EB-2015-0003

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 PowerStream Inc. for an Order approving rates and other service charges for the distribution of electricity for the years 2016 through 2020.

CROSS-EXAMINATION COMPENDIUM OF THE SCHOOL ENERGY COALITION
(Panel 1 – OM&A)

November 20, 2015

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Appendix 2-JA
Summary of Recoverable OM&A Expenses

	2012 Actuals	Last Board-Approved Rebasing Year 2013	Last Rebasing Year 2013 Actuals	2014 Actuals	2015 Bridge Year	2016 TEST YEAR 1	2017 TEST YEAR 2	2018 TEST YEAR 3	2019 TEST YEAR 4	2020 TEST YEAR 5
Operations	$ 12,468	$ 12,773	$ 12,240	$ 13,211	$ 13,955	$ 14,797	$ 15,369	$ 15,750	$ 16,128	$ 16,346
Maintenance	$ 19,409	$ 19,091	$ 20,030	$ 20,167	$ 21,450	$ 22,601	$ 23,558	$ 24,402	$ 25,209	$ 26,161
Billing and Collecting	$ 13,315	$ 14,124	$ 13,642	$ 16,089	$ 16,711	$ 17,282	$ 20,441	$ 20,685	$ 21,090	$ 21,508
Community Relations	$ 1,500	$ 1,399	$ 1,431	$ 1,740	$ 1,806	$ 2,124	$ 2,194	$ 2,221	$ 2,250	$ 2,276
Administrative and General	$ 36,101	$ 35,554	$ 33,506	$ 34,246	$ 38,635	$ 39,413	$ 40,248	$ 40,665	$ 41,433	$ 41,937
Total	**$ 82,792**	**$ 82,941**	**$ 80,849**	**$ 85,454**	**$ 92,558**	**$ 96,216**	**$ 101,808**	**$ 103,724**	**$ 106,109**	**$ 108,228**
%Change (year over year)			-2.3%	5.7%	8.3%	4.0%	5.8%	1.9%	2.3%	2.0%

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Appendix 2-JB
Recoverable OM&A Cost Driver Table

Total OM&A (000's)	2013 Actual	2014 Actual	2015 Bridge Year	2016 Test Year	2017 Test Year	2018 Test Year	2019 Test Year	2020 Test Year	2013 Actuals to 2015 Bridge Year	2016 to 2020 Test Years
Opening Balance *	**$ 82,941**	**$ 80,849**	**$ 85,454**	**$ 92,558**	**$ 96,216**	**$ 101,808**	**$ 103,724**	**$ 106,109**	**$ 82,941**	**$ 92,558**
Compensation	(204)	538	2,508	1,136	267	745	787	901	2,842	3,837
Asset Management	(922)	1,949	579	472	578	364	416	369	1,605	2,199
Vegetation Management	1,872	(1,565)	403	614	526	531	536	542	710	2,749
Customer Information System Implementation	-	1,349	1,310	(122)	(158)	(182)	1	1	2,659	(460)
Risk Management	(109)	330	757	518	485	(36)	138	(103)	978	1,002
Growth	(73)	59	144	369	140	232	87	106	131	935
Customer Expectation	95	754	(248)	58	25	25	25	25	602	158
Compliance	(361)	262	185	132	3,714	126	129	139	86	4,240
Other	(2,390)	929	1,464	482	15	110	265	139	4	1,011
Closing Balance	**$ 80,849**	**$ 85,454**	**$ 92,558**	**$ 96,216**	**$ 101,808**	**$ 103,724**	**$ 106,109**	**$ 108,228**	**$ 92,558**	**$ 108,228**

* OEB 2013 Approved Budget is $ 80,000. Difference of $ 2,941 relates to Joint Services Costs included in OM&A. The Revenue for Joint Services is included in Other Income.

Perspective and Weighting				Strategic Objectives	Definition	Sub Weight	Strategic Theme		Measure	Min (50%)	Target (100%)	Max (150%)	Feb-15 Results	YTD Score EMT
Results	Financial	30	F1	Increase Shareholder Value	Shape and maintain a healthy business and continue to create and embark on opportunities for further growth and development that will optimize shareholder value.									
			F2	Provide an Optimized Rate of Return	Deliver the optimum rate of return and provide the shareholders with regular dividend and interest payments consistent with the shareholders dividend policy.	20	Growth & Sustainability	F2-1	Consolidated Net Income (Core $26.7 M + Solar $2.6 M + PESI -$0.95 M = $28.35)	90-94%	95-105%	106-110%	$28.35	20.0
			F3	Pursue Core Business Growth	Develop the full potential of the core business and pursue growth opportunities for existing revenue streams, including mergers and acquisitions.									
			F4	Develop New Revenue Streams	Grow new revenue opportunities within the parameters of the evolving business model.	10	Growth & Sustainability	F4-1	Sub-Metering Customers - (net new billed in 2015)	3,000	3,500	4,000	325	0.0
	Customers	23	C1	Deliver Professional Services and an Exceptional Customer Experience	Deliver responsive, thorough and courteous customer service and consistent, reliable electrical service that meets the needs of our customer.	10	Customer Focus	C1-1	Customer Satisfaction - (average of PRE and POST Interview)	83-85%	86-88%	89-91%	0%	0.0
						10		C1-2	Reliability - SAIDI (minutes)	84.10	69.30	54.70	5.55	15.0
			C2	Provide Customers with Cost Effective, Competitive Distribution Rates	Provide excellent, cost effective energy products and services, utilizing a rate structure that is competitive with similar-sized utilities.									
			C3	Continue Developing the PowerStream Brand	Develop a brand proposition that when conveyed in marketing and advertising campaigns, will provide an attractive, unique and relevant message to current and potential customers.									
			C4	Deliver Superior Performance in Everything We Do	Utilize the philosophy, tools, and methods of continuous improvement to ensure that we consistently improve and evolve the processes, products, and services we provide for our customers and stakeholders.									
			C5	Foster Conservation and Sustainability	Ensure a full suite of innovative CDM programming is available for customers while responsibly managing the resources used internally to minimize our carbon footprint and environmental impacts.	3	Growth & Sustainability	C5-1	CDM - 2015 Net Incremental Energy Savings (53.6 GWh)	70-79%	80-120%	121-130%	2.6	0.0
Enablers	Processes	17	I1	Focus on Continuous Improvement of Key Processes	Utilize prevention-based process management methodologies to drive efficiency and effectiveness of key processes, ensuring they are continually reviewed, stabilized and improved.	10	Operational Excellence	I1-1	Completed process improvement projects/initiatives resulting in cost reduction/savings or efficiencies	$350,000	$500,000	$650,000	$0	0.0
			I2	Enhance Project Management Capabilities and Expertise	Promote the adoption and use of a standardized project management approach across PowerStream, which will support our ability to create and sustain transformational change and achieve our objectives.									
			I3	Shape and Influence Positive Advocacy	Actively participate in opportunities to shape and influence regulatory and government policy consistent with our strategic direction.									
			I4	Develop a Rate Submission Ready Organization	Develop the knowledge, skill, resources and expertise to prepare and successfully defend rate applications submitted to the regulator.	7	Regulatory Excellence	I4-1	2015 Rate Application Submission *(Timing & Amount - Board Assessment)	*TBD	*TBD	*TBD	0	0.0
	Foundation	30	E1	Be a Best-In-Class Employer	Enhance our culture through positive labour relations and by focusing and aligning our collective efforts and initiatives to achieve our strategic objectives.	5	High Performance Culture	E1-1	2015 Employee Survey	85-89%	90-95%	>95%	0.0%	0.0
			E2	Ensure a Safe and Healthy Workplace	Equip and empower all employees and contractors to work safely, stay healthy, and identify and manage risks and potential losses.	10	High Performance Culture	E2-1	Serious Injuries (Zero Injuries)		0		0	10.0
			E3	Build Integrated Technology Platforms	Convert and integrate single mission critical technology platforms (ERP, CIS, GIS, OMS, AMS) to enable productivity and process improvement.	5	High Performance Culture	E3-1	CIS Implemented (Go-Live)		Apr 1-Jun 1		0	0.0
						2.5		E3-2	Quality (% of Bills Canceled After issuance)	2.0%	1.5%	1.0%	0.1%	3.75
						2.5		E3-3	Quality (% of Unbilled Customers at Bill Issuance Date)	4.0%	3.0%	2.0%	1.5%	3.75
			E4	Investigate and Apply New and Innovative Technologies	Find, investigate and apply new and innovative technologies to grow the business, drive efficiencies and gain competitive advantage. Continue PowerStream's path of technological innovation with development of a Smart Grid strategy that appropriately responds to the requirements of our evolving business model and the needs of our customers.	5	High Performance Culture	E4-1	Total number of (product, service, process or business model) Innovation Projects	2	4	6	0	0.0
			E5	Enhance Governance and Shareholder Relations	Ensure we meet or exceed recognized standards for good governance and maintain an excellent relationship with our shareholders.									
						100							Overall Corporate Score:	52.5

Table title: PowerStream Board 2015 Corporate Scorecard - (for EMT)

PowerStream EMT 2015 Corporate Core Scorecard - (for Staff)									50%	100%	150%	Feb-15	YTD Score
Perspective and Weighting		Strategic Objectives	Definition	Sub Weight	Strategic Theme		Measure		Min	Target	Max	Results	
Results – Financial	20	F1	Increase Shareholder Value	Shape and maintain a healthy business and continue to create and embark on opportunities for further growth and development that will optimize shareholder value.									
		F2	Provide an Optimized Rate of Return	Deliver the optimum rate of return and provide the shareholders with regular dividend and interest payments consistent with the shareholders dividend policy.	20	Growth & Sustainability	F2-1	Net Income (Core $26.7 M)	90-94%	95-105%	106-110%	$26.70	20.0
		F3	Pursue Core Business Growth	Develop the full potential of the core business and pursue growth opportunities for existing revenue streams, including mergers and acquisitions.									
		F4	Develop New Revenue Streams	Grow new revenue opportunities within the parameters of the evolving business model.	0	Growth & Sustainability	F4-1	Sub-Metering Customers - (net new billed in 2015)	3,000	3,500	4,000	325	
					0		F4-2	Total Solar Projects in Commercial Operation (cumulative) and within budget 21.3 Mwac, 26.5 MWdc	90-94%	95-100%	101-110%	19.260	
					0		F4-3	Solar Revenue Generated (weather normalized) $17.3 M	90-94%	95-100%	101-110%	$0.68	
Results – Customers	23	C1	Deliver Professional Services and an Exceptional Customer Experience	Deliver responsive, thorough and courteous customer service and consistent, reliable electrical service that meets the needs of our customer.	5	Customer Focus	C1-1	Customer Satisfaction - (average of PRE and POST Interview)	83-85%	86-88%	89-91%	0%	0.0
					5		C1-2	Reliability - SAIDI (minutes)	84.10	69.30	54.70	5.55	7.5
		C2	Provide Customers with Cost Effective, Competitive Distribution Rates	Provide excellent, cost effective energy products and services, utilizing a rate structure that is competitive with similar-sized utilities.									
		C3	Continue Developing the PowerStream Brand	Develop a brand proposition that when conveyed in marketing and advertising campaigns, will provide an attractive, unique and relevant message to current and potential customers.									
		C4	Deliver Superior Performance in Everything We Do	Utilize the philosophy, tools, and methods of continuous improvement to ensure that we consistently improve and evolve the processes, products, and services we provide for our customers and stakeholders.	10	Operational Excellence	C4-1	Implement the 2015 J2E plan	80%	90%	100%	0.0%	0.0
		C5	Foster Conservation and Sustainability	Ensure a full suite of innovative CDM programming is available for customers while responsibly managing the resources used internally to minimize our carbon footprint and environmental impacts.	3	Growth & Sustainability	C5-1	CDM - 2015 Net Incremental Energy Savings (53.6 GWh)	70-79%	80-120%	121-130%	2.6	0.0
Enablers – Processes	27	I1	Focus on Continuous Improvement of Key Processes	Utilize prevention-based process management methodologies to drive efficiency and effectiveness of key processes, ensuring they are continually reviewed, stabilized and improved.	10	Operational Excellence	I1-1	Completed process improvement projects/initiatives resulting in cost reduction/savings or efficiencies	$350,000	$500,000	$650,000	$0	0.0
		I2	Enhance Project Management Capabilities and Expertise	Promote the adoption and use of a standardized project management approach across PowerStream, which will support our ability to create and sustain transformational change and achieve our objectives.	6	Operational Excellence	I2-1	% of PMO Projects Completed	70%	80%	90%	0.0%	0.0
					6		I2-2	% of Capital Projects Completed	70%	80%	90%	0.0%	0.0
		I3	Shape and Influence Positive Advocacy	Actively participate in opportunities to shape and influence regulatory and government policy consistent with our strategic direction.									
		I4	Develop a Rate Submission Ready Organization	Develop the knowledge, skill, resources and expertise to prepare and successfully defend rate applications submitted to the regulator.	5	Regulatory Excellence	I4-1	2015 Rate Application Submission *(Timing & Amount - Board Assessment)	*TBD	*TBD	*TBD	0	0.0
Enablers – Foundation	30	E1	Be a Best-In-Class Employer	Enhance our culture through positive labour relations and by focusing and aligning our collective efforts and initiatives to achieve our strategic objectives.	5	High Performance Culture	E1-1	2015 Employee Survey	85-89%	90-95%	>95%	0.0%	0.0
		E2	Ensure a Safe and Healthy Workplace	Equip and empower all employees and contractors to work safely, stay healthy, and identify and manage risks and potential losses.	5	High Performance Culture	E2-1	Serious Injuries (Zero Injuries)		0		0	5.0
					5		E2-2	Site Inspections	1,900	2,300	2,500	97	0.0
		E3	Build Integrated Technology Platforms	Convert and integrate single mission critical technology platforms (ERP, CIS, GIS, OMS, AMS) to enable productivity and process improvement.	5	High Performance Culture	E3-1	CIS Implemented (Go-Live)		Apr 1-Jun 1		0	0.0
					2.5		E3-2	Quality (% of Bills Canceled After issuance)	2.0%	1.5%	1.0%	0.1%	3.75
					2.5		E3-3	Quality (% of Unbilled Customers at Bill Issuance Date)	4.0%	3.0%	2.0%	1.5%	3.75
		E4	Investigate and Apply New and Innovative Technologies	Find, investigate and apply new and innovative technologies to grow the business, drive efficiencies and gain competitive advantage. Continue PowerStream's path of technological innovation with development of a Smart Grid strategy that appropriately responds to the requirements of our evolving business model and the needs of our customers.	5	High Performance Culture	E4-1	Total number of (product, service, process or business model) Innovation Projects	2	4	6	0	0.0
		E5	Enhance Governance and Shareholder Relations	Ensure we meet or exceed recognized standards for good governance and maintain an excellent relationship with our shareholders.									
					100							Overall Corporate Score:	40.0

Table 5: 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 adjustment factor:							
Customer Growth (A)	1.91%	1.71%	1.69%	1.72%	1.70%	1.70%	1.72%
Customer Growth effect on OM&A (B)	11.45%	11.45%	11.45%	11.45%	11.45%	11.45%	11.45%
Customer Growth adjustment (A*B)	0.22%	0.20%	0.19%	0.20%	0.19%	0.19%	0.20%

Table 6: Net Incremental New Costs for Changing Requirements ($ thousands)

			Custom IR Term					
Net incremental new costs	2014	2015	2016	2017	2018	2019	2020	2016-2020 Total
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
Customer expectation	$754	($248)	$58	$25	$25	$25	$25	$158
Total	$2,994	$2,305	$1,200	$895	$356	$719	$484	$3,654

The net incremental cost table above ties to the OM&A cost drivers in Appendix 2-JB in Exhibit J tab 1, except it does not include the compensation, growth or asset management cost drivers as these are captured in the inflation and customer growth adjustment factors above.

Capital – Estimated Productivity Savings

PowerStream plans to rehabilitate 140 kilometres of end-of-life or beyond underground cable in 2015 and each year during the 2016 to 2020 IR plan term.

PowerStream has managed to achieve significant savings in the costs of rehabilitating underground cable through the use of cable injection instead of replacement. Injection costs less than 10% of the cost of replacement. Injected cable has an estimated useful life of 20 years or 40% compared to 50 years for replacement cable. Taking into account the shorter life, this represents a cost of 40% for injected cable versus replacement cable.

Table 3: Historical Actual vs. Predicted Customer Counts/Connections

Year	Customer Counts			Connections		
	Actual	Predicted	Var %	Actual	Predicted	Var %
2011	335,935	335,809	-0.04%	80,969	81,080	0.14%
2012	343,344	343,361	0.00%	82,520	82,666	0.18%
2013	349,797	349,422	-0.11%	84,418	84,455	0.04%
2014	356,461	356,633	0.05%	85,990	85,867	-0.14%

Estimated rate class customer forecast models are statistically strong and generate predicted estimates that are extremely close to actual customer counts. Given rate-class customer model performance, PowerStream is confident and hence submits that the class-specific customer and connection regression models are robust and appropriate tools for forecasting future customer counts and connections.

Customer growth has been highly correlated with population growth. PowerStream has been experiencing a steady customer growth rate averaging 2% over the 2008 – 2014 periods. The 2015 – 2020 growth rates average 1.7% per year. This is consistent with the Conference Board population forecast. Table 4 and 5 illustrate the growth rates over the historical and forecast periods.

Table 4: Historic Customer Counts and Growth Rate (2008 – 2014)

	2008	2009	2010	2011	2012	2013	2014
Customer Counts	314,357	320,869	328,589	335,935	343,344	349,797	356,461
Growth Rates		2.07%	2.41%	2.24%	2.21%	1.88%	1.91%

Table 5: Forecast Customer Counts and Growth Rate (2015 – 2020)

	2015	2016	2017	2018	2019	2020
Customer Counts	362,543	368,663	374,990	381,372	387,845	394,508
Growth Rates	1.71%	1.69%	1.72%	1.70%	1.70%	1.72%

Rate class actual (2010 to 2014) and forecasted customer counts (2015 to 2020) are provided as supplementary information in electronic Appendix H-3-2.

<u>New Customer Information System ("CIS")</u>

A new CIS was implemented in 2015 by CGI Inc. CGI was also chosen to provide the maintenance on the new CIS based on the results of due diligence process including a pricing proposal; discussions with other out of province utilities who had used CGI for maintenance; and discussions with other LDCs.

There are $2,000,000 in incremental costs related to the maintenance agreement to support the new CIS and $1,392,000 in training costs. The maintenance costs are initially higher than the cost to support and maintain the former T&W Billing System however there is some reduction in cost over the term of the Custom IR plan.

<u>Vegetation Management</u>

In December 2013 there was a major ice storm that damaged a number of trees and increased OM&A expenses in 2013 by $1,809,000. As a result of the ice storm PowerStream changed its vegetation management policies for rear yards and heavily treed front yards from a 5 year tree trimming cycle to a 2 year cycle. Further, rural areas now have a 4 year tree trimming cycle where previously they were not part of the tree trimming cycle.

In addition to the change in policy after the ice storm, PowerStream changed its annual tree trimming cycle from 5 years to 3 years for urban areas in December 2012.

With the implementation of these changes, incremental costs for vegetation management have correspondingly been higher.

Below is some background information on other incremental costs:

Based on PowerStream's experience with cable injection, it has been determined that the amount of cable replacement for 2015 to 2020 can be reduced by 22 kilometers per year as this cable can now be injected rather than replaced. This translates into the savings summarized in Table 7 below.

Table 7: Additional Productivity Savings from Capital ($ Millions)

	2015	2016	2017	2018	2019	2020
Replacement cost savings	$ 10.3	$ 11.0	$ 12.0	$ 12.6	$ 13.3	$ 13.5
Injection Cost	$ 0.9	$ 0.8	$ 0.8	$ 0.8	$ 0.9	$ 0.9
Net Savings	$ 9.4	$ 10.2	$ 11.2	$ 11.7	$ 12.4	$ 12.6
Adjust for 40% life	$ 3.8	$ 4.1	$ 4.5	$ 4.7	$ 5.0	$ 5.0

These additional productivity gains related to a recent change in the cable injection program are described under the heading Continuous Productivity Improvement, directly below.

Continuous Productivity Improvement

PowerStream applies a broad and holistic approach to improvement. This balanced approach is multidimensional as it realizes that overall improvement can only be sustained by considering and initiating change that yields a mix of benefits. For greatest value, a combination of hard and soft improvements is required. PowerStream's stakeholders who include customers, rate payers and shareholders desire an organization that continues to improve its operations. Below are some of the many initiatives that PowerStream has undertaken to drive productivity improvements.

Customer Information System (CIS)

In its 2013 Cost of Service Application, PowerStream provided information with regard to initiating a new CIS Project. This project is scheduled to go live in the second quarter of 2015. The implementation of the new CIS replaces a 30 year old legacy system which does not meet current and expected customer needs and operational demands. In modernizing the CIS architecture, Customer Service is updating the backbone information system for future requirements.

The benefits of modernization are significant including the movement to a cross functional pooling of staff resources versus sequential and silo work assignment and scheduling, the availability of Wikipedia type information for shared use, real time workload balancing, optimization of capacity, the setting and electronic tracking of Key Performance Indicators, enhanced cycle time with the elimination of low value activity and process gaps and improved customer service and experience with an enhanced self-serve option.

Critical to realizing the full value of the new CIS is business processes that mirror system functionality. Workload balancing achieved through pooling is anticipated to increase capacity in the Customer Service area. This additional capacity has been incorporated into this rate application, the outcome of which can be demonstrated by the ability of Customer Service to continue to provide more value to more customers without increasing headcount.

Work Force Management (WFM)

Operations and Construction is planning to initiate Work Force Management in 2015 which will be phased over 4 years. The implementation of Work Force Management (WFM)/Mobile Dispatch will improve capacity through automated end to end planning and scheduling which integrates all departments along the project lifecycle (i.e. Engineering → Materials → Metering → Lines). The various benefits which will be realized include:

- Increased value added work time through decreased travel time and movement between jobs through enhanced route planning
- Decreased administration time through the simplification of document and information flow
- Increased schedule adherence by meeting planned job start dates
- Introduction of additional key metrics to track performance

The anticipated increased capacity upon full implementation of WFM has been incorporated into the rate application. The anticipated capacity increase will allow Operations and Construction to advance and/or do more planned and unplanned work, as well as build and maintain an increasing infrastructure with little or no increase in work hours.

Cable Injection

PowerStream uses two rehabilitation options to rehabilitate cable segments that are aged and are in deteriorated condition. The options are cable replacement and cable injection. PowerStream's initial cable injection program (pre 2015) excluded the older cable population (31 years and older). In 2014, in an effort to find methods of improving reliability while working within a constrained budget, PowerStream consulted with cable injection service providers and other utilities to obtain broader information. PowerStream also completed additional research by determining the effectiveness of cable injection on older cables and deteriorated cables which previously would have been replacement candidates. This work, combined with the past success of PowerStream's cable injection program, led PowerStream to make the decision to expand the cable age group for cable injection.

Beginning in 2015, PowerStream will be injecting cables in the range of 31 to 39 years and thus deferring the high cost of cable replacement, for this new range of cables, by 20 years. This new approach allows PowerStream to rehabilitate more cable segments with the same amount of capital funding. As well, the new approach is more expedient as it makes it possible to address potential reliability problems faster. PowerStream is one of the few utilities in Canada that have fully embraced a new and innovative way to rehabilitate cable segments that are aged and in deteriorated condition. This new program demonstrates PowerStream's success in developing innovative solutions to improve reliability while working within a constrained budget.

In House Cable Testing

PowerStream is one of the few (if not only) electricity utilities in Canada to have its own in-house Cable Testing Program. This program ensures replacement decisions are made in the most cost effective and efficient manner. Operating cost savings occur because it is less costly for PowerStream to do its own in-house testing than it would be to have external contractors do cable testing for PowerStream.

Pole Reinforcement Program

PowerStream has a significant Pole Replacement Program due to the quantity of wood poles in service (approx. 40,000). In 2014, PowerStream completed an engineering evaluation and pilot project using pole reinforcement technology to reinforce poles rather than replacing poles. Based on the successful completion of the pilot, PowerStream has embraced pole reinforcement as a new and innovative way to reduce capital costs associated with wood pole replacements. It should be noted that PowerStream is one of the first Local Distribution Companies in Ontario to embrace Pole Reinforcement Technology.

PI Enterprise software to manage real-time data and events

PI Enterprise software, introduced to PowerStream, provides notification capability for certain Transformer conditions as well as Circuit Breaker status. This new software allowed PowerStream to migrate from time based maintenance to a more proactive maintenance model based on condition and risk. Notification capability acquired with the implementation included equipment alarms, peak loads, oil temperatures, fire alarms, etc. PowerStream's new proactive based maintenance model, enabled by the new software notification capability, has already resulted in PowerStream successfully avoiding future costs on several occasions, one of which resulted in PowerStream avoiding the two million dollar expenditure to replace a transformer.

Non-Quantifiable Benefits

PowerStream's initiatives often have several purposes, such as improved customer service, better operational information and decision making. These initiatives provide benefits that are of direct or indirect value to customers but may not provide any productivity savings. The operational improvements may result in other savings.

An example is the purchase and use of PI Enterprise software to monitor transformer stations and municipal substations. This operational improvement has already provided timely warning to avert a capital replacement cost of $2 million and avoid customer outages. PowerStream was able to remedy the situation with a repair costing approximately $100,000.

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REF: Ex. J-2, Appendix 2-K

Please provide a version of Appendix 2-K, on a per employee (FTE) basis.

RESPONSE:

The Per Employee (FTE) data is added to the bottom of the chart in blue colour:

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	2012 Actual	2013 Board Approved	2013 Actual	2014 Actual	2015 Forecast	2016 Forecast	2017 Forecast	2018 Forecast	2019 Forecast	2020 Forecast
Number of Employees (FTEs including Part-Time)[1]										
Management (including executive)	103.56	110.20	104.41	105.36	112.50	117.50	117.00	117.75	118.75	118.75
Non-Management (union and non-union)	415.38	440.45	428.69	438.73	454.95	449.37	444.87	445.12	446.12	444.12
Total	**518.94**	**550.65**	**533.10**	**544.09**	**567.45**	**566.87**	**561.87**	**562.87**	**564.87**	**562.87**
Total Salary and Wages including ovetime and incentive pay										
Management (including executive)	$ 15,021,009	$ 15,708,582	$ 15,573,563	$ 16,390,784	$ 17,510,000	$ 18,529,018	$ 18,926,555	$ 19,440,591	$ 19,961,461	$ 20,443,074
Non-Management (union and non-union)	$ 33,667,780	$ 35,452,576	$ 35,578,299	$ 38,088,707	$ 37,376,380	$ 38,281,748	$ 39,533,577	$ 40,637,238	$ 41,692,675	$ 42,499,243
Total	**$ 48,688,789**	**$ 51,161,159**	**$ 51,151,862**	**$ 54,479,491**	**$ 54,886,381**	**$ 56,810,766**	**$ 58,460,132**	**$ 60,077,830**	**$ 61,654,136**	**$ 62,942,317**
Total Benefits (Current + Accrued)										
Management (including executive)	$ 3,961,929	$ 3,790,641	$ 4,322,335	$ 4,536,113	$ 4,485,371	$ 4,727,768	$ 4,797,718	$ 4,916,002	$ 5,059,781	$ 5,182,854
Non-Management (union and non-union)	$ 8,894,205	$ 11,701,493	$ 9,604,147	$ 9,739,250	$ 10,958,897	$ 11,318,056	$ 11,786,367	$ 12,036,423	$ 12,299,700	$ 12,556,006
Total	**$ 12,856,134**	**$ 15,492,134**	**$ 13,926,483**	**$ 14,275,363**	**$ 15,444,267**	**$ 16,045,824**	**$ 16,584,084**	**$ 16,952,425**	**$ 17,359,481**	**$ 17,738,859**
Total Compensation (Salary, Wages, & Benefits)										
Management (including executive)	$ 18,982,938	$ 19,499,223	$ 19,895,898	$ 20,926,897	$ 21,995,371	$ 23,256,785	$ 23,724,272	$ 24,356,593	$ 25,021,241	$ 25,625,928
Non-Management (union and non-union)	$ 42,561,986	$ 47,154,069	$ 45,182,446	$ 47,827,957	$ 48,335,277	$ 49,599,804	$ 51,319,944	$ 52,673,662	$ 53,992,375	$ 55,055,249
Total	**$ 61,544,923**	**$ 66,653,293**	**$ 65,078,344**	**$ 68,754,854**	**$ 70,330,648**	**$ 72,856,589**	**$ 75,044,216**	**$ 77,030,255**	**$ 79,013,616**	**$ 80,681,176**
Salary and Wages (including ovetime and incentive pay) per FTE										
Management (including executive)	$ 145,040	$ 142,546	$ 149,161	$ 155,570	$ 155,644	$ 157,694	$ 161,765	$ 165,101	$ 168,097	$ 172,152
Non-Management (union and non-union)	$ 81,054	$ 80,492	$ 82,993	$ 86,816	$ 82,155	$ 85,190	$ 88,865	$ 91,295	$ 93,456	$ 95,693
All	**$ 93,823**	**$ 92,910**	**$ 95,952**	**$ 100,130**	**$ 96,725**	**$ 100,218**	**$ 104,046**	**$ 106,735**	**$ 109,147**	**$ 111,824**
Benefits (Current + Accrued) per FTE										
Management (including executive)	$ 38,256	$ 34,398	$ 41,399	$ 43,054	$ 39,870	$ 40,236	$ 41,006	$ 41,749	$ 42,609	$ 43,645
Non-Management (union and non-union)	$ 21,412	$ 26,567	$ 22,404	$ 22,199	$ 24,088	$ 25,186	$ 26,494	$ 27,041	$ 27,570	$ 28,272
All	**$ 24,774**	**$ 28,134**	**$ 26,124**	**$ 26,237**	**$ 27,217**	**$ 28,306**	**$ 29,516**	**$ 30,118**	**$ 30,732**	**$ 31,515**
Total Compensation (Salary, Wages, & Benefits) per FTE										
Management (including executive)	$ 183,295	$ 176,944	$ 190,560	$ 198,624	$ 195,514	$ 197,930	$ 202,772	$ 206,850	$ 210,705	$ 215,797
Non-Management (union and non-union)	$ 102,466	$ 107,059	$ 105,397	$ 109,015	$ 106,243	$ 110,376	$ 115,359	$ 118,336	$ 121,027	$ 123,965
All	**$ 118,597**	**$ 121,045**	**$ 122,076**	**$ 126,367**	**$ 123,942**	**$ 128,524**	**$ 133,562**	**$ 136,853**	**$ 139,879**	**$ 143,339**

1

II-SEC-9

Ref: II/K/3/p2/Appendix 2-K

With respect to PowerStream's staffing vacancy rates:

a. Please provide PowerStream staffing vacancy rate for each year between 2011-2015.

b. What staffing vacancy rate did PowerStream use for its forecast 2016-2020 compensation costs?

RESPONSE:

a) Please see Table I-SEC-9-1 below.

Table I-SEC-9-1: Vacancies 2011-2015

	2011 **Actual**	**2012** **Actual**	**2013** **Actual**	**2014** **Actual**	**2015 (Jan-Jun)** **Actual**
Total FTE Vacancy Rate	3	11	17	13	8

b) The staffing vacancy used for the 2016 to 2020 OM&A compensation costs is an average rate of 6.6 FTE's.

II-VECC-3

Ref: Exhibit J/T2/pg.2

a) What are the current FTEs of PowerStream?

RESPONSE:

a) Table II-VECC-3 below shows the current FTEs.

	As of June 30, 2015 **FTE**
Management (including executive)	102.8
Non-Management (union and non-union)	434.6
Total	537.4

work programs that will be impacted by the growth in plant needed to service an increase in customers. A low correlation included back office work activities that are not externally customer orientated, (e.g. Finance and Corporate Services).

The high, medium and low percentages were applied to the 2013 OM&A costs and 11.45% was determined to be the growth effect on OM&A. 11.45% was then multiplied by the average customer growth of 1.71% (simple average of the percentages from 2016 – 2020 discussed in b) above), which resulted in a 0.20% customer growth effect on OM&A. Therefore, OM&A costs will increase by 0.2% when the average customer growth of 1.71% is experienced. F-Energy Probe-6 Appendix A provides the details for the calculation of the 11.45% and 0.20% factors respectively.

F-Energy Probe-7

REF: Ex. F, Tab 1, Table 6

a) Please confirm that the figures shown in Table 6 are all incremental on a year to year basis. For example, the $614 shown in 2016 for vegetation management is incremental to the amount spent in 2015, which in turn was $300 above the level of expenditures in 2014.

b) Please provide a table similar to Table 6 that shows the total costs, rather than the incremental costs, for the lines noted. In providing this table, please start with 2013 actual figures.

RESPONSE:

a) Yes. The figures in Exhibit F, Tab 1, Table 6 are all incremental on a year to year basis.

b) Refer to the below table, showing cumulative total costs starting from 2013 Actual Figures in (000's):

				Custom IR Term				
	Actual 2013 (Total)	**Actual 2014 (Total)**	**2015 Bridge Year (Total)**	**2016 (Total)**	**2017 (Total)**	**2018 (Total)**	**2019 (Total)**	**2020 (Total)**
New CIS incremental costs *	$0	$1,349	$2,659	$2,537	$2,379	$2,197	$2,198	$2,200
Vegetation management	$1,461	$1,760	$2,060	$2,674	$3,200	$3,731	$4,267	$4,809
Compliance	$1,057	$1,319	$1,504	$1,636	$1,654	$1,672	$1,690	$1,710
Risk Management	$2,677	$3,007	$3,764	$4,282	$4,767	$4,731	$4,869	$4,766
Customer expectation	$2,341	$3,095	$2,848	$2,905	$2,930	$2,955	$2,980	$3,005
Total	**$7,536**	**$10,530**	**$12,835**	**$14,035**	**$14,930**	**$15,286**	**$16,005**	**$16,490**

* - New post 2013, hence no budget

F-Energy Probe-8

REF: Ex. F, Tab 1, page 6

The evidence states that injection costs less than 10% of the cost of replacement and injected cable lasts 40% of the estimated life of 50 years for replacement cable. Based on these figures, please show how the cost of 40% for injected cable versus replacement cable has been estimated.

RESPONSE:

TABLE OF CONTENTS

J-SEC-31

REF: Ex. J-1, p.3

Please provide all internal or external analysis done regarding the changing of the tree trimming cycle.

RESPONSE:

5-year Cycle to 3-year Cycle

Prior to 2012, in the PowerStream South service territory, vegetation management was undertaken on a 5-year cycle. However, this cycle proved less than effective, as in reality labour and financial resources were primarily focused on reactive activities such as addressing trouble spots and worst performing feeders. In the North service territory, a 3-year cycle was in place and most activity was focused on maintaining the proactive 3-year cycle compared to reactive-type work.

In 2012, PowerStream reviewed its vegetation management program and concluded that the objectives of safety, customer service, and reliability would be better served with a consistent and proactive program across all service territories. The need for increased emphasis on proactive activity to maintain adequate clearances and reduce the probability of trees contacting power lines was further driven by increased storm activity, since the probability of tree contacts during storms is heightened. Practices of other LDCs were also surveyed. It was decided to establish a 3-year cycle across all PowerStream service territories, thereby implementing a more optimal cycle and harmonising the practices across all predecessor utilities. This also facilitated better program management, as it was more effective to manage a consistent cycle across all territories rather than maintaining different practices in various areas. These conclusions are summarised in the document "*PowerStream Annual Distribution Inspection and Maintenance Programs, June 2012*", see J-SEC-31 Appendix A.

3-year cycle to 2-year rear lots, 3 year cycle to 4-year rural

The December 2013 Ice Storm caused widespread outages on the PowerStream distribution system, with power lines being severely impacted by falling trees and limbs. Much damage was sustained in areas with a significant concentration of rear-lot distribution, and these areas required significant amounts of resources and the longest periods of time to repair distribution plant and restore power. In the aftermath of the storm, an internal review was conducted of PowerStream's response to the storm and level of preparedness for similar events in the future. The study gave rise to a number of Action Items, one of them being to make changes to the tree-trimming program cycle.

In 2013 and 2014, PowerStream's Vegetation Management cycle was 3-years across its service territory. Vegetation in each area is addressed once every 3-years, regardless of the concentration of customers or density of foliage in the area. A review of the existing Vegetation Management Program was conducted, and it was decided to reduce rear-lot cycle from 3-years to 2-years, extend rural area cycles from 3-year to 4-year, and to maintain urban area cycles at 3-years. Details of the cycle change in 2015 can be found in the document "Vegetation Management Program Review Phase 1: 2013 Ice Storm Action Items," see J-SEC-31 Appendix B.

For external analysis, PowerStream compared tree trimming cycles to other LDC's (best industry practices).

J-VECC-32

REF: Ex. J/T-1/pg. 3-5

a) What are the incremental costs for moving the tree trimming cycle from 5 to 3 years?

RESPONSE:

a) The annual incremental costs for moving the tree trimming cycle from 5 to 3 years is $564,645.

- Investigate more robust alternatives to wood poles (i.e. composite); may be more resistant to pole fires in high contamination areas
- Investigate the use of breakaway clamps for conductors
- Use electronic type reclosers for radial and backlot feeds instead of fuses
- Eliminate radial feeds; ensure loop configuration is in place so all have alternative supply points; diversify supply routes to large commercial customers
- If possible, put highway crossings underground – coordinate with bridge construction to get ducts installed in bridge structure
- Focus on hardening deadend and crossing poles; more storm guying in general
- Increase sectionalizing of feeder segments and distribution automation, especially in high treed area
- Underground major intersections and other strategic sections of line; diversify feeder routing
- Enforce underground supply as policy in undeveloped areas
- Review lifecycle cost of overhead versus underground with the cost of outages to customers included

These consultations were taken into consideration and incorporated into the practice review and hardening recommendations as deemed appropriate.

5. POWERSTREAM PRACTICES AND PHILOSOPHIES - HARDENING REVIEW

5.1 VEGETATION MANAGEMENT

5.1.1 Background

PowerStream's vegetation management practice is documented in its internal procedure ENG-P-018 Vegetation Management Procedure.

A three year tree trimming cycle has been adopted for the entire service area. It consists of annual cycle clearing (1/3 of PowerStream's service territory) and an annual program to address vegetation impacting worst performing feeders. To date the actual cycle clearing time for the whole service area is in the 4-5 year range however this is expected to improve in the near term as resources are allocated to achieve the 3 year cycle target.

Clearing is based on tree species and results in line clearances, between cycles, of 0.1 m – 3.5 m.

III-AMPCO-21

Ref: G-AMPCO-11(j)

Please provide a schedule that shows vegetation management costs for overhead lines based on $/km for the years 2011 to 2014 and forecast for 2015 to 2020.

RESPONSE:

The table below shows the average OM&A vegetation management cost per km of overhead line for historical and forecast years. This data only reflects dollars spent per linear kilometre of overhead lines and does not take into account the density or type of vegetation, nor the type or extent of tree pruning undertaken.

	Actual				Forecast Period					
OM&A - Vegetation Management	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Vegetation Management - Annual OM&A Costs (C$)	$1,052,449	$1,227,810	$1,461,031	$ 1,759,666	$ 2,060,000	$ 2,580,600	$3,106,406	$ 3,637,470	$ 4,173,844	$ 4,715,593
Estimated Overhead (O/H) Lines maintained - Kms	500	500	650	840	840	875	900	900	900	900
$/Km	$ 2,104.90	$ 2,455.62	$ 2,247.74	$ 2,094.84	$ 2,452.38	$ 2,949.26	$ 3,451.56	$ 4,041.63	$ 4,637.60	$ 5,239.55

	Actuals				Proposed					
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Distribution Lines - Emergency/Reactive Replace Capital	***$7,194,378***	***$7,918,155***	***$8,219,497***	***$8,697,396***	***$8,416,283***	***$8,636,001***	***$8,729,603***	***$8,888,091***	***$8,924,606***	***$8,504,138***
a) LIS - Unscheduled Replacement of Failed (end of useful Life) Distribution Equipment		$334,123.00	$51,210.00	$125,384.00	$350,776.00	$346,168.00	$331,291.00	$321,119.00	$276,190.00	$275,612.00
b) Non Recoverable replacement of Distribution Equipment due to accident/vandalism	$103,434.00	$126,031.00	$138,680.00	$208,789.00	$210,774.58	$220,581.01	$220,972.56	$220,972.47	$211,280.95	$191,499.23
c) Recoverable Replacement of distribution equipment due to Accidents/Vandalism	$137,439.00	$714,253.00	$807,981.00	$816,842.00	$530,442.20	$530,600.67	$545,432.33	$560,875.95	$570,984.37	$580,023.22
d) Storm damage - Replacement of distribution equipment due to storm.	$428,418.00	$482,911.00	$767,149.00	$1,160,050.00	$999,784.75	$1,000,232.43	$1,005,602.71	$1,005,624.45	$1,010,352.34	$1,010,159.38
e) Switchgears - Unscheduled Replacement of Failed (end of useful Life) Distribution Equipment		$1,381,861.00	$1,663,004.00	$1,495,974.00	$1,420,148.09	$1,431,383.51	$1,420,147.96	$1,421,218.32	$1,400,444.11	$1,140,858.02
f) Unscheduled Replacement of Failed (end of useful Life) poles, conductors & devices (S)	$5,472,537.00	$3,771,553.00	$4,051,060.00	$4,157,571.00	$4,004,267.00	$4,136,745.00	$4,195,526.00	$4,298,340.00	$4,349,171.00	$4,266,252.00
g) Unscheduled Replacement of Failed (end of useful Life) Distribution Equipment - Poles, conductors & devices (N)	$1,052,550.00	$1,107,423.00	$740,413.00	$732,786.00	$900,090.00	$970,290.00	$1,010,630.00	$1,059,941.00	$1,106,183.00	$1,039,734.00
Distribution Lines -Reactive O & M	***$5,400,663.80***	***$5,107,963.06***	***$6,862,122.52***	***$5,857,601.24***	***$5,888,034.00***	***$6,028,513.00***	***$6,172,551.00***	***$6,307,553.00***	***$6,440,120.00***	***$6,572,121.00***
h) Inspections, Patrol, Testing	$478,946.45	$558,421.79	$501,527.00	$434,200.74	$728,443.00	$739,101.00	$749,929.00	$759,915.00	$769,619.00	$778,996.00
i) Accidents & Vandalism	$530,023.70	$348,177.74	$355,100.84	$528,236.75	$408,551.00	$417,861.00	$427,351.00	$435,491.00	$443,139.00	$450,133.00
j) Poles and Lines Hardware	$686,710.96	$630,138.29	$524,338.75	$683,144.97	$577,254.00	$589,761.00	$602,520.00	$613,512.00	$623,834.00	$633,461.00
k) Storm Damage	$522,403.45	$337,871.22	$2,130,447.97	$265,277.83	$369,686.00	$377,037.00	$384,538.00	$391,068.00	$397,211.00	$403,090.00
l) Cable Faults - Primary	$1,488,438.22	$1,608,997.25	$1,725,815.28	$1,949,015.66	$2,201,209.00	$2,258,403.00	$2,317,214.00	$2,374,693.00	$2,432,340.00	$2,491,112.00
m) Cable Faults - Secondary	$1,042,341.74	$1,013,225.11	$968,755.14	$1,392,126.37	$1,030,677.00	$1,059,857.00	$1,089,858.00	$1,119,514.00	$1,149,470.00	$1,179,856.00
n) Customer Premises	$368,158.01	$335,833.91	$323,042.73	$312,657.00	$304,889.00	$312,771.00	$320,873.00	$327,565.00	$333,602.00	$339,707.00
o) Switching for Control Room	$102,177.94	$138,348.30	$160,101.14	$120,907.91	$101,848.00	$104,271.00	$106,746.00	$108,849.00	$110,808.00	$112,626.00
p) Permanent Removals	$181,463.33	$136,949.45	$172,993.67	$172,034.01	$165,477.00	$169,451.00	$173,522.00	$176,946.00	$180,097.00	$183,140.00

Table 3: Annual Emergency/Reactive Replacements (Capital and O&M)

On an overall annual basis, the total *for Distribution Lines – Emergency/Reactive Replacements* (capital) increases between 2015 to 2019, and commencing in 2020, the overall cost is expected to commence decreasing. The *Distribution Lines – Reactive O&M,* increases annually. Each individual line element has its own trending, as described below.

Item a) LIS - Unscheduled Replacement of Failed (end of useful Life) Distribution Equipment: This subcategory is trending downwards from 2015 to 2020 as a result of improved inspection and maintenance procedures and activities.

Table G-AMPCO-10-1

Asset Testing and Inspection

Asset Testing and Inspection			
Asset Type	**Testing and Inspection**	**% Inspected**	**Approximate % Tested per Year (1)**
TS Transformer	Dissolved gas anlaysis (DGA) automatically performed every hour on TS transformers with 7-gas online monitoring units. Others monitor moisture, hydrogen and carbon monixide in real time. Annual oil samples sent to external lab for independant testing. Doble testing and Electrical testing performed every 4 years (or less if poor DGA conditions or a major event trigger a test). Tap changer unit maintenance performed every 4 years or if number of cyclic operations triggers a maintenance threshold. Transformer and associated ancilliary components are powerwashed twice a year, IR scanned twice a year, and painted approximately every 10 years.	100% within a Year	100%
MS Transformer	Oil analysis completed for all transformers annually. IR scanned twice a year. Painted approximately every 10 years. Online DGA equipment being installed on the entire fleet.	100% within a Year	100%
Circuit Breakers/reclosers	Monthly patrol inspection - Testing done every 4 years (includes cell/bus maintenance) or as triggered by cyclic operation.	100% within a Year	25%
230 kV Switches	Monthly patrol, (RCM) annual maintenance, (RCM) 5 year maintenance , (RCM)10 year maintenance , (RCM)15 year maintenance, (RCM) 20 year, (RCM) 25 year maintenance, Powerwashed twice a year, IR scanned twice a year	100% within a Year	100%
MS Primary Switches	Monthly patrol inspection - Maintenance done every 5 years (circuit switcher: monthly inspection, (RCM) 5, 10 and 15 year maintenance), IR scanned twice a year	100% within a Year	20%
TS Capacitor Banks	Monthly patrol inspection - Detailed visual inspection done annually, IR scanned twice a year	100% within a Year	100%
TS Reactors	Monthly patrol inspection - Testing done every 4 years,	100% within a Year	25%
Station Service Transformers	Monthly patrol inspection. No regularly scheduled testing.	100% within a Year	No Testing Performed
230 KV PMUs	Monthly patrol inspection, 4 year detailed inspection - perfromed by station sustainment staff. IR scanned twice a year	100% within a Year	100%
TS Relays (1)	Monthly patrol. Lines, transformer and bus protections tested every 4 years.	100% within a Year	25%
Distribution Transformer	Inspection in 3-Year cycle (No testing)	100% over 3 Years	No Testing Performed
Switchgear	Inspection in 3-Year cycle; Dry-Ice Cleaning in 6-year cycle (No testing). RTU tested for Automated gears - 17%	100% over 3 Years; 100% Maintained over 6 Years	Manual Switchgear- No Testing Automated Switchgear- 17%
Mini-Rupter	Inspection in 3-Year cycle (No testing)	100% over 3 Years	No Testing Performed
Automated Switches	Maintenance in 6 -Year cycle. RTU and Switch Testing	17% in 2014 (Year 1)	17%
Poles	Pole inspection and testing in 5-Year cycle	100% over 5 Years	20%

G-AMPCO-11

REF: Ex. G-Tab 2-5.3.3 Asset Lifecycle Optimization Policies and Procedures

a) Page 10: Mini-Rupter Switch Replacement: Please provide a table that sets out the actual number of replacements per year and the spending for the years 2009 to 2014, and the planned number of replacements per year and the budget for the years 2015 to 2020.

b) Page 10: Automated Switch Replacement: Please provide a table that sets out the actual number of replacements per year and the spending for the years 2009 to 2014, and the planned number of replacements per year and the budget for the years 2015 to 2020.

c) Page 12: Fault Indicator Replacement: Please provide a table that sets out the actual number of replacements per year and the spending for the years 2009 to 2014, and the planned number of replacements per year and the budget for the years 2015 to 2020.

d) Page 12:-44 kV Porcelain Insulator Replacement: PowerStream is proposing to replace all of the remaining legacy 44 kV porcelain insulators with polymer type insulators over the next four years. Please provide the number of insulators to be replaced by year and the cost by year.

e) Page 19: Please provide PowerStream's Key Performance Indicator (KPI) Results (projected vs. actuals) for the years 2009 to 2014.

f) Page 26: Table 2 Annual O&M Spending: For each of the O&M costs listed in Table 2, please provide the frequency cycle that the activity is undertaken – for example annually, bi-annually, every 2 years etc.

g) Page 26: Table 2 Annual O&M Spending: For each of the O&M costs please provide the historical spending for the years 2009 to 2014.

h) Page 28, Vegetation Management: Please provide the analysis that underpins PowerStream's determination that the five year trimming cycle was not adequate to keep up with tree growth across the service territory and as such the tree trimming cycle has been adjusted to a three year cycle across the territory.

i) Page 28, Vegetation Management: Please provide a description of the work programs undertaken under vegetation management.

j) Page 28, Vegetation Management: Please discuss the size of the program and the km or number of trees to be addressed each year for the years 2015 to 2020 compared to the historical years 2009 to 2014.

k) Page 30: Please discuss further the trade off between capital investments and O&M costs and the premise that a renewed asset base should result in a decrease in O&M costs.

RESPONSE:

a) Due to the merger of PowerStream with Barrie Hydro Distribution Inc. in 2009, and the differences in financial reporting methods, PowerStream is unable to provide meaningful 2009-2010 historical costs and asset quantities. This applies for all subsequent questions.

Mini-Rupter Switch Actual Replacement 2011 - 2014

	Actual data							
Year	2011		2012		2013		2014	
Classification	# of Units	$	# of Units	$	# of Units	$	# of Units	$
Mini-Rupter Replacement	-	-	-	-	-	-	21	482,622

Mini-Rupter Switch Planned Replacement 2015 - 2020

	Planned data											
Year	2015		2016		2017		2018		2019		2020	
Classification	# of Units	$	# of Units	$	# of Units	$	# of Units	$	# of Units	$	# of Units	$
Mini-Rupter Replacement	15	577,736	15	592,267	15	607,090	15	622,214	15	637,649	15	653,406

b)

Automated Switch Actual Replacement 2011 - 2014

	Actual data							
Year	2011		2012		2013		2014	
Classification	# of Units	$	# of Units	$	# of Units	$	# of Units	$
Automated Switch Replacement	-	-	-	-	5	392,480	5	380,627

Automated Switch Planned Replacement 2015 - 2020

	Planned data											
Year	2015		2016		2017		2018		2019		2020	
Classification	# of Units	$	# of Units	$	# of Units	$	# of Units	$	# of Units	$	# of Units	$
Automated Switch Replacement	5	435,912	5	447,130	5	458,595	5	470,301	5	482,308	5	494,628

c)

Fault Indicator Actual Replacement 2011 - 2014								
	Actual data							
Year	2011		2012		2013		2014	
Classification	# of Units	$	# of Units	$	# of Units	$	# of Units	$
Fault Indicator	779	46,173	1,171	326,565	1,940	527,405	1,547	484,511

Fault Indicator Planned Replacement 2015 - 2020												
	Planned data											
Year	2015		2016		2017		2018		2019		2020	
Classification	# of Units	$	# of Units	$	# of Units	$	# of Units	$	# of Units	$	# of Units	$
Fault Indicator	1,650	500,000	1,650	500,000	1,650	500,000	1,650	500,000	1,650	500,000	1,650	500,000

d)

Porcelain Insulator Planned Replacement 2015 - 2020												
	Planned data											
Year	2015		2016		2017		2018		2019		2020	
Classification	# of Units	$	# of Units	$	# of Units	$	# of Units	$	# of Units	$	# of Units	$
Porcelain Insulators	275	66,000	275	68,000	275	69,000	275	71,000	275	71,000	275	71,000

e) C55 Optimization commenced in 2014 and applied the KPI's as noted on a go forward basis.

f)

Frequency Cycle for O&M Programs

Program		Frequency	Comment
Insulator Washing		Bi-Annually	high priority areas - e.g. close to highways
Pole Testing		5 year	
Underground Cable Testing		-	On selected potential candidates
Dry Ice Cleaning		6 year	
Infrared Scanning		3 year	
Overhead Switch Maintenance		6 year	
Vegetation Management	Rear Lot Area	2 year	
	Urban Area	3 year	
	Rural Area	4 year	

g) Please refer to the table below for the historical spending for years 2011-2014.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
O & M COSTS	2,242,034	2,438,036	2,522,976	2,627,108	3,290,425	3,824,791	4,364,492	4,909,270	5,459,443	6,014,538
insulator washing	85,013	88,166	98,335	99,615	140,000	141,400	142,814	144,242	145,684	147,142
pole testing	111,203	103,455	102,862	176,290	185,000	186,850	188,719	190,606	192,512	194,437
underground cable testing	-	14,722	10,047	9,957	51,945	53,177	54,431	55,506	56,521	57,417
dry ice cleaning	411,483	514,103	432,659	234,095	353,295	356,829	360,397	363,999	367,640	371,317
infrared scanning	100,600	201,285	143,700	122,125	146,856	148,516	150,193	151,841	153,490	155,104
overhead switch maintenance	348,929	288,497	274,342	225,361	353,329	357,419	361,532	365,606	369,752	373,528
vegetation management	1,184,805	1,227,810	1,461,031	1,759,666	2,060,000	2,580,600	3,106,406	3,637,470	4,173,844	4,715,593

h) Prior to 2012, in the PowerStream South service territories of Markham, Vaughan, Richmond Hill, and Aurora, vegetation management was undertaken on a 5-year cycle. However, this cycle proved less than effective, as in reality labour and financial resources were primarily focused on reactive activities such as addressing trouble spots and Worst Performing feeders. In the North service territories of Barrie and surrounding area, a 3-year cycle was in place and most activity was focused on maintaining the proactive 3-year cycle compared to reactive-type work.

In 2012, PowerStream reviewed its vegetation management program and concluded that the objectives of safety, customer service, and reliability would be better served with a consistent and proactive program across all service territories. The need for increased emphasis on proactive activity to maintain adequate clearances and reduce the probability of trees contacting power lines was further driven by increased storm activity, since the probability of tree contacts during storms is heightened. Practices of other LDCs were also surveyed. It was decided to establish a 3-year cycle across all PowerStream service territories, thereby implementing a more optimal cycle and harmonizing the practices across all predecessor utilities. This also facilitated better program management, as it was more effective to manage a consistent cycle across all territories rather than maintaining different practices in various areas.

i) Work activities undertaken under vegetation management are:

- Pruning of trees and removal of tree limbs to provide adequate clearance between power lines and trees. Cutbacks include allowance for growth up to the next clearing cycle;
- Pruning or removal of brush and undergrowth to provide adequate clearance from power lines;
- Removal of dead wood, broken limbs, and hangers;
- At property owner's request, pruning of limbs/brush of trees on private property to provide enough clearance from power lines so that the property owner's contractor can safely remove a tree;
- Limited removal of hazard or dead trees potentially detrimental to the power lines at request of Municipality;
- "Out of cycle" pruning of fast-growing trees or trouble spots identified during patrols or reports from the general public; and
- Emergency clearing during storms to assist with removing downed trees and limbs.

j) Prior to and including 2011, approximately 500 km of overhead line was addressed per annum under a 5-year vegetation management cycle. In 2012, PowerStream commenced working towards a 3-year cycle, and this was achieved fully in 2014, when approximately 840 km of overhead line was addressed. This will also be the approximate km addressed each year between 2015 and 2020.

k) PowerStream's philosophy is a measured and affordable approach to renewal that maintains a steady state asset age level. Contributions to this steady state asset age level include replacement of existing units, aging of existing units and additions of brand new units to the asset base. In addition, a substantive amount of the O&M costs are related to inspection of the assets and regular maintenance and not related to the age of the asset. For a more fulsome discussion, please refer to Section 5.3.3. Page 29.

B-CCC-16

REF: Ex. B/T1/p. 1

System hardening has been identified as a significant cost driver for 2016 and 2017. Please provide a detailed explanation of this program and a schedule setting out all capital and OM&A expenditures for each year of the plan term related to this program. In addition, please identify all expenditures related to this program each year prior to 2016.

RESPONSE:

A detailed explanation of the Storm Hardening & Rear Lot Conversions program is included in the Consolidated Distribution System Plan, Section 5.4.5, page 19 of 36 as noted below

> *Storm Hardening & Rear Lot Conversion*
> Included in the study report was a series of recommendations. This category covers the capital work that PowerStream must complete to harden (strengthen) the overhead distribution system to withstand the frequency and severity of storms (wind, rain, ice) that have been experienced the last few years and, according to meteorologists, is expected to become more common in the future.
>
> The vast majority of PowerStream's overhead distribution system has been designed and constructed to legacy standards for the typical wind and ice loadings commonly experienced at that time. Over the past 15 years, the increased frequency and severity of extreme weather events has led to improvements to construction standards for all new distribution system construction, however, parts of the existing distribution system needs remedial work to bring it up to the latest standards.
>
> PowerStream has a number of pockets of customers (mainly residential) being supplied by rear lot construction. In accordance with the consultant's report, PowerStream will adopt full conversion for rear lots and recommend completion over 15 years. The projects will be prioritized based on age, asset condition, customer needs and reliability.
>
> PowerStream's proposed rear lot conversion investment expenditures for 2016 to 2020 is based on historical expenditures of similar type construction work. The proposed investments are based on estimated construction costs of approximately $12,400 per customer.

Initiatives included in the Storm Hardening program include:

a) *Grade 1/Composite Poles for Strategic Locations:*
PowerStream will continue development of composite pole standards and consider use of composite poles and Grade 1 construction in future construction of poles with 3 or more circuits or critical poles as defined.

b) *Periodic in-line Anchoring :*
PowerStream will review existing lines and determine additional anchoring needs, both in-line anchors and storm-guying. PowerStream plans to reinforce all poles that carry 4 circuits, 1500 poles in all.

c) *Flood Avoidance:*
Relocate all existing flood sensitive equipment (switches, breakers, relays, etc) located in existing transformer stations to be above grade. PowerStream plans to complete this work over four years.

d) *Rear Lot Remediation*:
Convert to full front lot current standard over 15 years.

PowerStream's proposed investment expenditures for 2016 to 2020 is based on combination of available resources and affordability.

From an OM&A perspective, vegetation management is the main focus for system hardening. This includes such activities as increasing the tree clearance cutback around lines, complete removal of any limbs overhanging lines (referred to as "blue-skying"), removal of hazard trees located close to a power line where failures of the tree could pose a hazard to the line, and implementing vegetation management around secondary wires on customer properties.

The capital and OM&A expenditures for each year of the plan term related to this program are shown below.

(000's)	2016	2017	2018	2019	2020
Capital	$ 7,900	$ 7,999	$ 7,499	$ 6,900	$ 7,200
OM&A	$ 614	$ 525	$ 531	$ 536	$ 541

There are no expenditures for this program prior to 2016.

J-CCC-61

REF: Ex. J/T1/p. 3

Vegetation Management costs are increasing significantly from $300 million in 2015 to more than $600 million in 2016 and more than $500 million in the other years throughout the plan period. Please provide the business case analysis to justify these increased expenditures. Is this work carried out by permanent staff or by contractors?

RESPONSE:

The December 2013 Ice Storm caused widespread outages on the PowerStream distribution system, with power lines being severely impacted by falling trees and limbs. Much damage was sustained in areas with a significant concentration of rear-lot distribution, and these areas required significant amounts of resources and the longest periods of time to repair distribution plant and restore power. As a result of the Ice Storm, external reviews were conducted around system hardening, and vegetation management was an OM&A focus in order to help prevent outages like the 2013 Ice Storm from occurring again. Therefore, vegetation management costs increased $300,000 in 2015 from 2014 and another $600,000 in 2016 over 2015 and continue to increase at $500,000 per year from 2017 to 2020. These increases are the result of PowerStream implementing system hardening measures which include increasing the tree clearance cutback around lines, complete removal of any limbs overhanging lines (referred to as “blue-skying”), removal of hazard trees located close to a power line where failures of the tree could pose a hazard to the line, and implementing vegetation management around secondary wires on customer properties.

These changes are supported by a study that was conducted by CIMA (an independent third party) and is attached in J-CCC-61 Appendix A. This study was conducted as a result of the 2013 ice storm and supports effectively “hardening” the distribution system against ice storms and severe weather in general. Specifically related to vegetation management, CIMA recommended the following:

- enhancing the trim zone
- incorporating aspects of reliability centered maintenance in the fixed pruning cycle program
- instituting a “Hazard Tree” program that identifies trees outside the trim zone that are tall enough to contact the overhead distribution system and are also dead, declining, diseased, or otherwise structurally unsound

- including proactive service line clearing on private property as part of the three year trim cycle; continuing to educate and inform the municipalities, property developers and clients on vegetation near power lines and how they can help to keep the network safe
- training design staff and construction in basic vegetation management to help identify potential problems

The work that is expected to be performed will be carried out by contractors.

G-SEC-26

REF: Ex. G-2, Appendix A

Please explain how PowerStream determined the budget for its storm damage or unscheduled replacement programs.

RESPONSE:

In general, for reactive programs such as Storm Damage or Unscheduled Replacement, the budget was based on historical averages and trends from 2011 – 2014.

Specifically, as stated in the Distribution System Plan, Appendix A, page 311 of 730, Project Summary Report, Storm Damage, Project 101800, Section 4: "The budget for this category is based primarily on historical trends over the past few years."

Specifically, as stated in the Distribution System Plan Project, Appendix A, page 319 of 730, Project Summary Report, Unscheduled Replacement of Failed Equipment – Poles, etc, Project 101824, Section 3. (Comparative Information on Equivalent Historical Projects), "Historical number of events and associated costs are the basis for estimating future planned expenditures."

II-1-Staff-24

Ref: E J/T1/p. 2/Table 1

At the above reference, PowerStream provides a year-by-year breakdown of its operating costs. The proposed increase in the 2016 Test year relative to the 2014 actual level is significant at 12.6%.

a) Please outline the outcomes and higher level of services that customers will receive for the relatively higher rates they are paying.

b) Please identify any customer engagement that supports the further increases proposed in this application.

c) Please provide the analysis that was performed to assess whether PowerStream's planning decisions reflect best practices of Ontario distributors.

d) Please identify any initiatives considered and/or undertaken by PowerStream, including any analysis conducted, to optimize plans and activities from a cost perspective, for example, balancing cost levels of OM&A versus capital.

e) The OEB's letter of August 14, 2014, established the stretch factor assignments for 2015 rates. PowerStream was assigned to Stretch Factor Group 3 out of five groups. Please provide details on any initiatives undertaken to improve PowerStream's assignment in future years.

RESPONSE:

a) Please refer to the response to II-Staff-8 that discusses outcomes.

There are two main drivers for the increase in OM&A in addition to the inflation and customer growth drivers.

The first is the higher level of costs associated with the new Oracle customer care and billing system ("CC&B"). CC&B has the ability to utilize new and emerging technologies to enable PowerStream to meet increasing billing and bill presentation requirements and growing customer expectations including those that provide real time engagement with customers advising them of predefined events or changes to account status. The new CC&B system provides customer service staff with better tools to address and resolve customer concerns at the time of the first call. In the longer term the new system is expected to provide better staff productivity.

The second is PowerStream's vegetation management program. This was initiated as a result of the 2013 ice storm which precipitated improvements to PowerStream's response to outages and emergency management protocols. These initiatives have provided valuable services to customers in the form of maintaining reliability and accessibility to information. The increase level of vegetation management will increase reliability and reduce outages.

The new CIS system and the increased vegetation management program are designed to address customers' concerns and preferences identified in the customer engagement activities: better communication, increased reliability and fewer outages.

b) PowerStream conducted a customer engagement exercise which followed the guidelines set out in the *Filing Requirements for Electricity Transmission and Distribution Applications, Chapter 5* which indicates that utilities must demonstrate that they have consulted customers on the Distribution System Plan in order to ensure that it responds to identified customer preferences. PowerStream therefore undertook a customer engagement exercise which focused on the Distribution System Plan and the capital spending identified therein.

c) PowerStream's planning decisions are made based on both a top-down and bottom-up approach. Business targets are set based on top-down analysis regarding financing and spending needs. Details are then developed based on PowerStream's plans for capacity, system replacements and operating and maintenance activities.

d) In order to optimize plans and activities from a cost perspective, operating and capital requirements and spend levels are always considered as a package when setting plans. The process for planning is separate for both but once the details are developed reconciliation between the top down targets and the bottom up details are reviewed collectively. Capital spending has an optimization process which identifies risks and benefits of doing projects. The OM&A budget target is set based on the historical 3 year actual indexed by 1% for inflation in order to try to keep costs as low as possible. A review of cost drivers and must do projects is discussed with the Budget Working Group in order to assess if the spend is necessary or if alternatives are possible. The balancing of OM&A versus capital is supported by PowerStream's capitalization policy ADM-48 which was filed as part of the Rate Application, Section VI, Tab 18, Sch. 1.

e) PowerStream's productivity initiatives are discussed in the Application in Section II, Tab 1, Exhibit F, Tab 1.

PowerStream Custom IR
Technical Conference – April 21, 2015
Undertaking Responses

1. A-CCC-11: Provide in one table the budget and historical actual storm damage costs for 2013 to 2015 and budget for 2016 to 2020.

RESPONSE:

The Budget and Actual OM&A storm damage costs are included in the table below:

OM&A Storm Damage Costs ($000's)

	2013	2014	2015	2016	2017	2018	2019	2020
Budget	321	347	369	377	385	391	397	403
Actual (Note 1)	2,136	265	127	-	-	-	-	-

Note 1: Actuals for 2015 are to end of March