

PowerStream Custom IR

Technical Conference – September 9, 2015

Undertaking Responses

1 **JTC 1.1: In respect of 2 Energy Probe 12, part B, to update various tables 4, 5 and 6 for**
2 **those matters that Mr. Aiken just set out.**

3
4 **RESPONSE:**

5 Table 1 below presents the requested alternative version of “Table 4: Estimated Productivity
6 Savings from OM&A” that starts with the 2014 actual OM&A costs.

7
8 **Table 1: Alternative Table 4 Estimated OM&A Productivity Savings using 2014 Actual**
9 **OM&A (\$ thousands)**

"Expected OM&A"	Custom IR term 2016-2020							Total
	2014	2015	2016	2017	2018	2019	2020	
Approved/Prior year OM&A start	\$ 82,941	\$ 85,454	\$ 91,292	\$ 94,685	\$ 101,557	\$ 104,466	\$ 107,809	
Inflation adjustment	\$ 1,410	\$ 1,367	\$ 2,008	\$ 2,083	\$ 2,234	\$ 2,298	\$ 2,372	
Customer growth adjustment	\$ 193	\$ 165	\$ 186	\$ 197	\$ 210	\$ 216	\$ 224	
Net incremental new costs	\$ 2,994	\$ 4,305	\$ 1,200	\$ 4,591	\$ 464	\$ 829	\$ 605	
Expected OM&A	\$ 87,538	\$ 91,292	\$ 94,685	\$ 101,557	\$ 104,466	\$ 107,809	\$ 111,010	
Actual and Projected OM&A in Application	\$ 85,454	\$ 92,558	\$ 96,216	\$ 101,808	\$ 103,724	\$ 106,108	\$ 108,228	
Variance/Productivity savings (cost)	\$2,084	(\$1,266)	(\$1,531)	(\$251)	\$742	\$1,701	\$2,782	\$3,444

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11 Table 2 represents an updated “Table 5: OM&A Adjustment Factors for Inflation and Customer
12 Growth”. No change was made to the inflation factors. Customer growth was updated based on
13 the forecasted customer numbers in the updated application.

14 **Table 2: OM&A Adjustment Factors for Inflation and Customer Growth**

Adjustment Factors	2014	2015	2016	2017	2018	2019	2020
Inflation	1.70%	1.60%	2.20%	2.20%	2.20%	2.20%	2.20%
Customer Growth	2.04%	1.69%	1.78%	1.82%	1.81%	1.80%	1.82%
Customer Growth effect on OM&A	11.45%	11.45%	11.45%	11.45%	11.45%	11.45%	11.45%
Customer Growth adjustment factor	0.23%	0.19%	0.20%	0.21%	0.21%	0.21%	0.21%

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16 Table 3 represents an updated “Table 6: Net Incremental New Costs for Changing
17 Requirements”. It has been updated to include the OM&A cost drivers related to staff returning
18 from the new billing system project in 2015 and the additional costs related to monthly billing
19 starting in 2017.

1 **Table 3: Net Incremental New Costs for Changing Requirements (\$ thousands)**

Net incremental new costs	Custom IR Term							2016-2020 Total
	2014	2015	2016	2017	2018	2019	2020	
New CIS incremental costs	\$1,349	\$1,310	(\$122)	(\$158)	(\$182)	\$1	\$1	(\$460)
Vegetation management	\$299	\$300	\$614	\$526	\$531	\$536	\$542	\$2,749
Compliance	\$262	\$185	\$132	\$18	\$18	\$18	\$19	\$205
Risk Management	\$330	\$757	\$518	\$485	(\$36)	\$138	(\$103)	\$1,002
Staff returning from CIS project		\$2,000						
Customer expectation	\$754	(\$248)	\$58	\$25	\$25	\$25	\$25	\$158
Monthly billing costs				\$3,696	\$108	\$110	\$121	\$4,035
Total	\$2,994	\$4,305	\$1,200	\$4,591	\$464	\$829	\$605	\$7,689

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1 **JTC 1.2: To provide the study requested.**

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3 **RESPONSE:**

4 In 2011 and 2012 the costs associated with the water billing services provided to our
5 shareholders was internally produced. There was no formal study undertaken, rather an internal
6 analysis was conducted. This analysis looked at all the costs associated with providing the
7 service and the related mark-up that is charged to the shareholders. The results of the analysis
8 conducted are shown on the next page in Table JTC 1.2.

1

Table JTC 1.2

Water Metering and Billing services		
Attributable Costs to Water		
Divisions of Customer Service	2011 Estimate	2012 Estimate
245 Business Solutions	189,255	194,933
225 Billing Services	388,548	400,204
235 Customer Relations	302,830	311,915
255 Payments	229,975	236,874
256 Collections	405,223	417,380
Total Cost Attributable to Water - Note 1	1,515,832	1,561,307
Overhead Allocation		
Accounts	2011 Estimate	2012 Estimate
Building Depreciation Attributable to Cust. Svc.	67,873	67,873
IT & CIS Attributable to Cust. Svc.	1,173,517	1,197,694
Facility Maintenance Attributable to Cust. Svc.	112,905	116,292
Corporate Overhead Attributable to Cust. Svc.	172,204	177,370
Total Overhead Allocated to Cust. Svc. - Note 2	1,526,499	1,559,229
Overhead Adjusted for Water Service - Note 3	368,138	374,732
Meter Reading Costs - Note 4	674,519	688,893
Postage & TOM cashier - Note 5	468,904	482,612
Total Cost of Providing Water Service - Note 6	3,027,394	3,107,545
Target Revenue (Return=WACC=7.3%) - Note 7	3,248,394	3,334,395
Income Analysis		
Accounts	2011 Estimate	2012 Estimate
Total Revenue	3,248,394	3,334,395
Less Total Cost of Providing Water Service	3,027,394	3,107,545
Earnings	221,000	226,851
Return	7.30%	7.30%
Note 1 - Costs were determined based on time each employee spent on water billing		
Note 2 - Overhead costs were allocated based on time spent or sq footage of space used on water billing		
Note 3 - Overhead is adjusted for customers in the areas that water billing is provided		
Note 4 - Meter reading costs attributable to water billing		
Note 5 - Postage and cashier services attributed to water billing		
Note 6 - Total water billing costs		
Note 7 - Total water billing costs marked up by 7.3% or WACC as at 2011.		

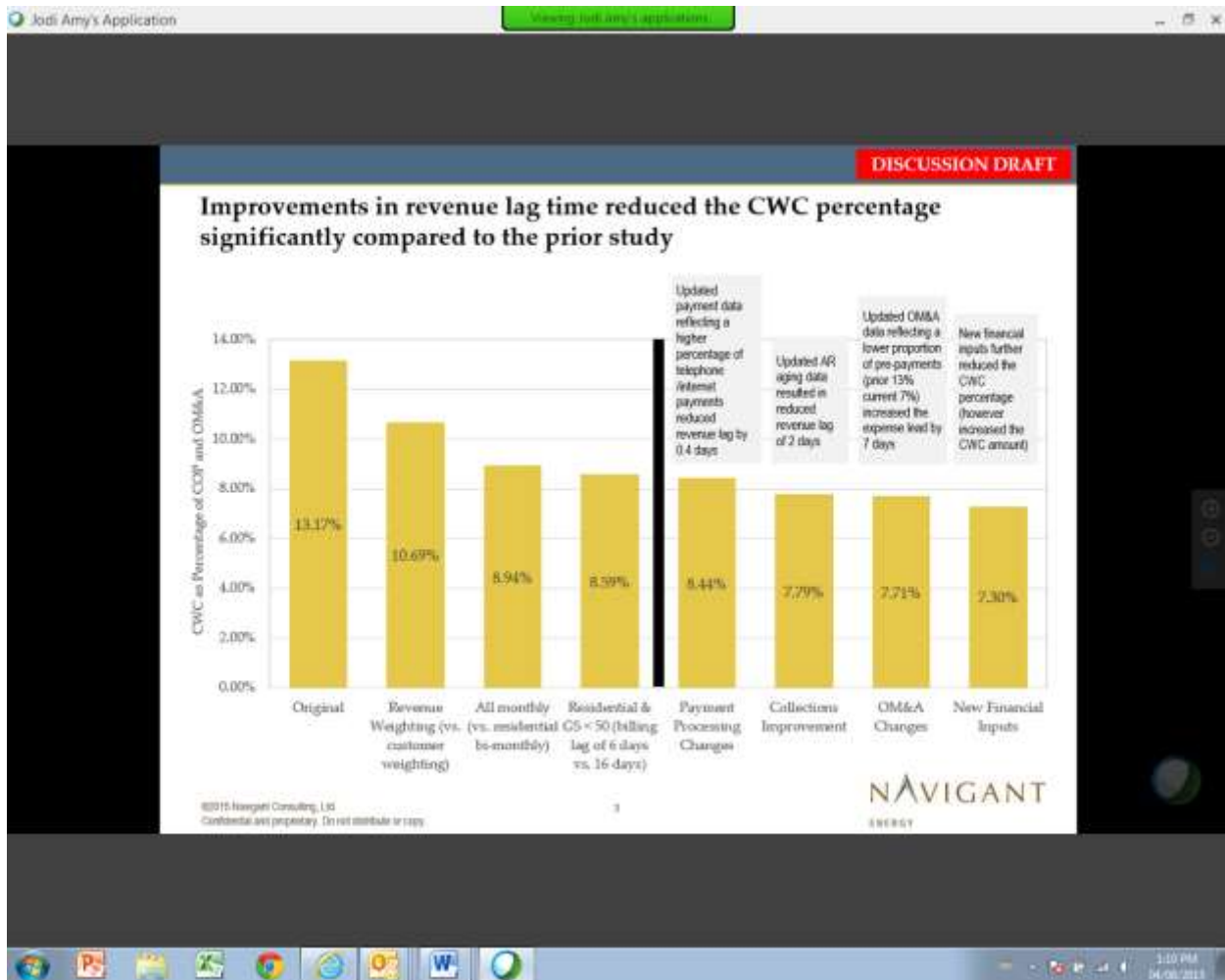
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1 **JTC 1.3: To provide documentation about the high-level analysis that was done.**

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3 **RESPONSE:**

4 The preliminary results are shown in the slide below.



5

1 **JTC 1.4: To provide a breakdown of the customer billing costs to move to monthly**
2 **billing.**

3

4 **RESPONSE:**

5

6 In Section A, schedule 1 of the interrogatory responses it discusses that there is a \$3,000,000
7 one-time capital cost in relation to moving to monthly billing. The breakdown of this internal
8 estimate is included in Table JTC 1.4 below.

9

10

Table JTC 1.4

Cost Category	Estimate
Vendor / server capacity / 3rd party development costs	\$1,345,000
Internal IS and Customer service costs and equipment	\$1,204,200
Reporting and Miscellaneous charges	\$450,800
Total	\$3,000,000

11

1 **JTC 1.5: To provide the appendices 2-AA and 2-AB in the Excel version, if possible.**
2

3 **RESPONSE:**

4 Appendix 2-AA, Capital Projects Table for 2015 to 2020 is provided in the Application in Exhibit
5 IV, Tab 2 in response to the April 2015 Technical Conference undertaking TCQ-39 appendices.
6 Appendix 2-AA, Capital Projects Table for 2011 to 2014 is provided in the Application in Exhibit
7 VI, Tab 31, Schedule 1.
8

9 The information requested in Appendix 2-AB, Table 2 – Capital Expenditure Summary from
10 Chapter 5 Consolidated Distribution System Plan Filing Requirements, is provided in the
11 Application in Exhibit II, Tab 2, Exhibit G, Distribution System Plan. This information is being
12 summarized in the Appendix 2-AB as a result of this undertaking.
13

14 Please note that \$3,000,000 for capital expenditures in 2016 related to the change to monthly
15 billing of Residential customers must be added to the above schedules under General Plant.
16 There have been no other changes to capital expenditures from the filed Application.
17

18 The excel files of the requested appendices are being submitted via the Board's Regulatory
19 Electronic Submission System (RESS).

1 **JTC 1.6: To provide the equivalent Excel workbook for the update customer count.**

2

3 **RESPONSE:**

4 The requested files are being submitted as live excel files on RESS.

1 **JTC 1.7: To provide a calculation schedule for number E and the LED adjustment, and as**
2 **part of that response how you calculated for the fact that for Markham, Barrie, New**
3 **Tecumseth, their conversions were already completed as of the end of 2015.**

4

5 **RESPONSE:**

6 The requested files are being submitted as live excel files on RESS.

1 **JTC 1.8: To advise where in the application we can find a table that updates the table that**
2 **is in response to Staff-14 B, which shows the total annual capital and OM&A savings on a**
3 **revenue requirement basis by year.**

4

5 **RESPONSE:**

6 This information is provided in response to interrogatory F-SEC-6 in the Application, Section III,
7 Tab 1, Schedule 1, starting on page 93 of 363. Table F-SEC-6-1 shows the total annual capital
8 and OM&A savings on a revenue requirement basis by year.

1 **JTC 1.9: To provide the labour and equipment and material costs for the unit costs**
 2 **reflected in the table that is marked as KTC1.1. Also, to do an estimate about what the**
 3 **blended rates would be.**
 4

5 **RESPONSE:**

6 a) Refer to Table JTC-1.9a for the breakdown of the asset classes marked as KTC1.1.
 7
 8

Table JTC-1.9a

Assets	Cost Type	Planned					
		2015	2016	2017	2018	2019	2020
Automated Switches	Labour	126,228	129,293	132,358	135,422	138,487	141,552
	Material	247,199	254,617	262,267	270,143	278,300	286,749
	Vehicle	33,968	33,968	33,968	33,968	33,968	33,968
	Admin	28,518	29,251	30,002	30,767	31,553	32,359
Automated Switches Total		435,912	447,130	458,595	470,301	482,308	494,628
Distribution Transformer	Labour	84,480	86,520	88,560	90,600	92,640	94,680
	Contract	93,500	96,305	99,194	102,169	105,234	108,391
	Material	264,000	271,920	280,078	288,479	297,133	306,046
	Vehicle	19,800	19,800	19,800	19,800	19,800	19,800
	Admin	32,325	33,218	34,134	35,073	36,036	37,024
Distribution Transformer Total		494,105	507,763	521,766	536,122	550,844	565,941
Mini Rupter Switches	Labour	183,140	187,600	192,060	196,520	200,980	205,440
	Contract	40,000	41,200	42,436	43,709	45,020	46,371
	Material	264,000	271,920	280,078	288,479	297,134	306,049
	Vehicle	52,800	52,800	52,800	52,800	52,800	52,800
	Admin	37,796	38,747	39,716	40,706	41,715	42,746
Mini Rupter Switches Total		577,736	592,267	607,090	622,214	637,649	653,406
Switchgear Replacement Program	Labour	142,989	165,318	174,006	178,024	182,042	186,060
	Contract	341,642	397,289	420,700	433,321	446,321	459,711
	Material	1,351,925	1,572,127	1,664,770	1,714,713	1,766,155	1,819,139
	Vehicle	35,823	40,410	41,580	41,580	41,580	41,580
	Admin	131,067	152,260	161,074	165,735	170,527	175,454
Switchgear Replacement Program Total		2,003,445	2,327,404	2,462,129	2,533,373	2,606,624	2,681,945
Transformer and Municipal Station Circuit Breaker	Labour	100,972	146,339	152,179	134,644	141,068	107,650
	Contract	329,088	632,957	630,945	1,293,929	1,131,800	491,531
	Purchases	688,606	1,265,190	1,252,414	987,758	944,242	655,065
	Vehicle	20,768	33,264	35,376	28,858	29,062	23,619
	Admin	79,760	145,443	144,964	171,163	157,232	89,451
Transformer and Municipal Station Circuit Breaker Total		1,219,194	2,223,193	2,215,878	2,616,351	2,403,405	1,367,316
Underground Cable Replacement	Labour	689,801	734,163	792,523	827,404	868,461	876,836
	Contract	9,795,118	10,489,433	11,392,453	11,972,330	12,650,440	12,875,332
	Material	301,444	322,812	350,602	368,448	389,318	396,239
	Vehicle	165,843	171,989	181,500	185,366	190,717	188,211
	Admin	766,654	820,288	890,195	934,749	986,926	1,003,563
Underground Cable Replacement Total		11,718,862	12,538,684	13,607,273	14,288,297	15,085,861	15,340,181
Grand Total		17,981,240	19,777,241	20,923,486	22,148,233	22,879,979	22,249,331

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b) The blended rate was calculated as shown in Table JTC-1.9b below. The dollar figures can be referenced in Appendix Staff-69. It should be noted that the DS Plan states 30km, while the Cable Report states 25km. The estimates were based on 30km, with an allocation of 20km mainstream, and 10km left behind. These figures are required to be updated in the Cable Report.

As indicated at the technical conference, the optimized values shown in the DS Plan reflect the dollar amounts proposed, and the unit lengths were not updated (hence the variation yearly) after optimization.

Table JTC-1.9b

CABLE REPLACEMENT BLENDED RATE SUMMARY						
Cable Category		Planned				
		2016	2017	2018	2019	2020
Main Stream	Estimated length (m)	20,000	20,000	20,000	20,000	20,000
	\$/m	\$421	\$434	\$447	\$460	\$474
	\$	\$8,420,000	\$8,672,600	\$8,932,778	\$9,200,761	\$9,476,784
Left Behind	Estimated length (m)	10,000	10,000	10,000	10,000	10,000
	\$/m	\$515	\$530	\$546	\$563	\$580
	\$	\$5,150,000	\$5,304,500	\$5,463,635	\$5,627,544	\$5,796,370
Total pre-optimized	\$	\$13,570,000	\$13,977,100	\$14,396,413	\$14,828,305	\$15,273,155
Total	Estimated length (m)	30,000	30,000	30,000	30,000	30,000
DSP Submission	\$	12,538,684	13,607,273	14,288,297	15,085,861	15,340,181

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1 **JTC 1.10: To confirm that PowerStream applied hourly customer interruption cost of**
2 **\$1.20 per kilowatt-hour for duration of the customer minutes interrupted, not customer**
3 **hour interrupted, because there's a factor of 60 between those two, and that when it**
4 **comes to benefit calculations this was considered.**
5

6 **RESPONSE:**

7 PowerStream applied \$20/kWhr (not \$1.20/kWhr) as the duration cost in its calculations.
8 PowerStream does not use the cost per CMI in its calculations.

9 In order to answer the specific questions (II-2-Staff -58 and II-2-Staff-53 g) in the format as
10 requested by OEB staff - "*Cost (\$) / (CMI Savings * Customer Interruption Cost)*", PowerStream
11 calculated the cost per CMI.

12 The calculation was completed using the \$20/kWhr for the duration cost and \$20 per kW for the
13 frequency cost. As such, the number PowerStream used in the formula requested by OEB staff
14 is in customer minutes and not customer hours. The derivation of the total cost per CMI is seen
15 in Table JTC-1.10.

1

Table JTC-1.10

	Year	Energy (kWhr)	Average Daily Peak (kW)
	2012	8,766,473,303	1,199,949
	2013	8,716,825,089	1,186,309
	2014	8,670,740,684	1,175,979
	Average	8,718,013,025	1,187,412
	No of Customer	346,943	
Duration Cost			
A	Average Energy Lost per hour (kWhr)= Energy Delivered / (365*24)		995,206.97
B	Duration Cost = \$ 20/kWhr		20
C	Duration Cost System Wide per hour (\$) = A X B		19,904,139.33
E	Duration Cost per Customer per hour (\$) = C/No of Customer		\$57.37
F	Duration Cost per Customer per Minute (\$) = E/60		\$0.96
Frequency Cost			
G	Average Peak (KW)		1,187,412.33
H	Frequency Cost (\$20/kW)		20
I	Frequency Cost System Wide (\$) =G*H		23,748,246.67
J	Frequency Cost System Wide for each Outage (\$) = H/No of Customer		68.45
	Average System SAIFI Excluding LOS/MED over past three year		1.01
	Total Cost per CMI= F+J		\$69.41

2

1 **JTC 1.11: To provide the answer to 2-Staff-57, part B.**
2

3 **RESPONSE:**

4 Exhibit G, Tab 2, Section 5.3.3, Table 5 on page 36 (also shown on Appendix A, BOMA 11) lists
5 the reliability and remediation capital and O&M programs that are included in the 5 year
6 reliability work plan.

7 Of these programs, there are only three capital programs that address reliability improvements.
8 These are distribution automation, storm hardening and fault indicators.

9 For these reliability improvements programs, a capital expenditure of \$14.9M is estimated for
10 one minute reduction of total system SAIDI. The three programs target improvements in
11 specific areas so that customer experience similar levels of service.

12 The remaining capital programs are based on asset renewal and are aimed at maintaining
13 reliability.

1 **JTC 1.12: To try and break out the material and external purchase costs for each of the**
2 **years 2012 through 2020 for work completed by internal resources, and this is with**
3 **respect to the answer given to 2-Staff-59.**
4

5 **RESPONSE:**

6 Refer to Table JTC-1.12.

7 **Table JTC-1.12.**

Undertaking 1.12	Actual \$	Actual \$	Actual \$	Budget \$	Budget \$	Budget \$	Budget \$	Budget \$	Budget \$
Based on IR Staff-59 referring to previous IR SEC-27	2012	2013	2014	2015	2016	2017	2018	2019	2020
Contract / Consulting / Prof Serv	46,409,337	56,519,306	70,507,262	57,216,885	60,709,568	65,721,892	64,740,797	70,610,138	69,022,129
Material, including Burdens	16,401,266	19,641,433	21,898,049	22,836,704	32,223,635	31,359,084	29,489,255	26,277,768	28,637,491
External Purchases	18,386,681	10,161,295	10,439,174	21,296,147	19,267,701	14,724,179	14,688,031	12,830,074	14,138,506
Total Capital Spend - Net Rate Base	74,915,000	93,500,000	109,488,127	118,399,999	132,800,017	131,499,752	125,399,834	125,400,540	125,400,071
Total Capital Spend - Gross Rate Base	105,841,860	114,852,271	132,435,515	136,722,738	154,813,872	154,422,481	149,232,485	149,202,833	150,722,676
Capital Contribution	- 30,926,860	- 21,352,271	- 22,947,387	- 18,322,740	- 22,013,855	- 22,922,729	- 23,832,651	- 23,802,293	- 25,322,604

Note: The above figures for Total Capital Spend (Gross) - Contract/Material/External Purchase cannot be broken down further into Dollars for Management Staff vs Dollars for Non-Management Staff within the time frame required.

8
9

1 **JTC 1.13: To ask the consultant to provide the background to the 1.47 factor.**

2

3 **RESPONSE:**

4 The 1.47 factor used by CIMA was derived from the initial report prepared by PowerStream
5 comparing estimates between Option 3 and Option 4 for one typical project.

1 **JTC 1.14: To provide the information on the requirements under which they operate.**

2

3 **RESPONSE:**

4

5 For new residential subdivisions, subdivision agreements between the Municipality and the
6 Developer include a clause related to electrical servicing by PowerStream. Included in the
7 clause is a requirement for underground. As an example, these are the words on a typical
8 agreement - "... *The owner further agrees that all lands shall be serviced by underground*
9 *electrical distribution systems...*".

10 At the point in time when the underground electrical distribution system is required to be
11 replaced, the municipality, as the road authority, has the right to determine where the electrical
12 facilities are located, specifically under the Electricity Act, 1998, S.O. 1998, c. 15, Sched. A,
13 subsection 41. 9, location:

14 *(9) The location of any structures, equipment or facilities constructed or installed under*
15 *subsection (1) shall be agreed on by the transmitter or distributor and the owner of the*
16 *street or highway, and in case of disagreement shall be determined by the Board. 1998,*
17 *c. 15, Sched. A, s. 41 (9).*

18 This approval is typically governed by the Municipal Consent application process for submission
19 by utilities or their contractors for work within the municipal right of way.

20 The City of Markham's Official Plan approved by the Region in June, 2014, section 7.2.3.5
21 states:

22 *To work with the Region and utility providers to ensure appropriate utility design and*
23 *placement, including locating cables, electrical circuits and other utility structures*
24 *underground in order to minimize visual impacts. Markham and the Region shall*
25 *encourage priority areas for underground installation of utilities in new communities and*
26 *intensification areas.*

27 At the conclusion of the technical conference, a specific request was made to municipal staff,
28 asking:

- 29
- 30 • can PowerStream obtain approval to move or relocate rear lot poles of an overhead
31 system to the front?;
 - 32 • would the municipality consider granting municipal consent for rebuilding an existing
33 underground hydro system to overhead?; and
 - 34 • If no approvals are obtained, what are the by-laws or regulations that would prohibit
35 PowerStream from doing so?

1 No response was received.

2 From a technical and practical perspective, design requirements dictate that roads with curves
3 require extensive guying on lands that customers typically value as their own. Also, pole lines
4 could provide issues with mature trees and result in issues with finding acceptable locations with
5 all parties. There is also a perception of decreased property values. The results are dissatisfied
6 ratepayers.

1 **Additional Information following Technical Conference**

2

3 **Subject to Check:** Part A: \$288/m of cable replacement (Staff-71). However, in the answer II-2-
4 Staff-16, the answer is \$265-\$288. What is the discrepancy?

5 **RESPONSE:**

6 PowerStream cannot locate the reference to \$265. PowerStream did locate a \$261 reference in
7 the IRM from 2013. This is an outdated figure.

1 **Staff Consultant Request:** Provide failure rates for the asset classes available

2 **RESPONSE:**

3 Refer to Table 1 below.

4 **Table 1**

Equipment Failure Rate										
Cause		2007	2008	2009	2010	2011	2012	2013	2014	
Distribution Transformer	Population	Number Not Available				43,535	43,865 *	44,195 *	44,192	
	Failure	58	59	53	53	69	126	129	149	
	Failure %	-				0.16%	0.29%	0.29%	0.34%	
Wood Poles	Population	Number Not Available				46,413	43,347	45,399	38,070	
	Failure	Not Available				8	23	28	38	
	Failure %	-				0.02%	0.05%	0.06%	0.10%	
Line Hardware	Population	Number Not Available								
	Failure	19	17	18	5	16	36	33	52	
	Failure %	-								
Station Equipment (Misc.)	Population	Number Not Available								
	Failure	3	0	5	1	2	2	0	4	
	Failure %	-								
Switch	Population	Number Not Available								
	Failure	18	21	16	16	25	50	46	55	
	Failure %	-								
Switching Unit	Population	Number Not Available				1,739	1,851	1,877	1,847	
	Failure	16	21	20	15	30	24	28	15	
	Failure %	-				1.73%	1.30%	1.49%	0.81%	
Station Equipment Breaker	Population	Number Not Available				387	401	399	398	
	Failure	Not Available				0	1	0	4	
	Failure %	-				0.00%	0.25%	0.00%	1.01%	
Switch LIS/Recloser	Population	Number Not Available					338	346	360	
	Failure	Not Available					3	0	5	
	Failure %	-					0.89%	0.00%	1.39%	

5 * Estimated