providing the Information Requested by AMPCO**

18. To provide the information requested by AMPCO, Toronto Hydro would have to manually reconcile the costs of executed projects against the scope of work initially developed for each corresponding project. Through such a process, Toronto Hydro would need to determine the quantities and costs for the assets in question and aggregate those asset quantities and costs back to the specific projects and programs where they originated, while taking into account any scope changes that may have occurred over the lifecycle of the project. Toronto Hydro would also have to manually derive the unit costs for each of the assets in question for each project by way of analyzing each work order for a project to allocate costs. This data is not readily available within Ellipse. This process would be very labour- intensive. Toronto Hydro estimates that if it were to dedicate three staff from the System Planning and Project Management functions on a full-time basis, it would take a duration of approximately one year to manually derive all of the unit cost information requested by AMPCO.

**SWORN BEFORE ME** at the City of Toronto, in  
the Province of Ontario, this 13 day of January,  
2015



Commissioner for Taking Affidavits

Elias Lyberogiannis

(LSUC #: 64499C)



Mike Walker