Contents

Response to Interrogatories
2018 Cost of Service Rate Application
WPI Inc. ("WPI," "WPI")
EB-2017-0084

Exhibit 2 – Rate Base (OEB STAFF)

2-Staff-13

Impact of Customer Preferences

Chapter 5 of the Filing Requirements states, "A DS Plan filing must demonstrate that distribution services are provided in a manner that responds to identified customer preferences."

The applicant plans to spend $6.25 million on substation upgrades over the term of the DSP. Please explain how the project reflects customer preferences identified through customer engagement.

WPI Response:

WPI believes that critical investments in municipal stations are essential in order to maintain the network system safety and reliability in our communities. Our customers have indicated that reliable supply of electricity is an area of preference as it relates to great customer service and satisfaction. Since the 2000 amalgamation, WPI inherited some infrastructures, such as Municipal Station in extremely poor condition. WPI has conducted condition-based assessments of these substations, since the last cost of service application and has continued to monitor the operations of these transformers within the substation through a preventative maintenance program and diagnostic testing to ensure continuous operability of this equipment. WPI has determined through a strategic replacement program that it no longer can maintain these aging substations through the existing maintenance program and has planned through its distribution system plan to replace refurbish/rebuild one MS station per year which has reached the end of its useful life, and it poses an environmental risk, safety and imminent failure in the community. Therefore, the plans to spend $6.25 million on Municipal Substation upgrades over the term of the DSP is a reasonable and prudent investment to meet our customer's expectation for a safe and reliable supply of electricity.

a) The results of the customer engagement activities generally supported the proposed planned activities and reflected the expressed desire for continued reliability at a similar cost.

2-Staff-14

Pacing and Distribution Rate Impacts

Ref: Exhibit 2, pages 32, 93
Chapter 2 Appendix 2-AB

Capital expenditures for the past five years have averaged about $4.8 million annually. As a result, WPI has increased its net capital assets from $32.7 million in 2013 to $46.8 million in 2018. WPI plans to continue to invest $22.5 million over the years 2018 to 2022.

Please describe and quantify where possible the benefits that the applicant's customers will realize from this investment.

WPI Response:

WPI capital expenditures over the years 2018 to 2022 are necessary in order for WPI to continue to make critical investments in aging infrastructure inherited in the 2000 amalgamation. Over the years most of these capital assets have aged, and conditions have worsened creating an imminent threat to our distribution network. WPI through its distribution system plan and asset condition-based assessments have developed a plan for the replacement and refurbishment of its aging infrastructure in order to address the risks associated with the current state of the system that balances the consequences of those risk with the need to establish a reasonable pace for system investments. Most importantly Westario's planned system investments addresses the need to replace (or, when possible, refurbish) its substation, transformers, poles and restricted and undersized conductors.
WPI has also seen an increase in residential subdivision and industrial development in various communities. These developments have created an urgency in renewed distribution assets to accommodate the connection of these new customers to our distribution network. WPI will experience a moderate increase in capital investments over 2018 to 2022 in the categories of system renewal and system access.

a) The DSP details the Capital Expenditures past, current and planned that relate to ensuring the continued integrity of the system, reliability of delivery and a system that is safe for all.
The outcomes as such are not necessarily expected to be incremental in all areas but are expected to maintain our operational effectiveness in areas that are controllable such as compliance with Reg 22/04, a serious electrical incident index of zero (0) and a manageable system reliability

score i.e. since Westario is embedded in Hydro One territory most incidents are due to uncontrollable loss of power.

2-Staff-15

Ref: Exhibit 2, page 72
Regulated Price Plan Prices and the Global Adjustment Modifier for the Period July 1, 2017, to April 30, 2018, June 22, 2017

Please update the cost of power calculation taking into account the impact of the Fair Hydro Plan (FHP) on the Global Adjustment.

WPI Response:

Cost of Power calculations are presented at the next page.

Power Supply Expense

Determination of Commodity

Customer Class Name		Last Actual kWh's	non-RPP non GA mod	non-RPP GA mod	non-RPP Total	RPP	non-RPP %	RPP %
Residential		185,452,373	185,962	5,039,032	5,224,994	180,227,379	2.82%	97.18%
General Service < 50 kW		65,124,517	305,486	18,493,466	18,798,952	46,325,565	28.87%	71.13%
General Service > 50 to 4999 kW		164,939,252	154,195,988	18,288,126	172,484,114	-7,544,862	104.57%	-4.57%
Unmetered Scattered Load		264,389	-	59,398	59,398	204,991	22.47%	77.53%
Sentinel Lighting		13,802	-	2,003	2,003	11,799	14.51%	85.49%
Street Lighting		2,196,082	2,014,574	936,411	2,950,985	-754,903	134.37%	-34.37%
TOTAL		**417,990,415**	**156,702,010**	**42,818,436**	**199,520,446**	**218,469,969**		
%		100.00%	37.49%	10.24%		52.27%		

Forecast Price GA modifier $32.90

				non GA	GA	RPP	
HOEP ($/MWh)				$24.83	$24.83		Note: Table ES-1 from current RPP report - Load Weighted price for RPP Consumers
Global Adjustment ($/MWh)				$87.67	$54.77		Note: Table ES-1 from current RPP report - Impact of Global Adjustment
Adjustments					$2.40		
TOTAL ($/MWh)				**$112.50**	**$82.00**	**$82.00**	Note: Table ES-1 from current RPP report - Average Supply Cost for RPP Consumers ($ / MWh)
$/kWh				***$0.11250***	***$0.08200***	***$0.08200***	
%				37.49%	10.24%	52.27%	
WEIGHTED AVERAGE PRICE		**$0.0934**		**$0.0422**	**$0.0084**	**$0.0429**	

Electricity Projections

(volumes for the bridge and test year are automatically loss adjusted)

Customer Class Name		Revenue USA #	Expense USA #	2013	2014	2015	2016	2017 Volume	2017 rate ($/kWh):	2017 Amount	2018 Volume	2018 rate ($/kWh):	2018 Amount
Residential	kWh	4006	4705	208,838,038	207,075,874	202,183,179	191,808,589	198,434,039	0.0980	$19,446,536	194,634,466	$0.0934	$18,185,527
General Service < 50 kW	kWh	4010	4705	70,097,154	69,905,512	72,350,209	71,085,253	69,683,233	0.0980	$6,828,957	65,705,259	$0.0934	$6,139,122
General Service > 50 to 4999 kW	kWh	4035	4705	183,216,733	182,715,830	182,773,674	189,240,640	176,485,000	0.0980	$17,295,530	173,159,219	$0.0934	$16,179,004
Unmetered Scattered Load	kWh	4010	4705	309,576	308,729	306,327	311,190	282,897	0.0980	$27,724	277,658	$0.0934	$25,943
Sentinel Lighting	kWh	4025	4705	18,252	18,202	17,653	16,318	14,768	0.0980	$1,447	14,576	$0.0934	$1,362
Street Lighting	kWh	4025	4705	5,289,903	5,275,441	5,304,264	3,826,405	2,349,808	0.0980	$230,281	2,349,808	$0.0934	$219,553
TOTAL								**$447,249,744**		**$43,830,475**	**$436,140,986**		**$40,750,510**

Transmission - Network

(volumes for the bridge and test year are automatically loss adjusted)

Customer Class Name		Revenue USA #	Expense USA #	2013	2014	2015	2016	2017 Volume	2017 Rate	2017 Amount	2018 Volume	2018 Rate	2018 Amount
Residential	kWh	4066	4714	208,838,038	207,075,874	202,183,179	191,808,589	198,434,039	0.0062	$1,230,291	194,634,466	0.0064	$1,242,598
General Service < 50 kW	kWh	4066	4714	70,097,154	69,905,512	72,350,209	71,085,253	69,683,233	0.0056	$390,226	65,705,259	0.0058	$378,885
General Service > 50 to 4999 kW	kW	4066	4714	183,216,733	182,715,830	182,773,674	189,240,640	443,482	2.3500	$1,042,184	440,687	2.4198	$1,066,393
Unmetered Scattered Load	kWh	4066	4714	309,576	308,729	306,327	311,190	282,897	0.0056	$1,584	277,658	0.0058	$1,601
Sentinel Lighting	kW	4066	4714	18,252	18,202	17,653	16,318	17	1.7835	$30	17	1.8365	$31
Street Lighting	kW	4066	4714	5,289,903	5,275,441	5,304,264	3,826,405	6,846	1.7697	$12,115	6,846	1.8223	$12,475
TOTAL								**$268,850,517**		**$2,676,431**	**$261,064,936**		**$2,701,984**

Transmission - Connection

(volumes for the bridge and test year are automatically loss adjusted)

Customer Class Name		Revenue USA #	Expense USA #	2013	2014	2015	2016	2017 Volume	2017 Rate	2017 Amount	2018 Volume	2018 Rate	2018 Amount
Residential	kWh	4068	4716	208,838,038	207,075,874	202,183,179	191,808,589	198,434,039	0.0045	$892,953	194,634,466	0.0047	$905,323
General Service < 50 kW	kWh	4068	4716	70,097,154	69,905,512	72,350,209	71,085,253	69,683,233	0.0041	$285,701	65,705,259	0.0042	$278,455
General Service > 50 to 4999 kW	kW	4068	4716	183,216,733	182,715,830	182,773,674	189,240,640	443,482	1.6253	$720,792	440,687	1.6800	$740,347
Unmetered Scattered Load	kWh	4068	4716	309,576	308,729	306,327	311,190	282,897	0.0041	$1,160	277,658	0.0042	$1,177
Sentinel Lighting	kW	4068	4716	18,252	18,202	17,653	16,318	17	1.2842	$22	17	1.3271	$23
Street Lighting	kW	4068	4716	5,289,903	5,275,441	5,304,264	3,826,405	6,846	1.2544	$8,588	6,846	1.2966	$8,877
TOTAL								**$268,850,517**		**$1,909,216**	**$261,064,936**		**$1,934,201**

Wholesale Market Service

(volumes for the bridge and test year are automatically loss adjusted)

Customer Class Name		Revenue USA #	Expense USA #	2013	2014	2015	2016	2017 Volume	2017 rate ($/kWh):	2017 0.0052 Amount	2018 Volume	2018 rate ($/kWh):	2018 0.0052 Amount
Residential	kWh	4062	4708	208,838,038	207,075,874	202,183,179	191,808,589	198,434,039	0.00360	$714,363	194,634,466	0.0036	$700,684
General Service < 50 kW	kWh	4062	4708	70,097,154	69,905,512	72,350,209	71,085,253	69,683,233	0.00360	$250,860	65,705,259	0.0036	$236,539
General Service > 50 to 4999 kW	kWh	4062	4708	183,216,733	182,715,830	182,773,674	189,240,640	176,485,000	0.00360	$635,346	173,159,219	0.0036	$623,373
Unmetered Scattered Load	kWh	4062	4708	309,576	308,729	306,327	311,190	282,897	0.00360	$1,018	277,658	0.0036	$1,000
Sentinel Lighting	kWh	4062	4708	18,252	18,202	17,653	16,318	14,768	0.00360	$53	14,576	0.0036	$52
Street Lighting	kWh	4062	4708	5,289,903	5,275,441	5,304,264	3,826,405	2,349,808	0.00360	$8,459	2,349,808	0.0036	$8,459
TOTAL								**$447,249,747**		**$1,610,099**	**$436,140,989**		**$1,570,108**

Rural Rate Protection

(volumes for the bridge and test year are automatically loss adjusted)

Customer Class Name		Revenue USA #	Expense USA #	2013	2014	2015	2016	2017 Volume	2017 rate ($/kWh):	2017 Amount	2018 Volume	2018 rate ($/kWh):	2018 Amount
Residential	kWh	4062	4730	208,838,038	207,075,874	202,183,179	191,808,589	198,434,039	0.00130	$257,964	194,634,466	0.0003	$58,390
General Service < 50 kW	kWh	4062	4730	70,097,154	69,905,512	72,350,209	71,085,253	69,683,233	0.00130	$90,588	65,705,259	0.0003	$19,712
General Service > 50 to 4999 kW	kWh	4062	4730	183,216,733	182,715,830	182,773,674	189,240,640	176,485,000	0.00130	$229,430	173,159,219	0.0003	$51,948

Unmetered Scattered Load	kWh	4062	4730	309,576	308,729	306,327	311,190	282,897	0.00130	$368	277,658	0.0003	$83
Sentinel Lighting	kWh	4062	4730	18,252	18,202	17,653	16,318	14,768	0.00130	$19	14,576	0.0003	$4
Street Lighting	kWh	4062	4730	5,289,903	5,275,441	5,304,264	3,826,405	2,349,808	0.00130	$3,055	2,349,808	0.0003	$705
TOTAL								**$447,249,747**		**$581,425**	**$436,140,989**		**$130,842**

Smart Meter Entity Charge

(per customer)

				2013	2014	2015	2016	2017			2018		
Customer		**Revenue**	**Expense**						**rate ($/kWh):**			**rate ($/kWh):**	
Class Name		USA #	USA #					Volume		Amount	Volume		Amount
Residential	kWh			208,838,038	207,075,874	202,183,179	191,808,589	20,535	0.79000	$194,669	20,749	0.7900	$196,702
General Service < 50 kW	kWh			70,097,154	69,905,512	72,350,209	71,085,253	2,579	0.79000	$24,451	2,583	0.7900	$24,488
General Service > 50 to 4999 kW	kW			183,216,733	182,715,830	182,773,674	189,240,640	199	0.79000	$157	193	0.7900	$1,834
TOTAL								**23,312**		**$219,277**	**$23,526**		**$223,025**

Low Voltage Charges - Historical and Proposed LV Charges

				2013	2014	2015	2016	2017
4075-Billed - LV				$644,641	$745,456	$720,110	$711,571	$691,460
4750-Charges - LV				$1,019,951	$1,023,217	$1,309,755	$1,207,507	$1,258,631

Low Voltage Charges - Allocation of LV Charges based on Transmission Connection Revenues

	ALLOCATON BASED ON TRANSMISSION-CONNECTION REVENUE				
Customer Class Name		**RTSR Rate**	**Uplifted Volumes**	**Revenue**	**% Alloc**
Residential	kWh	**$0.0047**	194,634,466	$905,323	46.81%
General Service < 50 kW	kWh	**$0.0042**	65,705,259	$278,455	14.40%
General Service > 50 to 4999 kW	kW	**$1.6800**	440,687	$740,347	38.28%
Unmetered Scattered Load	kWh	**$0.0042**	277,658	$1,177	0.06%
Sentinel Lighting	kW	**$1.3271**	17	$23	0.00%
Street Lighting	kW	**$1.2966**	6,846	$8,877	0.46%
TOTAL			**261,064,936**	**$1,934,201**	**100.00%**

Low Voltage Charges Rate Rider Calculations

(volumes are not loss adjusted)

	PROPOSED LOW VOLTAGE CHARGES & RATES				
Customer Class Name	**% Allocation**	**Charges**	**Non-Uplifted Volumes**	**Rate**	**per**
Residential	46.81%	589,115	181,901,370	$0.0032	kWh
General Service < 50 kW	14.40%	181,197	61,406,784	$0.0030	kWh
General Service > 50 to 4999 kW	38.28%	481,761	161,831,046	$0.0030	kW
Unmetered Scattered Load	0.06%	766	259,493	$0.0030	kWh
Sentinel Lighting	0.00%	15	13,622	$0.0011	kW
Street Lighting	0.46%	5,776	2,196,082	$0.0026	kW
TOTAL	**100.00%**	**1,258,631**	**407,608,401**		

Low Voltage Charges to be added to power supply expense for bridge and test year.

(volumes are not loss adjusted)

Customer		**Revenue**	**Expense**	2017			2018		
Class Name		USA #	USA #	Volume	Rate	Amount	Volume	Rate	Amount
Residential	kWh	4075	4750	185,452,373	$0.0018	$333,814	181,901,370	$0.0032	$582,084
General Service < 50 kW	kWh	4075	4750	65,124,517	$0.0016	$104,199	61,406,784	$0.0030	$184,220
General Service > 50 to 4999 kW	kW	4075	4750	443,482	$0.6184	$274,250	161,831,046	$0.0030	$485,493
Unmetered Scattered Load	kWh	4075	4750	264,389	$0.0016	$423	259,493	$0.0030	$778
Sentinel Lighting	kW	4075	4750	17	$0.4888	$8	13,622	$0.0011	$15
Street Lighting	kW	4075	4750	6,846	$0.4773	$3,268	2,196,082	$0.0026	$5,710
TOTAL		**0**	**0**	**251,291,628**		**$715,962**	**407,608,401**		**$1,258,301**

Projected Power Supply Expense						**$51,542,884**			**$48,568,972**

2-Staff-16

Ref: Exhibit 2, page 648
2016 Yearbook of Electricity Distributors

In 2016, WPI achieved the Emergency Urban Response requirement for service quality 57.1% of the time, a decline from 83.3% in 2015 and 100% in 2014. This fell well short of the target of 80%, and was the worst among all Ontario electricity distributors in 2016. Also, the Low Voltage Connections met the service quality requirement 92.1% of the time. This has been declining since 2014, and was the fourth lowest score among all distributors in 2016.

a) Please explain what WPI believes to be the cause of this deterioration in performance.
b) What options has WPI considered or is it considering to address this.
c) Please describe any measures WPI is taking to improve these results, and why these measures were selected.
d) Please estimate the level of performance WPI expects to achieve in these measures in 2017, 2018, and into the IRM period.

WPI Response:

a) WPI has experienced a significant decline in the emergency calls over the past few years due to some of the investments made in replacements of restricted conductors, poles and lines. WPI experienced seven (7) emergency response calls in 2016 of which 4 were responded to within the emergency urban response time frame of 60 minutes. WPI service areas are widely stretched out from its central base in Walkerton. WPI's area spans approximately 60km east/west and 80km north/south, and some of our lines staff live 40km away. Due to our geographic area, it is possible from time to time that some emergency response calls may fall short of the required response time. WPI emergency urban response requirement was unfortunately not met due to delays caused by weather conditions in November and December of 2016. In November only 2 out of 3 emergency calls were not responded within the required time frame, and in December only one emergency response call was not responded to within the required time frame.

   WPI`s Low Voltage Connections meet the service quality requirement of the OEB. However, we have seen a small decline over the past couple years from 2014 in our performance. WPI believes this decline will not continue. We believe our recordings of this service quality requirement are sometimes not recorded properly when factors such as delays caused by contractors and customers are not taken into consideration and factored into the recording of the ESQR. WPI plans to view its recording procedure for this service quality requirement.

b) WPI plans to address its emergency urban response requirement in the 2018 and ensure that staff understands that with the significant decline in the number of emergency calls that there is a greater expectation to respond to emergencies within a 60-minute time frame. WPI believes our recording of the Low Voltage Connections service quality requirement are sometimes not recorded properly when factors such as delays caused by contractors and customers are not taken into consideration and factored into the recording of the ESQR. WPI plans to view its recording procedure for this service quality requirement.

c) WPI will communicate these performance measures with its operation staff and ensure that measures are put in place to maintain a service quality requirement results that exceed that OEB minimum standard at all time. Despite the decline in Emergency calls over the years, more effort will be made to avoid missing emergency calls through effective communication and logistical improvements. WPI plans to view its recording procedure for the Low Voltage Connections service quality requirement.

d) WPI believes with considerations given to effectively communication its expectations for Emergency urban response results and the review of its recording procedure for Low Voltage Connections that it estimates the level of performance expected in these measures in 2017 and 2018 will be above OEB minimum standards.

2-Staff-17

Ref: 2.5.2 Distribution System Plan
Exhibit 2, CoS page 95, 96

WPI discusses its acquisition of the ESRI ArcGIS planning tool and states that it will provide a number of cost savings.

a) Which other planning tools did WPI investigate and why was the ESRI tool selected?
b) Please provide the forecasted dollar value of the cost savings that the ESRI system is expected to deliver.

WPI Response:

a) WPI explored other planning tools such ASIViewer but decided that ESRI ArcGIS planning tool was more widely used by many other LDCs and Municipalities serviced by WPI. The ESRI tool was scaled and tailored to WPI's needs for future innovative technologies. WPI is pleased with the capabilities of this planning tool. ERSI ArcGIS planning tool provides the ability for our staff to customize their needs for mapping, asset management and system integration and engineering design. Our engineering staff and line staff find the ESRI tool very convenient for verifying data in the field and limiting the time required to go to the field to conduct engineering investigation and line patrols.

b) Westario Power has seen some moderate cost avoidances since the implementation of the ESRI ArcGIS tool, estimated at $96,639.00 over the next five years. Our Linemen and Design Technicians time in the field has reduced significantly since its implementation. Staff no longer have to go to the field to collect or verify asset information, all required field data is now stored in our GIS database. The table below shows the forecasted dollar value of the cost avoidance the ESRI system is expected to deliver in the next five years, 2018 to 2022.

Years	2018	2019	2020	2021	2022
Technician	$10,614.00	$11,792.00	$12,382.00	$12,972.00	$13,561.00
Linemen	$4,918.00	$6,259.00	$7,153.00	$8,047.00	$8,941.00
Total Avoidance	$15,532.00	$18,051.00	$19,535.00	$21,019.00	$22,502.00

2-Staff-18

Ref: 2.5.2 Distribution System Plan; Appendix E: Natural Gas Expansion into Westario Territory
Exhibit 2, CoS pages 112, 122; CoS pages 583, 584

WPI states, "Westario remains a winter peaking utility, mainly due to the above-average amount of electrical heating in many of the communities they serve" and "Colder winters have created higher usage partially due to some communities utilizing electrical heat where there is no natural gas available, which translates into higher load demands." WPI also provided the EPCOR timeline for its expansion of its natural gas distribution into the WPI service territory.

a) Has WPI developed a forecast of its expected loss of electrical load from its Smart Meter data base (or any other source WPI has of customer load data) starting in 2018?
b) What is WPI's forecast of expected load loss?

WPI Response:

a) WPI understands that the proposed natural gas distribution expansion in some of its servicing communities may be introducing the possibility of natural gas to its residential and general service customers. However, WPI has not determined the impact of its winter load demand or forecasted what the expected loss of electrical load demand in these communities would result in after completion of this project. WPI is unable to predict or determine how many of these customers will switch from electrical heating loads to natural gas heating and how quickly and rapidly these residents will begin any connection conversion.
Most general service customers <50kW and >50kW are already using propane, resulting in a low impact to WPI's load demands.

b) WPI has not undertaken such a study but has reviewed potential suppliers input into the application and have been unable to locate specific details. Current information and the state of the application suggest "*If approved, it is expected that construction would start sometime in 2019*."

c) WPI is unable to predict or determine how many of these customers will switch from electrical heating loads to natural gas heating and how quickly and rapidly these residents will begin any connection conversion. Most general service customers <50kW and >50kW are already using propane, resulting in a low impact to WPI's load demands. Further research on forecasted load loss as a result of the proposed natural gas distribution expansion project may need to be complete so that WPI can better forecast the expected load loss. Due to residential distribution charges switching to a fully fixed amount the impact of a change to natural gas will be minimal to residential customers.

d) WPI has not attempted to estimate the lost electric load due to timing and cost constraints. The uptake estimates provided by potential suppliers of gas are very aggressive, and we believe that due the state of the application process and since the cost for customers to modify existing structures is restrictive the change will have minimal impact in the 5-year horizon. WPI must still provide appropriate maintenance and upgrades to the existing infrastructure, therefore the availability has not yet impacted WPI's planning.

2-Staff-19

Ref: 2.5.2 Distribution System Plan
Exhibit 2, CoS pages 87 and 112

Table #20 presents the WPI “Non-Financial Performance Measures.”

a) Please confirm that 531.2 Total km of line” is actually circuit-km of line. If this is not the case, please explain the discrepancy between this value and “746km of distribution lines” presented on CoS page 87.

WPI Response:

a) WPI has determined that the 746km of distribution lines is an error from previous publications. WPI has been able to determine a more accurate measurement of its distribution lines through modern technologies and planning tools. WPI has a total of 531.2km of distribution lines in its distribution network as indicated in Table # 20.

2-Staff-20

Ref: 2.5.2 Distribution System Plan; Appendix H: Regional Planning Needs Assessment Study *(Needs Assessment Report Greater Bruce-Huron Region)*
Exhibit 2, CoS page 112; CoS 615

Table #20 in the DSP, WPI presents the Maximum Monthly Winter Peak Load (kW) without embedded Generation has an irregular pattern where data was available:

2014	2015	2016
85,470	93,386	76,774

The Needs Assessment Report for the Greater Bruce-Huron Region states, "the winter *gross* coincident load in the Region is expected to grow at an average rate of approximately 1.1% annually from 2016-2025" and this is based in part on input from the LDCs winter gross load forecast (2016-2025).

a) Please provide the winter gross load forecast that WPI provided for the Needs Assessment report.
b) How was that forecast developed (e.g., what assumptions were made, what was the basis for those assumptions)?

WPI Response:

a) WPI did provide a winter gross load forecast for the needs assessment report, a copy of which will be included in the response to an excel spreadsheet. (Also see Appendix H)

b) WPI winter gross load forecast was developed by multiplying the maximum peak load in the winter and summer periods for each town at the primary meter point by a factor.

2-Staff-21

Ref: 2.5.2 Distribution System Plan; Appendix F: Greater Bruce-Huron Regional Planning Meeting Minutes
Exhibit 2, CoS page 114; CoS pages 585, 594.

WPI states that “it is very evident that the Westario outage frequencies and durations are heavily impacted by the loss of supply from Hydro One.”

Appendix F Greater Bruce-Huron Regional Planning Meeting Minutes for the meetings in 2015 and 2016 do not show that WPI raised the issue of Hydro One supply interruptions effect on WPI’s outage performance.

> Please provide information on WPI’s communication with Hydro One on this issue.

WPI Response:

WPI did raise the issue about the impact of the loss of supply from Hydro One at the 2016 Greater Bruce-Huron Regional Planning meeting. However, the issue raised by WPI was not documented in the meeting minutes since WPI was told to direct this concern to the distribution operating department of Hydro One. WPI has subsequently been communicating with Hydro One by email, telephone and with Hydro One Account Executives about the impact of the loss of supply on its customers and ways to improve our working relationship and finding common opportunity to improve on the reliability of both of our distribution networks.

2-Staff-22

Ref: 2.5.2 Distribution System Plan
Exhibit 2, CoS pages 120,128-131

WPI states that Step 4 of its Asset Management Process "produces a planned list of projects for the planning period." In section 5.3.3.4 Distribution Class Asset Optimization Policies and Practices and section 5.3.3.5, Station Class Asset Optimization Policies and Practices, WPI provided an overview of the policies and practices for each individual group of assets how asset investment decisions are made.

> Please describe in detail how WPI optimized and prioritized the various potential capital investments among the different groups of assets in developing its Distribution System Plan. For example, how did WPI determine the amount of asset investment in pole mount transformers versus switches.?

WPI Response:

WPI views all assets specified under the Distribution class asset optimization policies and practices critical for the safe and reliable supply of electricity. WPI's asset investment optimization and prioritization process seek to look at the overall risk to the organization when making any asset investment decisions. Our process looks at each potential asset investment to achieve the optimal balance of cost-effectiveness, safety, customer expectation, network reliability and the company's needs. WPI also take into consideration other factors, such as the resource availability, the materials & actual asset cost, any outage requirement and how this investment impacts customer rates.

The Asset group selected for capital investment is prioritized based on the aging of the asset, reliability of the asset and the cost of replacing the asset under emergency situations. WPI's asset investment decisions take a proactive approach to investing in assets that are considered high risk and that will have a high financial impact under emergency situations. The asset groups the falls into this category are poles, transformers, stations and any large cost assets. The example above is a perfect example where consideration would be given to investment in pole mounted transformers versus switches. Pole mounted transformers are large cost assets, which can have significant financial impacts of investment if not invested in proactively before they fail under an emergency situation.

2-Staff-23

Ref: 2.5.2 Distribution System Plan
Exhibit 2, CoS page 120, 126, 147

In the pages listed, the Asset Management Process, the Asset replacement/refurbishment prioritization five level priority matrix, and prioritization of capital investments are described.

Please describe how these three processes are correlated?

WPI Response:

WPI's asset management process provides a methodical approach to making the appropriate asset investments at the appropriate time. Step 4 in the asset management process allow for the best strategy for each asset group, which includes asset replacement, asset refurbishment or asset decommissioning. The asset replacement/Refurbishment prioritization processes describe the priority levels and response time considerations for the replacement and refurbishment of a single or group of assets. The prioritization of the capital investment describes how WPI will manage its levels of investments for single or groups of assets based on prioritization methodology taking into consideration a level of risk and financial impacts and other manageable factors. All these three processed are correlated and helps establish a consistent approach to managing WPI asset investment decisions. WPI believes it is essential to prioritize capital investments using a balance of some proportion of the following factors: safety, financial viability, quality of supply, customer rates and regulatory compliance.

2-Staff-24

Ref: 2.5.2 Distribution System Plan
Exhibit 2, CoS page 125, 126

WPI speaks to a utilizing condition assessments from the existing database information to generate health index for each asset type. It is indicated that health index results considered a multitude of factors, including age, condition assessment, material composition, historical fault information, etc.

a) For every asset group for which health indexing was performed, please summarize the basis of the health index calculation for each asset. In particular, what factors other than age were used in determining the health for each asset group?

Asset Group	**Basis of Health Index** (e.g. age, condition assessment, material composition, historical fault information, etc.)

b) How were factors other than age incorporated into the health assessment?

c) If only age was used, does WPI have plans to utilize other parameters in determining the Asset Health Indices?

WPI Response:

a) See table below

Category	Asset Group	Basis of Health Index (e.g. age, condition assessment, material composition, historical fault information, etc.)
O/H	Pole Mount Transformers	Age and Condition Assessment
	Air Break Switches	Condition Assessment
	Wood Poles	Aging, Condition Assessment, and Material composition
	Overhead Conductor	Condition Assessment
	Reclosers	Age, Condition Assessment, Historical fault information
U/G	Pad Mount Transformer	Age and Condition Assessment, Historical Load information
	U/G Cables	Age and Condition Assessment
Substation	44kV Power Transformer	Age, Condition Assessment and Historical Load, diagnostic testing

	15kV CB/Reclosers	Age, Condition Assessment, Historical fault information
	Protective Relays	Age and Historical Fault information
	15kV Primary Cable	Age and Condition Assessment and Loading
General Plant	Vehicles and Others	Age and Condition Assessment

b) WPI's inspection and maintenance program as part of its asset management program helps identify physical asset condition affected by many factors such as weather, soil condition, and loading. WPI's inspection procedure allows staff to record any defective or poor conditions of the asset which is then logged in our asset database for further assessment. Asset physical condition is included in the overall health assessment of each asset group. Additional, other factors such as pole testing are used to determine the physical condition of a pole further. This effort helps provide more scientific based results for the condition of the pole and therefore allow for a much more targeted approach to the replacement process.
WPI also conducts yearly inspections and maintenance of is Substations, including transformers and apparatus. Power transformer "Dissolved Gas in oil analysis" is completed for all power transformers on a routine inspection basis to monitor and predict potential failure, due to the aging of most of WPI's transformers. These factors were not incorporated into the health assessment of WPI's asset management program.

c) Age is one of the most important factors of WPI's health assessment of its asset. However WPI also incorporates other factors such as equipment physical condition, and diagnostic testing to determine the health assessment of the asset.

2-Staff-25

Ref: 2.5.2 Distribution System Plan
Exhibit 2, CoS pages 120

The Asset Management Process is shown in a flow chart.

a) Please explain how Step 1 and Step 2 of the Asset Management Process are executed given that the Asset Condition Assessment is very limited, both with respect to data and the number of asset groups that were actually assessed?

b) What is the method used for assessing or validating the effectiveness of the investments made?

WPI Response:

a) WPI has continued to improve its data gathering and inspection process for most of its assets over the past years with limited internal resources such as trained staff, asset management tools, and consultant. Most of the data in the past were either incomplete or incorrect and kept in an excel document. In 2016 WPI implemented Esri ArcGIS as a planning tool to help better manage its asset management process. Since the implementation of this planning tool, WPI has been more aggressive with its asset management plans, conducting more inspections and completing more diagnostic testing of it wood poles and power transformers with its substations. WPI has been focusing its asset management strategy primarily on the asset types such as a wood pole, overhead & underground transformer, air break switches, substation, power transformers, and substation apparatus, of which more data information and condition assessments have been recorded in WPI's database. The asset condition assessment document presents working progress with respect to available data and the number of asset groups assessed by WPI staff and consultants.

b) WPI believes that the current investments made in wood pole replacement and distribution transformer replacement and substations refurbishment/replacement and restricted conductor replacement is a balanced approach that will maximize both safety and reliability for its customers. The asset investments in these asset groups are based on the accuracy of the asset assessment data collected and verified by WPI staff and its consultant based on the health assessment data such as asset age, inspections, condition assessments and diagnostic testing. Based on these data analysis WPI intends to maintain current investment efforts in the asset groups identified as critical by those indicators in the asset condition assessment.

2-Staff-26

Ref: 2.5.2 Distribution System Plan, Appendix G: Distribution System and Inspection Under Ontario Regulation 22/04
Exhibit 2, CoS pages 126; CoS page 490

It is indicated that detailed overhead and underground sheets are used to record deficiencies. CoS page 490 refers to a sample of the inspection program.

Please provide a sample of this inspection program.

WPI Response:

A sample of Westario Inspection program, to reference WPI SR-000-07 Distribution System Inspection is included at Appendix I.

2-Staff-27

Ref: 2.5.2 Distribution System Plan
Exhibit 2, CoS page 133

WPI describes a pole testing program that is currently underway.

a) How many poles have been tested?
b) What is the age distribution/average age of the poles tested?
c) Are the initial results in line with the asset condition assessment results that indicate that 55% of poles will require replacement within ten years?
d) When will WPI's "scientific-based pole testing program" results be used as part of the determination of the pole replacement program?

WPI Response:

a) WPI has test 5800 poles year to date which is 65 percent of the total wood poles in the WPI distribution network.

b) The average age of the poles currently tested is from 1945 to 1989 which is about 60 percent of the tested poles and 1990 – 2017, which is about 40 percent of the tested poles.

c) WPI tested 45 percent of the 55 % of poles requiring replacement within10 years as per the Table 1-1 of the asset condition assessment. The pole testing results for this group of poles show that 21 percent were in line with the asset condition assessment results, where as the remaining 23 % of this group tested require replacement over a 10-year period.

d) WPI's scientific testing program results will be incorporated in the health assessment process in the future to determine the number of pole replacements required per year under the decrepit pole replacement program. WPI started using the results from the scientific testing and the age of the pole to optimize its pole replacement program in 2017. The scientific results for the condition of the pole will enable WPI to implement a much more targeted approach to its pole replacement plans.

2-Staff-28

Ref: 2.5.2 Distribution System Plan
Exhibit 2, CoS page 136

WPI presents its plan for SCADA implementation. WPI currently has 27 stations. WPI stated it:

- installed SCADA on one of the SCADA-ready stations in 2015
- two (2) more in 2016
- three (3) more units planned for 2017, and
- one unit in 2018

a) Please provide the schedule for the installation of SCADA on the remaining 20 stations.

b) How does WPI plan to operate its system during the period of partial implementation of its SCADA system?

WPI Response:

a) WPI's SCADA implementation program is part of the modernization of our network as we continue to upgrade and rebuild our legacy substation with more current and modern technical equipment. WPI plans to implement SCADA in any new substation rebuild, which is in alignment with one substation rebuild per year.

b) WPI SCADA implementation is primarily to monitor loading and equipment condition at each substation with the limit operability of circuit breaker or reclosers. WPI will fully implement SCADA system at each station as it comes online. Each SCADA system at a substation will operate independently of the other.

2-Staff-29

Ref: 2.5.2 Distribution System Plan, Appendix A: Asset Management Plan 2013-2022 - *Appendix D: Asset* Condition *Assessment*
Exhibit 2, CoS page 146

It is indicated that the Asset Condition Assessment (ACA) fed into planning of System Renewal investments.

a) Please confirm that the following typical useful lives were used in the assessments.

Asset Group	TUL
Power transformers	45
Pole mounted transformers	40
Poles	50
Pad mounted transformers	30

b) Please confirm that these typical lives were assumed, on the basis of the OEB useful life study.
c) Does WPI have any evidence (e.g., removal statistics, failure data, age distributions) to justify their useful life assumptions?
d) Please provide an age distribution for each asset group where age is known.
e) Please explain how the 'Expected Life' column in the health index table (for example, CoS page 312, Table 3-1) correlates with the 'Factors' shown in Appendix B of the Asset Condition Assessment (CoS page 326). For example, the Hydro Pole scoring system (CoS page 327) ranges from 0 to 4, using age limits of 51 and 25 years respectively. How does this relate to 'Expected Life'?
f) Please explain how the 'Factors' shown in Appendix B of the Asset Condition Assessment (CoS page 326) correlate with the typical useful life assumptions above?
g) How were cables assessed given that age was available for only 15% of the population?

WPI Response:

a) WPI confirms that the typical useful lives of the above-listed assets were used its asset management plan and by extension its the Asset Condition Assessment (ACA.

b) WPI has recently completed an assessment of its assets to meet the IFRS accounting standards. In its analysis, WPI utilized the Kinectrics Inc. Report Number K-418003-RA-001-R00 dated July 8, 2010, titled Asset Depreciation Study for the Ontario Energy Board" to assist with the determination of the useful lives of its asset.

c) WPI has based its assumptions for the useful life of its asset based on the analysis conducted by the OEB's consultant report number K-418033-RA-001-R000 dated July 8, 2010, titled "Asset Depreciation Study for the Ontario Energy Board."

d)

Asset Group	**Age distribution (Yrs.)**
Distribution Station Transformers	1963 - 1980 1980 - 2005 2005 - 2017
Circuit Breakers	1963 – 1980 1980 – 2008 2008 - 2015
Reclosers	1975 – 1993 2013 - 2017
Switchgear Assemblies Network	1961 - 1978
Protectors N/A	N/A
Distribution Poles	1945 - 2017
Distribution Pole Mount Transformers	1961 - 2017
Distribution Pad mount Transformers	1963 - 2017
Switches – 3 Phase Load Break	1980 - 2017
Switches – 3 Phase Air Break	1980 - 2017
Switches – 1 Phase Air Break	N/A
U/G Primary Cables	1980 - 2017

e) Previous Asset Condition Assessments considered other factors based on information not available at WPI at time of the assessment.

For example, the following information was not included into the Health Index evaluation:

Transformers

- PCB presence and tested levels
- Evidence of leakage
- Recent visual inspection records

<u>Poles</u>

- Pole strength (through lab testing on selected samples)
- The existence of cracks for both wood and concrete poles
- Woodpecker or insect caused damage to wood poles
- Wood rot or concrete spalling
- Damage due to fire or mechanical damage
- The condition of guy wires

In Westario's ACA, other than age, no additional data was available at the time of the assessment. Therefore, for Westario, age was the only factor given to an asset class. Therefore, for Westario the Factor of 0-4 was assigned to an asset based on the following:

"0" if the age is 51+ years old, "0.7" for age 45-50, "1.5" for age 40-44, "2.1" for age 34-39, "3.0" for age 30-34, "3.5" for age 25-29, and "4" for age 0-25. So a younger asset gets a higher score which translates to a longer life expectancy based on age.

These were further grouped into

- "Very Good" which covered assets with 15+ years of remaining life
- "Good" which covered assets with 10-15 years of remaining life
- "Fair" which covered assets with 5-10 years of remaining life
- "Poor" which covered assets with 1-5 years of remaining life
- "Very Poor" which covered assets at/beyond their expected lifetimes.

f) The above explanation explains how the 'Factors' shown in Appendix B of the Asset Condition Assessment (CoS page 326) correlate with the typical useful life of the asset

g) Westario used additional financial –based information that indicated the asset age for capital depreciation to be able to estimate age-related data for the underground cable assessment since field data information was not readily available in WPI database.

2-Staff-30

Ref: 2.5.2 Distribution System Plan
Exhibit 2, CoS pages 152, 153, 185 - 187

WPI presents historical budget and actuals for the Poletran project. In each year 2012 through 2015, WPI underspent the budget for this project. The total underspent was $589,518. Actual expenditures for 2016 were not presented. The budget for the Poletran project in 2017 through 2019 is $1,132,957.

a) Please provide the actual expenditure for the Poletran project for 2016.
b) Please confirm that the underspending each year from 2012 through 2015 meant that planned work was not completed. If not, please provide the reason for the underspending.
c) Please confirm that the total budget for 2017 through 2019 is sufficient to pay for the uncompleted work (if that is the basis for the underspending) from 2012 through 2015 and the remaining replacements of the program.
d) If the underspend was not due to uncompleted work, please explain the reason for the significant increase from recent actuals.

WPI Response:

a) Power didn't conduct any Poletran work in 2016 due to the unavailability of human resources to complete the electrical installation work required.

b) WPI's underspending each year from 2012 through 2015 meant that our competitive bidding price for the civil work was a less than estimated and that the planned work was completed. The Poletran work was divided into manageable phases with the civil work be complete the year before the electrical work started for each phase of the project.

c) WPI's forecasted budget for 2017 through to 2019 is sufficient to complete the remaining two phases of the Poletran project, i.e. phase 9 and 10. The civil work for phase 9 has been completed.

d) The actual underspend was not due to uncompleted work for the planned work from 2012 to 2015. WPI expects to see an increase in the last two phases (Phase 9 and 10) due to the fact that the scope of work for these phases are much larger than previous phases.

2-Staff-31

Ref: 2.5.2 Distribution System Plan
Exhibit 2, CoS pages 152, 153, 188 - 190

WPI presents historical budget and actuals for the #6 Copper Replacement project. In the period 2012 through 2016, WPI underspent the budget for this project in each year except for 2014. In total, this project was underspent $525,079. The budget for the #6 Copper Replacement project in 2017 through 2020 is $1,440,705.

a) Please confirm that the underspending over the period from 2012 through 2016 meant that planned work was not completed. If not, please provide the reason for the underspending.
b) Please confirm that the total budget for 2017 through 2020 is sufficient to pay for the uncompleted work (if that is the basis for the underspending) from 2012 through 2016 and the remaining replacements of the program.
c) If the underspend was not due to uncompleted work, please explain the reason for the significant increase from recent actuals.

WPI Response:

a) Power underspending over the period from 2012 through 2016 except for 2014 was due to the utilization of contractors for completing most of the larger project at a lower cost. In 2014, most of the originally planned capital spending was temporarily transferred to Substation planned work. The three jobs planned under the # 6 copper replacement project in 2014 were overspent from what was budgeted.

b) WPI's total budget for 2017 through 2020 for # 6 copper replacement project was for new planned work in other towns within our service area.

c) The actual spending reflects the reduced costs of doing the planned work by using a contractor to supplement our resources. All projects planned in the period were completed except for 2014, where WPI cut back on the number of projects for that year as noted in answer a).

2-Staff-32

Ref: 2.5.2 Distribution System Plan; Appendix A: Asset Management Plan 2013-2022; Appendix A: Asset Management Plan 2013-2022 - *Appendix D: Asset Condition Assessment Report*
Exhibit 2, CoS pages 152, 153, 169-171; CoS pages 260-261; CoS pages 302, 307, 308, 316, 318, 319, 320.

WPI states "Westario had adopted a TUL of 50 years for poles." "Westario plans to replace up to 100 decrepit poles per year from 2017 to 2020, increasing to approximately 150 poles for 2021 and beyond, pending results of pole testing." The estimated cost to replace a pole is $5,841.76. WPI states that 5404 poles require replacement based on age. WPI also states "Although older poles may still be in good physical and structural condition, the assessment methods only took into consideration the pole age due to there being no other available data." "A comprehensive pole testing program, targeted at this aged population will help to further assess the condition of this asset group."

a) Please explain why the annual budget for the pole replacement program in the years 2017 to 2020 is not $584,176 (i.e., $5,841.76 x 100) and for 2021 and 2022, $876,264 (i.e., $5,841.76 x 150) or less given opportunities to group pole replacements in order to gain efficiencies of scale?
b) Please explain how WPI proposes to have 5404 decrepit poles replaced through a program of 100 to 150 pole replacements per year (i.e., 36 to 54-year program) given that, based on age alone, more of WPI's poles will require replacement.

WPI Response:

a) WPI proposed 100 and 150 pole replacements in its decrepit poles program in the years 2017 to 2020 and 2021 and 2022. However, we have made an allowance to the budget for an additional 30 - 50 poles under other system renewal projects.

b) WPI has determined based on the available data on age of its poles in the distribution network that there are 5404 poles within 10 years of their end of life, however we are currently undertaking a comprehensive pole testing program to assess the physical and structural conditions of these poles to understand better how aggressive our pole replacement program needs to be over the next 10-20 years.

2-Staff-33

Ref: 2.5.2 Distribution System Plan
Exhibit 2, CoS pages 152, 153, 178 and 179

WPI states its Capital Poles project "covers new poles that are required to provide new customer connections, either through line extensions, pole relocations, or new poles for service connections". WPI says that "there are no actual (or little) planned projects as of yet for this category" for future expenditures but that this area is unpredictable given that it is driven by customer demand. Also, there are low expectations of new customers over the next several years. WPI calculates that the average annual expenditure for Capital Poles over the historic period has been $235,332. The budget forecast for 2017 is $306,742, which is just under 1% higher than the actual cost from 2016.

a) Given the historic levels of expenditure and the lack of growth for Capital Poles, why did WPI chose to escalate the budget for 2018 by 6% over the budget for 2017, also noting that the escalation factor used for the budget for years following 2018 is about 1%?
b) Are there capital costs for the replacement of existing capital poles that have deteriorated also included in this project?

WPI Response:

a) WPI chose to escalate the budget for 2019 by 6% over the budget for 2018 because of the knowledge of some proposed work that is scheduled to be completed in 2019 in partnership with various towns.

b) Any capital cost for the replacement of existing capital poles that have deteriorated or decrepit is usually replaced under the decrepit pole replacement program.

2-Staff-34

Ref: 2.5.2 Distribution System Plan
Exhibit 2, CoS pages 153, 180-182, 320

From 2018 to 2022, the planned expenditure for distribution transformers is $1,604,454. WPI's condition assessment report identified that 57% and 33% of pole mounted and pad mounted transformers respectively will reach the end of their life within 10 years.

a) It is noted that the 'Health Index analysis revealed that 57% of the population of pole mount transformers will reach their statistical end of life within the next five to ten years', but that the 'analysis could not take into account any "run-to-failure" transformers within the group due to lack of customer connection information'. Please explain what is meant by this statement. What are these assets that are not accounted for?
b) A total of 35 transformers (30 pole mount and 5 pad mount) are slated for replacement every year. Please explain how the quantity of 35 was derived, given that per the asset condition assessment (Appendix D), a total of 1330 distribution transformers are marked as requiring replacement within the next ten years.

WPI Response:

a) WPI understands from the condition assessment report that 57 percent of the population of pole mount transformers will reach their statistical end of life within 10 years based on the age of these transformers, however some of these transformers may have a small number of connected loads and may not require immediate replacements due to the low risk or reliability concerns they pose to our customers or distribution network and therefore a run to failure replacement strategy could be deployed. However, the analysis did not take this factor into consideration with determining the number of pole mounted transformers required replacement in five to ten years. If a run to fail factor is taken into consideration the 57% replacement rate would be reduced.

b) WPI recognizes the total number of distribution transformers marked as requiring replacement within the next ten years based only on age and condition of the transformer. However, the number of transformers requiring replacement must be distributed over a longer year replacement projection to balance customer need, cost, and reliability. These assets may have to be evaluated not only based on age but other factors such as diagnostic testing, physical condition, and transformer loading.

2-Staff-35

Ref: 2.5.2 Distribution System Plan; Appendix A: Westario Asset Management Plan 2013-2022; Appendix C: Transformer Fleet Inventory; Appendix A: Asset Management Plan 2013-2022 - ***Appendix D: Asset Condition Assessment Report***
Exhibit 2, CoS pages 125,126; CoS pages 256-265; CoS pages 285-296; CoS pages 302-325

An Asset Health Index is made up of the sum of condition scores of parameters that measure the health of the asset where each parameter is weighted to reflect the importance of that parameter in determining the health of the asset. If there is only one condition parameter, the weighting of that parameter is 1.
For Station Transformers, WPI provides information on transformer age, transformer loading, switching or lightning surges, moisture contamination, paper insulation ageing and transformer oil testing diagnostics such as, Dissolved Gas Analysis (DGA) and General Oil Quality (GOQ).

a) Although WPI notes that there are a number of parameters for calculating the health index for station transformers, please confirm that for station transformers the only parameter for determining their health index was limited DGA results. In particular, levels of CO and CO2.
b) What is the rationale for this? Why were other gases, which are more indicative to transformer degradation, not used in the assessment?
c) If other parameters are indeed used, please provide the other health index parameters and their respective weighting factors.
d) Please indicate what routine tests and maintenance procedures are conducted for station transformers.
e) Please indicate what routine tests and maintenance procedures are conducted for other station assets (e.g. circuit breakers).

WPI Response:

a) WPI determined the health of its station transformers based on Dissolved Gas Analysis (DGA) and age of the assets.

b) The rationale behind using these two parameters for assessing the condition of the substation transformer was because these were the two historical data points that were available in WPI's database on substation transformer asset and was easily verifiable. Over the past five years WPI has been recording the DGA result for levels of CO and CO2 and other gases in its oil analysis for its substation transformer to help predict failing conditions and preventive maintenance response. We believe that CO and CO2 gases in oil samples taken on a yearly basis would help us understand the level of oxidation of the cellulose insulation inside the transformer, and hence understand how bad the insulation was degrading resulting in some imminent failure.

c) See a).

d) WPI has implemented a routine inspection program for its substations where a physical inspection is completed on all apparatus and transformers looking for oil leaks; rust cracked insulators and other anomalies. An oil sample is taken on all vintage transformers and diagnostic testing and analysis. Any defects observed during the routine inspections are corrected immediately or shortly after the inspection is completed.

e) WPI has implemented a routine inspection program for its substations where a physical inspection is completed on all apparatus including reclosers and breakers, and steel structures, etc. for oil leaks, rust cracked insulators and any anomalies. Any defects observed during the routine inspections are corrected immediately or shortly after the inspection is completed.

2-Staff-36

Ref: 2.5.2 Distribution System Plan; Appendix A: Asset Management Plan; Appendix F: Westario's Fleet Listing
Exhibit 2, CoS pages 175-177; CoS page 488

WPI states its vehicle replacement policy is based on a ten to fifteen year lifetime. The replacement of single bucket trucks appears to be planned after 13 to 16 years of life. The double bucket truck is scheduled for replacement after ten years of life.

Why is the replacement of a double bucket truck scheduled earlier than the replacement date of a single bucket truck?

WPI Response:

WPI has planned to replace its double bucket truck # 15, which is going to reach its end of useful life after 15 years and not truck # 55 as assumed as per the Active Fleet & Equipment List on CoS page 488. This replacement is required due to increased maintenance cost of this double bucket truck in the coming years, and it reaches its end of life as per WPI's policy.

11	Single Bucket	2005 to be replaced in 2018
15	Double Bucket	2007 to be replaced in 2022
24	Single Bucket	2006 to be replaced in 2020

See spreadsheet referenced at 2-VECC-10

Truck 15 on page 488 is recorded as a single bucket in error; it is a double bucket.

2-Staff-37

Ref: 2.5.2 Distribution System Plan; Appendix A: Asset Management Plan 2013-2022 - Appendix *D: Asset Condition Assessment Report*; Appendix C: Westario Station Transformer Replacement/Refurbishment Plan
Exhibit 2, CoS pages 152, 153; CoS pages 297-321; CoS pages 471-482

WPI presents its Station Transformer Replacement/Refurbishment Plan proposal estimated the cost would be $250k for 2016, and the actual cost for 2016 was $335,460. The Proposed Yearly Transformer Fleet Strategy sets out the proposed cost for 2017 as $160k. The Bridge Year Budget for 2017 for this Plan is $306,200. The Proposed Yearly Transformer Fleet Strategy sets out the proposed cost for 2018 as $150k. The Budget forecast for 2018 for this Plan is $307,305.

a) Was there additional work done in 2016 that accounts for the difference between the Plan proposal than the actual cost in 2016?
b) Why is the Bridge Year Budget over 90% higher than the Proposed Yearly Transformer Fleet Strategy proposed cost in 2017?
c) Please provide the actual cost of the Distribution Transformer Replacement activities for 2017.
d) Why is the Budget forecast for 2018 for this plan more than double the amount set out in the Proposed Yearly Transformer Fleet Strategy?

WPI Response:

a) WPI proposed yearly transformer fleet strategy estimated on (CoS pages 471-482) primarily for the replacement or refurbishment of substation transformer within the WPI's Substations and the labour and material cost required to temporarily install the mobile unit station (MUS) required to carry the station load temporarily during the transformer change out.

b) The Bridge year budget for distribution transformer replacement in Table #45 on CoS page 153 is not the same as the proposed yearly estimates for Transformer Fleet Strategy proposed in 2017 on (CoS pages 471-482). These estimated costs for Transformer Fleet Strategy proposed are only to be included in the overall cost of substation upgrade/rebuild projects.

c) The actual cost of the distribution transformer replacement program will be included in revised capital expenditures for 2017.

d) The 2018-year budget for distribution transformer replacement in Table #45 on CoS page 153 is not the same as the proposed yearly estimates for Transformer Fleet Strategy proposed in 2018 on (CoS pages 471-482). These estimated costs for Transformer Fleet Strategy proposed are only to be included in the overall cost of substation upgrade/rebuild projects.

2-Staff-38

Ref: Appendix A: Asset Management Plan 2013-2022 - *Appendix D: Asset Condition Assessment Report*; Appendix C: Westario Station Transformer Replacement/Refurbishment Plan
Exhibit 2, CoS pages 471-482.

There is the technical requirement for WPI to temporarily install its Mobile Utility Station (MUS) to carry station load while the Distribution Transformer changes are made

a) Given that WPI has only one MUS, does this present a bottleneck to the replacement/refurbishment of the Distribution Transformers?
b) What contingency plan does WPI have if the MUS fails?

WPI Response:

a) WPI has only one MUS in its system and has not yet experienced a bottleneck issue with the replacement/refurbishment of the substation transformers. Most of our towns have 3-4 stations which can be paralleled for back feed supply during a substation transformer replacement in another substation. WPI is planning to undertake one substation rebuild or upgrade per year for the next five years as per WPI DSP. The redundancy in our town allows us the option to tie two stations together for back feed power. The MUS is primarily used in towns with only one substation and no back-feed power supply.

b) WPI MUS was primarily procured to provide contingency for towns with one substation or to provide back up power with replacing a substation transformer. The failure rate for our substation transformers has been very low, with only one transformer failure in 40 years. WPI does have substations with 2 power transformers that can be used as a contingency plan in the event of a failure with the MUS.

2-Staff-39

Ref: Appendix A: Asset Management Plan 2013-2022 - *Appendix D: Asset Condition* Assessment *Report*; Appendix D: PCB-Free Position Letter; Appendix E: PCB-free Position Letter
Exhibit 2, CoS pages 483 and 484; CoS pages 485 and 486

The two PCB-Free Position Letters appear to be identical.

If the attachment was accidentally filed twice, and another attachment was inadvertently missed, please file that attachment with the interrogatory responses.

WPI Response:

WPI accidentally filed the PCB free position letter twice. There are no additional attachments required to be filed on the subject.

Exhibit 2 – Rate Base (SEC)

2-SEC-13

[Ex.2, Appendix 2-AA] Please revise all Chapter 2 appendices to include 2017 actual information and any resulting changes (if any) to the 2018 test year forecast.

WPI Response:

Appendix 2-AA

Reporting Basis		CGAAP	CGAAP	CGAAP	CGAAP	MIFRS	MIFRS	MIFRS	MIFRS
Projects	**USoA**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
System Access									
Capital Poles									
Distribution Station Equipment Nor	182000	0	0	0	0	0	0	0	0
Poles, Towers and Fixtures	183000	88,194	72,452	73,025	33,673	80,888	99,869	137,057	96,571
Overhead Conductors and Devices	183500	39,166	106,855	102,325	37,154	151,509	74,137	98,721	127,577
Underground Conduit	184000	510	2,807	3,066	12,214	10,654	3,333	12,774	8,468
Underground Conductors and Devices	184500	2,891	2,611	26,988	24,726	14,105	33,869	31,778	26,799
Line Transformers Overhead	185000	10,593	23,442	22,585	-3,725	9,979	52,649	24,253	28,394
Services Overhead	185500	8,465	23,682	11,705	1,110	9,068	9,255	3,687	15,206
Meters	186000	2,125	0	1,465	8,817	0	4,011	5,103	3,726
New 3 phase									
Distribution Station Equipment Nor	182000	0	0	0	0	0		0	
Poles, Towers and Fixtures	183000	17,990	32,836	11,846	16,908	4,668	9,847	472	
Overhead Conductors and Devices	183500	22,322	40,864	34,342	28,683	13,967	20,853	6,192	
Underground Conduit	184000	253	388	822	998	267	1,750	33	
Underground Conductors and Devices	184500	30,942	11,792	15,713	1,195	13,483	17,779	24,312	
Line Transformers Overhead	185000	95,438	46,450	38,225	35,071	56,612	101,645	44,482	
Services Overhead	185500	10,755	5,739	20	6,659	3,649	4,987	5,452	
Meters	186000	14,595	1,360	10,383	8,480	13,116	16,152	12,879	
New Single Phase									
Distribution Station Equipment Nor	182000	0	0	0	0		0	0	
Poles, Towers and Fixtures	183000	0	849	0	0		4,661	862	
Overhead Conductors and Devices	183500	0	2,224	766	160		6,479	2,262	
Underground Conduit	184000	0	6,430	0	0		305	95	
Underground Conductors and Devices	184500	0	7,958	479	0		2,516	0	
Line Transformers Overhead	185000	0	4,275	2,398	0		26,761	5,117	
Services Overhead	185500	0	15,354	7,964	1,424		3,819	1,310	
Meters	186000	0	1,379	390	0		3,338	1,119	
New UG Service									
Distribution Station Equipment Nor	182000	0	0	0	0	0	0	0	0
Poles, Towers and Fixtures	183000	3,405	21,580	21,343	8,766	9,061	4,560	8,519	12,960
Overhead Conductors and Devices	183500	6,735	18,560	24,068	10,062	24,475	3,073	3,991	15,764
Underground Conduit	184000	690	2,465	791	618	1,083	3,817	280	1,730
Underground Conductors and Devices	184500	31,773	25,750	37,071	48,297	50,137	26,494	40,108	36,484
Line Transformers Overhead	185000	-2,694	66,924	-13,624	140,062	54,406	57,041	3,731	59,870
Services Overhead	185500	180,662	134,538	112,954	80,502	71,634	0	79,380	142,011
Meters	186000	116,297	63,140	99,715	86,031	76,941	4,328	2,567	1,835
New Subdivisions (80 new lots)									
Distribution Station Equipment Nor	182000	0	0	0	0	0	0	0	
Poles, Towers and Fixtures	183000	24,561	13,085	5,768	16,365	39,537	4,480	13,311	

Overhead Conductors and Devices	183500	39,440	25,839	7,068	25,454	62,572	12,667	21,830	
Underground Conduit	184000	2,462	413	167	1,298	1,576	184	661	
Underground Conductors and Devices	184500	157,372	182,972	24,822	111,279	64,946	78,205	89,726	
Line Transformers Overhead	185000	55,612	53,462	23,046	44,725	34,027	10,688	35,934	
Services Overhead	185500	9,092	999	1,272	10,318	1,441	0	1,076	
Meters	186000	11,449	0	121	0	0	0	0	
CDM & Car Charging Station									
Distribution Station Equipment Nor	182000								0
Poles, Towers and Fixtures	183000								17,271
Overhead Conductors and Devices	183500								21,008
Underground Conduit	184000								2,305
Underground Conductors and Devices	184500								48,620
Line Transformers Overhead	185000								61,533
Services Overhead	185500								184,116
Meters	186000								25,828
Capital Poles									
Distribution Station Equipment	182000	0	0						
Poles, Towers and Fixtures	183000	169,152	176,460						
Overhead Conductors and Devices	183500	229,501	172,567						
Underground Conduit	184000	7,046	3,826						
Underground Conductors and Devices	184500	67,798	9,142						
Line Transformers Overhead	185000	123,021	16,396						
Services Overhead	185500	85,609	46,094						
Meters	186000	1,895	518						
Non-bugdeted Work Orders									
Distribution Station Equipment Nor	182000						0	0	
Poles, Towers and Fixtures	183000						16,774	466	
Overhead Conductors and Devices	183500						30,137	402	
Underground Conduit	184000						11,117	13	
Underground Conductors and Devices	184500						23,346	1,579	
Line Transformers Overhead	185000						-71,890	0	
Services Overhead	185500						80,137	3,050	
Meters	186000						14,324	119	
Non-demarcation									
Distribution Station Equipment Nor	182000	0	0	0	0	0	0	0	0
Poles, Towers and Fixtures	183000	2,446	0	0	0	0	3,242	211	4,560
Overhead Conductors and Devices	183500	0	0	0	0	0	161	2	227
Underground Conduit	184000	17,852	0	0	11,536	3,568	8,465	0	11,905
Underground Conductors and Devices	184500	0	0	0	103	0	5,374	18,105	7,558
Line Transformers Overhead	185000	0	0	0	0	0	0	0	0
Services Overhead	185500	0	1,245	6,613	0	10,919	14,895	1,441	20,949
Total Projects		$1,685,415	$1,445,721	$715,705	$808,965	$888,287	$839,632	$744,462	$983,276
Contributed Capital		-626,691	-689,868	-473,674	-394,427	-360,794	-584,438	-572,358	-340,541
Sub-Total System Access		**1,058,724**	**755,853**	**242,031**	**414,538**	**527,493**	**255,194**	**172,104**	**642,735**

System Renewal	**USoA**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
#6 Copper Primary Replacement									
Distribution Station Equipment	182000	0	0	0	0	0	0	0	
Poles, Towers and Fixtures	183000	188,289	191,308	550,670	176,655	245,523	89,049	324,005	122,493
Overhead Conductors and Devices	183500	272,671	737,605	562,982	147,104	401,943	145,336	356,031	186,836
Underground Conduit	184000	3,916	3,772	17,146	14,595	19,121	4,924	10,983	6,868
Underground Conductors and Devices	184500	59,654	7,621	50,158	20,315	57,392	13,417	20,128	15,362
Line Transformers Overhead	185000	119,629	44,646	54,644	48,024	22,162	14,942	5,881	20,612
Services Overhead	185500	145,735	18,205	67,484	42,456	27,274	13,316	52,529	18,495
Meters	186000	1,545	1,165	0	0	0	939	1,250	107
Port Elgin 5KV Cable & Poletran Replacement									
Distribution Station Equipment	182000	0	0	0	0	0		0	0
Poles, Towers and Fixtures	183000	10,242	4,360	4,062	10,337	7,685		62,165	10,348
Overhead Conductors and Devices	183500	17,388	29,695	8,855	14,378	12,201		38,495	16,429
Underground Conduit	184000	249,446	3,066	121,218	16,609	1,070		9,391	1,441
Underground Conductors and Devices	184500	115,416	198,452	119,711	175,030	236,148		147,238	317,984
Line Transformers Overhead	185000	30,269	37,862	29,705	54,024	52,173		43,816	70,253
Services Overhead	185500	11,089	3,222	4,116	17,120	34,778		34,944	46,830
Meters	186000	0	0	0	0	0		781	0
Substation Refurbishment									
Distribution Station Equipment	182000	303,500	0	15,000	1,814,902	815,176	1,513,465	1,731,851	1,310,000
Poles, Towers and Fixtures	183000	28,317	0	0	0				
Overhead Conductors and Devices	183500	43,714	0	142	0				
Underground Conduit	184000	55,471	0	0	0				
Underground Conductors and Devices	184500	77,151	0	9,670	0				
Line Transformers Overhead	185000	37,393	0	13,744	0				
Services Overhead	185500	15,222	0	0	0				
Meters	186000	89,589	0	-15,015	0				
Distribution Transformer Replacements									
Distribution Station Equipment	182000	0	0			0	0	0	0
Poles, Towers and Fixtures	183000	0	0			910	13,118	15,895	12,017
Overhead Conductors and Devices	183500	0	0			0	8,276	20,560	7,581
Underground Conduit	184000	0	0			0	1,556	445	1,426
Underground Conductors and Devices	184500	0	0			111	9,093	32,047	8,330
Line Transformers Overhead	185000	0	0			0	299,713	122,548	274,558
Services Overhead	185500	0	0			378	2,319	3,217	2,124
Meters	186000	0	0			0	1,385	6,729	1,269
Storm Damage									
Distribution Station Equipment	182000	0	0						
Poles, Towers and Fixtures	183000	0	0					34,340	
Overhead Conductors and Devices	183500	0	0					4,326	
Underground Conduit	184000	0	0					152	
Underground Conductors and Devices	184500	0	0					167	
Line Transformers Overhead	185000	0	0					2,808	
Services Overhead	**185500**	**0**	**0**					**0**	

Meters	186000	0	0					0	
Decrepit Poles									
Distribution Station Equipment	182000			0	0	0	2,858	0	0
Poles, Towers and Fixtures	183000			213,863	113,445	153,228	362,137	322,833	276,782
Overhead Conductors and Devices	183500			262,335	111,881	145,733	407,253	344,656	310,167
Underground Conduit	184000			4,432	6,458	10,049	20,059	13,379	61,815
Underground Conductors and Devices	184500			13,245	18,096	91,165	31,967	40,652	73,404
Line Transformers Overhead	185000			16,734	20,941	60,551	91,248	88,737	9,000
Services Overhead	185500			23,544	18,908	14,495	68,939	33,030	48,464
Meters	186000			0	0	663	1,408	0	514
Total Projects		$1,875,646	$1,280,979	$2,148,446	$2,841,278	$2,409,929	$3,116,718	$3,926,010	$3,231,509

System Service		2011	2012	2013	2014	2015	2016	2017	2018
Smart Meter, Collectors & Interval Metering Projects									
Distribution Station Equipment	182000	0	0	0	0	51,584	0	0	0
Poles, Towers and Fixtures	183000	8,516	28,167	29,900	10,003	5,188	3,055	0	1,154
Overhead Conductors and Devices	183500	917	25,068	42,029	3,681	19,389	1,783	435	1,603
Underground Conduit	184000	254	303	2,131	0	83	184	0	57
Underground Conductors and Devices	184500	323	17,018	37,481	4,843	8,632	266	0	1,228
Line Transformers Overhead	185000	4,304	13,943	12,432	973	18,710	1,495	0	806
Services Overhead	185500	1,781	1,282	16,194	735	1,198	3,993	1,094	530
Meters	186000	975	-14,734	377,828	273,986	131,098	244,032	4,648	24,621
SCADA									
Distribution Station Equipment	182000	0	0					79,285	282,000
Poles, Towers and Fixtures	183000	0	0						
Overhead Conductors and Devices	183500	0	0						
Underground Conduit	184000	0	0						
Underground Conductors and Devices	184500	0	0						
Line Transformers Overhead	185000	0	0						
Services Overhead	185500	0	0						
Meters	186000	0	0						
Service Upgrades (to 100, 200 or 400 Amp)									
Distribution Station Equipment Nor	182000	0	0				0	0	70,000
Poles, Towers and Fixtures	183000	0	0				0	1,198	
Overhead Conductors and Devices	183500	0	0				0	5,888	
Underground Conduit	184000	0	0				0	74	
Underground Conductors and Devices	184500	0	0				0	1,351	
Line Transformers Overhead	185000	0	0				0	24,676	
Services Overhead	185500	0	0				0	28,735	
Meters	186000	0	0				0	3,293	
Fit									
Distribution Station Equipment Nor	182000						688,929		
Substation Monitoring System(SCADA)									
Distribution Station Equipment	182000	0	0						
Poles, Towers and Fixtures	183000	1,559	0						
Overhead Conductors and Devices	183500	21,332	0						
Underground Conduit	184000	0	0						
Underground Conductors and Devices	184500	0	0						

Line Transformers Overhead	185000	0	0						
Services Overhead	185500	0	0						
Meters	186000	115,939	0						
Upgrade Station Metering, Transformers & Switchgear									
Distribution Station Equipment	182000	0	0	15,940		0		19,517	
Poles, Towers and Fixtures	183000	0	0	0		0		0	
Overhead Conductors and Devices	183500	0	0	0		0		0	
Underground Conduit	184000	0	0	0		0		0	
Underground Conductors and Devices	184500	0	0	0		0		0	
Line Transformers Overhead	185000	0	0	0		0		0	
Services Overhead	185500	0	0	0		0		0	
Meters	186000	0	0	0		10,308		108,698	
IFRS & COS Entries									
Distribution Station Equipment	182000	0	-89,310	0					
Poles, Towers and Fixtures	183000	0	113,067	-99,497					
Overhead Conductors and Devices	183500	0	186,447	-204,681					
Underground Conduit	184000	0	4,602	-4,269					
Underground Conductors and Devices	184500	0	147,190	-92,856					
Line Transformers Overhead	185000	0	50,310	-54,406					
Services Overhead	185500	0	111,117	-54,980					
Meters	186000	0	92,600	-8,535					
Station Grid Code Upgrade									
Distribution Station Equipment	182000	147,139	0				97,962		
Poles, Towers and Fixtures	183000	1,505	0						
Overhead Conductors and Devices	183500	3,277	0						
Underground Conduit	184000	450	0						
Underground Conductors and Devices	184500	7,743	0						
Line Transformers Overhead	185000	33,705	0						
Services Overhead	185500	5,034	0						
Meters	186000	4,118	0						
Stranded and Smart Metering									
Distribution Station Equipment	182000	0	0	0					
Poles, Towers and Fixtures	183000	0	0	0					
Overhead Conductors and Devices	183500	0	0	0					
Underground Conduit	184000	0	0	0					
Underground Conductors and Devices	184500	0	0	0					
Line Transformers Overhead	185000	0	0	0					
Services Overhead	185500	0	0	0					
Meters	186000	-443,031	0	3,452,097					
Annual OH Burden adjustment									
Distribution Station Equipment	182000	0	0	0	-4,218	-29	12,407	0	
Poles, Towers and Fixtures	183000	0	0	12,883	26,466	17,035	66,533	1,188	
Overhead Conductors and Devices	183500	0	0	11,781	22,056	17,382	146,253	1,165	
Underground Conduit	184000	0	0	1,673	3,273	1,466	1,011	62	
Underground Conductors and Devices	184500	0	0	3,644	17,629	3,163	15,954	577	
Line Transformers Overhead	185000	0	0	1,419	11,630	990	23,691	61,341	
Services Overhead	185500	0	0	9,234	35,545	21,866	52,817	321	
Meters	186000	0	0	684	1,534	-15	1,830	70,358	
Total Projects		-$84,160	$687,070	$3,508,123	$408,138	$308,049	$1,362,195	$413,903	$382,000

Contributed Capital		-6,030	-18,463						

General Plant		2011	2012	2013	2014	2015	2016	2017	2018
Land	186500								
Buildings and Fixtures	180800			8,091	39,432	40,949	7,144	19,406	35,000
Other Installations on Customer's Premise	186500								
Major Spare Parts Inventory	189999	-6,783	9,424						
Office Furniture and Equipment	191500	10,589	2,642	12,647	42,234	21,091	6,259	19,285	35,000
Computer Equipment Hardware	192000	45,385	9,258	82,496	2,446	179,867	35,314	10,796	
Computer Software	192500	89,765	-17,677	309,217	115,489	187,990	52,127	11,766	30,000
Esri ArcGIS Software	192500						354,685		
Transportation Equipment	193000	145,500	266,096		371,134	58,226	93,165		500,000
Stores Equipment	193500	-5,900	1,241		580	0		2,608	
Tools, Shop and Garage Equipment	194000	18,505	1,180	41,298	73,832	93,460	1,275	4,473	35,000
Measurement and Testing Equipment	194500	4,405	13,143			0			
Power Operated Equipment	195000	-11,000				0		2,724	
Communication Equipment	195500				545	20,845	763		
Miscellaneous Equipment	196000		17,197	26,266	17,556	17,800	100,662		
Load Management Controls Utility Prem	197500								
Sentinel Lighting Rental Units	198500								
Total Non-Projects		$290,467	$302,504	$480,015	$663,247	$620,228	$651,394	$71,057	$635,000
Contributed Capital									
Sub-Total General Plant		**290,467**	**302,504**	**480,015**	**663,247**	**620,228**	**651,394**	**71,057**	**635,000**

2-SEC-14

[Ex.2] Please explain any material variances between 2017 forecast and actual capital expenditures.

WPI Response:

a) The total gross capital expenditure budgeted for 2017 was $4. 3M vs the actual spending of $5,155,431. The variance from the total budgeted capital expense and total actual capital expenditure is $845,986, which is a 19.6% variance. The variance to the 2017 capital spend was mainly attributed to the capital investment program under the system renewal and system service categories.

<u>Poletrans Conversion Port Elgin</u>
The Poletran capital project spend was over by $51,712.00. This was attributed to additional labour hours and equipment required to address boring issues which created deficiencies that needed to be corrected before the cables could be installed.

<u>#6 Copper Replacement</u>
The capital expense for this project was over by $118,592.00. The variance was mainly attributed to additional cost required to address hard to reach poles in the rear lot of private property, the additional switching requirements to minimize the outage time to accommodate customers fed from a 3-phase transformer bank and delays due to weather conditions (rain).

<u>Decrepit Pole Replacement</u>
The capital expense for this project was over by $112,260.00. The variance was mainly attributed to additional distribution transformer cost included in the budget, and additional hours needed to accommodate switching for contractors to complete their work safely. Additional materials and equipment cost required to complete a small project in the town of Elmwood.

<u>Substation Upgrade</u>
The capital expense for this program was over by $281,851. This was mainly attributed to additional cost required to complete the Palmerston substation including the commissioning and energization of the backup transformer. The additional cost was required to repair the mobile substation and to replace the Walkerton MS5 substation transformer which was leaking transformer oil and posing an environmental threat to the community.

Metering

Westario's metering program came in over budget by $104,392. This was mainly attributed to replacing and resealing Primary Metering Equipment at 8 locations. In accordance with measurement Canada Standards and to be in compliance with OEB metering requirements.

2-SEC-15

[Ex.2, p.60-67] Please provide an excel version of tables 11-14.

WPI Response:

a) The Excel version of the requested information is filed along with these responses. (the file is entitled 2-SEC-15)

2-SEC-16

[Ex.p.120] Please explain how the Applicant prioritizes its test year capital work. If the Board requires reduction in the test year capital budget, please explain how the Applicant will determine which projects to cancel or defer.

WPI Response:

WPI investments in capital work have been very consistent over the past 5 years. The Asset group selected for capital investment is prioritized based on the aging of the asset, reliability of the asset and the cost of replacing the asset under emergency situations. WPI takes a proactive approach to making the right investments in its assets that are considered high risk and have a high financial impact under emergency situations. The asset groups the falls into this category are pole, distribution transformers, substations and any large cost assets. Should the board require any reduction in the test year capital budget, WPI would find it difficult to cut back on any capital program for the test year considering that these are largely critical investments in equipment which has reached or nearly reached an end of useful life. While WPI could, in theory, cut back on projects with relatively lesser reliability and cost risk such as projects within the categories of general plant, system service and system renewal (i.e., distribution transformer replacements, and Poletran conversion) and extend the replacement projection years over 5 years, WPI doesn’t believe this is a realistic or prudent proposition since delaying the replacement of critical assets reaching their end of life risks the reliability of the distribution network.

2-SEC-17

[Ex., p.129, 133. 144] With respect to pole testing:

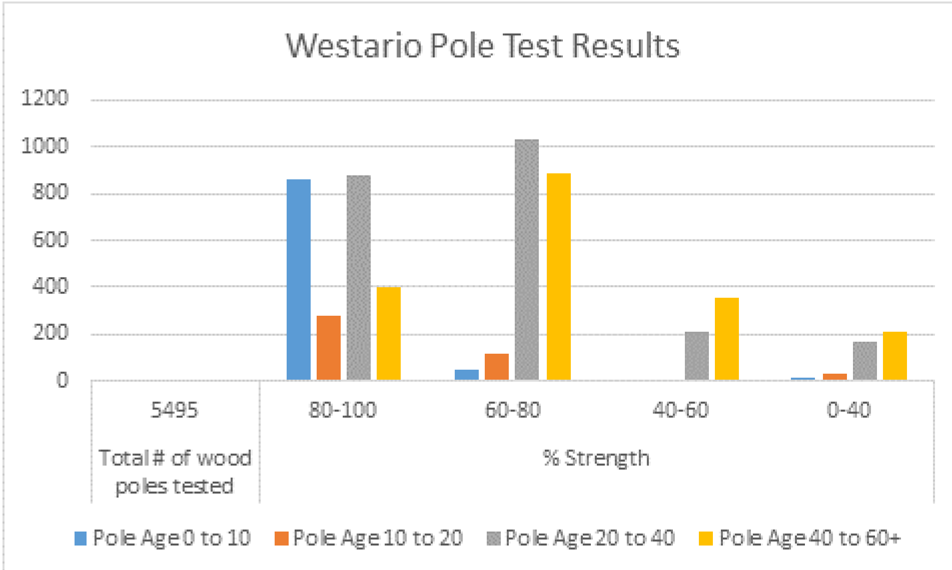
a. [p.129] The Applicant states it previously completed a pole testing program. When did the Applicant undertake this pole testing program, and please provide a summary of the results?
b. [p.133] Please explain how the Applicant's current pole testing results are incorporated into its asset condition assessment.
c. [p.133] Please provide a summary of the "early results" from the pole testing program.
d. [p.144] The Applicant states that it is "planning to engage contracted wood pole testing services." Please reconcile the statements on p.144 regarding pole testing that is underway.
e. [p.144] When will the Applicant be in a position to prepare "a prioritized list of poles requiring replacement and to defer the replacements of old poles that are still in good condition or where the impact of failure is low?"

WPI Response:

a) WPI began it pole testing program in 2016 and has completed 65% of its wood pole inventory in its distribution network. WPI is currently reviewing and complying the data into one database system.

b) WPI has not started incorporating the pole testing data into its asset condition assessment as this assessment has already been completed using the age of pole and physical condition. A revised asset condition assessment will incorporate the pole testing data in the future.

c) The following is a summary of the early testing results from the pole testing program completed in 2016-2017; the result indicates that 11% of the tested poles requires replacement within 10 years.



		Pole Age			
		0 to 10	10 to 20	20 to 40	40 to 60+
Total # of wood poles tested	5495				
% Strength	80-100	864	279	878	403
	60-80	48	113	1036	883
	40-60	2	4	210	354
	0-40	13	28	166	214

d) This paragraph on p.144 should indicate that Westario has already engaged a contractor for wood pole testing service 2016.

e) Westario Power has already started preparing a prioritized list of poles requiring replacement using the scientific testing results obtained from the contractor and the information in the pole condition assessment report to defer the replacements of old poles that are still in good condition or where the impact of failure is low. The process of prioritization of pole replacements has been applied to the 2018 decrepit pole replacement program.

2-SEC-18

[Ex.2, p.152, 169, 180, 188] Please complete the attached spreadsheet.

WPI Response:

a) The following table below provides a summary of the investment categories on Cos Pg. 169, 180 and 188. See Appendix G for further details.

2-SEC-18	2012 Budget	2012 Actuals	2013 Budget	2013 Actuals	2014 Budget	2014 Actuals	2015 Budget	2015 Actuals	2016 Budget	2016 Actuals	2017 Budget	2017 Actuals	2018 Forecast	2019 Forecast	2020 Forecast	2021 Forecast	2022 Forecast
Decrepit Pole Replacement Program																	
# of poles	100	61	100	75	100	39	100	64	100	112	100	95	100	100	100	150	150
Total cost ($)	573,418	490,800	571,220	534,153	479,884	289,729	428,573	476,180	469,439	985,870	785,700	843,287	799,800	789,866.00	799,586	1,153,628	1,167,236
Capital Poles Program																	
# of poles	50	40	50	39	50	21	50	43	50	41	50	36	50	50	50	50	50
Total cost ($)	472,558	268,206	173,790	241,160	298,288	113,970	228,091	276,202	199,00	277,122	304,300	313,373	307,000	325,481	328,883	332,285	335,687
Distribution Transformer Replacement Program																	
# of transformers	0	0	0	0	0	0	0	0	85	77	35	23	35	35	35	35	35
Total cost ($)	0	0	0	0	0	0	0		435,000	335,460	306,200	201,441	307,305	317,023	322,691	327,790	329,645
#6 Copper Primary Wire Replacements																	
# of meters		5160m	2100m	6600m	1135m	1760m	2750m	3680m	2250m	1600m	2820m	4520m	2160m	1200m	640m		
Total cost ($)	1,290,202	1,164,788	1,326,425	1,303,085	149,619	449,151	851,195	773,415	889,000	281,923	685,914	770,807	370,772	272,120	145,598	0	0
please complete the shaded area																	

2-SEC-19

[Ex.2, p.152, 180] Did the Applicant replace any distribution transformers between 2012 and 2014? If so, please explain where on Table 44 the costs of those replacements would be.

WPI Response:

a) WPI did not complete any distribution transformer replacements between 2012 and 2014 as the program only started in 2015.

2-SEC-20

[Ex.2, p.193] The Applicant states that the SCADA project began in 2016. Please provide a copy of the full SCADA project plan or business case which identifies all aspects of the projects, costs, timeline, and justification.

WPI Response:

a) Westario Power decided to complete a SCADA pilot projects on five (5) of it's substations (Palmerston, Lucknow, Kincardine MS1 and Kincardine MS2 and MS3, which were upgraded with new electronic relays, to determine the viability of SCADA technology on the distribution network and how it best benefits with Westario's plans for innovation and smart grid technology in the future. This was the first technology project that Westario had undertaken as far as the innovation of the distribution network. This pilot project was intended to be a test case and did not have a formal business case. The contractor at the time only provided Westario Power with a Proposal for the SCADA installation, including hardware, engineering four these four locations.

   With SCADA installed in five (5) substation now, Westario has benefited from the valuable information we can now retrieve from the field using SCADA, which was not readily available without SCADA. Westario Power believes the SCADA project is justifiable and beneficial to the continuous monitoring and management of the distribution network. We can now monitor the operating conditions of our power transformers at this Substation, and the loading on the transformer is now available remotely. The Voltage levels on the feeders from these substations are now available in real-time, and Westario can operate the Auto-reclosers remotely to provide hold-off conditions for the safe completion of line work for our crews and contractors.

2-SEC-21

[Ex.2, p.298] With respect the Asset Condition Report:

a. Please explain what specialized expertise Costello Utility Consultants is utilizing in undertaking the asset condition assessment.
b. [p.303] For each of the listed asset condition/health index score, please provide which assets score is based entirely on the assets age.
c. Please provide Costello's Utility Consultants' view on how the Applicant can improve its asset condition information data collection.

WPI Response:

a) WPI selected Costello Utility Consultant to undertake the asset condition assessment, because of their years of experience in the utility industry and the wide range knowledge and expertise related to Distribution Asset Assessment and System Planning,

- One of their engineers employed to this project is a Professional Engineer in the electrical power distribution sector since 1989 (29 years) and has worked with both consultants and LDCs for his entire career. His expertise covers transmission and distribution stations but is most strong in the areas of underground and overhead distribution design and system planning.
- Stephen Costello has extensive experience (25+ years) in stations, SCADA systems, as well as protection and control technologies. Most of the senior staff of this consultant held positions within LDCs and have been responsible for capital planning and performance evaluations.

b) All WPI assets were assessed on the age (remaining life as per the Typical Useful Life). No other reliable data was available to the consultant at the time of the asset condition assessment.

c) Costello's Utility consultant has advised WPI that other factors need to be included in future asset condition assessments. WPI has started scientific testing on its poles in and other assets; the results will now be included as part of the asset condition assessment.

2-SEC-22

[Ex. 2, p.650] Please revise Table 29 to include 2017 information.

WPI Response:

a) The following is the revised Table 29 to include 2017 information.

Table 1 – OEB App 2-G SAIFI SAIDI Results

Index	Includes outages caused by loss of supply						Excludes outages caused by loss of supply					
	2012	2013	2014	2015	2016	2017	2012	2013	2014	2015	2016	2017
SAIDI	4.785	9.454	6.390	6.914	5.720	2.09	0.826	2.644	3.394	0.879	2.159	1.315
SAIFI	1.431	1.526	1.703	2.296	1.638	0.711	0.337	0.654	0.828	0.369	0.588	0.365
	5 Year Historical Average											
SAIDI					6.702						2.031	
SAIFI					1.726						0.563	

2-SEC-23

[EB-2012-0176, 2.0-Staff-6, Ex.2, p.152] In EB-2012-0176, the Applicant provided a three-year capital expenditure forecast for 2014-2016 (see below). Please explain the variances between the forecast and the revised annual budget amounts for those years.

Investment Category	Project/Activity	Budget 2014	Actual 2014	Budget 2015	Actual 2015	Budget 2016	Actual 2016
System Renewal	Poletran	354,467	287,498	379,439	344,055	489,000	
	Substation Upgrade	1,641,605	1,809,644	848,371	815,176	1,824,000	1,457,532
	# 6 Copper Replacement	149,619	449,151	851,195	773,415	880,000	281,923
	Decrepit Pole Replacement	479,884	289,729	428,573	475,884	469,000	985,871
	Distribution Transformer Replacement				1,328	435,000	335,460
Total Expenditure		2,625,575	2,836,022	2,507,578	2,409,858	4,097,000	3,060,786
System Service	Scada					70,000	55,932
	Metering	435,123	299,478	105,705	235,882	53,000	254,808
	Cyme and GIS Integration						354,684
	Wholesale Metering (PME)			10,000	10,308		
	ESRI ArcGIS			361,825		210,000	
	Mobile Transformer Substation			978,000			688,929
	Hanover MS1 Reactor Installation						
	Station Grid Code Upgrade Non Compliant	288,657		198,000		100,000	97,962
	Stranded and Smart Metering						
	IFRS and 2013 COS entries						
	Annual OH Burden Adj		113,916		61,930		320,497
Total Expenditure		723,780	413,394	1,653,530	308,120	433,000	1,772,812
System Access	Capital Poles	298,288	113,970	228,091	276,202	199,000	277,122
	New O/H Service Connections					16,000	
	New U/G Service Connections	187,853	374,338	218,651	287,736	86,000	99,313
	Non-Demarcation Customers	40,000	11,639	42,000	14,487	13,000	32,139
	3 Phase Customers	230,857	97,994	215,840	105,763	223,000	173,013
	Single Phase		1,585				47,878
	New Lots Develop	120,951	209,439	115,399	204,099	79,000	106,223
	Relocates and Replacements						103,944

	Contributed Capital	-344,627	-394,428	-313,340	-360,794		-584,438
Total Expenditure		533,322	414,537	506,641	527,493	616,000	255,194
General Plant	Technology	15,000	118,480	268,600	388,702	55,000	210,994
	Vehicle Replacement	400,000	371,134	35,000	58,226	115,000	93,165
	Tools & Equipment	70,000	74,412	85,000	93,460	85,000	1,275
	Facilities Enhancements	35,000	39,429	46,000	40,949	20,000	7,906
	Office Furniture and Equipment	5,000	42,234	5,000	21,091	20,000	6,259
	Miscellaneous Equipment	30,000	17,556	30,000	17,800		100,662
	Change in Major Spare parts Inventory		-28,543		-113,560		
Total Expenditure		555,000	634,702	469,600	506,668	295,000	420,261
Total Expenditure		4,437,677	4,298,655	5,137,349	3,752,139	5,441,000	5,509,053

2014-2016 Capital Budget Forecast (MIFRS)

Project	**2014**	**2015**	**2016**
Capital #6 Primary Replacement	$ 1,213,000	$ 1,222,000	$ 1,342,000
Capital Poles - Priority Level 5	465,000	465,000	465,000
Capital Poles	387,000	387,000	387,000
Upgrade Station Metering	133,000	133,000	133,000
Station Grid Upgrade - 25 Stations	224,000	-	-
Port Elgin 5KV Cable & Poletran Replacement	612,000	612,000	612,000
Underground Butyl Rubber Replacement	213,000	216,000	220,000
New 3 Phase Customers	230,000	230,000	230,000
New low voltage services	169,000	169,000	169,000
Non-demarcation Customers	40,000	40,000	40,000
New Lots Developed	187,000	187,000	187,000
Metering	227,000	-	-
Buildings	9,000	9,000	9,000
Office Furniture & Equipment	2,000	2,000	2,000
Computer Hardware	29,000	29,000	29,000
Computer Sofware	45,000	45,000	45,000
Transportation Equipment	-	50,000	50,000
Tools, Shop & Garage Equipment	72,000	72,000	72,000
Contributed Capital	- 344,000	- 344,000	- 344,000
Total	**$ 3,913,000**	**$ 3,524,000**	**$ 3,648,000**

WPI Response:

a) WPI revised its capital projects budget under the four investment categories from the forecasted 2014-2016 Capital Budget in its 2012 Cost of Service application to better reflect the needs of our customers. WPI continues to monitor and manage its cost structure for capital investments to balance the cost effectiveness while ensuring the reliability and safety of the distribution system. WPI revised its budget taking into consideration its available resources to complete the capital work and the prioritization of critical projects in the most effective and manageable way giving serious consideration to projects with most risk to our network system and significant capital cost. Most of the projects have been distributed over a 5 - 10-year replacement projection to ensure WPI capital cost remains reasonable and manageable. One key capital investment that was included in the revised capital budget was the upgrade/rebuild of substations under the system renewal category. Eighteen of the twenty-seven substations are more than thirty (30) years old and had reached or will pass the Typical Useful Life (TUL) of 45 years for power transformers within the next 15 years. Actual expenditures for capital assets were greater each year from the 2013 Board Approved forecast due to extensive upgrades and replacements of WPI aging distribution substations which had reached the end of their life and were at risk of imminent failure.

Exhibit 2 – Rate Base (VECC)

2.0-VECC-3

Reference: Exhibit 2, page 32-

a) For the periods 2013 through 2016 please explain the variances between the total capital expenditures shown in Appendix 2-AB and the tables at Exhibit 2 pages 33 to 54.

WPI Response:

System Renewal

Westario Power forecasted five-year plans since it last cost of service application focused on critical capital investments with lasting benefits to our customers and the reliability and safety of our distribution network. Westario's capital assets investment significantly increased each year from the 2013 Board Approved to 2018 Test due to extensive upgrades and replacements of WPI aging distribution substations which had reached the end of their life and were at risk of imminent failure. Starting in 2013 after evaluating and prioritizing our most critical capital assets such as poles, and substations, Westario determined it was necessary and vital to increase capital investments in removing unsafe # 6 copper conductors in our network system which was creating frequent outages in our communities in Southampton and Port Elgin and an unsafe risk to our workers and the public. Westario determined it was necessary to replace decrepit poles in our network system that was at risk of falling inadvertently during storms, extending this power outages event longer. Westario Substations were at a critical point of failure due to a number of these substation degrading and some power transformers leaking and showing high levels of Dissolve gases (example CO & CO2).

In 2013 Westario capital investment budget was $4.9M; the planned capital work fell short of meeting its budgeted target due to the lack of resources and supervisor of the capital work and the slow implementation of the capital program. However, Westario's capital investment actuals for 2013 were $6.3 due to the inclusion in 2013 of the Stranded and Smart Meter investments; the Capital Expenditure for this category was $3,508,123.

Westario Capital investment in 2014 was approximately $4.3M.

In 2015, Westario Power continued to make these critical investments as forecasted in earlier years. Westario capital investment budget was $5.1M. However, the planned capital work falls short of meeting its budgeted target due to the lack of resource and supervision for the capital work; the actual capital expenditure for 2015 was $3.8M.

Westario Power continued the capital investment program in 2016 as planned with the expectation of accomplishing the work necessary to remain on target with its forecasted capital work over the next 5 –10 years. Westario was better able to complete most of the planned work with its available resources and a supplementary line contractor. The actual capital investment expenditure for 2016 was $5.4M, a little more than the capital investment budgeted of $5.38M

2.0-VECC-4

Reference: Exhibit 2, page 51

a) Please update the table showing 2017 forecast capital expenditures for (unaudited) actuals.

WPI Response:

a) Westario Power to update table showing 2017 forecast capital expenditures.

Investment Category	Project/Activity	Budget 2017	Actual 2017
System Renewal	Poletran	285,118	336,830
	Substation Upgrade	1,450,000	1,731,851
	# 6 Copper Replacement	652,215	770,807
	Decrepit Pole Replacement	772,820	885,080
	Distribution Transformer Replacement	306,200	201,441
Total Expenditure		3,466,353	3,926,009
System Service	Scada	70,000	79,285
	Metering	30,000	134,392
	Service Upgrades	0	65,214
	Annual OH Burden Adjustment	0	135,012
Total Expenditure		100,000	413,903
System Access	Capital Poles	304,300	313,373
	New O/H Service Connections	166,129	162,538
	New U/G Service Connections	124,663	138,575
	Non-Demarcation Customers	45,200	19,759
	New 3 Phase	0	93,822
	Non-Budgeted Work Orders	0	5,629
	New Single Phase	0	10,765
	Contributed Capital	0	(572,358)
Total Expenditure		640,292	172,103
General Plant	Technology	52,800	22,562
	Vehicle Replacement	10,000	
	Tools & Equipment	25,000	9,805
	Facilities Enhancements		19,406
	Office Furniture and Equipment	15,000	19,285
	Miscellaneous Equipment		
	Change in Major Spare parts Inventory		
Total Expenditure		102,800	71,058
Total Expenditure		4,309,445	4,583,073

2.0-VECC-5

Reference: Exhibit 2, pages 23-

a) Please identify where in the continuity schedules it shows the removal of the stranded meter values from the rate base of the Utility.

WPI Response:

a) The removal of stranded meters is shown through a combination of the adjustments column and the disposals column on the 2013 continuity schedule.

2.0-VECC-6

Reference: Exhibit 2, Section 2.5.2, DSP, page 116

a) Please provide the outages by cause code for each of the years 2012 through 2017.
b) WPI has undertaken a detailed analysis of outages due to equipment failure (see section 5.2.3.4 of DSP). Please explain how the DSP addresses the known issues with respect to equipment failure and how capital investments in the years 2018 through 2022 will be monitored to understand whether these investments are effectively addressing equipment failure issues.

WPI Response:

a) See table below

Cause Code	2012	2013	2014	2015	2016	2017	Total
0 - Unknown	3	3	6	2	4	0	18
1. Scheduled/Planned	39	30	31	25	22	21	168
2. Loss of Supply	16	8	12	1	5	1	43
3. Tree Contact	19	8	4	21	13	2	67
4. Lightning	0	3	5	3	2	0	13
5. Equipment Failure	56	67	64	64	39	22	312
6. Storm related	5	9	9	9	10	7	49
7. Fire	1	0	0	1	1	0	3
8. Human Element	0	0	1	0	1	0	2
9. Foreign Interference	3	7	11	22	8	6	57

b) WPI's Distribution System Plan (DSP) doesn't address every single known issue with respect to the list of equipment failures in (Chart # 4, Section 5.2.34 of DSP), however large equipment such as conductors, switches, and transformers are addressed in our capital investment programs under the system renewal category forecast for 2018 through 2022. Equipment failures such as U/G burn-off, connections, fuses are addressed under our Operation and Maintenance program. WPI has continued to see significantly improvements in its equipment failure events due to the significant investments made in conductors, poles, transformers, and switches replacement. WPI will continue to monitor these outage causes to determine if continued investments in this equipment is effectively addressing equipment failure issues over the next five years as per Westario DSP.

2.0-VECC-7

Reference: Exhibit 2, Section 2.5.2, DSP, page 86 (PDF 168)

a) Please provide a table which shows for each year 2012 through 2022:
   i. The number of poles replaced (or forecast to be replaced)
   ii. The dollar amount spent (or forecast) on pole replacement
   iii. The average cost per pole of pole replacement in each year.

WPI Response:

a) Actual Pole Replacement Data:

Data	2012	2013	2014	2015	2016	2017
Number of Poles Replaced	224	258	120	203	191	224
Average cost per Pole	4,279	6,844	5,582	5,743	6,054	6,777
Total dollar amount for Pole Replacement Expenditure	958,511	1,765,859	669,913	1,165,923	1,156,397	1,518,225

Forecast Pole Replacement Data:

Data	2018	2019	2020	2021	2022
Number of Poles Replaced	150	130	117	150	150
Average cost per Pole	7,892	7,570	7,485	6,690	6,762
Total dollar amount for Pole Replacement Expenditure	1,183,838	984,188	875,836	1,003,537	1,014,229

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Data	2012	2013	2014	2015	2016	2017
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Average cost per Pole	4,279	6,844	5,582	5,743	6,054	6,777
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Average cost per Pole	7,892	7,570	7,485	6,690	6,762
Total dollar amount for Pole Replacement Expenditure	1,183,838	984,188	875,836	1,003,537	1,014,229

2.0-VECC-8

Reference: Exhibit 2, Appendix D, Costello Asset Condition Assessment (ACA)

The Costello ACA contains the following statements at page 3 of their Report:

This report contains the findings of the asset condition assessment which was derived from available information provided by WPI. The information reviewed and analyzed included all data available from the current equipment databases and current employee knowledge. While there are significant gaps in the data available on many of the distribution assets, WPI is currently in the process of implementing an ESRI Geographical Information System which can be populated with up to date information to be used for a more accurate assessment.

Health indices were not developed for all Westario assets. This is due to the fact that many of WPI's assets are either not registered in their GIS database or do not contain enough valuable information to be assessed.

a) Please explain what steps WPI proposes in order to address the deficiencies in data collection identified in the ACA Report.
b) Using Table 1-1 please indicate any asset group that relied solely on age in order to determine their asset condition (health index).
c) For those assets which relied upon a combination of age and testing please provide a description of the testing undertaken and the percentage of the asset population subject to testing.
d) Please identify any asset groups for which utility employees identified asset condition and indicate whether the information provided was by way of written report or verbal interviews or both.
e) Please explain the " **" footnote on Table 1-1, specifically clarifying what *"values*" are "*not consistent with database totals of 9864 poles total*."

WPI Response:

a) Westario Power recognized deficiencies in asset data, other than age, required to completing a more comprehensive asset condition assessment. Westario Power is now looking at including other parameters such, diagnostic testing results, condition, material composition, etc. to calculate the health indices of its asset group in it next asset condition assessments in the future. Westario Power has started pole testing to determine the strength of the poles and have already started to comply the data in our database for future asset condition assessment and asset prioritization replacement program.

b) Westario Power asset condition assessment was completed based on the available asset age data. The asset age data was the most reliable information available to the consultant at the time to determine the asset condition (health index).

c) asset age information was the primary pieces of information used to complete the asset condition assessment. Westario power has completed dissolve gas analysis (DGA) on all of its substation power transformer.

d) Westario Power has identified assets conditions, such as station transformers, poles, and reclosers and other distribution transformers based on yearly inspection reports, employee knowledge, and maintenance information both through a written report and verbally.

e) What Westario Power meant by this statement (**" footnote on Table 1-1, specifically clarifying what "values" are "not consistent with database totals of 9864 poles total.") is that the total number of poles in the database of 9864 was not consistent with the actual number of pole in our distribution network at the time the asset condition assessment was being completed. Westario Power's total pole population has increased and was not reflected in the old database.

2.0-VECC-9

Reference: Exhibit 2, Appendix D, Costello Asset Condition Assessment (ACA), page 16

a) Please clarify if Table 3-3 Distribution Pole Health Index results are based solely on age.
b) Please explain what study Costello has done, or referenced which correlates pole age to asset condition.
c) Is the useful life used to determine asset condition the same as that used for depreciation purposes?

WPI Response:

a) Westario Power Distribution Pole Health index result was based solely on the available asset age data. The asset age was the most reliable information available to the consultant at the time to determine the asset condition (health index).

b) Costello has not conducted any studies on the correlation between age and condition. Given the lack of other useful data, the age of the pole, which coincides with the currently accepted capital depreciation schedules, was the only method available at the time of the assessment that could be used.

   Going forward, Westario will have a complete set of pole strength data to add to the condition assessment process. This assessment process also needs to include an assessment of the required strength of the pole for its given situation.

c) The Typical Useful Life values used in the asset condition assessment for Westario were consistent with those used in the currently accepted Capital Depreciation schedules used for accounting purposes and are consistent with those developed by the OEB.

At the outset, the only data Westario had for poles was age. Visual inspection reports were anecdotal at best and were not consistently recorded or managed at regular intervals. One of the first recommendations made to Westario by Costello was for the commencement of a Pole Testing program to collect information on a more scientific and repeatable basis. As soon as this information was available, Westario started applying it to the asset replacement decision-making process, and the new pole data would become a new factor for the next Asset Condition Assessment on poles.

2.0-VECC-10

Reference: DSP, Section 5.4.5.2.4, page 93

a) Please provide a copy of WPI's vehicle replacement policy
b) Please provide the inventory of vehicles (description/age) for 2015, 2016, 2017 (current with mileage) and proposed 2018.

WPI Response:

a) WPI does not have a written vehicle replacement policy but continues to use its past standard practice of replacing vehicles using the guidelines regarding the typical useful life periods used for utility assets in Table F-2 of the Kinectrics, Report No: K-418033-RA-001-R000 July 8, 2010. Other factors taken into consideration for WPI's vehicle replacement practices are physical vehicle condition, mileage, and overall maintenance cost to operate the vehicle. WPI determines whether a vehicle is ready for replacement when all these factors listed above are evaluated and it is determined that the vehicle has become cost prohibitive to repair and maintain. Typically, pick-up trucks are replaced every ten years, and large truck are replaced every fifteen years.

b) A spreadsheet of the inventory of vehicles for 2015 to 2017 is filed along with this response. (Placeholder for Active Fleet List)

Exhibit 2 – Rate Base (ENERGY PROBE)

2.0 IR #13

Reference: Exhibit 2 page 33

Can WPI please explain the $3.4 million expense related to stranded and smart metering.

WPI Response:

a) WPI had invested $3.4M in the procurement and deployment of smart meter since the enactment of regulations under the Electricity Act and the Ontario Energy Board Act with respect to smart meter activity and the O.Reg.425/06 concerning certain recovery of the stranded meter cost. The Board noted that the installation of smart meters means that the older meters will be retired earlier than planned and that the costs associated with the retired meters will not have been fully depreciated. Therefore, WPI would be at risk of not recovering the costs of these stranded meters. The Board accepted that the stranded meter cost would be recoverable. The cost for stranded meters was deferred by the Board for several reasons but noted that distributors could if they choose to bring forward applications for the recovery of the stranded meter cost in their rates. WPI’s smart meter capital investments, which included the residual value of the conventional meters stranded as a result of being replaced by smart meters, were included in WPI’s rate base for the first time in 2013 as part of the approval by the OEB of WPI’s smart meter implementation program costs
b) Approved in the last cost of the service application, costs related to the transition to smart meters

2.0 IR #14

Reference: Exhibit 2, page 60-63

Please recreate tables 11-13, but include actuals versus budgeted expenditures.

WPI Response:

a) Westario Power has included the actuals versus the budgeted expenditures for Tables 11-13 as shown in 2-SEC-13

2.0 IR #15

Reference: Exhibit 2, page 70

Will the Fair Hydro Plan have any impact on the 335—Power Supply Expenses category of costs? If so, please update Table 17.

WPI Response:

a) Please see response to 2-Staff-15

2.0 IR #16

Reference: Exhibit 2, page 73, Table 21

Please updated this table with the most recent RPP from the Ontario Energy Board that included reductions that are part of the Fair Hydro Plan. If the update results in a material difference in the rate application, please highlight that difference and provide any applicable tables and charts.

WPI Response:

a) Please see response to 2-Staff-15

2.0 IR #17

Reference: Exhibit 2, page 73

Please provide an updated to your load forecast if 10% or 50% of your residential customers in Kincardine switch to natural gas heating in 2021.

WPI Response:

a) The change in load forecast resulting from a change to natural gas in unknown. There is not enough information available to determine the number of customers in Kincardine using electricity to heat vs. other means (i.e. propane, wood stove), therefore no reasonable estimate can be determined.

2.0 IR #18

Reference: Exhibit 2, page 106, Table 16

The one service your customers say they are willing to pay more for each month is "increased tree trimming to improve reliability." Please highlight in your evidence where you have increased your tree-trimming budget in response to this request.

WPI Response:

a) WPI has a very effective vegetation management program which cycles the tree trimming program through an area every three year. WPI has not had to increase its budget for tree trimming but have reduced its tree trimming costs through competitive bidding and was still able to continue with its regular tree trimming program.

2.0 IR #19

Reference: Exhibit 2, page 101-108

a) Did WPI tell the customers being surveyed that the utility will be experiencing no load growth over the next five years?
b) Did Westario tell customers that it planned on increasing rates by more than 16% for residential customers in 2017 and more than 80% for larger volume customers?

WPI Response:

a) No information was given to survey respondents regarding load growth.

b) No information was given to survey respondents regarding rate changes as this information was not available at the time. Information regarding changes in rates was presented to Westario Customers in a Bill Insert when the amounts were determined. Customers were then invited to a community meeting where further information regarding rate impacts was presented, and a Westario staff member was available to answer questions from the public.

2.0 IR #20

Reference: Exhibit 2, page 112, Table 20

Please update this table with 2017 actuals.

WPI Response:

a) WPI has updated Table 20 as follows;

	2012	2013	2014	2015	2016	2017
General Information						
# of Customers	22,610	22,763	22,850	23,109	23,240	23,533
Total km of line	515	516	523	523.4	531.2	538.9
Total km of line Overhead	371	372	375	375.6	378.4	382.3
Total km of line Underground	144	144	148	148.2	152.8	156.6
Total km of 3 phase line	307	308	310	310.6	314	317.8
Total km of 2 phase line	1	1	1	1	2	2
Total km of 1 phase line	207	207	212	212	215	218.9
# of customers per km of line	43.9	44.1	43.7	44.2	43.8	43.7
Number of stations >= 50kV	0	0	0	0	0	0
Number of stations >= 27.6kV <50Kv	27	27	27	27	27	27
Transformers at stations >= 50kV	0	0	0	0	0	0
Transformers at stations >= 27.6kV <50Kv	27	27	28	28	29	29

System Peak Monthly Loading	2012	2013	2014	2015	2016	2017
Maximum Monthly Winter Peak Load (Kw) with embedded generation	83,916	83,335	86,152	94,884	75,257	74,293
Maximum Monthly Winter Peak Load (Kw) without embedded generation	N/A	N/A	85,470	93,386	76,774	76,014
Maximum Monthly Summer Peak Load (Kw) with embedded generation	71,136	72,566	68,204	69,124	69.686	66,349
Maximum Monthly Summer Peak Load (Kw) without embedded generation	N/A	N/A	67,522	67,626	71,203	68,069
Average Peak Load with embedded generation (Kw)	70,342	71,805	70,855	70,032	67,889	64,623
Average Peak Load without embedded generation	N/A	N/A	70,172	68,534	69,406	66,343
Average Load factor with embedded generation (Kw)	70	72	69.2	60.8	76.8	76
Average Load factor without embedded generation (Kw)	N/A	N/A	69.8	61.8	75.2	74.3

2.0 IR #21

Reference: Exhibit 2, page 115-116, Table 23-28

Please update these tables with 2017 actuals.

WPI Response:

a) Westario Power has updated Table 23-28 with 2017 actuals as follows,

Table #23: Westario SAIDI vs. Industry Average (Including Loss of Supply)

	2012	2013	2014	2015	2016	2017
Westario SAIDI	4.78	9.45	7.38	6.91	5.92	2.09
Industry Average	2.38	5.56	2.26	3.50	n/a	n/a
Comparable LDC Average	2.29	5.84	1.43	2.92	n/a	n/a

Table #24: Westario SAIFI vs. Industry Average (Including Loss of Supply)

	2012	2013	2014	2015	2016	2017
Westario SAIFI	1.42	1.52	1.9	2.29	1.64	0.71
Industry Average	1.95	2.37	1.82	1.82	n/a	n/a
Comparable LDC Average	2.25	2.62	1.37	1.93	n/a	n/a

Table #25: Westario CAIDI vs. Industry Average (Including Loss of Supply)

	2012	2013	2014	2015	2016	2017
Westario CAIDI	3.36	6.2	3.88	3.01	5.56	n/a
Industry Average	1.31	2.44	2.26	n/a	n/a	n/a
Comparable LDC Average	1.12	2.17	1.43	n/a	n/a	n/a

Table #26: Westario SAIDI vs. Industry Average (Excluding Loss of Supply)

	2012	2013	2014	2015	2016	2017
Westario SAIDI	0.83	2.64	4.76	0.87	2.41	1.31
Industry Average	1.39	3.33	1.45	1.59	n/a	n/a
Comparable LDC Average	1.06	1.86	0.69	1.35	n/a	n/a

Table #27: Westario SAIFI vs. Industry Average (Excluding Loss of Supply)

	2012	2013	2014	2015	2016	2017
Westario SAIFI	0.34	0.65	1.2	0.36	0.62	0.36
Industry Average	1.28	1.47	1.09	1.09	n/a	n/a
Comparable LDC Average	1.3	1.34	0.77	0.99	n/a	n/a

Table #28: Westario CAIDI vs. Industry Average (Excluding Loss of Supply)

	2012	2013	2014	2015	2016	2017
Westario CAIDI	2.45	4.04	3.98	2.37	3.85	n/a
Industry Average	1.32	2.17	n/a	n/a	n/a	n/a
Comparable LDC Average	1.32	1.5	n/a	n/a	n/a	n/a

2.0 IR #22

Reference: Exhibit 2, page 116, Chart 3

Preamble: Tree contact is the second biggest cause of interruptions.

a) Please provide a detailed response on the utility's plan to reduce tree contacts over the next five years
b) Has the utility performed a cost benefit analysis on whether it's cheaper to reduce outages through an increased tree trimming budget as opposed to the capital budget, as it is currently proposing?

WPI Response:

a) WPI has a very effective vegetation management system to manage tree growth around our distribution lines. Tree contact is the fourth cause of interruptions in our distribution network. (first is Equipment failure, followed by planned/scheduled outages, followed by loss of supply, and then Tree contact) WPI will continue to find areas of improvements to reduce the number of tree contacts through dialogue with customers and the municipalities.

b) WPI has not performed a cost/benefit analysis on reducing outages through tree trimming vs investing in capital. While increased spending on the tree trimming program could reduce the number of outages caused by trees a reduction in investment will cause increased outages as a result of equipment failure. WPI believes that both areas need to be addressed as they are both equally important.

2.0 IR #23

Reference: Exhibit 2, page 128

Please provide evidence, or highlight where it can be found in the application, that the pole mount transformers are degrading or failing more regularly.

WPI Response:

a) WPI has seen and recorded through its inspection and line patrol operations program the conditions of some of our pole mounted transformers. Westario has shown in Table 1-1 on Pg. 303, that 322 of its pole mount transformers will reach their end of useful life in 10 years. WPI has also shown in table #29 Pg. 117 that 21 distribution transformers failed between the years 2011 – 2016. Westario believes that as more of these degrading transformers reach their end of useful life and their condition continues to degrade, in addition to their connected loading, we will see more failures in pole mount transformers.

2.0 IR #24

Reference: Exhibit 2, page 133

a) Is there a cost difference between replacing or refurbishing a substation?
b) Has WPI completed a cost-benefit analysis on whether it's more cost effective to replace or refurbish a substation? If so, please provide that analysis.
c) If not, why has it not done so?

WPI Response:

a) Westario believes there is a difference in replacing and refurbishing a substation. The replacing of a substation requires an entirely brand-new equipment and apparatus of a substation, where as the refurbishing required rebuilding equipment which is salvageable.

b) WPI completes cost-benefit analysis on power transformer refurbishment/replacement for the substation. The table titled proposed yearly transformer fleet strategy at Ex. 2 Cos Pg. 476-478 provides a summary of some of the proposed cost associated with refurbishing some of our power transformers from 2016 -2018. WPI assesses each substation's needs prior to any project implementation when deciding between refurbishment/Replacement and proceeds with the option that will provide the best value to Westario and its customers.

c) N/A

2.0 IR #25

Reference: Exhibit 2, page 133

What percentage of the utility's poles are currently assessed at less than 60% of the strength of a new pole?

WPI Response:

a) Based on the total number of 5495 poles tested from 2016 – 2017, WPI has tested or assessed 11% of its utility poles at less than 60% of the strength of the new pole. See summary report below.

		Pole Age				% Tested
		0 to 10	10 to 20	20 to 40	40 to 60+	
Total # of wood poles tested	5495					100%
% Strength	80-100	864	279	878	403	44%
	60-80	48	113	1036	833	37%
	40-60	2	4	210	354	11%
	0-40	13	28	166	214	8%

2.0 IR #26

Reference: Exhibit 2, page 134

Please provide the number of capital pole installations on an annual basis between 2013 and 2017.

WPI Response:

a) The following table provides the number of capital pole installations on an annual basis between 2013 through 2017.

Actual Pole Replacement Data:

Data	2012	2013	2014	2015	2016	2017
Number of Pole installations	224	258	120	203	191	224

2.0 IR #27

Reference: Exhibit 2, page 137, Table 35

a) Is this an above average rate of failed smart meters?
b) Has WPI compared its level of failed smart meters to other utilities in Ontario?
c) IS WPI using the same smart meter has other utilities in Ontario?

WPI Response:

a) The information provided in table 35 are actual smart meter failure in the installation of smart meter technology at the time the DSP was completed. Westario Power does have an above average rate of meter failures.

b) WPI has compared its level of failed smart meters to other utilities in Ontario and found that its failure rate is relatively higher than other utilities.

c) WPI is using the same smart meters as some other utilities in Ontario.

2.0 IR #28

Reference: Exhibit 2, page 154, Table 46

Please update this chart with 2017 actuals.

WPI Response:

a) The following updated table 46 shows the 2017 actuals.

	2017		
	Plan	Actual	Variance
Category	$		%
System Renewal	3,466,354	3,926,010	13.3%
System Service	100,000	413,903	313.9%
System Access	640,292	172,104	-73.1%
General Plant	102,800	71,057	-30.9%
Total	4,309,446	4,583,073	6.3%
System OM&A	5,676,836	6,223,493	9.6%

2

2.0 IR #29

Please refile Appendices 2-AA and 2-AB using 2017 actuals.

WPI Response:

a) Refer to 2-SEC-13 For appendix 2-AA
b) Appendix 2-AB

	2017	2017
	Actual	Planned
Category	$	$
System Access	744,462	980,834
System Renewal	3,926,010	3,466,354
System Service	413,903	100,000
General Plant	71,057	102,800
Total	5,155,432	4,649,987
Contributed Capital	-572,358	-340,541
Net Capital	4,583,074	4,309,446
System O&M	2,299,663	1,980,836

Appendix G – 2-SEC-18 Summary of the Investment Categories

2-SEC-18

	2012 Budget	2012 Actuals	2013 Budget	2013 Actuals	2014 Budget	2014 Actuals	2015 Budget	2015 Actuals	2016 Budget	2016 Actuals	2017 Budget	2017 Actuals	2018 Forecast	2019 Forecast	2020 Forecast	2021 Forecast	2022 Forecast
Decrepit Pole Replacement Program																	
# of poles	100	61	100	75	100	39	100	64	100	112	100	95	100	100	100	150	150
Total cost ($)	573,418	490,800	571,220	534,153	479,884	289,729	428,573	476,180	469,439	985,870	785,700	843,287	799,800	789,866.00	799,586	1,153,628	1,167,236
Capital Poles Program																	
# of poles	50	40	50	39	50	21	50	43	50	41	50	36	50	50	50	50	50
Total cost ($)	472,558	268,206	173,790	241,160	298,288	113,970	228,091	276,202	199,00	277,122	304,300	313,373	307,000	325,481	328,883	332,285	335,687
Distribution Transformer Replacement Program																	
# of transformers	0	0	0	0	0	0	0	0	85	77	35	23	35	35	35	35	35
Total cost ($)	0	0	0	0	0	0	0		435,000	335,460	306,200	201,441	307,305	317,023	322,691	327,790	329,645
#6 Copper Primary Wire Replacements																	
# of meters		5160m	2100m	6600m	1135m	1760m	2750m	3680m	2250m	1600m	2820m	4520m	2160m	1200m	640m		
Total cost ($)	1,290,202	1,164,788	1,326,425	1,303,085	149,619	449,151	851,195	773,415	889,000	281,923	685,914	770,807	370,772	272,120	145,598	0	0

please complete the shaded area

Appendix H – 2-Staff-20 Winter Peak Load Forecast

Load Forecast Template

Customer Name: Westario Power Inc. (Distribution)
Region Name: Greater Bruce / Huron

Notes:

1	Enter data for the transformer stations supplying your LDC and if there is a missing transformer station please add it to the current list
2	For LDCs directly connected to the transmission facilities, load forecasts should factor in the load forecasts of any embedded distributor. Include a list of all embedded distributors
3	For LDCs that are embedded in another distributor's system, **DO NOT** include your embedded load in forecasts submitted to the transmitter; instead, submit the embedded load forecasts to the host distributor for inclusion in their submission to the transmitter.
4	Provide coincident load forecast aggregated for all your feeders at the DESN level.
5	For Historical Data, LDCs are to provide the Net Load, i.e. Gross Peak Load minus any EXISTING Conservation & Demand Management (CDM) and Distributed Generation (DG), available during the time of peak demand.
6	For Forecasted Data, LDCs are to only provide the Gross Peak Load (which is the Forecasted Load from their Historical Net Load). IESO will provide Forecasted DG and CDM.
7	Provide load forecast in MWs and include power factor assumptions.
8	List all assumptions made in preparing this load forecast.

Transformer Station Name	DESN ID (e.g. T1/T2)	Bus ID (e.g. BY)	TS Feeder	Distribution Station Name	DS Feeder	Local Distribution Company (LDC)	Communities Served by LDC	Customer Data (MW)	Winter Peak Load													Power Factor
									Historical Data (MW)			Near Term Forecast (MW)					Medium Term Forecast (MW)					
									2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
Douglas Point TS	*T3/T4*	*DJ*	*M1*			*Westario Power Inc.*	*Southampton*	Gross Peak Forecast				6.74	6.78	6.82	6.87	6.91	6.96	7.02	7.07	7.13	7.19	97%
								Net Load	6.6	6.81	6.69											97%
Douglas Point TS	*T3/T4*	*DJ*	*M4*			*Westario Power Inc.*	*Kincardine*	Gross Peak Forecast				19.06	19.86	20.68	21.54	22.44	23.38	24.35	25.37	26.42	27.52	95%
								Net Load	16.1	17.19	18.06											97%
Douglas Point TS	*T3/T4*	*DJ*	*M8*			*Westario Power Inc.*	*Port Elgin*	Gross Peak Forecast				12.88	12.61	12.35	12.1	11.85	11.6	11.37	11.13	10.9	10.68	97%
								Net Load	14.62	15.25	13.58											97%
Hanover TS	*T1/T2*	*BY*	*M1*			*Westario Power Inc.*	*Hanover*	Gross Peak Forecast				14.85	14.84	14.82	14.8	14.78	14.77	14.75	14.73	14.72	14.7	95%
								Net Load	13.95	14.1	14.39											95%
Hanover TS	*T1/T2*	*BY*	*M2*	*Mildmay DS*	*F2*	*Westario Power Inc.*	*Mildmay*	Gross Peak Forecast				1.81	1.82	1.82	1.82	1.83	1.83	1.83	1.84	1.84	1.84	97%
								Net Load	1.9	2.24	1.82											97%
Hanover TS	*T1/T2*	*BY*	*M3*			*Westario Power Inc.*	*Walkerton*	Gross Peak Forecast				10.37	10.17	9.97	9.78	9.59	9.41	9.23	9.05	8.88	8.71	91%
								Net Load	10.41	10.91	10.55											91%
Hanover TS	*T1/T2*	*BY*	*M4*	*Pearl Lake DS*	*F1*	*Westario Power Inc.*	*Elmwood*	Gross Peak Forecast				0.56	0.58	0.6	0.62	0.64	0.66	0.68	0.7	0.73	0.75	97%
								Net Load	0.52	0.71	0.55											97%
Hanover TS	*T1/T2*	*BY*	*M5*	*Neustadt DS*	*F1*	*Westario Power Inc.*	*Neustadt*	Gross Peak Forecast				1.21	1.29	1.38	1.47	1.57	1.68	1.79	1.91	2.04	2.18	97%
								Net Load	1.17	1.03	1.13											97%
Palmerston TS	*T1/T2/T3*	*BYJ*	*M4*			*Westario Power Inc.*	*Harriston*	Gross Peak Forecast				3.28	3.37	3.47	3.56	3.66	3.77	3.87	3.98	4.1	4.21	93%
								Net Load	3.2	2.9	3.19											93%
Palmerston TS	*T1/T2/T3*	*BYJ*	*M4*			*Westario Power Inc.*	*Palmerston*	Gross Peak Forecast				8.97	9.33	9.71	10.11	10.52	10.95	11.39	11.86	12.34	12.84	93%
								Net Load	8.04	8.28	8.37											93%
Palmerston TS	*T1/T2/T3*	*BYJ*	*M4*	*Harriston DS #2*	*F3*	*Westario Power Inc.*	*Clifford*	Gross Peak Forecast				1.28	1.26	1.24	1.32	1.19	1.17	1.15	1.15	1.15	1.14	97%
								Net Load	1.54	1.38	1.31											97%
Wingham TS	*T1/T2*	*BY*	*M5*			*Westario Power Inc.*	*Lucknow*	Gross Peak Forecast				2.5	2.67	2.84	3.02	3.22	3.42	3.65	3.88	4.13	4.4	97%
								Net Load	2.13	2.17	2.35											97%
Wingham TS	*T1/T2*	*BY*	*M5*			*Westario Power Inc.*	*Wingham*	Gross Peak Forecast				5.52	5.64	5.78	5.91	6.05	6.19	6.33	6.48	6.63	6.79	95%
								Net Load	5.56	5.35	5.37											95%
Wingham TS	*T1/T2*	*BY*	*M5*			*Westario Power Inc.*	*Teeswater*	Gross Peak Forecast				2.13	2.27	2.42	2.58	2.76	2.94	3.13	3.34	3.56	3.8	97%
								Net Load	1.56	1.64	2											97%
Wingham TS	*T1/T2*	*BY*	*M5*	*Ripley DS*	*F2*	*Westario Power Inc.*	*Ripley*	Gross Peak Forecast				1.62	1.67	1.73	1.78	1.84	1.9	1.96	2.02	2.09	2.15	99%
								Net Load	1.39	1.5	1.56											99%

Appendix I – 2-Staff-26 Inspection Standards

	WESTARIO POWER STANDARD OPERATING PROCEDURE

Distribution System Inspection Under Ontario Regulation 22/04		
	Document No.:	SR-002-07
	Page:	
	Issued:	Sept 30, 2007
	Issue No.:	2.0
	Revised:	July 11, 2008

1. Background:

Section 4 of *Ontario Regulation 22/04* (Electrical Distribution Safety) requires that Westario Power has processes in place to ensure that:

- All distribution systems and electrical installations, and;
- All electrical equipment forming part of such systems are designed, constructed, installed, protected, used, maintained, repaired, extended, connected and disconnected so as to reduce the probability of exposure to electrical safety hazards.

For overhead and underground systems, including secondary distribution lines, and other electrical installations operating at 750 volts or below that are not a direct part of a distribution system, Westario Power must ensure that:

- Equipment is maintained in proper operating condition;
- There is sufficient space to allow proper operation/maintenance;
- Energized conductors and live parts are adequately barriered;
- Grounding, where required, is effective;
- Structures are sufficiently strong to withstand loads imposed by equipment/weather loadings.

2. Purpose:

The intent of this document is to establish guidelines and processes when maintaining electrical equipment and lines for the overhead and underground electrical distribution systems, including substations and other electrical installations operating at 750 volts or below that are not direct parts of a distribution system, as outlined in Section 4 of *Regulation 22/04*.

3. Definitions:

Urban means areas with higher density and, by definition pose safety and reliability consequences to greater numbers of people. For the purpose of this work procedure, Westario Power has been designated an **URBAN** utility by the Ontario Energy Board.

Civil Infrastructure refers to structures such as duct and vault systems, ducts suspended from or attached to structures, flush-to-grade hand holes, poles and towers supporting distribution plant, and buildings that house substation equipment. It is intended that civil infrastructure will be inspected as part of the patrol of the distribution system or in the course of doing routine utility work. There may be instances where it will be extremely difficult to perform a visual inspection (e.g. where access is restricted due to energized equipment in an enclosure), and therefore the civil infrastructure associated with this would be inspected in the course of doing normal utility work, which would require the utility to de-energize the equipment.

Patrol means visual inspection of distribution system components to identify problems and hazards such as leaning poles, damaged equipment enclosures, and vandalism. This will include an inspection of related peripheral equipment, hardware, connections, all supports and attachments. This would also include an assessment of vegetation encroachment on right-of-ways.

Conductors and Cables – Underground: It is not possible to inspect underground cable directly; however, the system can be checked for exposed cable and or grade changes that may indicate that the cable has been brought too close to the surface. Patrol inspection of cable chambers is not required since a visual inspection will not reveal faults because the failure mechanism for underground cable (e.g. voids, water trees) is not visually detectable.

Vegetation refers to encroachment of vegetation upon distribution lines on any right-of-way; either public road allowance or private property. It is intended that vegetation will be inspected as part of the regular patrol of distribution equipment.

4. Scope:

In order to meet the requirements of Section 4 of Ontario Regulation 22/04, Westario Power has adopted an inspection program so as to identify system deficiencies, deteriorating or defective equipment, abnormal conditions, and safety hazards. The inspection program will ensure all parts of the distribution system will be inspected to identify deficiencies before these deficiencies lead to system failures that may:

a) Impair the safety of Westario Power employees or the public,
b) Impair system reliability and reduce the quality of service to our customers,
c) Seriously reduce the life expectancy of equipment and increase cost,
d) Adversely affect the environment.

This procedure includes an inspection program that will be part of the inspection for the overhead, underground situated in Westario Power's service areas. See Appendix A.

This procedure shall be read in conjunction with the relevant regulations under the Occupational Health & Safety Act, and the E&USA Rulebook, and all related Westario Power work procedures.

5. Priority Guide:

The inspectors should use their knowledge and experience of system operations when deciding if a specific field condition should be reported for further repair, refurbishment or replacement. High priority problems must be attended to immediately. Judgment should be exercised as to whether to repair medium and low priority problems while on site.

High Priority items are those that are likely to cause an outage, equipment damage, or pose a significant safety risks to workers or the public and significantly increase operational hazards.

Medium Priority items are those that, if left unsolved or unattended, could lead to a future problem (for example incorrect records, missing or incorrect nomenclature, rust, etc)

Low Priority items are those not likely to cause a power outage, or pose a safety risk. (For example: aesthetic issues, base levelling issues, etc.)

6. Guidelines for Conducting an Inspection:

a) Westario Power shall ensure that only persons qualified under the Occupation of Health and Safety Act are involved in inspection activities.
b) The inspection shall be a performed by a qualified person who has sufficient knowledge to identify defects and assess the severity of the defect that may require immediate attention, from those that can be repaired at a later date.
c) The inspector shall be properly trained to protect both himself, his coworker(s), and the public. Some inspections can expose the inspector to energized lines or high voltage circuits and equipment.
d) In cases where the inspector notices that a problem exists, or identifies a condition that warrants a more thorough or rigorous inspection, the inspector shall escalate the concern to the Supervisor.

6.1 Overhead and Underground Inspections:

6.1.1 Patrol or visual inspections may consist of walking and driving by equipment to identify obvious structural problems and hazards such as leaning power poles, damaged equipment enclosures, and vandalism.

6.1.2 For underground systems, riser poles should be checked as above, with a visual check of cable guards, terminators, and arrestors. It is not possible to inspect underground cable directly; however, the system can be checked for exposed cables.

6.1.3 The specifics of these inspections shall be recorded (Appendix E). Records of the inspection shall be held on-file for five years. The file shall contain the records of inspection activities carried-out during the year, identified issues, the associated work to remedy the issue, and all notes and comments on inspection issues not followed-up.

6.1.4 A contract inspection service may use its own internally developed forms. Before these are accepted by Westario Power for use in our inspection practice, these forms shall be reviewed by Westario Power for suitability and adherence to this standard. A contractor granted leave to use its own form shall follow all record-keeping practices of this standard.

6.1.5 Appendix C provides a list of requirements to be expected for a *typical* distribution line patrol inspection in terms of the types of defects that may be visually detected.

6.1.6 As shown in Appendix B, inspection cycles are categorized by the following major distribution facilities:

- Distribution Transformers,
- Conductors and cables,
- Vegetation,
- Poles and guying,
- Civil infrastructure.

For each of these facilities, Westario Power shall further distinguish between overhead facilities, underground facilities and the facilities' locations.

6.1.7 Westario Power may determine that more frequent inspections may be required due to local or relative importance to overall system reliability of a particular piece of equipment, or portion of the distribution system.

6.1.8 It is intended that Westario Power will perform the inspection of approximately one-third of the system in each year. Westario Power has been designated by the Ontario Energy Board as an **urban utility**.

6.1.9 In all cases, Westario Power is responsible to ensure that appropriate follow-up and corrective action is taken regarding problems identified during an inspection.

6.1.10 Before any switching is performed, a complete visual check of the physical appearance of the overhead or underground equipment shall be completed for possible mechanical or electrical hazards. The equipment may have to be isolated and de-energized following safe work procedures prior to an attempt at an inspection of the apparatus. Once isolation is established, proper de-energization work practices must be followed.

6.1.11 The maintenance activities shall only be carried out by qualified personnel.

6.1.12 When maintenance services are contracted, a review of the Maintenance Contractor's health and safety procedures and reputation shall be considered with the same attention to detail as the determination of quality of work and delivery capabilities.

6.1.13 Contractors must be made aware of Westario Power's Health and Safety Procedures to effectively control the risk of accidents and incidents.

6.1.14 The Manager of System Reliability shall designate a Contract Administrator to be accountable in meeting the safety responsibilities with respect to selecting Maintenance Contractors, and managing and reviewing contract work to perform these tasks.

6.1.15 In the event of non-compliance with the required safety standards or policies, safety issues will be dealt with the contractor's supervisor or representative. It will be the responsibility of the Maintenance Contractor to address the issues with his/her employees prior to resuming work for Westario Power. If the matter continues to be unresolved, Westario Power will provide its concern in writing to the Maintenance Contractor.

6.1.16 Maintenance Contractors and their employees working on site shall wear appropriate personal protective equipment as set out by Westario Power while within the plant or areas where such protection is required.

7. Records:

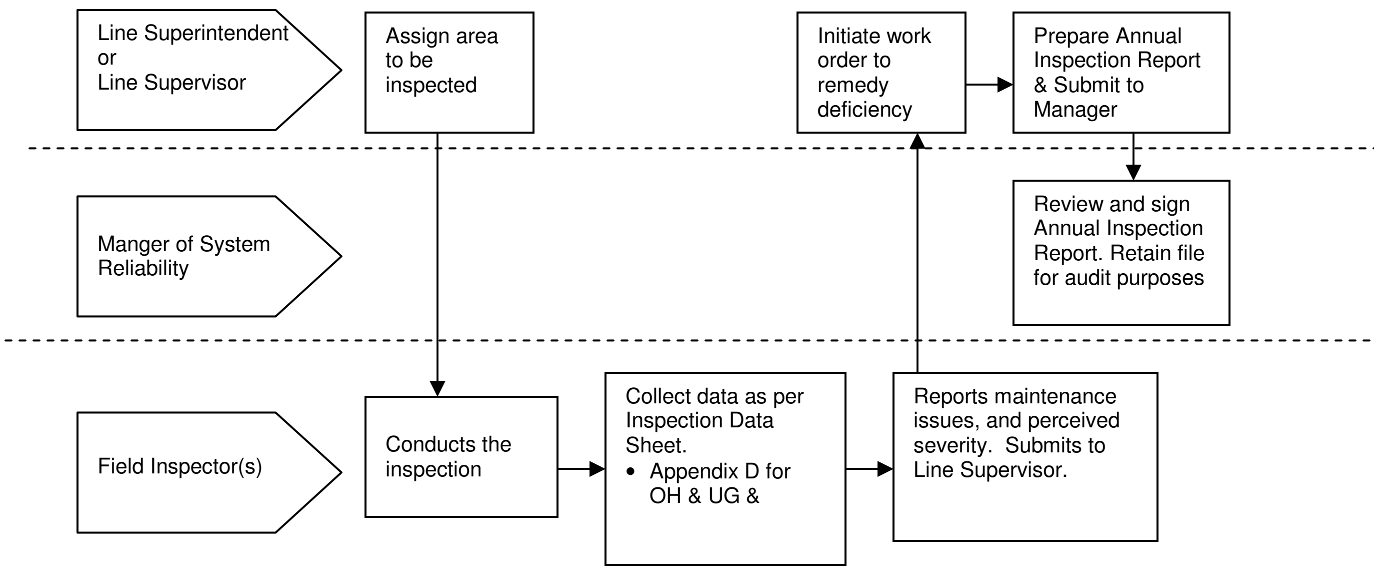
All records of inspection and maintenance shall be retained with the project files and survive as long as the substation does. These should be readily available to both the ESA and OEB upon request for a period of at least one year after the annual audit, following inspection and maintenance completion.

In January of every year, the Manage of System Reliability or his designate shall prepare an Annual Inspection Summary Report, as shown in Appendix D, for the previous year.

Defects, when found, shall be immediately reported to the Line Supervisor or the Line Superintendent if the inspector considers hazard to be severe. Otherwise, defects shall be reported to the Design Drafter. The Design Drafter shall be recorded and provided to the Management for review and remediation.

Appendix A

Distribution System Inspection Process:



Appendix B

System Inspection Cycle

Distribution Facility	**Inspection**
All Distribution Transformers	3 Years

Lines and Equipment	**Inspection**
Switching and Protective Devices	3 Years
Conductors and Cables -- Overhead	3 Years
Conductors and Cables -- Underground	3 Years
Vegetation	3 Years
Poles	3 Years
Civil Infrastructure	3 Years

Appendix C

Typical Defects That Can be Detected Found in an Inspection

Distribution Facilities	Types of Defect
Transformers and switching kiosks	• Paint condition and corrosion, • placement on pad or vault, • check for lock and penta bolt in place, • grading changes, • Access changes (shrubs, tree, etc.) • phase indicators and unit match operating map, • leaking oil, flashed or cracked insulators
Switching/Protective Devices: • Overhead • Underground • Pad mounted	• Bent, broken bushings and cut-outs, • Damaged lightning arresters, • Damaged enclosures, • Current and potential transformers. • Security and structural condition of enclosure
Conductors and Cables	• Low conductor clearance • Broken/frayed conductors or tie wires • Tree conditions, • exposed broken ground conductors, • broken strands, bird caging, • excessive or inadequate sag, • Insulation fraying on secondary especially open-wire.
Poles and Structures	• Bent, cracked or broken poles, • excessive surface wear or scaling, • loose, split or broken cross arms and brackets, • Woodpecker or insect damage, bird nest, • loose or unattached guy wires or stubs, • guy strain insulators pulled apart or broken, • guy guards out of position or missing, • indications of burning or scorching
Hardware and attachments	• Loose or missing hardware, • Insulators detached from pins, • Conductors unattached form insulators, • Tie wires unravelled, • ground wire broken or removed
Equipment Installation (includes transformers)	• Contamination/discoloration of bushings, evidence of bushing flashover, • oil leaks, • rust, • Ground lead attachments, ground wires on arrestors unattached, • bird or animal nests, • Vines or bush growth interference. • Accessibility compromised.
Vegetation and Right of Way	• Leaning or broken “danger” trees, • Growth into line of “climbing” trees, • unapproved/unsafe occupation

Appendix D
ANNUAL INSPECTION SUMMARY REPORT

For Year _____

Reviewed: ____________________________ Date: ______________________

System Reliability Manager

Part 1 Lines	Distribution System Inspection Target (number or percent)	Distribution System Actually Inspected (number or percent)	Reason Patrol was not Completed	Date Patrol will be Completed
Overhead Plant				
Transformers				
Switching & Protective Devices				
Conductors				
Vegetation				
Poles				
Underground Plant				
Transformers				
Switching & Protective Devices				
Cables				
Vegetation				
Civil Infrastructure				

If a cell is blank it is because it was not a maintenance target for that year.

Appendix F
Field Inspection Sheet

TRANSFORMERS	☐ Pole-mount ➔		Pole Number			←☐ PoleTran		☐ Pad-mount
Location/Address								
Old Transformer Number				**New Transformer Number**				
KVA	**Phase** 1 or 3		**Impedance** %			**Year Manufactured**		
Serial Number				**Manufacturer**				
Nameplate HV				**Nameplate LV**				
Taps ☐ +5%	☐ +2.5%	☐ 0%	☐ -2.5%	☐ -5%	☐ None	☐ Other		Specify
Connection	☐ Wye-Wye		☐ Wye-Delta		☐ Delta-Wye		☐ Delta-Delta	
Internal CL Fuse	☐ Yes	☐ No	**Catalogue Number**					
External CL Fuse	☐ Yes	☐ No	**Catalogue Number**					
Internal LB switch	☐ Yes	☐ No	**Describe**					
Pad Transformers:	**Locks**	☐ Yes	☐ No	**Condition**				
	Hood	☐ Yes	☐ No	**Condition**				
Doors and Latches		☐ Yes	☐ No	**Condition**				Describe
Feeder	**Connected Voltage**			**Connected Phase** R W B				
LV Connection	☐ OH Bus	☐ UG	☐ One Customer					
Transformer Mounting	☐ Pole, direct	☐ Pole, X-Arm	☐ Platform	☐ Above Sec	☐ Below Sec	☐ Other		
Cutout Mounting	☐ C/A bracket	☐ X-Arm bracket	☐ Other					Specify
Cutout Type		☐ Unkn	**Cutout Rating**		V		A	☐ Unkn
Surge Arrester	☐ Yes	☐ No	**Arrester Rating**		V			☐ Unkn
Grounding	☐ Case Ground	☐ H2	☐ Neutral Spade/Strap		☐ None	☐ Other		Specify
Ground Wire	☐ Bonded to System Neutral		☐ Bonded to Ground Rod		☐ None	☐ Other		Specify
Safety Decals	☐ Yes	☐ No	**"No Shrubs" Decal**		☐ Yes	☐ Added	☐ No	
PCB Decals	☐ "Tested"	☐ "Non-PCB"	☐ "Contains PCB"		PPM	☐ None		
General Conditions And Comments								

Sketch of Secondary District

Indicate North. Show street names. Show Municipal Numbers.

Address	**Meter No**	**Address**	**Meter No**

If more space needed, use other side of sheet.

Checked By	Date

PRIMARY SWITCHING DEVICES	Pole No	Location	COMMENTS

Underground Devices

Device Type	☐ K-Bar 2-Way	☐ K-Bar 3-Way	☐ K-Bar 4-Way	☐ Vault	☐ Splice Box	
No of Circuits	☐ One	☐ Two	☐ Three	☐ Four		
Foundation Type	☐ Concrete	☐ Fiberglass/Plastic	☐ Other		Specify	

Circuit 1 Source	☐ R	☐ Elbow	☐ Term	☐Elbow Drain	☐Cable Grd	☐ Closed	☐Open/Parked	☐Open/Park/Grded	
Feeder	☐ W	☐ Elbow	☐ Term	☐Elbow Drain	☐Cable Grd	☐ Closed	☐Open/Parked	☐Open/Park/Grded	
Voltage	☐ B	☐ Elbow	☐ Term	☐Elbow Drain	☐Cable Grd	☐ Closed	☐Open/Parked	☐Open/Park/Grded	
Circuit 2	☐ R	☐ Elbow	☐ Term	☐Elbow Drain	☐Cable Grd	☐ Closed	☐Open/Parked	☐Open/Park/Grded	
Feeder	☐ W	☐ Elbow	☐ Term	☐Elbow Drain	☐Cable Grd	☐ Closed	☐Open/Parked	☐Open/Park/Grded	
Voltage	☐ B	☐ Elbow	☐ Term	☐Elbow Drain	☐Cable Grd	☐ Closed	☐Open/Parked	☐Open/Park/Grded	
Circuit 3	☐ R	☐ Elbow	☐ Term	☐Elbow Drain	☐Cable Grd	☐ Closed	☐Open/Parked	☐Open/Park/Grded	
Feeder	☐ W	☐ Elbow	☐ Term	☐Elbow Drain	☐Cable Grd	☐ Closed	☐Open/Parked	☐Open/Park/Grded	
Voltage	☐ B	☐ Elbow	☐ Term	☐Elbow Drain	☐Cable Grd	☐ Closed	☐Open/Parked	☐Open/Park/Grded	
Circuit 4 Alt Feed	☐ R	☐ Elbow	☐ Term	☐Elbow Drain	☐Cable Grd	☐ Closed	☐Open/Parked	☐Open/Park/Grded	
Feeder	☐ W	☐ Elbow	☐ Term	☐Elbow Drain	☐Cable Grd	☐ Closed	☐Open/Parked	☐Open/Park/Grded	
Voltage	☐ B	☐ Elbow	☐ Term	☐Elbow Drain	☐Cable Grd	☐ Closed	☐Open/Parked	☐Open/Park/Grded	
Surge Arresters	☐ Elbow Arresters		☐ Overhead Arresters		R W B				

Overhead Devices

Type of Switch	Switch Number	Feeder	Voltage	Ampacity	Phase	R W B	Gang-Op	Singles	
☐ LB Switch					1 or 3	R W B	☐		
☐ Solid blades					1 or 3	R W B		☐	
☐ LC/Jumpers					1 or 3	R W B		☐	
☐ MSO/opener					1 or 3	R W B		☐	
☐ Line Fuses					1 or 3	R W B		☐	

Checked By	Date

HV OVERHEAD PRIMARY & FRAMING

HV OVERHEAD PRIMARY & FRAMING	Pole No	Location	COMMENTS

CIRCUIT 1

CIRCUIT 1	Wire Size and Type			Specify ACSR/Al/Str Cu/Sol Cu			
Feeder No:	Insulation	☐ Bare	☐ Poly	☐ Aerial Spacer		Specify Voltage Rating	
Voltage:	No of Phases	R W B	☐ Other			Specify 'odd' phasing	
Framing:	☐ X-Arm	☐ Armless	Is this circuit underbuild?	☐ YES	☐ NO	Primary cable dip? ☐ YES ☐ NO	
Devices:	☐ LB Switch	☐ Solid blades	☐ LC/Jumpers	☐ MSO/opener	☐ Line Fuses	See switch device or primary cable dip data sheet	
	☐ Surge Arresters for Line Protection	☐ Qty per phase		specify	R W B		

CIRCUIT 2

CIRCUIT 2	Wire Size and Type			Specify ACSR/Al/Str Cu/Sol Cu			
Feeder No:	Insulation	☐ Bare	☐ Poly	☐ Aerial Spacer		Specify Voltage Rating	
Voltage:	No of Phases	R W B	☐ Other			Specify 'odd' phasing	
Framing:	☐ X-Arm	☐ Armless	Is this circuit underbuild?	☐ YES	☐ NO	Primary cable dip? ☐ YES ☐ NO	
Devices:	☐ LB Switch	☐ Solid blades	☐ LC/Jumpers	☐ MSO/opener	☐ Line Fuses	See primary cable dip data sheet	
	☐ Surge Arresters for Line Protection	☐ Qty per phase		specify	R W B		

CIRCUIT 3

CIRCUIT 3	Wire Size and Type			Specify ACSR/Al/Str Cu/Sol Cu			
Feeder No:	Insulation	☐ Bare	☐ Poly	☐ Aerial Spacer		Specify Voltage Rating	
Voltage:	No of Phases	R W B	☐ Other			Specify 'odd' phasing	
Framing:	☐ X-Arm	☐ Armless	Is this circuit underbuild?	☐ YES	☐ NO	Primary cable dip? ☐ YES ☐ NO	
Devices:	☐ LB Switch	☐ Solid blades	☐ LC/Jumpers	☐ MSO/opener	☐ Line Fuses	See primary cable dip data sheet	
	☐ Surge Arresters for Line Protection	☐ Qty per phase		specify	R W B		

LV OVERHEAD SECONDARY BUS — COMMENTS

CIRCUIT 1	Bus Wire	☐ Open	☐ Lashed	☐ Duplex	☐ Triplex	☐ Quad	
Fed From:	Insulation	☐ Bare	☐ Poly	☐ Rubber	☐ Insulated/Unknown type		
Voltage:	☐ 120V	☐ 120/240V	☐ 120/208V	☐ 240V Δ	☐ 347/600V	☐ 600V Δ	☐ Other

LV OVERHEAD SECONDARY BUS — COMMENTS

CIRCUIT 2	Bus Wire	☐ Open	☐ Lashed	☐ Duplex	☐ Triplex	☐ Quad	
Fed From:	Insulation	☐ Bare	☐ Poly	☐ Rubber	☐ Insulated/Unknown type		
Voltage:	☐ 120V	☐ 120/240V	☐ 120/208V	☐ 240V Δ	☐ 347/600V	☐ 600V Δ	☐ Other

LV OVERHEAD SECONDARY BUS — COMMENTS

CIRCUIT 3	Bus Wire	☐ Open	☐ Lashed	☐ Duplex	☐ Triplex	☐ Quad	
Fed From:	Insulation	☐ Bare	☐ Poly	☐ Rubber	☐ Insulated/Unknown type		
Voltage:	☐ 120V	☐ 120/240V	☐ 120/208V	☐ 240V Δ	☐ 347/600V	☐ 600V Δ	☐ Other

JOINT USE AND THIRD-PARTY ATTACHMENTS — COMMENTS

Joint Use Attachments	☐ HONI	☐ Telephone	☐ Cable TV	☐ Other	Specify	
Municipal Attachments	☐ Signs	☐ Banners	☐ Baskets	☐ Wreaths	☐ Traffic Signals	☐ Street Lights

POLES AND STRUCTURES — COMMENTS

TYPE	☐ Wood	☐Cement	☐ Steel	☐PoleTran	☐ Other	Specify
Ownership	☐WPI	☐HONI	☐Bell	☐Other	Brand Visible? ☐ YES ☐ NO	
	Height			Class		Year

Guys And Anchors — COMMENTS

Guys And Anchors	No of Strands	Attachments	☐Primary	☐ Secondary	☐Third Party	
Are third party guys attached to WPI Anchors?	☐ YES	☐ NO		Guy Guards	☐ YES	☐ NO
No of Anchors	Anchor offsets			Guy Insulators	☐ YES	☐ NO
Span Guys ☐ YES ☐ NO	To Pole			Storm Guys	☐ YES ☐ NO	Qty
Anchors	☐ PISA	☐ Rock	☐ Expansion	☐ Unknown	Storm Guy Insulators	☐ YES ☐ NO

Checked By	Date