EB-2018-0165

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 January 1, 2020 to December 31, 2024.

Toronto Hydro

Panel 2 General Plant Operations and Administration.

Panel 3 CIR and DVAs

Energy Probe Research Foundation Compendium

July 4, 2019

PANEL 2 – GENERAL PLANT, OPERATIONS AND ADMINISTRATION.

EP COMPENDIUM OF EVIDENCE, INTERROGATORIES AND UNDERTAKINGS

TOPIC	REFERENCES/EXHIBITS
1. Compensation	
Salaries and Wages	**Exhibit U-STAFF-166.11** **Update 4A-Staff-128 / part (b)**
Total Compensation	**Exhibit U-SEC-102** **JTC 3.6 Appendix A OEB Form 2K** **Exhibit U-72, Tab 4A, Schedule 5, Appendix B, Updated JTC 3.22** **4A-EP-57 Exhibit 4ATab 4 Schedule 5- Mercer Report -Pages 4 and 5**
Executive Compensation & Incentive Pay	**4A-EP-56 Exhibit 4A Schedule 2 Form 2K; 4A-AMPCO -100 b) c)** **Exhibit U, Tab 1C, Schedule 5, pp. 63 and 64**
2. Fleet Capital and Services	
Fleet Program 2013-2019	**Exhibit 2B DSP Section E8.3.1** **4A-EP-51: Exhibit 4ATab 2 Schedule 11 Page 6; Exhibit 2B Section E8.3.4 Tables 4,6.7.**
Fleet Program 2020-2024	**ibid 4A-EP-51 …..** **1B SEC 3 Appendix E** **4A-EP-52: Exhibit 4ATab 2 Schedule 11 Page 6; Exhibit 2B Section E8.3.5** **EP Exhibit K xx** **TC Tr. Feb 21 2019 Pages 109-113**
3. IT/OT Capital and Services.	**Exhibit 2B Section E.8.4.1** **Exhibit U-STAFF-166.4 Table 1** **Exhibit 2B E8.4.5 Business Case Evaluation ("BCE") Page 24** **2B-EP-49: 2B-SEC-72** **Exhibit 2B, Section E8.4, Appendix A** **TC Tr. Vol Feb 21 2019 Page102**

Interrogatory Responses
U-STAFF-166.11
Update 4A-Staff-128 / part (b)

Table 1: 2015-2020 Breakdown of Salary and Wages ($ Millions)

	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Bridge	2020 Test
Base Salary	138.1	139.2	140.9	140.4	153.3	156.4
Overtime	12.6	12.7	13.1	17.1	12.2	12.4
Incentive Pay	7.5	8.4	9.1	9.2	10.5	10.7
Total	**158.3**	**160.3**	**163.1**	**166.7**	**176.0**	**179.4**

TOTAL CHANGE 2018-2024 =$21.1 million

AVERAGE ANNUAL PERCENTAGE CHANGE =4.2%

RESPONSES TO SCHOOL ENERGY COALITION INTERROGATORIES
INTERROGATORY 102:
Reference(s): JTC3.6, Appendix A
Please update the interrogatory response to include 2018 actuals. (Please also provide include in your response the table in excel format)

RESPONSE:
Please refer to Appendix A of this response.
In providing this information, Toronto Hydro maintains the limitations and qualifications outlined in its responses to interrogatory 4A-SEC-87, part (b), and undertaking JTC3.6.

Updated JTC3.6 Appendix A
OEB Appendix 2-K
EMPLOYEE COSTS /COMPENSATION TABLE

	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Bridge	2020 Test	2021 Projection	2022 Projection	2023 Projection	2024 Projection
Number of Employees (FTEs including Part-Time)										
Executive	6	6	7	5	5	5	5	5	5	5
Managerial	55	63	63	67	63	62	63	63	63	63
Non Management, Non-Union	495	521	549	564	607	603	610	610	610	610
Society	53	56	60	65	68	69	69	69	69	69
PWU	874	837	794	724	779	778	797	797	797	797
Total	**1483**	**1484**	**1473**	**1425**	**1523**	**1517**	**1544**	**1544**	**1544**	**1544**
Total Salary and Wages (including ovetime and incentive pay)										
Executive	$ 2,486,891	$ 2,397,404	$ 2,704,552	$ 2,378,602	$ 2,369,718	$ 2,447,034	$ 2,510,069	$ 2,583,737	$ 2,659,837	$ 2,738,448
Managerial	$ 9,805,887	$ 11,755,405	$ 12,267,327	$ 13,340,028	$ 13,109,022	$ 13,272,778	$ 13,844,190	$ 14,277,271	$ 14,724,649	$ 15,186,974
Non Management, Non-Union	$ 52,575,387	$ 55,121,586	$ 58,799,211	$ 63,677,023	$ 69,086,145	$ 70,786,074	$ 73,543,113	$ 75,917,742	$ 78,368,180	$ 80,899,710
Society	$ 6,273,163	$ 6,387,993	$ 7,345,852	$ 7,857,253	$ 8,730,321	$ 9,026,473	$ 9,135,492	$ 9,276,139	$ 9,410,531	$ 9,546,705
PWU	$ 87,126,813	$ 84,638,474	$ 81,994,788	$ 79,475,009	$ 82,701,776	$ 83,908,086	$ 87,750,357	$ 90,205,825	$ 92,639,490	$ 95,107,337
Total	**$ 158,268,141**	**$ 160,300,862**	**$ 163,111,731**	**$ 166,727,914**	**$ 175,996,982**	**$ 179,440,444**	**$ 186,783,221**	**$ 192,260,714**	**$ 197,802,688**	**$ 203,479,175**
Total Benefits (Current + Accrued)										
Executive	$ 598,384	$ 566,562	$ 632,406	$ 539,960	$ 639,810	$ 706,901	$ 728,164	$ 751,670	$ 775,851	$ 800,022
Managerial	$ 2,974,938	$ 3,352,572	$ 3,570,450	$ 3,766,985	$ 4,006,639	$ 4,344,315	$ 4,554,021	$ 4,707,312	$ 4,864,976	$ 5,017,854
Non Management, Non-Union	$ 16,711,133	$ 17,268,194	$ 18,482,452	$ 18,694,608	$ 22,685,770	$ 24,854,001	$ 25,902,470	$ 26,803,377	$ 27,726,571	$ 28,589,965
Society	$ 2,186,586	$ 2,147,661	$ 2,485,728	$ 2,558,950	$ 2,702,876	$ 2,981,200	$ 3,041,149	$ 3,100,646	$ 3,160,919	$ 3,211,829
PWU	$ 30,356,391	$ 28,722,633	$ 28,143,352	$ 25,433,165	$ 26,864,459	$ 29,136,946	$ 30,623,764	$ 31,612,859	$ 32,620,296	$ 33,530,859
Total	**$ 52,827,432**	**$ 52,057,622**	**$ 53,314,387**	**$ 50,993,668**	**$ 56,899,553**	**$ 62,023,363**	**$ 64,849,569**	**$ 66,975,864**	**$ 69,148,612**	**$ 71,150,529**
Total Compensation (Salary, Wages, & Benefits)										
Executive	$ 3,085,275	$ 2,963,967	$ 3,336,959	$ 2,918,562	$ 3,009,528	$ 3,153,935	$ 3,238,233	$ 3,335,406	$ 3,435,688	$ 3,538,470
Managerial	$ 12,780,825	$ 15,107,977	$ 15,837,777	$ 17,107,012	$ 17,115,660	$ 17,617,093	$ 18,398,211	$ 18,984,583	$ 19,589,625	$ 20,204,828
Non Management, Non-Union	$ 69,286,521	$ 72,389,780	$ 77,281,663	$ 82,371,631	$ 91,771,915	$ 95,640,075	$ 99,445,583	$ 102,721,119	$ 106,094,752	$ 109,489,675
Society	$ 8,459,748	$ 8,535,654	$ 9,831,580	$ 10,416,204	$ 11,433,197	$ 12,007,672	$ 12,176,641	$ 12,376,785	$ 12,571,449	$ 12,758,534
PWU	$ 117,483,204	$ 113,361,107	$ 110,138,140	$ 104,908,173	$ 109,566,235	$ 113,045,032	$ 118,374,121	$ 121,818,684	$ 125,259,786	$ 128,638,197
Total	**$ 211,095,573**	**$ 212,358,484**	**$ 216,426,119**	**$ 217,721,582**	**232,896,535**	**$ 241,463,807**	**$ 251,632,790**	**$ 259,236,578**	**$ 266,951,300**	**$ 274,629,704**

Notes:
Please see Toronto Hydro's response to interrogatory 4A-SEC-87 part b) for the assumptions and limitations associated with the 2021-2024 information.

TOTAL CHANGE 2018-2024 =$56.91 million

AVERAGE ANNUAL PERCENTAGE CHANGE =9.49%

RESPONSES TO ENERGY PROBE RESEARCH FOUNDATION INTERROGATORIES
INTERROGATORY 72:
Reference(s): Exhibit U, Tab 4A, Schedule 5, Appendix B, Updated JTC 3.22
Exhibit U, Tab 4A, Schedule 3, Appendix A, OEB Appendix 2-K

a) Please provide the following clarifications and explanations:

i) Why has the head count for this group decreased in 2018 then increased by 100 in 2019?

ii) Why have Salaries and Wages for this group increased by about $ 6 million 2015-2018, and then increased to about 15.5 million 2015-2019 with an increased headcount of 40 relative to 2015?

iii) Why are Salaries and Wages increasing in 2020 by an additional $3.5 million, despite a reduced 2020 headcount?

b) Provide the total and average percentage increases in Total Compensation and explain why the increase in Total Compensation for this group of about $28 million for 2015-2020 is reasonable.

RESPONSE:

a) Toronto Hydro assumes Energy Probe's questions in part (a) of this interrogatory refer to the Non-Management (union and non-union) category in the Employee Cost table. All of the answers that follow are provided in the context of this employee category.

i) Please refer to Toronto Hydro's response to interrogatory U-VECC-87, part (b).

ii) For the reasons detailed in part (b) of Toronto Hydro's response to interrogatory U-VECC-87, the increase in salary and wages from 2015 to 2018 was lower than expected because of delays in hiring various resources. The 2018 results affected the variance from 2018 to 2019.

iii) The additional $3.2 million from 2019 to 2020 represents a 2 percent growth in salary and wages for this period. The total increase in salary and wages from 2019 to 2020 is lower for this period due to the decrease in FTEs from 2019 to 2020.

b) From 2015 to 2020 the total compensation for the Non-Management group has increased by 38 percent, which represents a compounded annual growth rate of 6.7 percent; however, once the data has been normalized for the yearly growth of the average number of FTEs and yearly average changes to benefits, the average increase in compensation costs for the Non-Management group is 13.2 percent, which represents a compounded annual growth rate of 2.5 percent. When compared to market conditions for salaries and wages in this group, the rate of growth in this category is reasonable and aligned with Toronto Hydro's compensation strategy of maintaining market competitive salary and wages, as discussed in Exhibit 4A, Tab 4,

Schedule 4.
Furthermore, part of the growth in compensation from 2015 to 2020 is driven by a modest FTE increase. The additional resources are needed to support the execution of large and complex capital projects, which are being carried out by both internal and external resources. They are also needed to provide enhanced supervision and program management, and to continue to execute the utility's workforce renewal and training and development plan.

4A-EP-57

Ref: Exhibit 4ATab 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.
b) Indicate specifically, which if any, are "Senior Management and/or Executive positions".
c) Provide the annual total and average TC for the listed positions and indicate the amount of incentive pay as a percentage of S&W and TC. Compare to Peer group.
d) 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.
e) Specifically show how much of the premium relates to incentive pay.
f) Comment/discuss if these positions require skills and other characteristics to support the above market compensation premium(s)

RESPONSE (PREPARED BY TORONTO HYDRO):

b) Consistent with Mercer's clarification in part (a), above, the following responses focus on the Z and W2 grades only. Further, the information is presented by grade (rather than by position) in order to facilitate comparisons to peer group data from the Mercer review. Please refer to Toronto Hydro's response to interrogatory 4A-SEC-89 (e). Toronto Hydro data provided in the responses below reflect the combined salaries and incentive pay of incumbents in the benchmarked positions, whereas theToronto Hydro data in the Mercer review reflects salary structure job rates, and target short-term incentives.

Table 1: Average Total Target Compensation ($K)

Grade	Toronto Hydro (Average)	Energy Peer Group (Average)	General Industry Peer Group (Average)
Z	235	212	306
W2	117	94	90

Note: Mercer provided the Average Total Target Compensation for the peer groups in order to answer this question as this metric was not available in the Mercer review.

Table 2: Target Incentive Pay as a Percentage of Salaries and Wages

Grade	Toronto Hydro	Energy Peer Group (P50)	General Industry Peer Group (P50)
Z	25%	20%	30%
W2	8%	N/A	8%

Note: Comparison has been conducted on the basis of Target Incentive Pay (in order to align with the market data from the Mercer report)

c) **Table 3: Salaries & Wages Premium ($K)**

Grade	Toronto Hydro (Average)	Energy Peer Group (P50)	Premium over Energy Peer Group (P50)		General Industry Peer Group (P50)	Premium over General Industry Group (P50)	
			$	%		$	%
Z	188	183	+5	+3%	232	-44	-19%
W2	108	86	+22	+26%	87	+21	+24%

Table 4: Target Total Compensation Premium ($K)

Grade	Toronto Hydro (Average)	Energy Peer Group (P50)	Premium over Energy Peer Group (P50)		General Industry Peer Group (P50)	Premium over General Industry Group (P50)	
			$	%		$	%
Z	235	198	+37	+19%	307	-72	-23%
W2	117	96	+21	+21%	94	+23	+24%

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Ref: 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 TC breakdown between Senior Executives and other Executives and # 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 Total Compensation.
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 5 year period 2015-2020.
f) Include information/discussion of industry benchmarks for comparable positions.

RESPONSE:

a) Please see Toronto Hydro's response to interrogatory 4A-AMPCO-100 part (b).

c) **Table 1: Executive Employee Compensation 2011-2020 ($ Thousands)**

	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Bridge	2019 Bridge	2020 Test
FTE	9.2	7.4	8	7	6	6	7	5	5	5
TC	3,813.6	3,273.2	3,414.4	3,021.4	3,085.3	2,964.0	3,337.0	2,932.4	3,034.9	3,181.2[1]

Note 1: Total Compensation in 2020 reflects the accrual method of accounting for OPEBs.

RESPONSES TO ENERGY PROBE RESEARCH FOUNDATION INTERROGATORIES

INTERROGATORY 68:

Reference(s): Exhibit U, Tab 1C, Schedule 5, pp. 63 and 64 Performance-based Incentive Compensation

Preamble:

"In 2018, the Corporation exceeded all of its corporate targets represented by its KPIs. The NEOs exceeded the majority of their divisional and individual performance targets for 2018. Each of the corporate, divisional and individual performance targets were reasonably difficult to attain and served to encourage success in the NEOs performance and in the Corporation's overall results."

a) Please provide the amounts of incentive pay the NEOs received in 2018. Position this for each as a percentage of their Total Compensation and Salary. 18 b) Please provide the Corporate KPIs that will govern incentive pay in the 2020 Test Year and compare to 2018. Discuss any differences

c) Please provide the 2020 targets and weightings and note any differences to 2018.

RESPONSE:

a) Please refer to Appendix A of this response for incentive pay provided to NEOs in 2018. Toronto Hydro's executive compensation is aligned with its comparators in terms of base salary and variable performance pay as assessed by Mercer (Canada)

Limited in its senior executive compensation review. 1 Please refer to 1B-SEC-3, Appendix D for further information.

b) This information is not available. The Corporate Scorecard (inclusive of metrics, targets and weightings) for a given year is approved by the Board of Directors in the fourth quarter of the preceding year.

c) Please refer to part (b) of this response.

Annual Information Form - Summary Compensation Table

NEO Name and Principal Position	Salary	Non-Equity Incentive Plan Compensation	All Other Compensation	Total Compensation	Incentive Pay as Percentage of Total Compensation	Incentive Pay as Percentage of Salary
Anthony Haines President and Chief Executive Officer, Toronto Hydro Corporation	583,999	570,068	16,053	1,170,120	49%	98%
Sean Bovingdon Former Executive Vice-President and Chief Financial Officer, Toronto Hydro Corporation	262,632	153,273	1,727	417,632	37%	58%
Aida Cipolla Executive Vice-President and Chief Financial Officer Toronto Hydro Corporation	215,668	111,400	1,560	328,628	34%	52%
Dino Priore Executive Vice-President and Chief Engineering and Construction Officer Toronto Hydro-Electric System Limited	377,561	224,808	4,580	606,949	37%	60%
Ben La Pianta Executive Vice-President and Chief Customer Care and Electric Operations Officer, Toronto Hydro-Electric System Limited	346,704	207,482	9,133	563,319	37%	60%
Amanda Klein Executive Vice-President, Public and Regulatory Affairs and Chief Legal Officer Toronto Hydro-Electric System Limited	283,000	169,800	2,863	455,663	37%	60%

GENERAL PLANT OM&A AND CAPITAL
EXHIBIT 4A DSP EXHIBIT 2B SECTION 8

ASSET VALUES IT/OT and FLEET

Interrogatory Responses
U-STAFF-168
Appendix B

Table 4: Gross Assets Breakdown by Major Plant Account – Detailed by Uniform System of Account

	Description	2015 Actuals MIFRS	2016 Actuals MIFRS	2017 Actuals MIFRS	2018 Actuals MIFRS	2019 Bridge MIFRS	2020 Forecast MIFRS
1815	Transformer Station Equipment	5.8	6.0	36.9	37.9	38.9	39.0
	Subtotal High Voltage Plant	5.8	6.0	36.9	37.9	38.9	39.0
1805	Land	7.1	7.1	7.0	7.0	7.0	7.0
1808	Buildings and Fixtures	51.4	105.1	116.6	137.3	146.6	150.1
1810	Leasehold Improvements	-	-	-	-	-	-
1820	Distribution Station Equipment	149.9	156.8	184.5	213.5	233.9	266.4
1830	Poles, Towers and Fixtures	311.0	339.5	362.5	380.8	402.6	438.4
1835	O/H Conductors and Devices	299.4	349.5	390.5	428.3	468.2	527.1
1840	U/G Conduit	952.0	1,051.0	1,127.9	1,205.6	1,306.1	1,446.6
1845	U/G Conductors and Devices	609.9	690.6	782.8	862.2	955.9	1,074.8
1850	Line Transformers	412.4	465.3	515.4	566.7	640.8	731.9
1855	Services	93.3	109.1	122.1	124.6	141.4	166.1
1860	Meters (includes Smart Meters)	168.7	180.9	199.7	220.1	243.9	279.8
1970	Load Management-Customer	3.0	3.0	3.0	3.0	3.0	3.0
1975	Load Management-Utility	-	-	-	-	-	-
1980	System Supervisory Equipment	25.4	28.2	33.6	39.7	46.4	54.3
1609	Capital Contributions Paid	21.7	75.6	75.6	164.2	190.5	220.3
2440	Contributed Capital	(58.2)	(90.5)	(118.0)	(156.6)	(235.2)	(381.0)
	Subtotal Distribution Plant	3,047.0	3,471.1	3,803.4	4,196.4	4,551.0	4,984.8
1611	Computer Software	101.6	113.6	137.0	207.9	247.9	289.5
1905	Land	17.7	17.7	17.7	17.4	17.4	17.4
1612	Land Rights	-	-	-	1.6	1.6	1.6
1908	Buildings and Fixtures	126.9	184.5	246.7	239.4	240.6	243.6
1910	Leasehold Improvements	0.8	0.8	0.8	0.8	0.8	0.8
1915	Office Furniture and Equipment	10.8	15.4	19.0	20.0	20.4	21.5
1920	Computer Equipment	27.3	47.2	58.7	66.8	74.2	89.3
1930	Transportation Equipment	26.6	29.9	33.7	36.1	41.1	45.7
1935	Stores Equipment	0.0	0.0	0.0	0.0	0.0	0.0
1940	Tools, Shop and Garage Equipment	14.7	17.8	21.2	23.4	26.2	35.7
1945	Measurement & Test Equipment	0.5	0.5	0.5	0.5	0.5	0.6
1950	Power Operated Equipment	0.6	0.7	0.8	1.3	1.4	1.5
1955	Communication Equipment	8.0	35.9	45.4	49.9	50.7	52.0
1960	Miscellaneous Equipment	0.3	0.3	0.3	0.3	0.3	0.3
2005	Property Under Capital Leases	18.2	18.2	18.2	18.2	18.2	18.2
	Subtotal General Plant	354.0	482.3	599.8	683.2	741.1	817.4
	GROSS FIXED ASSETS BEFORE CWIP	3,406.8	3,959.4	4,440.1	4,917.5	5,331.0	5,841.3
2055	Construction Work-in-Process	577.7	502.9	485.8	396.4	381.1	358.3
	TOTAL INCLUDING CWIP	3,984.5	4,462.3	4,925.9	5,313.9	5,712.2	6,199.6

Exhibit 2B DSP Section E8.3.1 Fleet and Fleet Services Program

E8.3.1 Overview

Table 1: Program Summary

2015-2019 Cost ($M): 19.1	**2020-2024 Cost ($M):** 42.5
Segments: Fleet and Equipment Services	
Trigger Driver: System Maintenance and Capital Investment Support	
Outcomes: Reliability, Environment, Safety, Financial	

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

E8.3.4 Expenditure Plan

Table 4: Historical & Forecast Program Costs ($ Millions)

	Actual			Bridge		Forecast				
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Heavy Duty Vehicles	2.2	2.9	3.3	1.7	1.7	5.8	6.6	7.2	7.4	6.5
Light Duty Vehicles	1.3	0.8	0.3	1.5	1.5	2.7	2.2	1.2	1.2	1.1
Equipment	0.6	0.1	1.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1
Total	**4.1**	**3.7**	**4.7**	**3.3**	**3.3**	**8.6**	**8.9**	**8.5**	**8.7**	**7.8**

Exhibit EP K xx	*Fleet Services Capital and Operating Costs -Comparison 2015-2019 to 2020-2024*					
		Column 1	***Column 2***	***Column 3***		
		CIR Plan	**2017 LCA Analysis**	***CIR Plan***		
		2013-2019	**Ex. 2B Section**	**2020-2024**		
		Historic	**E8.3 Page 10**	**Forecast**		
			Table 5			
Fleet Profile						**References**
average # units	Light Duty Vehicles	307		259		E8.3.1 - Overview
	Heavy Duty Vehicles	260		204		2013 data 4A-EP-51
	Total	**567**		**463**		4A-SEC-3 App E Table 1
	Trailers	**51**		**51**		4A-EP-51
Age of Vehicles years	Light Duty Vehicles	**5.8 years**	**6-10 years**	**4.8 years**		4A-EP-51 Table 3
average	Medium Duty Vehicles	**6.1 years**				4A-SEC-3 Appendix E
	Heavy Duty Vehicles	**7.6 years**	**8-14 years**	**5.9 years**		
	Trailers	**?**	**20 years**	**?**		
Capital Expenditures $M						
	Light Duty Vehicles			$ 8.30		E8.3.1 Table 7
	Heavy Duty Vehicles			$ 33.50		E8.3.1 Table 6
	Total	**$ 19.10**	**$ 41.50**	**$ 42.50**		
	Trailers	?		?		
Operating Expenses $M						
	Light Duty Vehicles					
	Fuel					
	Maintenance					
	Heavy Duty Vehicles					
	Fuel					
	Maintenance					
	Total	?		**$27.2M**		
FLEET REPLACEMENT OPTIONS						
Scenario I-Run to Fail						
	CAPEX	**$8 - 28M**				4A-EP-51
	OPEX	**$51 - 75M**				
Scenario II- Managed Fleet						
	CAPEX			**$42.5M;**		4A-EP-51
	OPEX			**$27.2M**		
Scenario IIi-LIFE CYCLE (FAR 20)						
	CAPEX		**$41.5M***			4A-SEC-3 Appendix E and
	OPEX		**$22.3M**			TC Tr. Vol Feb 21 2019 pg 113
*** $ 56.5 million with $14 million for Trailers**						

Table 5: Life Cycle Analysis Replacement Criteria

Priority	Segment	Vehicle Type	2013 LCA (Years)	2017 LCA (Years)	Net	Considerations
1	*Heavy Duty (HD)*	Cube Van	12	12-15	↑	Heavy duty vehicle replacements are routinely evaluated on an individual basis.
1	*Heavy Duty (HD)*	Single Bucket	14	12-16	→	
1	*Heavy Duty (HD)*	Single Bucket -Van Mount	8	11	↑	
1	*Heavy Duty (HD)*	Cable Truck	16	11-14	↓	
1	*Heavy Duty (HD)*	Crane Truck	14	10-14	↓	
1	*Heavy Duty (HD)*	Dump Truck	14	8-12	↓	
1	*Heavy Duty (HD)*	Line Truck	13	13	→	
1	*Heavy Duty (HD)*	Double Bucket Truck	14	14	→	
1	*Heavy Duty (HD)*	Digger-Derrick	13	13	→	
2	*Light Duty (LD)*	Car	6	9	↑	Exceptions: Above average maintenance costs, obsolescence, and usability for the task, poor reliability, excessive downtime, and lack of parts.
2	*Light Duty (LD)*	Cargo Minivan	7	7	→	
2	*Light Duty (LD)*	Passenger Minivan	6	9	↑	
2	*Light Duty (LD)*	Full-size Van	9	10	↑	
2	*Light Duty (LD)*	Pick-Up Truck	9	9	→	
2	*Light Duty (LD)*	SUV	6	8	↑	
3	*Equipment (Eq)*	Trailers	20	20	→	Equipment replacement is on a run-to-failure and/or ad-hoc request basis.

4A-EP-52

Ref: Exhibit 4ATab 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**

RESPONSE:

a) The five-year CAPEX & OPEX[1] estimates for each option examined is as follows:

i) Run-to-Fail Option: CAPEX of approximately $8 - 28M to account for greater redundancy due to significant repair downtime, and complete failure situations; OPEX of approximately $51 - 75M[3] given that repairs become increasingly costly once critical components are affected. The substantial risks associated with this option are explained at Exhibit 2B, Section E8.3, pp. 16-17.

[1] **OPEX figures in these responses are exclusive to direct vehicle repair & maintenance costs. Business administration costs (such as office staff payroll, meeting expenses, and other administrative costs) are not included.**
[2] **Though we are running vehicles to failure before replacements, it is assumed that some capital investment would be required to increase vehicle redundancy in the pool since repair frequency & duration would increase – estimated at 10% of the capital cost of Option C. Eventually, some vehicles would need to be replaced which is estimated to be approximately 50%of the capital cost of Option C – Full LCA Replacement.**
[3] **$51M is the minimum which is in-line with current trends, however a high-end estimate of $75M is given to account for more costly and lengthy repairs given the Run-to-Fail model. This is roughly double the OPEX expected in Option B – Managed Fleet Replacement.**

ii) Managed Fleet Replacement Option (Selected [1] Option): CAPEX: $42.5M; vehicle-related OPEX of approximately $27.2M.

iii) Replacement of all Assets According to the Life Cycle Analysis Option: CAPEX: $56.5M; vehicle-related OPEX of approximately $22.3M.

b) Figures 1 and 2 below provide the equivalent charts to Figure 6, Exhibit 2B, Section E8.3, page 16 for the Managed Fleet Replacement and Replacement of all Assets According to the Life Cycle Analysis Options.

Appendix Copies of Exhibits Referenced in EP K. XX Exhibit Fleet Management

4A-EP-51

Ref: Exhibit 4ATab 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 # 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**
   - **The change in Fleet Capital/Leasing cost 2013-2020**
   - **The change in Fleet Maintenance costs 2013-2020.**
   - **The change in Fleet Capital/Leasing cost 2020-2024**
   - **The change in Fleet Maintenance costs 2020-2024**

Response a)

Table 1: 2013

	Approximate Number of Vehicles	Approximate Age
Light Duty	307	4.3 years
Heavy Duty	260	6.2 years

Table 2: 2020 (Forecast)

	Approximate Number of Vehicles	Approximate Age
Light Duty	259	6.0 years
Heavy Duty	204	7.5 years

Table 3: 2024 (Forecast)

	Approximate Number of Vehicles	Approximate Age
Light Duty	259	4.8 years
Heavy Duty	204	5.9 years

2020-2024: The average age of light duty vehicles decreases by 20 percent (from 6.0 to 4.8 years) and heavy duty is anticipated to decrease by approximately 21 percent (from 7.5 to 5.9 years) with capital expenditures averaging approximately $8.5 million a year. Please note that Toronto Hydro does not anticipate leasing any vehicles during this period.

2020-2024: With decreases in average fleet age, vehicle-related operational expenses decrease by approximately 17 percent (from approximately $6.5 million to $5.4 million)
1B SEC 3 Appendix E

Comprehensive 2017 Fleet Review Pages 7/8

Life Cycle Analysis for 2017

Vehicle Type	Current Planned Life Cycle	Optimal AEC (lowest annual equivalent cost) 2013 LCA	Optimal AEC (lowest annual equivalent cost) 2017 LCA	Recommended Tactic (See Section 4.2 for detail)
Car	6 years / 120,000 km	6 years	9 years	Increase LC+3
Cargo Minivan	7 years / 140,000 km	7 years	7 years	No change
Passenger Minivan	6 years / 120,000 km	6 years	9 years	Increase LC+3
Full Size Van	9 years / 135,000 km	9 years	10 years	Increase LC+1
Pick-up	9 years / 180,000 km	9 years	9 years	No change
SUV	6 years / 120,000 km	6 years	8 years	Increase LC+2
Cube Van	12 years / 180,000 km	12 years	12-15 years	Assess case by case at Y12. Consider increasing LC+3
Single Bucket Aerial Device	14 years / 210,000 km	14 years	12-16 years	Assess case by case at Y12. Consider increasing LC+2
Single-bucket Van Mount Aerial Device	8 years / 120,000 km	8 years	11 years	Increase LC+3
Cable Truck	16 years /240,000 km	16 years	11 – 14 years	Assess case by case at Y11 – consider Y14. Decrease LC-5 (re-assess at Y11).
Crane Truck	14 or 16 years / 210,000 km or 240,000 km	14 years	10 -14 years	Assess case by case at Y10 – consider increase to Y14. Decrease LC – 4 (re-assess at Y10).
Dump Truck	14 years / 210,000 km	14 years	8 -12 years	Assess case by case at Y8 – consider increase to Y12. Decrease LC – 6 (re-assess at Y8)
Line Truck	13 years / 195,000 km	13 years	13 Years	No change
Double Bucket Aerial Device	14 years / 210,000 km	14 years	14 years	No change

Digger-Derrick	13-14 years / 195,000 or 210,000 km	13 - 14 years	13 years	No change
Trailers	20 years		20 years	No change. Replace cable trailers with cable trucks.

Exhibit 2B Section E8.3 Page 10

2020-2024: The average age of light duty vehicles decreases by 20 percent (from 6.0 to 4.8 years) and heavy duty is anticipated to decrease by approximately 21 percent (from 7.5 to 5.9 years) with capital expenditures averaging approximately $8.5 million a year. *Please note that Toronto Hydro does not anticipate leasing any vehicles during this period.*

Table 1.1: Toronto Hydro Fleet Profile

Vehicle Type	Number of Units	Average Age
Light duty: 5.8 years on average		
Car	17	6.9 years
Cargo Minivan	58	4.6 years
Passenger Minivan	15	2.5 years
Full-size Van	43	7.1 years
Pick-up	93	5.7 years
SUV	35	6.9 years
Medium duty: 6.1 years on average		
Cube Van	49	4.9 years
Single Bucket Aerial Device	71	9.1 years
Single Bucket-Van Mount	7	7.3 years
Heavy duty: 7.6 years on average		
Cable Truck	6	7.8 years
Crane Truck	19	7.5 years
Dump Truck	9	7.7 years
Line Truck	5	6.9 years
Double Bucket Aerial Device	45	7.7 years
Digger Derrick	16	6.5 years
Total Vehicles Reviewed	488 units	6.5 years (average age, vehicles only)
Trailers	51 units	11.8 years on average

Refers to 2017

Exhibit 2B Section E8.3 Page 12

Table 6: Replacement Costs[5] For Heavy Duty Vehicles for the 2020 to 2024 Period ($ Millions)

Description	2020		2021		2022		2023		2024		Total Cost
	No.	Cost	No.	Cost	No.	Cost	No.	Cost	No.	Cost	
Cube Van	4	0.5	2	0.3	5	0.7	0	0	7	1.0	**2.5**
Van With Aerial Device	3	0.3	0	0	3	0.4	0	0	0	0	**0.7**
Line Truck	2	0.3	0	0	0	0	1	0.1	0	0	**0.4**
Single Bucket Truck	7	2.6	10	3.8	6	2.4	5	1.9	4	1.6	**12.3**
Double Bucket Truck	3	1.3	2	0.9	7	3.1	5	2.3	6	2.7	**10.2**
Cable Truck	0	0	2	1.0	0	0	0	0	0	0	**1.0**
Small Crane Truck	0	0	1	0.3	1	0.3	2	0.5	0	0	**1.0**
Large Crane Truck	0	0	0	0	0	0	1	0.5	0	0	**0.5**
Small Derrick Truck	1	0.4	1	0.4	1	0.4	1	0.4	0	0	**1.6**
Large Derrick Truck	1	0.4	0	0	0	0	2	0.9	1	0.4	**1.7**
Dump Truck	0	0	0	0	0	0	3	0.7	3	0.8	**1.5**
Total	**21**	**5.8**	**18**	**6.6**	**23**	**7.2**	**20**	**7.4**	**21**	**6.5**	**33.5**

Table 7: Replacement Costs[6] For Light Duty Vehicles for the 2020 to 2024 Period ($ Millions)

Description	2020		2021		2022		2023		2024		Total Cost
	No.	Cost	No.	Cost	No.	Cost	No.	Cost	No.	Cost	
Sports Utility Vehicle	25	1.1	0	0	0	0	0	0	0	0	**1.1**
Pick-Up Truck	15	0.8	15	0.7	15	0.9	15	0.9	13	0.8	**4.1**
Minivan - Passenger	3	0.1	0	0	0	0	0	0	0	0	**0.1**
Minivan - Cargo	3	0.1	17	0.8	0	0	0	0	0	0	**1.0**
Full Size Van - Cargo	10	0.5	12	0.6	5	0.3	5	0.3	6	0.3	**2.0**
Total	**56**	**2.7**	**44**	**2.2**	**20**	**1.2**	**20**	**1.2**	**19**	**1.1**	**8.3**

TOTAL $42.5 Million

1b SEC-3 Appendix E Fleet Challenge 2017 Comprehensive Vehicle Fleet Review
Executive Summary Page 9

Capital Budget Impacts FY 2018-2023

Budget Year	Capital Required	Total Capital Budget	No of Vehicles
FY 2018	$11,214,000	$3,085,000[6]	20
FY 2019	$4,176,450	$2,876,400[7]	23
FY 2020	$7,483,133	$7,387,051	101
FY 2021	$10,098,260	$10,098,260	54
FY 2022	$4,993,200	$4,993,200	40
FY 2023	$10,632,450	$10,632,450	42
FY 2024	$8,283,675	$8,283,675	33

TOTAL CAPEX 2020-2024 ~$41.5 million

Scenario 2. Optimized LCA's – Capex Forecast

The following chart demonstrates 2018 to 2024 Capex using optimized 2017 LCA. In this scenario, $7,803,925 would be required in 2018.

Table 4.6: Long-Term Capex Requirements – Optimize 2017 LCA Practices

Budget Year	Capital Required	Deferred Spending	Total Capital Budget	Number of Units
FY 2018	$7,803,925	$0	$7,803,925	23
FY 2019	$7,359,855	$0	$7,359,855	76
FY 2020	$2,985,077	$0	$2,985,077	48
FY 2021	$4,113,462	$0	$7,963,754	79
FY 2022	$4,113,462	$0	$4,113,462	32
FY 2023	$9,265,306	$0	$9,265,306	43
FY 2024	$3,862,246	$0	$3,862,246	19

Ref: FAR V20.0 Optimized 2017 LCA

Using 2017 optimized LCA practices $7,803,925 would be required in 2018. This approach is forecasted to yield a potential Opex reduction of **~$65k in 2018**, a downtime reduction of 397 person/days and GHG reduction of 49.5 MT.

31

2020-2024 TOTAL $41.5 million

4A-EP-52

Ref: Exhibit 4ATab 2 Schedule 11 Page 6; Exhibit 2B Section E8.3.5

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

RESPONSE:

a) The five-year CAPEX & OPEX[1] estimates for each option examined is as follows:

i) Run-to-Fail Option: CAPEX of approximately $8 - 28M to account for greater redundancy due to significant repair downtime, and complete failure situations; OPEX of approximately $51 - 75M[3] given that repairs become increasingly costly once critical components are affected. The substantial risks associated with this option are explained at Exhibit 2B, Section E8.3, pp. 16-17.

[1] **OPEX figures in these responses are exclusive to direct vehicle repair & maintenance costs. Business administration costs (such as office staff payroll, meeting expenses, and other administrative costs) are not included.**
[2] **Though we are running vehicles to failure before replacements, it is assumed that some capital investment would be required to increase vehicle redundancy in the pool since repair frequency & duration would increase – estimated at 10% of the capital cost of Option C. Eventually, some vehicles would need to be replaced which is estimated to be approximately 50%of the capital cost of Option C – Full LCA Replacement.**
[3] **$51M is the minimum which is in-line with current trends, however a high-end estimate of $75M is given to account for more costly and lengthy repairs given the Run-to-Fail model. This is roughly double the OPEX expected in Option B – Managed Fleet Replacement.**

ii) Managed Fleet Replacement Option (Selected [1] Option): CAPEX: $42.5M; vehicle-related OPEX of approximately $27.2M.

iii) Replacement of all Assets According to the Life Cycle Analysis Option: CAPEX: $56.5M; vehicle-related OPEX of approximately $22.3M.

b) Figures 1 and 2 below provide the equivalent charts to Figure 6, Exhibit 2B, Section E8.3, page 16 for the Managed Fleet Replacement and Replacement of all Assets According to the Life Cycle Analysis Options.

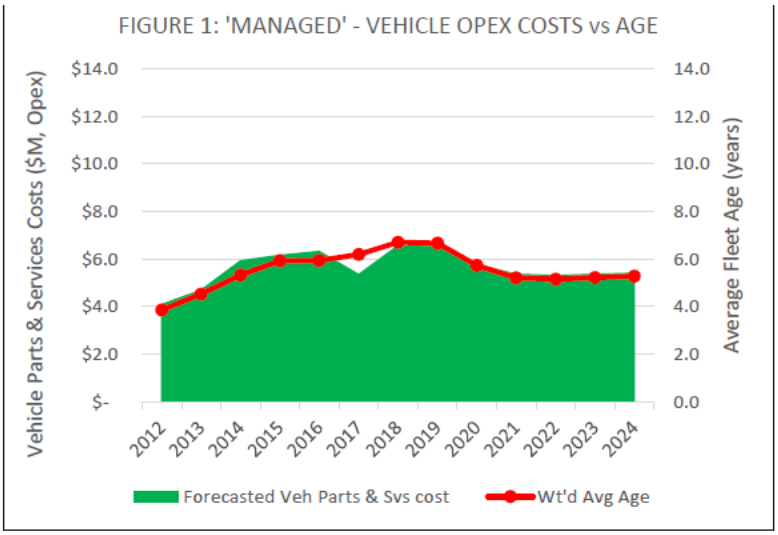
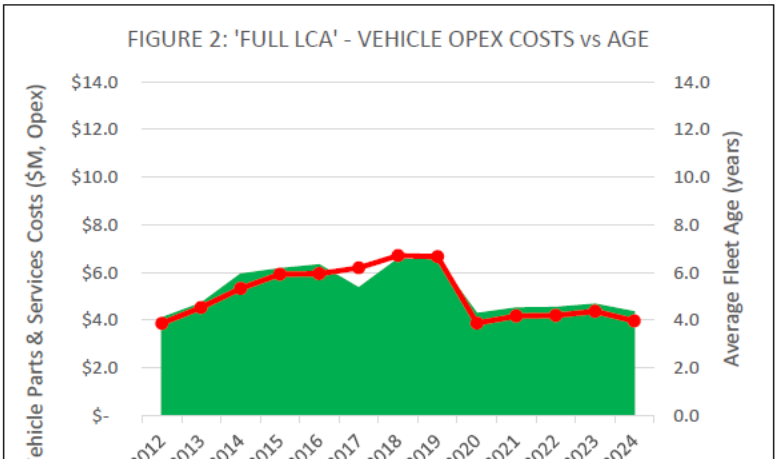


Figure 1: Option 2 - Managed Fleet Replacement (Selected Option)



Technical Conference Transcript February 21 2019 Pages 109-113

DR. HIGGIN: Right. So then we come to your capital budget. Can we have a look at your capital budget? Could you pull that up for me? I am just trying to find the reference here.

But your capital budget is about 45 million, correct?

MR. NAHYAAN: 45.2 million.(SIC 42.5 million)

DR. HIGGIN: Yes. I am trying to understand that difference. I think we have got the same five years here in the capital budget projections. They have the LCA analysis, which I said is 28 and yours is 45.2. I just want to understand the difference.

MR. NAHYAAN: Can I refer you to page 9 of the LCA analysis report of the consultant?

DR. HIGGIN: Yes, page 9, okay.

MR. NAHYAAN: Under the executive summary section.

DR. HIGGIN: Yes.

MR. NAHYAAN: So the table provided in that page 9, which includes 2018 and '19 actual forecast as well as the future forecast from the consultant, is the representative scenario that's been recommended from the consultant for Toronto Hydro change.

If you actually add up the sum for the 2020 baseline year to 2024, it equates to about roughly 41.4 million which is roughly this.

DR. HIGGIN: So how does that relate to table 4.6, the LCA analysis? We are going to come to the final on this, I think, in a minute.

MR. NAHYAAN: So if you look at page 32 -- I think you are referring me the page 31?

DR. HIGGIN: Yes.

MR. NAHYAAN: Page 32 is the recommended scenario, the table that's presented in page 32.

DR. HIGGIN: Okay, so you -- they recommended that, but you don't know why they changed from the LCA analysis?

MR. NAHYAAN: So in terms of their recommendation, they utilize a business as usual scenario, as well as a long-term CAPEX requirement scenario, and the final scenario includes the actual forecast for '18 and '19.

Those make the critical -- or is the key differentiating factor between those two scenarios.

DR. HIGGIN: Right. So let's come to what is actually before us in the DSP. You came up with three scenarios, right? One was business as usual, there was your recommended or your proposed, and then there was an LCA analysis, correct? The three scenarios.

MR. NAHYAAN: Those were the three scenarios that were discovered or investigated by the consultant, Toronto Hydro's consultant.

DR. HIGGIN: And you chose something in the middle, which I think -- what have you called it? Your middle scenario, which is called, I will get it --

MR. KEIZER: I believe the witness was just about -- was saying something else when you responded with something else, Mr. Higgin.

DR. HIGGIN: Yes, okay, sorry.

MR. NAHYAAN: So how the process unfolded is they made a recommended scenario that was based on that 2018 and '19 forecast and their overall analysis of the LCA. That translated into the capital program forecast for Toronto Hydro. That's how it unfolded.

DR. HIGGIN: And is that the managed fleet, and please explain the managed fleet relative to all of those other scenarios that you have mentioned including the LCA, the business as usual, and all of those things that get us to what's before us, which is, quote, "the managed fleet"?

MR. NAHYAAN: So at a high level, how the process unfolded is Toronto Hydro was asked to refresh its LCA analysis from 2013 into the 2017 period, with additional data that is available from Toronto Hydro, actual data in terms of operating costs, as well as the vehicle life, as well as all other pertinent information feeding into that FAR model that the consultant utilized in order to forecast their recommended version of the long-term capital planning version, which is in this table at page 32.

Once that translated into Toronto Hydro's actual option, that essentially refers to the Toronto Hydro managed fleet option analyzed by Toronto Hydro. In terms of options analysis, Toronto Hydro also evaluated a run to fail scenario, as well as a direct reflection of the baseline LCA scenario.

I wouldn't say that one scenario analysis or one options analysis is exactly the same methodology used in the other options analysis. One was purely from an LCA derision perspective. The other one is more from a rate impact perspective from the filed evidence in Toronto Hydro.

DR. HIGGIN: Right. Now, can you just summarize for us, either by undertaking, for those three options on the capital and also the opex, what are the differences in those three options, which of the three options? Can you summarize for us those? I think you have answered it in 52. If that's your answer there, if that's complete, that would do, EP 52.

MR. NAHYAAN: It would be my understanding that I answered the question in terms of how the process unfolded in terms of the benchmarking study versus the difference in Toronto Hydro's analysis of options.

DR. HIGGIN: Right. So just to summarize -- and look at EP 52, please. You've chosen the managed fleet option, correct, as being in the DSPs that's in there, correct?

MR. NAHYAAN: Yes, that formulates our plan, yes.

DR. HIGGIN: And then if you go now to look at the Opex bit just to complete this, and you do give us the two charts there in EP 52 on the Opex, you'll see a very significant difference between the managed and the other, a massive, massive difference, right?

Tell me why that's the case.

MR. NAHYAAN: Can I refer you to page 18 of 20, Exhibit 2B, section E8.3.

DR. HIGGIN: Yes.

MR. NAHYAAN: Option 3.

DR. HIGGIN: Option 3, just to get it on my map, is?

MR. NAHYAAN: It's replacement --

DR. HIGGIN: Is the LCA option?

MR. NAHYAAN: Correct. I just want to read the description between lines 13 and 17.

"This option entails replacing all vehicle types according to the exact replacement ages

provided for in the LCA review, and replacing all trailers over 20 years of age, without taking into account asset condition assessments gathered during routine inspections. Trailers are usually replaced reactively once failure or breakdown occurs. This option would require 56.5 million in funding over the 2020 to 2024 period."

So there's actually two key differences between this option (LCA 20) and the managed fleet option. The two key differences being one is completely ignore any live condition assessment that we have on the vehicles and change the vehicles right at the LCA recommended age time frame, as well as the second element, which may or may not have featured in the other scenario that the consultant took into account in terms of their options, was to replace all trailers at 20 years of age. So those two factors would be indicative of that difference between those two charts.

DR. HIGGIN: And there's a 10 million increase in capital, that's what you say, that's related to that? From 45 to 52?

MR. NAHYAAN: 14 million, yes.

DR. HIGGIN: Yes, 14 million. Okay. Thank you --

Exhibit 2B, section E8.3. Page18 of 20,

E8.3.5.4 Evaluation of Options

Toronto Hydro has opted to proceed with Option 2, the managed fleet replacement approach, as it is the most cost-effective solution to manage Toronto Hydro's vehicle fleet to the lowest overall lifecycle cost, while ensuring asset reliability and employee and public safety.

Replacing vehicle fleet on a run to failure basis (Option 1) will not only adversely affect field crew productivity and inability to conduct planned system maintenance and capital investment, but it will also more than double the current vehicle related maintenance and repair costs. In addition, Toronto Hydro could have chosen to replace its vehicle fleet according to the exact replacement ages provided for in the LCA review, as per Option 3, without taking into consideration the asset condition. Option 3 would increase vehicle reliability and provide assurance of vehicle availability more so than the other two options. However, Option 3, among other things, would require more capital funding over the 2020-2024 plan period and would not be the most cost-effective solution.

The managed fleet replacement approach ensures that capital investments are made at a level and pace that minimizes asset maintenance, repair, and capital costs. An optimally timed vehicle replacement strategy also ensures that the appropriate level of vehicles are available to support system maintenance and capital investment plans. As such, Option 2 provides maximum value for ratepayers.

IT/OT PROGRAM O&M and CAPITAL

E8.4 Information Technology and Operational Technology Systems

E8.4.1 Overview

Table 1: Program Summary

2015-2019 Cost ($M): 231.2	**2020-2024 Cost ($M):** 281.4
Segments: IT Hardware, IT Software, and Communication Infrastructure	
Trigger Driver: System Maintenance and Capital Investment Support	
Outcomes: Customer Service, Public Policy, and Financial	

Table 1: Cost variance for IT/OT Program for the 2015-2019 period ($ Millions)

Program	CIR Plan	CIR Forecast	Variance	Variance Explanation (Updated)
ERP	51.3	59.3	8.0	The variance in the ERP program is attributable to the following factors: • an additional $4.9 million resulting from additional resources that were required for the project, changes in infrastructure costs following a more detailed technical assessment, and exchange rate fluctuations; • an additional $1.8 million resulting from a three month schedule extension to allow the alignment of various activities and streamline project related tasks; and
				• an additional $1.3 million in subscription fees for SuccessFactors modules. These modules bring additional functionalities such as Compensation, Recruiting, Onboarding, Performance & Goals, Workforce Analytics & Planning and Employee Central;
IT Hardware & Software	117.7	116.5	-1.2	For the reasons discussed in section 1.5.4 of Exhibit U, Tab 2, Schedule 2, Toronto Hydro's actual IT Software cost in 2018 was less than forecast in the Application. The updated forecast expenditure in the CIR 2015-2019 period reflects the re-assessment of business needs in the IT Hardware & Software segment in 2018 following the implementation of the ERP and is expected to result in a variance of $1.2M or 1% below the originally planned program expenditures over the five-year period.
Voice Radio System	20.4	21.8	1.4	No update. As originally explained, the variance is attributable to the additional supporting infrastructure that was required to deploy the radio system, namely facilities work, power backup (UPS/generators), HVAC and redundant fiber-optic telecom links for the 10 radio antenna bearing high-sites that enable the P25 radio system to function.
Distribution System Comm.	16.0	20.1	4.1	$2.8 million of this variance is attributable to the added scope of completing the necessary facilities, telecom, and IT infrastructure investment to ensure business continuity in the event of a power disruption. The remaining $1.3 million of variance is attributable to higher than forecasted fiber-optic plant installation costs as well as the deployment of a more advanced, secure and future-proof telecom technology than what was available at the time of the original filing.
Total[1]	**205.4**	**217.7**	**12.3**	

Note 1: Totals may not add due to rounding.

Panel: General Plant, Operations and Administration

Exhibit 2B E8.4.5 Options Analysis/Business Case Evaluation ("BCE") Page 24

E8.4.4 Expenditure Plan

Table 5: Historical & Forecast Program Costs ($ Millions)

Segments	Actual			Bridge		Forecast				
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
IT Hardware	7.5	9.3	10.1	7.8	7.8	11.5	10.3	11.6	14.0	14.5
IT Software	14.8	21.7	40.3	50.8	19.7	41.0	43.0	35.8	40.5	48.2
Communication Infrastructure	6.1	17.6	4.9	6.0	6.9	2.2	2.4	2.1	2.1	2.1
Total	**28.4**	**48.6**	**55.4**	**64.6**	**34.4**	**54.8**	**55.7**	**49.5**	**56.6**	**64.8**

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,

IT/OT Budget Benchmarking Gartner Report E8.4 Appendix A

2B-EP-49
Ref: 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
   - IT budget per Gross Assets
   - IT budget per Customer
   - IT Budget per Employee

   Please Tabulate and chart the results
f) Comment on the result, including whether TH is, or is not, a good/cost-effective IT performer

Response

c) Exhibit 2B, Section E8.4, Page 14, Table 5 is in respect of Capital, not Capital plus Operational Expenses, as is stated in Gartner's definition. There is also a note in the paragraph below the table in Exhibit 2B Section E8.4 Page 14 Table 5 stating that the costs include "three IT/OT Program segments." Since the scope of costs between what is reported in Exhibit 2B, Section E8.4, pg. 14, Table 5 and the Gartner Section E8.4, pg. 14 Table 5.

e)
i) Gartner does not have a value for "Gross Assets" from Toronto Hydro nor for the members of the peer group, and so cannot calculate this metric.
ii) Gartner does not have a value for "customers" from Toronto Hydro nor for the members of the peer group, and so cannot calculate this metric.
iii) 2017 IT spending per employee is on slide 21 of the Gartner report. 2017 IT Spending for Toronto Hydro is equal to IT Budget, so slide 21 provides this benchmark metric.

RESPONSES TO SCHOOL ENERGY COALITION 1 INTERROGATORIES
INTERROGATORY 72:
Reference(s): Exhibit 2B, Section E8.4, Appendix A

With respect to the Gartner 'IT Budget Assessment Final Report':
a) [p.8] Please explain how the peer group was selected.
b) [p.8] Provide a list of the peer group utilities.
c) [p.8] Please confirm that the revenue and operational expenses include non-distribution costs such as the cost of power.
d) If the response to part (c) is confirmed, are similar costs included in the peer group information?
e) [p.8-32] If the response to part (c) is confirmed, please revise the Toronto Hydro information, and if possible the peer groups, to show on all metrics on costs related to distribution revenue and distribution expenses.
f) Please explain why Gartner did not include an IT spending per customer metric.
g) [p.19] Gartner states in explaining why it generally bases its metrics on employees count: "Many of the IT departments Gartner works with and has in our peer benchmark database typically do not know the number of contractor labour or level of outsourcing in the lines of business, and Gartner does not normally collect a number of users". Why would IT departments not know the number of users

that have active accounts on their systems?
h) Please provide a copy of the completed questionnaire that was provided to Toronto Hydro to collect the necessary data for the study.

RESPONSE (*RESPONSES PROVIDED BY GARTNER):*

a) The peer group was selected based on industry and revenue. For the benchmark of Toronto Hydro, Gartner selected utilities that had conducted a benchmarking study with Gartner within the previous 18 months, that had total annual revenue similar to THESL and that had distribution services in urban areas.
b) Gartner cannot name the members of the peer group due to confidentiality agreements with the peer organizations that are standard for all our benchmarking clients.
c) Confirmed.
d) Yes.
e) Revising Toronto Hydro's information to show all metrics on costs related to distribution revenue and distribution expenses would be a significant burden for both Toronto Hydro and Gartner. The level of effort and time involved in doing this work would likely be similar to the original benchmark project, which ran from project kick

off on December 5, 2017, to delivery of the final report on March 16, 2018. Toronto Hydro would need to report revenue, operational expense and employees for its distributiona number of users". Why would IT departments not know the number of users

that have active accounts 1 on their systems?
h) Please provide a copy of the completed questionnaire that was provided to Toronto Hydro to collect the necessary data for the study.

RESPONSE (*RESPONSES PROVIDED BY GARTNER):*
a) The peer group was selected based on industry and revenue. For the benchmark of Toronto Hydro, Gartner selected utilities that had conducted a benchmarking study with Gartner within the previous 18 months, that had total annual revenue similar to THESL and that had distribution services in urban areas.
b) Gartner cannot name the members of the peer group due to confidentiality agreements with the peer organizations that are standard for all our benchmarking clients.
c) Confirmed.
d) Yes.
e) Revising Toronto Hydro's information to show all metrics on costs related to distribution revenue and distribution expenses would be a significant burden for both Toronto Hydro and Gartner. The level of effort and time involved in doing this work would likely be similar to the original benchmark project, which ran from project kick off on December 5, 2017, to delivery of the final report on March 16, 2018. Toronto Hydro would need to report revenue, operational expense and employees for its distribution business only (if project scope were similar, this would need to be done for both 2017 and the 2020 projection). In addition, because Gartner 1 benchmarks are based on an alignment of business and IT support for that business, Toronto Hydro would need to revise all IT data (total IT spending, IT spending distributions, total IT staffing levels, IT staffing distributions, and infrastructure workload measures) to align with the narrower scope (again, if project scope were similar, this would need to be done for both 2017 and the 2020 projection). Where IT spending and staffing are not tracked at this level of detail, THESL would need to provide estimates (for example, the IT spending for distribution vs non-distribution businesses for application development, application support, servers, storage, end-user computing, IT service desk, data network, voice services and IT management and admin, as well as for hardware, software, personnel and outsourcing) . The accuracy of results would only be as accurate as these allocations. Gartner would need to work with Toronto Hydro through data collection, review of initial results, and any clarification or revisions to data.
Gartner does not have a break-out of peer distribution and non-distribution revenue and cost, nor a break-out of IT spending and staffing for support of distribution and non-distribution businesses and so cannot provide these calculations for the peer

group.
21 f) Gartner does not collect data for the number of customers and so cannot calculate IT spending per customer.
g) IT departments may know the number of active accounts on their systems, but these do not always correspond one-to-one with users. There may be duplicate users or group accounts
h) Toronto Hydro provided two data collection questionnaires, one for 1 2017 and one for 2020. Please see Appendix A and B, respectively

DR. HIGGIN: I am going to ask a question. I am going to ask TH to fix that problem for me, and benchmark their costs against available Ontario data from the Ontario utilities in terms of their IT costs on those parameters.

That is what I am going to ask you to do, and I expect you will refuse me. The data is, by the way, in the triple-R filings for the utilities. It's not like it doesn't exist.

So I would like you to do that on those parameters which are revenue -- yes, he's done that -- and the other ones I have asked for: IT budget for gross assets, IT budget per customer, and IT budget for employee.

I would like you to do that, and provide it to us as an undertaking.

MR. KEIZER: Mr. Higgin, we are going to stand by the report that Gartner prepared for us. So we won't be undertaking another benchmarking report for the purposes of this hearing.

I do note as well Gartner's note. When you referred to the 2.3 times greater, there is a second bullet that says:

> **"Gartner believes that the relatively lower employee count skews the results for IT spending per employee."**

So it's not the higher IT spending, so they have obviously reached a conclusion contrary to yours, and you are free to assert what you want within the proceeding and argument.

PANEL 3 CIR Framework & DVAs

EP COMPENDIUM OF EVIDENCE, INTERROGATORIES AND UNDERTAKINGS

TOPIC	REFERENCES/EXHIBITS
1. **Scorecard Cost Control Data 2013-2018**	
2018 Data Reporting	**U-EP-62 Exhibit U, Tab 1B, Schedule , Page 2, Table 1: Toronto Hydro EDS**
2. Load Forecast	
CDM Update	**U-EP-70: Exhibit U, Tab3, Schedule 1, Page 2, Appendices B, C and D** **Updated Responses to Interrogatories 3-VECC-25 and 3-VECC-26**
3. Cost Allocation and Rate Design	
Residential and CSMUR R/C Ratios	**7-EP-60: Exhibit 6Tab 1Schedule 6 Pages 11/12; Exhibit 7 Tab1 Schedule 3 Page 5- R/C Ratios** **7-VECC- 56 Exhibit 7,Tab 1, Schedule 1, p. 5**

COST CONTROL- EDS SCORECARD

RESPONSES TO ENERGY PROBE RESEARCH FOUNDATION INTERROGATORIES

INTERROGATORY 65:

Reference(s): Exhibit U, Tab 1B, Schedule 1, Page 2, Table 1: Toronto Hydro EDS Performance - 2014-2018

Exhibit U, Tab 1B, Schedule 1, Page 38, 2018 Corporate Scorecard Update

Responses to Interrogatories 1B-SEC-8 and 4A-AMPCO-96

a) Please provide the Scorecard 2018 Cost Control Data for the following categories:

i) Efficiency,

ii) Total cost/customer,

iii) Total cost/km of line.

b) Please discuss the trend and cross reference to response to U-EP-71 Admin Costs/Customer

RESPONSE:

a) The 2018 results for the identified measures are determined by PEG on behalf of the OEB. Toronto Hydro expects the 2018 results for all utilities to be issued in August 2019 by the OEB.b) Please see the response to part (a).

Exhibit U, Tab 1B, Schedule 1

Table 1: Toronto Hydro EDS Performance – 2014-2018

Performance Outcomes	Performance Categories	Measures		2014	2015	2016	2017	2018	Target		Average
									Industry	Distributor	
Customer Focus Services are provided in a manner that responds to identified customer preferences.	Service Quality	New Residential/Small Business Services Connected on Time		91.50%	96.90%	97.70%	98.32%	99.80%	90.00%		96.84%
		Scheduled Appointments Met On Time		99.80%	99.90%	99.50%	99.37%	99.66%	90.00%		99.65%
		Telephone Calls Answered On Time		71.90%	76.80%	64.70%	77.92%	80.15%	65.00%		74.29%
	Customer Satisfaction	First Contact Resolution		81.00%	84.00%	86.00%	88.00%	89.00%			85.60%
		Billing Accuracy		96.62%	97.54%	98.86%	99.24%	99.25%	98.00%		98.30%
		Customer Satisfaction Survey Results		91.00%	91.00%	83.00%	83.00%	92.00%			88.00%
Operational Effectiveness Continuous improvement in productivity and cost performance is achieved; and distributors deliver on system reliability and quality objectives.	Safety	Level of Public Awareness			71.00%	71.00%	69.00%	69.00%			70.00%
		Level of Compliance with Ontario Regulation 22/04		C	C	C	C	C		C	N/A
		Serious Electrical Incident Index	Number of General Public Incidents	3	0	0	1	6		2	2.00
			Rate per 10, 100, 1000 km of line	0.295	0	0	0.035	0.209		0.074	0.108
	System Reliability	Average Number of Hours that Power to a Customer is Interrupted		0.89	0.99	0.91	0.91	0.81		1.11	0.90
		Average Number of Times that Power to a Customer is Interrupted		1.18	1.31	1.28	1.18	1.14		1.36	1.22
	Asset Management	Distribution System Plan Implementation Progress		147%	100%	101%	99%	95%			108.40%
	Cost Control	Efficiency Assessment		5	5	5	5				
		Total Cost per Customer		$967	$1,000	$1,044	$1,042				
		Total Cost per Km of Line		$70,688	$73,309	$27,819	$27,825				
Public Policy Responsiveness Distributors deliver on obligations mandated by government (e.g., in legislation and in regulatory requirements imposed further to Ministerial directives to the Board).	Conservation & Demand Management	Net Cumulative Energy Savings			12.51%	34.58%	63.11%			1,576.05 GWh	
	Connection of Renewable Generation	Renewable Generation Connection Impact Assessments Completed On Time		97.12%	100.00%	100.00%	81.08%	100.00%			95.64%
		New Micro-embedded Generation Facilities Connected On Time		100.00%	100.00%	100.00%	92.41%	100.00%	90.00%		98.48%
Financial Performance Financial viability is maintained; and savings from operational effectiveness are sustainable.	Financial Ratios	Liquidity: Current Ratio (Current Assets/Current Liabilities)		0.68	0.67	0.61	0.64	0.53			0.63
		Leverage: Total Debt (includes short-term and long-term debt) to Equity Ratio		1.65	1.57	1.45	1.34	1.2			1.44
		Profitability: Regulatory Return on Equity	Deemed (included in rates)	9.58%	9.30%	9.30%	9.30%	9.30%			N/A
			Achieved	7.41%	10.71%	12.18%	9.08%	9.33%			N/A

RESPONSES TO ENERGY PROBE RESEARCH FOUNDATION INTERROGATORIES
INTERROGATORY 70:
Reference(s): Exhibit U, Tab 3, Schedule 1, Page 2, Appendices B, C and D
Updated Responses to Interrogatories 3-VECC-25 and 3-VECC-26

Preamble:

"Toronto Hydro notes the very recent Provincial directives on conservation programs in the province. However, at time of preparation of the load forecast for the update, the potential impacts are unknown, and therefore Toronto Hydro has included the latest forecast for CDM savings through the forecast period.

a) For the Residential and CSMUR Sectors please provide a summary table with the original CDM forecast and updated forecast 2018-2024 including the load forecast for these sectors.

b) How will uploading CDM to IESO affect TH in respect of the following:

i) recovery of CDM costs,

ii) attribution,

iii) load forecast?

RESPONSE:

a) Please see Table 1 and Table 2.

Table 1: Summary table with the original CDM forecast and updated forecast 2018-2024 for Residential and CSMUR Sectors

	Original CDM Forecast MWh		Updated CDM Forecast MWh	
	RES	CSMUR	RES	CSMUR
2018	638,045	10,300	753,504	13,251
2019	659,746	16,846	787,453	15,434
2020	670,817	23,205	801,974	17,218
2021	680,526	29,504	814,023	18,888
2022	690,234	35,804	826,072	20,558
2023	699,943	42,103	838,121	22,228
2024	709,651	48,403	850,169	23,898

Table 2: Summary Table with original distribution load forecast and updated forecast 2018-2024 for Residential and CSMUR Sectors

	Original Distribution Load Forecast MWh		Updated Distribution Load Forecast MWh	
	RES	CSMUR	RES	CSMUR
2018	4,579,986	256,194	4,770,272	266,755
2019	4,532,015	263,913	4,543,879	278,115
2020	4,510,637	277,127	4,531,218	297,764
2021	4,458,696	286,904	4,488,480	314,676
2022	4,422,718	300,278	4,462,016	336,412
2023	4,386,740	313,818	4,435,553	352,415
2024	4,366,438	328,419	4,425,206	367,618

b)

i) In accordance with OEB requirements, there is accounting separation between the costs associated with CDM delivery and rate regulated distribution. As a result, ratepayers will not be affected by the provincial change to CDM delivery.

ii) The attribution of savings is no longer relevant as conservation targets are no longer assigned to individual LDCs nor does the IESO intend to track results at the LDC level.

iii) As noted above, the IESO will no longer be providing LDC level results. Further, if IESO CDM delivery is not tracked and reported at the LDC level, the impacts of provincially funded CDM on Toronto Hydro's load forecast will be more difficult to predict.

7-EP-60

Ref: Exhibit 6Tab 1Schedule 6 Pages 11/12; 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 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

RESPONSE:

a) The proposed 2020 R/C ratios for both the Residential and CSMUR rate classes meet the OEB's threshold guidelines. The R/C ratios provided in the Revenue Requirement Work forms ("RRWF") for 2021 to 2024 (Exhibit 6, Tab 1, Schedules 3 to 6) are not meaningful because, unlike the 2020 RRWF, these work forms do not represent revenues or costs on a cost of service basis. This is due to the fact rates in 2021 to 2024 are based on the proposed Custom Price Cap Index rate framework described in Exhibit 1B, Tab 4, Schedule 1.

b) The table below shows the revised R/C ratios for 2020 by adjusting 1 the fixed rate for he Residential and CSMUR class to achieve 100 percent and adjusting only the GS and arge Use to compensate.

Table 1: Revised Revenue to Cost Ratio with Residential and CSMUR at 100%

	Revenue ($ Millions)	Cost ($ Millions)	Adjusted R/C Ratio	Pre-filed R/C Ratio
Residential	324.7	324.7	100.0%	103.2%
GS <50 kW	124.2	131.6	94.4%	89.8%
GS - 50 to 999 kW	221.2	210.2	105.3%	105.3%
GS - 1000 to 4999 kW	72.2	74.2	97.2%	95.0%
Large Use >5MW	37.1	40.4	91.7%	85.0%
Street Light	24.6	22.6	108.9%	108.9%
USL	4.3	4.6	95.1%	95.1%
CSMUR	36.3	36.3	100.0%	100.0%
Total	**844.5**	**844.5**	**100.0%**	**100.0%**

8-EP-61
Exhibit 8Tab 1Schedule 1ORIGINALPage 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

RESPONSES TO VULNERABLE ENERGY CONSUMERS 1 **COALITION INTERROGATORIES**

INTERROGATORY 56:

Reference(s): Exhibit 7, Tab 1, Schedule 1, p. 5

a) What would be the LU class revenue to cost ratio if all of the revenues shortfall arising from setting the CSMUR ratio at 100% was recovered from the LU class?

RESPONSE:

a) The LU class revenue to cost ratio would be 85.9 percent if the revenue shortfall arising from setting the CSMUR ratio at 100 percent was recovered only from the LU class.