



November 5, 2015

Ms. Kirstin Walli
Board Secretary
Ontario Energy Board
P.O. Box 2319
2300 Yonge Street, 27th Floor
Toronto, ON M4P 1E4

Dear Ms. Walli:

Re: **Hydro Ottawa Limited Custom Incentive Regulation ("Custom IR")
Application for 2016-2020 Electricity Distribution Rates and Charges –
Amendment to September 18, 2015 Settlement Proposal
Board File Number EB-2015-0004**

Pursuant to the Ontario Energy Board's (OEB) set out in paragraph 4 of Procedural Order No. 10, Hydro Ottawa is pleased to submit an amendment to its September 18, 2015 Settlement Proposal containing an agreement reached with the interveners on October 30, 2015 regarding the appropriate working capital allowance to be incorporated into Hydro Ottawa's 2016-2020 rates.

In addition, and further to the settlement reached with interveners, Hydro Ottawa herein provides revised workforms, schedules and rate orders with the updated rate base information that reflects the updated Working Capital Allowance calculated using the agreed-upon WCF for the years 2016 to 2020 as well as the revised Return on Equity using the OEB's deemed rates for. For ease of reference Hydro Ottawa also provides in the amendment to the September 18, 2015 Settlement Proposal updates to Tables 1 and 2 as originally provided on pages 10 and 11 respectively in the September 18, 2015 Settlement Proposal that set out the revised revenue requirement and bill impacts, respectively.

Thank you,

A handwritten signature in black ink, appearing to be "Geoff Simpson", written over a light blue horizontal line.

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EB-2015-0004 Intervenors

Hydro Ottawa Limited / Hydro Ottawa limitée

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

AND IN THE MATTER OF an application by Hydro Ottawa Limited for an order approving just and reasonable rates and other charges for electricity distribution to be effective January 1, 2016 and for each following year through to December 31, 2020.

**AMENDMENT TO THE SEPTEMBER 18, 2015
SETTLEMENT PROPOSAL**

FILED NOVEMBER 5, 2015

INTRODUCTION

On September 18, 2015, Hydro Ottawa Limited ("Hydro Ottawa") filed with the Ontario Energy Board ("OEB") a Settlement Proposal ("the September 18, 2015 Settlement Proposal") reached with interveners following settlement negotiations arising from Hydro Ottawa's Custom Incentive Rate-setting Application ("Custom IR" or the "Application") as filed under section 78 of the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, (Schedule B) for approval for changes to the rates charged for electricity distribution for a period of five years, to be effective January 1, 2016 through December 31, 2020. The OEB assigned File Number EB-2015-0004 to the Application.

The interveners who were parties to the September 18, 2015 Settlement Proposal (the "Intervenors") are:

- Consumers Council of Canada ("CCC");
- Energy Probe Research Foundation ("Energy Probe");
- School Energy Coalition ("SEC");
- Vulnerable Energy Consumers Coalition ("VECC")

On page 13 of the September 18, 2015 Settlement Proposal, Hydro Ottawa and the Intervenors (collectively, "the Parties") agreed that the Working Capital Allowance to be included in rate base for the 2016 to 2020 period would be determined after the Parties and the OEB review the results of a Lead/Lag study being conducted by Navigant Consulting. The Parties further agreed that:

"The results of this study will be subject to an a discovery process to be determined by the OEB and the new Working Capital Allowance for 2016-2020 will be determined by agreement between the Parties, or as determined by order of the OEB. For the purposes of determining rates resulting from this Settlement Proposal, Hydro Ottawa is using an interim working capital allowance of 7.5% as a placeholder. Once the results of the lead/lag study are reviewed and the Parties agree, or as the OEB determines the Working Capital Allowance to be reflected in rates, Hydro Ottawa will update all necessary workforms and appendices and incorporate the results in updated rates."

As a consequence of the outstanding Lead/Lag study, the Parties agreed to a partial settlement of Issue 3.1 ("Is the rate base component of the revenue requirement, including the working capital allowance, for 2016 – 2020 as set out in the Custom IR Application appropriate?").

Specifically, on page 31 of the September 18, 2015 Settlement Proposal, the Parties agreed that:

“[t]he rate base component of the revenue requirement for 2016-2020 (as set out in the Custom IR Application and amended as described in the Key Components section above) is appropriate. As noted above, Hydro Ottawa’s rate base will be updated to incorporate the results of Hydro Ottawa’s lead/lag study.”

In the result, certain aspects of Hydro Ottawa’s rate base component of its 2016-2020 revenue requirement were not finally settled within the September 18, 2015 Settlement Proposal. However, it was anticipated that these items would be finalized after the presentation and review of the pending Lead/Lag study.

The September 18, 2015 Settlement Proposal was presented to the OEB at the first day of the oral hearing in this proceeding, on September 30, 2015.

On October 29, 2015 the OEB released Procedural Order No. 10 wherein it directed Parties to provide a joint proposal on the appropriate Working Capital Allowance and all necessary documentation or to notify the OEB that no proposal had been reached, by November 5, 2015.

This Amendment to the September 18, 2015 Settlement Proposal, and the associated attachments, represents the joint agreement of the Parties on the outstanding Working Capital Allowance aspect of Issue 3.1 in this proceeding.

LEAD/LAG STUDY REVIEW

On October 20, 2015, Hydro Ottawa served via email a copy of its Lead/Lag study authored by Navigant Consulting on the Interveners and OEB staff. Interveners were provided the opportunity to ask interrogatories. On October 30, 2015 an agreement was reached. A copy of the Lead/Lag study is attached in Attachment 2 to this amendment to the September 18, 2015 Settlement Proposal for the OEB’s information and reference.

AGREEMENT

Having reviewed the Lead/Lag study, and having considered the comments of the OEB in its June 3, 2015 letter titled “Allowance for Working Capital for Electricity Distribution Rate Applications”, the Parties have agreed that Hydro Ottawa will use the following Working Capital Factors (“WCF”) for the years 2016 to 2020.

Table 1 – 2016-2020 Working Capital Factors

	2016	2017	2018	2019	2020
Navigant WCF (%)	8.04	8.04	8.08	8.13	8.09
Settled WCF (%)	7.89	7.89	7.92	7.55	7.52
Difference (%)	(0.15)	(0.15)	(0.16)	(0.58)	(0.57)

Hydro Ottawa arrived at these levels by using the following Collection Lag.

Table 2 – 2016-2020 Collection Lag (days)

	2016	2017	2018	2019	2020
Collection Lag (days)	25.45	25.45	25.45	24.00	24.00

Hydro Ottawa is not committing to achieving these specific collection lags but will commit to the use of the WCF outlined above for the purposes of its 2016-2020 CIR. Hydro Ottawa will make efforts across the spectrum of working capital factors to make the improvements to achieve the specific WCF values.

The Collection Lag as calculated by Navigant was 25.98 days (to be used in all years 2016-2020).

Hydro Ottawa has provided Intervenor with revised workforms and schedules with the updated rate base information that reflects the updated Working Capital Allowance calculated using the agreed-upon WCF for the years 2016 to 2020. These documents are provided in Attachment 1 to this Amendment to the September 18, 2015 Settlement Proposal. For ease of reference Hydro Ottawa is also providing an update to Tables 1 and 2 as originally provided on pages 10 and 11 respectively in the September 18, 2015 Settlement Proposal.

Table 3 – UPDATED Summary of 2016-2020 Revenue Requirement

Item (\$millions)	2016	2017	2018	2019	2020	Totals (16-20)
Original Settlement Revenue Requirement	\$175.3	\$182.3	\$190.8	\$198.5	\$202.9	\$949.9
Change	(\$0.2)	(\$0.2)	(\$0.2)	(\$0.5)	(\$0.6)	(\$1.8)
Amended Settlement Revenue Requirement	\$175.0	\$182.1	\$190.6	\$198.0	\$202.3	\$948.1
Deficiency over 2015 Rates	(\$5.1)	(\$12.6)	(\$20.6)	(\$27.4)	(\$31.1)	(\$96.7)
Yearly Change in Deficiency	(\$5.1)	(\$7.5)	(\$7.9)	(\$6.8)	(\$3.7)	(\$31.1)
Weighted Average Increase over 2015 rates	3.2%	7.9%	12.9%	17.1%	19.4%	12.1%
Weighted Average Change in Revenue Deficiency	3.2%	4.6%	4.6%	3.8%	2.0%	3.6%
New Regulator Assets for Items Taken out of Base Rates						
CCRA Payments ¹	\$0.2	\$0.6	\$0.9	\$1.3	\$1.7	\$4.7
Land for New Facilities ¹	\$0.0	\$0.4	\$1.0	\$1.2	\$1.2	\$3.9
Estimated Revenue Requirement for future Regulatory Assets	\$0.2	\$1.0	\$2.0	\$2.5	\$2.9	\$8.6

1. Numbers are estimates based on original budgeted amounts and timing.

Revenue Requirement Including New Regulatory Assets						
Final Revenue Requirement	\$175.3	\$183.1	\$192.6	\$200.5	\$205.2	\$956.7

Table 4 – UPDATED Summary of 2016-2020 Bill Impacts¹

Rates Summary Amended Settlement - November 5, 2015							
Rate Class		2015 Approved	2016 Proposed	2017 Proposed	2018 Proposed	2019 Proposed	2020 Proposed
Residential (800 kWh)	Distribution Charge	\$ 28.39	\$ 28.40	\$ 28.66	\$ 28.87	\$ 28.73	\$ 28.01
	Change in Distribution Charge		\$ 0.01	\$ 0.26	\$ 0.21	\$ 0.14	\$ 0.72
	% Distribution Increase		0.04%	0.92%	0.73%	-0.48%	-2.51%
	% Increase of Total Bill - No VA		-0.15%	0.19%	0.16%	-0.11%	-0.53%
	% Increase of Total Bill		-1.32%	1.37%	0.16%	-0.11%	-0.53%
Residential (232 kWh)	Distribution Charge	\$ 15.10	\$ 17.44	\$ 20.08	\$ 22.91	\$ 25.66	\$ 28.01
	Change in Distribution Charge		\$ 2.34	\$ 2.65	\$ 2.82	\$ 2.76	\$ 2.35
	% Distribution Increase		15.49%	15.17%	14.06%	12.04%	9.15%
	% Increase of Total Bill - No VA		4.89%	5.42%	5.50%	5.06%	4.12%
	% Increase of Total Bill		4.41%	5.90%	5.50%	5.06%	4.12%
General Service <50kW (2000 kWh)	Distribution Charge	\$ 58.72	\$ 60.43	\$ 63.27	\$ 66.17	\$ 68.57	\$ 69.87
	Change in Distribution Charge		\$ 1.71	\$ 2.84	\$ 2.90	\$ 2.40	\$ 1.30
	% Distribution Increase		2.91%	4.70%	4.58%	3.63%	1.90%
	% Increase of Total Bill - No VA		0.36%	0.88%	0.90%	0.73%	0.40%
	% Increase of Total Bill		-0.92%	2.19%	0.90%	0.73%	0.40%
General Service 50- 1,499 kWh (250 kW)	Distribution Charge	\$ 1,153.10	\$ 1,217.65	\$ 1,279.35	\$ 1,344.05	\$ 1,399.55	\$ 1,430.93
	Change in Distribution Charge		\$ 64.55	\$ 61.70	\$ 64.70	\$ 55.50	\$ 31.38
	% Distribution Increase		5.60%	5.07%	5.06%	4.13%	2.24%
	% Increase of Total Bill - No VA		0.19%	0.35%	0.37%	0.32%	0.18%
	% Increase of Total Bill		0.68%	-0.13%	0.37%	0.32%	0.18%
General Service 1,500- 4,999 kWh (2500 kW)	Distribution Charge	\$ 12,915.68	\$ 13,329.18	\$ 13,969.68	\$ 14,628.68	\$ 15,175.93	\$ 15,458.93
	Change in Distribution Charge		\$ 413.50	\$ 640.50	\$ 659.00	\$ 547.25	\$ 283.00
	% Distribution Increase		3.20%	4.81%	4.72%	3.74%	1.86%
	% Increase of Total Bill - No VA		-0.08%	0.36%	0.37%	0.31%	0.16%
	% Increase of Total Bill		0.24%	0.05%	0.37%	0.31%	0.16%
Large Use (7500kW)	Distribution Charge	\$ 40,078.07	\$ 41,287.82	\$ 43,077.32	\$ 44,947.07	\$ 46,537.07	\$ 47,403.32
	Change in Distribution Charge		\$ 1,209.75	\$ 1,789.50	\$ 1,869.75	\$ 1,590.00	\$ 866.25
	% Distribution Increase		3.02%	4.33%	4.34%	3.54%	1.86%
	% Increase of Total Bill - No VA		0.17%	0.33%	0.34%	0.29%	0.16%
	% Increase of Total Bill		0.28%	0.22%	0.34%	0.29%	0.16%
Sentinel Lighting (0.4 KW)	Distribution Charge	\$ 6.63	\$ 7.54	\$ 7.94	\$ 8.76	\$ 9.18	\$ 9.17
	Change in Distribution Charge		\$ 0.91	\$ 0.40	\$ 0.82	\$ 0.42	\$ 0.00
	% Distribution Increase		13.65%	5.31%	10.28%	4.82%	-0.04%
	% Increase of Total Bill - No VA		4.55%	1.95%	3.96%	1.95%	0.02%
	% Increase of Total Bill		3.48%	3.03%	3.95%	1.96%	-0.02%
Street Lighting (1 KW)	Distribution Charge	\$ 4.57	\$ 6.07	\$ 6.44	\$ 6.81	\$ 7.16	\$ 7.34
	Change in Distribution Charge		\$ 1.50	\$ 0.37	\$ 0.37	\$ 0.35	\$ 0.19
	% Distribution Increase		32.77%	6.08%	5.78%	5.10%	2.62%
	% Increase of Total Bill - No VA		5.60%	1.35%	1.34%	1.23%	0.66%
	% Increase of Total Bill		3.01%	3.91%	1.34%	1.23%	0.66%
Unmetered Scattered Load (470 kWh)	Distribution Charge	\$ 14.72	\$ 14.71	\$ 15.18	\$ 15.83	\$ 16.40	\$ 16.60
	Change in Distribution Charge		\$ -0.01	\$ 0.46	\$ 0.65	\$ 0.58	\$ 0.19
	% Distribution Increase		-0.07%	3.14%	4.30%	3.64%	1.18%
	% Increase of Total Bill - No VA		-0.19%	0.61%	0.86%	0.74%	0.25%
	% Increase of Total Bill		-1.93%	2.40%	0.85%	0.75%	0.25%

¹ During the review of Hydro Ottawa's EDDVAR Continuity Schedule a data entry error was found related to the over collection of Stranded Meters. The Stranded Meter over collection is recorded in Account 1555; this account is not included in the calculation of rate riders in the EDDVAR Continuity Schedule model. As part of Hydro Ottawa Original Evidence the regulatory liability in Account 1555 for 2014 and 2015 was included in the projected interest column of Account 1508, Sub Account Incremental Capital Charges. When updating the EDDVAR Continuity Schedule for the 2016 model, only the 2014 balance was included in the projected interest column of Account 1508 and it was shown as an asset. Hydro Ottawa has corrected the balance to be a regulatory liability including the over collection related to 2014 and 2015 (refund to customers). This correction impacts the Group 2 rate rider.

In addition, Hydro Ottawa has noted that the balance for Account 1592 is not included in the calculation of the rate riders as part of the EDDVAR Continuity Schedule. Hydro Ottawa has added the balance to the projected interest column of Account 1508, Sub Account Financial Assistance Payment, in order to clear the liability to rate payers. This correction impacts the Group 2 rate rider. A minor adjustment was also made to Account 1508, Sub Account Other, as projected interest was calculated on this account in error. This correction impacts the Group 2 rate rider and reduces the regulatory asset.

All of the above adjustments will result in funds being returned or less being collected from rate payers in 2016.

Please note in the rate summary provided as part of the Settlement Agreement the Deferral / Variance Accounts Balances (excluding Global Adj.) - NON-WMP rate rider was included in the line "% Increase of Total Bill - No VA". This has been corrected in the summary tables provided.

Attachment 1

The Schedules below incorporate the change in the Working Capital allowance as agreed to in this Amendment to the September 18, 2015 Settlement Proposal, as well as the revised ROE as directed by the Board in its October 15, 2015 Letter entitled “Cost of Capital Parameter Updates for 2016 Applications”. The ROE is being updated for 2016 to 2018, consistent with the agreement reached in the September 18, 2015 Settlement Proposal (page 19).

Schedule 1	Cost Allocation
Schedule 2	PILSs
Schedule 3	RRWFs
Schedule 4	EDDVAR
Schedule 5	Appendix 2OA
Schedule 6	Appendix 2-P
Schedule 7	Appendix 2-V
Schedule 8	Appendix 2-W
Schedule 9	Appendix 2-Z

Attachment 2

Navigant Consulting Lead/Lag Study



Working Capital Requirements of Hydro Ottawa's Electricity Distribution Business

Prepared for:



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Project No. 182730



October 20, 2015



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Section I: Executive Summary

Summary

This report provides the results of the working capital requirements of Hydro Ottawa's distribution business.

Performing a lead-lag study requires two key undertakings:

1. Developing an understanding of how the regulated distribution business operates in terms of products and services sold to customers/purchased from vendors, and the policies and procedures that govern such transactions; and,
2. Modeling such operations using data from a relevant period of time and a representative data set. It is important to ascertain and factor into the study whether (or not) there are known changes to existing business policies and procedures going forward. Where such changes are known and material, they should be factored into the study.

Results from the lead-lag study using data from July 2014 to June 2015 identify the following working capital amount in Table 1, below.

Table 1: Summary of Working Capital Requirements

Year	Percentage of OMA	Working Capital Requirement, including HST
2014/2015	8.17%	\$ 76,216,775
2016	8.04%	\$ 78,462,033
2017	8.04%	\$ 79,963,908
2018	8.08%	\$ 83,327,026
2019	8.13%	\$ 82,439,418
2020	8.09%	\$ 83,560,850

Table 2, below summarizes the detailed working capital requirements for the test year, considering known and measurable changes calculated in the study. Detailed working capital requirements for each subsequent year can be found in Section IV: Conclusions.

Table 2: Hydro Ottawa Distribution Working Capital Requirements (Test Year)

Description	Revenue Lag Days	Expense Lead Days	Net Lag Days	Working Capital Factor	Expenses	Working Capital Requirements
Cost of Power	60.12	34.91	25.21	6.91%	\$ 847,601,664	\$ 58,541,721
OM&A Expenses	60.12	18.94	41.18	11.28%	\$ 85,426,633	\$ 9,638,802
DRC	60.12	32.53	27.59	7.56%	\$ 35,714,869	\$ 2,699,174
PILS	60.12	3.75	56.37	15.44%	\$ 7,050,000	\$ 1,088,749
Interest	60.12	37.52	22.60	6.19%	\$ 17,662,951	\$ 1,093,712
Total					\$ 993,456,117	\$ 73,062,158
HST						\$ 3,154,618
Total - Including HST						\$ 76,216,775
Working Capital as a Percent of OM&A incl. Cost of Power						8.17%

Organization of the Report

Section II of the report discusses the lag times associated with Hydro Ottawa's collections of revenues. The section includes a description of the sources revenues and how an overall revenue lag is derived.

Section III presents the lead times associated with Hydro Ottawa's expenses. The section includes a description of the types of expenses incurred by Hydro Ottawa's distribution operations and how expenses are treated for the purposes of deriving an overall expenses lead.

Section IV presents a summary of the results from the study.

Section II: Revenue Lags

A distribution utility providing service to its customers generally derives its revenue from bills paid for service by its customers. A revenue lag represents the number of days from the date service is rendered by Hydro Ottawa until the date payments are received from customers and funds are available to Hydro Ottawa.

Interviews with Hydro Ottawa personnel indicate that its distribution business receives funds from the following funding streams:

1. Retail Customers; and,
2. Other Sources (revenues from miscellaneous service charges, and rentals).

Hydro Ottawa currently takes into account the Ontario Clean Energy Benefit (OCEB) when billing customers and is reimbursed for OCEB through the settlement processes with the Independent Electricity System Operator (IESO). The OCEB will cease December 31, 2015. OCEB was removed from retail revenues in this study to reflect this known and measurable change. Hydro Ottawa currently charges both residential and non-residential customers for the Debt Retirement Charge (DRC) and remits the DRC collected from customers to the Ontario Electricity Financial Corporation (OEFC). O.Reg 156/15 exempts residential customers from paying DRC on electricity consumed after December 31, 2015. DRC was removed from residential customers' retail revenues in this study to reflect this known and measurable change.

The lag times associated with the funding streams above and considering the known and measurable changes described were weighted and combined to calculate an overall revenue lag time as shown below. Detailed data tables are provided in Appendix B.

Table 3: Summary of Revenue Lag

Description	Revenues	Lag Days	Weighting	Weighted Lag
Retail Revenue	\$ 1,005,965,561	60.37	99.15%	59.86
Other Revenue	\$ 8,573,272	31.18	0.85%	0.26
Total	\$ 1,014,538,833		100.00%	60.12

Retail Revenue Lag

Retail Revenue lag consists of the following components:

1. Service Lag;
2. Billing Lag;
3. Collections Lag; and,
4. Payment Processing Lag.

The lag times for each of the above components, when added together, results in the Retail Revenue Lag for the purpose of calculating the working capital requirements for Hydro Ottawa's distribution business. The components are intended to represent a continuous process from the end date of the customer's previous billing cycle to the date in which the payment is available to Hydro Ottawa. Figure 1 illustrates the start and end point for each component of Hydro Ottawa's retail revenue lag.

Figure 1: Retail Revenue Lag

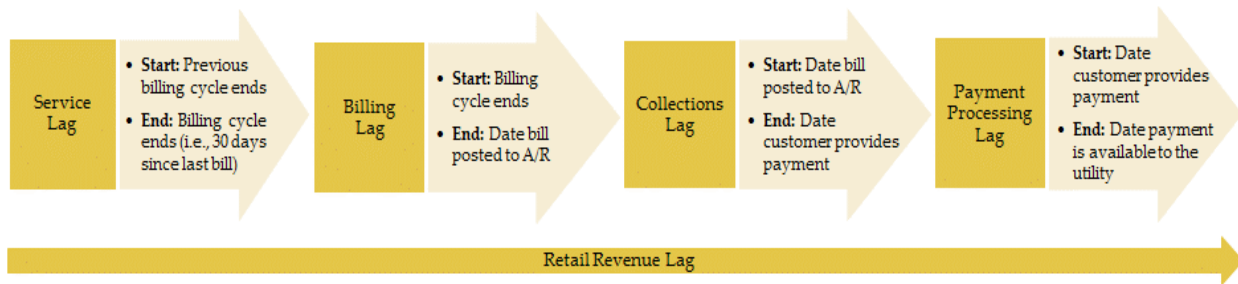


Table 4, below summarizes the total Retail Revenue Lag.

Table 4: Summary of Retail Revenue Lag

Description	Lag Days
Service Lag	15.21
Billing Lag	17.97
Collections Lag	25.98
Payment Processing Lag	1.21
Total	60.37

The estimation of each component of the Retail Revenue Lag is described below.

Service Lag

The Service Lag is the time from Hydro Ottawa's provision of electricity to a customer, to the time the customer's service period ends, which is typically defined as when the meter is read. All of Hydro Ottawa's customers have monthly billing cycles. Using the information provided, the Service Lag was estimated to be 15.21 days.

Billing Lag

The Billing Lag is the time period from when the customer's service period ends, which is typically defined as when the meter is read to the time that the customer's bill is posted to accounts receivable. Interviews with Hydro Ottawa staff and data provided indicated that Hydro Ottawa customers have an average billing lag of 17.97 days.

Collections Lag

The Collections Lag is the time period from when the bill is posted to accounts receivable, until the time when the customer provides a payment to Hydro Ottawa. The Collections Lag is measured by analyzing the receivables aging data provided by Hydro Ottawa. Hydro Ottawa's Collection lag was calculated to be 25.98 days for Hydro Ottawa's distribution operations.

Payment Processing Lag

The Payment Processing lag is the time period from when the customer provides a payment to Hydro Ottawa until such time as the funds associated with that payment are available to the company. The Payment Processing Lag is measured by analyzing the payment methods used by Hydro Ottawa



customers. Some examples of the payment methods used include credit card, pre-authorized payment and cash or cheque payments. Hydro Ottawa provided the processing time associated with each method of payment and the amount processed under each method of payment. Using the data provided by Hydro Ottawa a customer-weighted average payment processing lag of 1.21 days was determined for Hydro Ottawa's distribution operations.

Section III: Expense Leads

Expense Leads are defined as the time period between when a service is provided to Hydro Ottawa and when payment is remitted for that service. Typically services are provided in advance of payment which reduces the capital requirement of the company. Therefore, in conjunction with the calculation of the revenue lag, expense lead times were calculated for the following items:

1. Cost of Power;
2. OM&A Expenses;
3. Debt Retirement Charge (DRC);
4. Payments in Lieu of Taxes;
5. Interest Expenses; and,
6. Harmonized Sales Tax.

Cost of Power

For the purpose of the distribution lead-lag study, cost of power expenses were considered to consist of payments made by Hydro Ottawa to its vendors in the following categories:

1. Independent Electricity System Operator (IESO) Cost of Power Expenses;
2. Hydro One Cost of Power Expenses;
3. Payments to Embedded Generation Customers; and,
4. Payments to Retailers.

Expense lead times were calculated individually for each of the items listed above and then dollar-weighted to derive a composite expense lead time of 34.91 days for cost of power expenses.

Table 5: Summary of Cost of Power Expenses

Description	Amounts	Expense Lead Time	Weighting	Weighted Lead Time
IESO Cost of Power	\$ 761,002,237	33.12	89.78%	29.74
Hydro One Cost of Power	\$ 50,269,365	53.36	5.93%	3.16
Embedded Generation	\$ 26,465,340	41.08	3.12%	1.28
Payments to Retailers	\$ 9,864,722	62.26	1.16%	0.72
Total	\$ 847,601,664		100.00%	34.91

IESO Cost of Power Expenses

Hydro Ottawa purchases its power supply requirements on a monthly basis from the IESO and pays for such supplies on a schedule defined by the IESO's billing and settlement procedures. Taking the information on actual payments made by Hydro Ottawa from August 2014 to July 2015 related to cost of power expenses from July 2014 to June 2015, a dollar-weighted IESO Cost of Power expense lead time of 33.12 days was calculated. Table 6 below summarizes the components of the Cost of Power expense lead calculation.

Table 6: Summary of IESO Cost of Power Expenses

Delivery Period	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
Jul-14	8/19/2014	\$ 68,590,841	15.50	19.00	34.50	9.01%	3.11
Aug-14	9/17/2014	\$ 58,579,744	15.50	17.00	32.50	7.70%	2.50
Sep-14	10/17/2014	\$ 57,306,333	15.00	17.00	32.00	7.53%	2.41
Oct-14	11/19/2014	\$ 62,073,017	15.50	19.00	34.50	8.16%	2.81
Nov-14	12/16/2014	\$ 53,617,648	15.00	16.00	31.00	7.05%	2.18
Dec-14	1/19/2015	\$ 79,446,785	15.50	19.00	34.50	10.44%	3.60
Jan-15	2/18/2015	\$ 62,245,988	15.50	18.00	33.50	8.18%	2.74
Feb-15	3/17/2015	\$ 76,309,109	14.00	17.00	31.00	10.03%	3.11
Mar-15	4/20/2015	\$ 75,142,301	15.50	20.00	35.50	9.87%	3.51
Apr-15	5/19/2015	\$ 50,522,133	15.00	19.00	34.00	6.64%	2.26
May-15	6/16/2015	\$ 55,582,646	15.50	16.00	31.50	7.30%	2.30
Jun-15	7/17/2015	\$ 61,585,691	15.00	17.00	32.00	8.09%	2.59
Total		\$ 761,002,237				100.00%	33.12

Hydro One Cost of Power Expenses

Hydro Ottawa provides payment to Hydro One for Cost of Power expenses on a monthly basis and pays for such charges on a monthly basis. Based upon information on payments made by Hydro Ottawa from August 2014 to July 2015 related to cost of power expenses from June 2014 to June 2015, a dollar-weighted Hydro One Cost of Power expense lead time of 53.36 days was calculated. Table 7, below summarizes the components of the Hydro One Cost of Power expense lead calculation.

Table 7: Summary of Hydro One Cost of Power Expenses

Delivery Period	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
Jun-14	8/15/2014	\$ 3,892,630	17.00	38.00	55.00	7.74%	4.26
Jul-14	9/22/2014	\$ 3,705,295	15.50	46.00	61.50	7.37%	4.53
Aug-14	10/14/2014	\$ 3,944,827	16.50	36.00	52.50	7.85%	4.12
Sep-14	11/10/2014	\$ 3,494,637	14.50	35.00	49.50	6.95%	3.44
Oct-14	12/19/2014	\$ 4,573,530	16.00	43.00	59.00	9.10%	5.37
Nov-14	1/9/2015	\$ 4,834,315	15.00	35.00	50.00	9.62%	4.81
Dec-14	2/13/2015	\$ 4,411,058	17.00	37.00	54.00	8.77%	4.74
Jan-15	3/18/2015	\$ 4,673,244	15.00	41.00	56.00	9.30%	5.21
Feb-15	4/10/2015	\$ 4,808,792	16.50	32.00	48.50	9.57%	4.64
Mar-15	5/12/2015	\$ 3,667,770	15.50	34.00	49.50	7.30%	3.61
Apr-15	6/12/2015	\$ 4,091,519	14.50	37.00	51.50	8.14%	4.19
May-15	7/13/2015	\$ 4,171,746	15.50	38.00	53.50	8.30%	4.44
Total		\$ 50,269,365				100.00%	53.36

Payments to Embedded Generation Customers

Hydro Ottawa purchases power supply from Renewable Energy Standard Offer (RESOP), cogeneration and hydroelectric customers on a calendar month basis and Feed-in-Tariff (FIT) and micro Feed-in-Tariff (MFIT) customers on a monthly basis according to each customer's billing cycle. Hydro Ottawa provided transaction level data namely, invoice date, payment date, and payment amount. Using the data provided and the service and billing lag components from the retail revenue lag, a dollar-weighted expense lead time of 41.08 days was calculated.

Table 8: Summary of Embedded Generation Cost of Power Expenses

Description	Amounts	Expense Lead Time	Weighting	Weighted Lead Time
RESOP	\$ 7,306,922	45.13	27.61%	12.46
FIT	\$ 6,087,586	42.14	23.00%	9.69
MicroFit	\$ 3,320,301	34.95	12.55%	4.38
Other Generation	\$ 9,750,530	39.46	36.84%	14.54
Total	\$ 26,465,340		100.00%	41.08

Payments to Retailers

Hydro Ottawa remits payments to retailers for applicable revenues collected from customers on retailer billing. Note that payments can be positive or negative. Retailers are invoiced ten days after the retailer customer is billed. Using invoice and payment information for each retailer transaction from July 2014 to June 2015 and retail revenue lags determined from the revenue analysis, a dollar-weighted expense net lead time of 62.26 days was calculated.

OM&A Expenses

For the purpose of the distribution lead-lag study, OM&A expenses were considered to consist of payments made by Hydro Ottawa to its vendors in the following categories:

1. Payroll & Benefits;
2. Property Taxes;
3. Corporate Procurement Card; and,
4. Miscellaneous OM&A.

Expense lead times were calculated individually for each of the items listed above and then dollar-weighted to derive a composite expense lead time of 18.94 days for OM&A expenses.

Table 9: Summary of OM&A Expenses

Description	Amounts	Expense Lead Time	Weighting	Weighted Lead Time
Payroll & Benefits	\$ 41,547,394	22.02	48.64%	10.71
Property Taxes	\$ 2,153,768	(67.13)	2.52%	(1.69)
Corporate Procurement Card	\$ 1,379,773	29.74	1.62%	0.48
Miscellaneous OM&A	\$ 40,345,699	19.99	47.23%	9.44
Total	\$ 85,426,633		100.00%	18.94

Payroll & Benefits

The following items were considered to be expenses related to the Payroll & Benefits of Hydro Ottawa:

1. Payroll;
2. Withholdings including the Canada Pension Plan, Employment Insurance, and Income Tax withholdings;
3. Pension contributions;
4. Group Health, Dental, and Life Insurance related administrative fees and claims, and long-term disability;
5. Payments made by Hydro Ottawa for Employer Health Tax (EHT); and
6. Payments made by Hydro Ottawa for the Workplace Safety and Insurance Board (WSIB).

When all Payroll, Withholdings and Benefits were dollar-weighted using actual payment data, the weighted average expense lead time associated with Payroll & Benefits was determined to be 22.02 days as shown in Table 10, below. Additional detail can be found in Appendix B.

Table 10: Summary of Payroll & Benefits Expenses

Description	Amounts	Expense Lead Time	Weighting	Weighted Lead Time
Payroll	\$ 21,923,888	16.37	52.77%	8.64
Withholdings	\$ 9,933,689	25.20	23.91%	6.03
Pensions	\$ 6,652,464	44.94	16.01%	7.20
Group Life Insurance	\$ 111,591	(14.22)	0.27%	(0.04)
Group Health	\$ 998,017	(14.21)	2.40%	(0.34)
Group Dental	\$ 506,915	(14.21)	1.22%	(0.17)
Long-Term Disability	\$ 410,711	(14.21)	0.99%	(0.14)
EHT	\$ 658,400	30.24	1.58%	0.48
WSIB	\$ 319,419	45.52	0.77%	0.35
Employee Assistance Program	\$ 32,300	31.30	0.08%	0.02
Total	\$ 41,547,394		100.00%	22.02

Property Taxes

Hydro Ottawa remits property taxes to the Village of Casselman, Hydro One, the National Capital Commission, and City of Ottawa. Using payment dates from July 2014 to June 2015 and amounts associated with Hydro Ottawa's distribution business for calendar year 2014 and 2015, a dollar-weighted expense lead (-lag) time of negative 67.13 days was determined. Table 11, below summarizes the property tax expense lead calculation.

Table 11: Summary of Property Tax Expenses

Description	Amounts	Expense Lead Time	Weighting	Weighted Lead Time
Village of Casselman	\$ 1,571	67.99	0.07%	0.05
Hydro One	\$ 907	190.50	0.04%	0.08
National Capital Commission	\$ 2,573	85.50	0.12%	0.10
City of Ottawa	\$ 2,148,718	(67.52)	99.77%	(67.36)
Total	\$ 2,153,768		100.00%	(67.13)

Corporate Procurement Card

Procurement (or charge) cards are used by Hydro Ottawa for a variety of company related reasons including, and not limited to, purchases of materials in the field, incidental expenses, and to settle charges for travel and accommodation. Based on invoice and payment information provided by Hydro Ottawa, a dollar-weighted expense lead time of 29.74 days was determined. Table 12 below summarizes the components of the corporate procurement card expense lead calculation.

Table 12: Summary of Corporate Procurement Card Expenses

Delivery Period	Amounts	Total Lead Time	Weighting Factor %	Weighted Lead Time
Jul-14	\$ 83,786.37	29.27	6.07%	1.78
Aug-14	\$ 72,352.77	27.86	5.24%	1.46
Sep-14	\$ 108,425.34	29.47	7.86%	2.32
Oct-14	\$ 114,955.86	29.78	8.33%	2.48
Nov-14	\$ 132,607.18	28.90	9.61%	2.78
Dec-14	\$ 109,801.43	34.80	7.96%	2.77
Jan-15	\$ 116,486.72	30.04	8.44%	2.54
Feb-15	\$ 137,236.13	28.58	9.95%	2.84
Mar-15	\$ 138,573.27	29.67	10.04%	2.98
Apr-15	\$ 122,222.96	27.94	8.86%	2.48
May-15	\$ 106,071.17	31.72	7.69%	2.44
Jun-15	\$ 137,254.00	29.03	9.95%	2.89
Total	\$ 1,379,773.20		100.00%	29.74

Miscellaneous OM&A

Hydro Ottawa provided transaction level data for July 2014 to June 2015 from their accounts payable system under the Miscellaneous OM&A category, a dollar-weighted expense lead time of 19.99 days was derived. Table 13, below summarizes the components of miscellaneous OM&A expense lead calculation.

Table 13: Summary of Miscellaneous OM&A Expenses

Category	Amounts	Weighted Lead Days (by category)	Weighting Factor %	Weighted Lead Time
Internal Allocations, Administrative Costs	\$ 3,410,500	37.05	8.45%	3.13
Advertising and Promotion	\$ 1,121,395	41.35	2.78%	1.15
Inventory & Equipment	\$ 1,823,748	37.95	4.52%	1.72
Memberships, Licenses	\$ 275,343	(22.49)	0.68%	(0.15)
Miscellaneous	\$ 1,529,773	25.79	3.79%	0.98
Outside Services	\$ 16,145,394	39.42	40.02%	15.78
Prepays	\$ 5,982,534	(70.22)	14.83%	(10.41)
Training & Staff	\$ 1,645,797	36.76	4.08%	1.50
Transportation & Travel	\$ 918,386	38.08	2.28%	0.87
Postage, Printing & Office Supplies	\$ 2,519,430	25.58	6.24%	1.60
Computer Hardware & Software	\$ 3,255,245	31.83	8.07%	2.57
Telecommunications and Utilities	\$ 1,718,153	29.84	4.26%	1.27
Total	\$ 40,345,699		100.00%	19.99

Debt Retirement Charge (DRC)

Hydro Ottawa makes payments for the debt retirement charge on a monthly basis to the Ontario Electricity Financial Corporation. O.Reg 156/15 exempts residential customers from paying DRC on electricity consumed after December 31, 2015. This has been modeled as a known and measurable change and only DRC to non-residential customers is included in the model. Using payment amounts that were made from July 2014 to June 2015, a dollar-weighted expense lead time of 32.53 days was determined for DRC. Table 14, below summarizes the components of the DRC expense lead calculation.

Table 14: Summary of DRC Expenses

Delivery Period	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
Jul-14	8/18/2014	\$ 2,981,008	15.50	18.00	33.50	8.35%	2.80
Aug-14	9/18/2014	\$ 2,986,150	15.50	18.00	33.50	8.36%	2.80
Sep-14	10/17/2014	\$ 2,982,714	15.00	17.00	32.00	8.35%	2.67
Oct-14	11/18/2014	\$ 2,838,390	15.50	18.00	33.50	7.95%	2.66
Nov-14	12/18/2014	\$ 2,810,878	15.00	18.00	33.00	7.87%	2.60
Dec-14	1/16/2015	\$ 2,836,702	15.50	16.00	31.50	7.94%	2.50
Jan-15	2/18/2015	\$ 3,182,341	15.50	18.00	33.50	8.91%	2.98
Feb-15	3/18/2015	\$ 3,139,933	14.00	18.00	32.00	8.79%	2.81
Mar-15	4/17/2015	\$ 3,299,788	15.50	17.00	32.50	9.24%	3.00
Apr-15	5/15/2015	\$ 3,012,809	15.00	15.00	30.00	8.44%	2.53
May-15	6/18/2015	\$ 2,728,475	15.50	18.00	33.50	7.64%	2.56
Jun-15	7/17/2015	\$ 2,915,681	15.00	17.00	32.00	8.16%	2.61
Total		\$ 35,714,869				100.00%	32.53

Payment in Lieu of Taxes (PILs)

Hydro Ottawa makes payments in lieu of taxes in installments to the relevant taxing authorities. PILs payments made from July 2014 to June 2015 were not reflective of future years. As such, payment amounts and payment dates from calendar year 2013 were used to calculate the lead days associated with PILs. A dollar-weighted expense lead time of 3.75 days was determined for PILs. Table 15, below summarizes the components of the PILs expense lead calculation.

Table 15: Summary of PILs Expenses

Delivery Period	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
2013	1/13/2013	\$ 600,000	182.50	(352.00)	(169.50)	8.51%	(14.43)
2013	2/28/2013	\$ 600,000	182.50	(306.00)	(123.50)	8.51%	(10.51)
2013	3/18/2013	\$ 600,000	182.50	(288.00)	(105.50)	8.51%	(8.98)
2013	4/23/2013	\$ 600,000	182.50	(252.00)	(69.50)	8.51%	(5.91)
2013	5/30/2013	\$ 600,000	182.50	(215.00)	(32.50)	8.51%	(2.77)
2013	6/26/2013	\$ 600,000	182.50	(188.00)	(5.50)	8.51%	(0.47)
2013	7/26/2013	\$ 575,000	182.50	(158.00)	24.50	8.16%	2.00
2013	8/12/2013	\$ 575,000	182.50	(141.00)	41.50	8.16%	3.38
2013	9/30/2013	\$ 575,000	182.50	(92.00)	90.50	8.16%	7.38
2013	10/8/2013	\$ 575,000	182.50	(84.00)	98.50	8.16%	8.03
2013	11/27/2013	\$ 575,000	182.50	(34.00)	148.50	8.16%	12.11
2013	12/19/2013	\$ 575,000	182.50	(12.00)	170.50	8.16%	13.91
Total		\$ 7,050,000				100.00%	3.75

Interest on Short-Term and/or Long-Term Debt

Taking into account the long term and short term debt instruments, a dollar-weighted expense lead time of 37.52 days was determined for the period from July 2014 to June 2015.

Table 16: Summary of Interest Expenses

Delivery Period	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
Jul-14	8/19/2014	\$ 1,570,221	15.50	19.00	34.50	8.89%	3.07
Aug-14	9/16/2014	\$ 1,570,221	15.50	16.00	31.50	8.89%	2.80
Sep-14	10/9/2014	\$ 1,519,569	15.00	9.00	24.00	8.60%	2.06
Oct-14	11/22/2014	\$ 1,585,919	15.50	22.64	38.14	8.98%	3.42
Nov-14	12/12/2014	\$ 1,637,308	15.00	12.00	27.00	9.27%	2.50
Dec-14	1/29/2015	\$ 1,691,885	15.50	29.00	44.50	9.58%	4.26
Jan-15	2/26/2015	\$ 1,691,885	15.50	26.00	41.50	9.58%	3.98
Feb-15	3/30/2015	\$ 1,273,729	14.00	30.00	44.00	7.21%	3.17
Mar-15	4/30/2015	\$ 1,297,525	15.50	30.00	45.50	7.35%	3.34
Apr-15	5/29/2015	\$ 1,255,670	15.00	29.00	44.00	7.11%	3.13
May-15	6/22/2015	\$ 1,297,525	15.50	22.00	37.50	7.35%	2.75
Jun-15	7/27/2015	\$ 1,271,493	15.00	27.00	42.00	7.20%	3.02
Total		\$ 17,662,951				100.00%	37.52

Harmonized Sales Tax (HST)

The expense lead times associated with the following items that attract HST were considered in Hydro Ottawa's distribution lead-lag study.

1. Revenues;
2. Cost of Power; and,
3. OM&A¹.

A summary of the expense lead times and working capital amounts associated with each of the above items is provided in Table 17 and Table 18. Note that the statutory approach described in Appendix A was used to determine the expense lead times associated with Hydro Ottawa's remittances and disbursements of HST (i.e., remittances are generally on the last day of the month following the date of the applicable return).

Table 17: Summary of HST Working Capital Factors

Description	HST Lead Time	Working Capital Factor
Revenue	(29.23)	-8.01%
Cost of Power	43.16	11.82%
OM&A Expense	44.12	12.09%

Table 18: Summary of HST Working Capital Amounts

Description	2014	2016	2017	2018	2019	2020
Revenue	\$ (10,563,107)	\$ (11,105,519)	\$ (11,359,593)	\$ (11,852,586)	\$ (11,736,910)	\$ (11,921,034)
Cost of Power	\$ 13,028,251	\$ 13,708,258	\$ 13,975,421	\$ 14,564,664	\$ 14,275,307	\$ 14,488,690
OM&A Expense	\$ 689,474	\$ 652,103	\$ 664,558	\$ 679,107	\$ 692,078	\$ 703,369
Total	\$ 3,154,618	\$ 3,254,842	\$ 3,280,387	\$ 3,391,185	\$ 3,230,475	\$ 3,271,026

¹ Costs within OM&A that attract HST include Corporate Procurement Card, Outside Services, and Miscellaneous OM&A.

Section IV: Conclusions

Using the results described under the discussion of revenue lags and expense leads, and applying them to Hydro Ottawa's distribution expenses for July 2014 to June 2015 (including known and measurable changes described in earlier sections), and 2016 to 2020 based on Hydro Ottawa's planning inputs working capital requirements were determined. Table 19 to Table 24 summarize the working capital requirements for 2014 and 2016 to 2020 calculated in the study.

Table 19: Hydro Ottawa Distribution Working Capital Requirements (2014/2015)

Description	Revenue Lag Days	Expense Lead Days	Net Lag Days	Working Capital Factor	Expenses	Working Capital Requirements
Cost of Power	60.12	34.91	25.21	6.91%	\$ 847,601,664	\$ 58,541,721
OM&A Expenses	60.12	18.94	41.18	11.28%	\$ 85,426,633	\$ 9,638,802
DRC	60.12	32.53	27.59	7.56%	\$ 35,714,869	\$ 2,699,174
PILS	60.12	3.75	56.37	15.44%	\$ 7,050,000	\$ 1,088,749
Interest	60.12	37.52	22.60	6.19%	\$ 17,662,951	\$ 1,093,712
Total					\$ 993,456,117	\$ 73,062,158
HST						\$ 3,154,618
Total - Including HST						\$ 76,216,775
Working Capital as a Percent of OM&A incl. Cost of Power						8.17%

Table 20: Hydro Ottawa Distribution Working Capital Requirements (2016)

Description	Revenue Lag Days	Expense Lead Days	Net Lag Days	Working Capital Factor	Expenses	Working Capital Requirements
Cost of Power	60.12	34.91	25.21	6.89%	\$ 894,285,487	\$ 61,597,295
OM&A Expenses	60.12	18.94	41.18	11.25%	\$ 81,017,720	\$ 9,116,362
DRC	60.12	32.53	27.59	7.54%	\$ 37,651,690	\$ 2,837,775
PILS	60.12	3.75	56.37	15.40%	\$ 3,836,227	\$ 590,820
Interest	60.12	37.52	22.60	6.18%	\$ 17,100,984	\$ 1,056,021
Total					\$ 1,033,892,107	\$ 75,198,274
HST						\$ 3,254,842
Total - Including HST						\$ 78,453,116
Working Capital as a Percent of OM&A incl. Cost of Power						8.04%

Table 21: Hydro Ottawa Distribution Working Capital Requirements (2017)

Description	Revenue Lag Days	Expense Lead Days	Net Lag Days	Working Capital Factor	Expenses	Working Capital Requirements
Cost of Power	60.12	34.91	25.21	6.89%	\$ 911,714,427	\$ 62,797,780
OM&A Expenses	60.12	18.94	41.18	11.25%	\$ 82,565,158	\$ 9,290,485
DRC	60.12	32.53	27.59	7.54%	\$ 38,513,091	\$ 2,902,699
PILS	60.12	3.75	56.37	15.40%	\$ 3,720,009	\$ 572,921
Interest	60.12	37.52	22.60	6.18%	\$ 18,131,172	\$ 1,119,637
Total					\$ 1,054,643,857	\$ 76,683,521
HST						\$ 3,280,387
Total - Including HST						\$ 80,237,099
Working Capital as a Percent of OM&A incl. Cost of Power						8.04%

Table 22: Hydro Ottawa Distribution Working Capital Requirements (2018)

Description	Revenue Lag Days	Expense Lead Days	Net Lag Days	Working Capital Factor	Expenses	Working Capital Requirements
Cost of Power	60.12	34.91	25.21	6.91%	\$ 947,558,773	\$ 65,445,507
OM&A Expenses	60.12	18.94	41.18	11.28%	\$ 84,142,153	\$ 9,493,873
DRC	60.12	32.53	27.59	7.56%	\$ 40,074,720	\$ 3,028,672
PILS	60.12	3.75	56.37	15.44%	\$ 4,983,589	\$ 769,628
Interest	60.12	37.52	22.60	6.19%	\$ 19,349,743	\$ 1,198,160
Total					\$ 1,096,108,979	\$ 79,935,840
HST						\$ 3,391,185
Total - Including HST						\$ 83,327,026
Working Capital as a Percent of OM&A incl. Cost of Power						8.08%

Table 23: Hydro Ottawa Distribution Working Capital Requirements (2019)

Description	Revenue Lag Days	Expense Lead Days	Net Lag Days	Working Capital Factor	Expenses	Working Capital Requirements
Cost of Power	60.12	34.91	25.21	6.91%	\$ 928,733,588	\$ 64,145,299
OM&A Expenses	60.12	18.94	41.18	11.28%	\$ 85,749,268	\$ 9,675,206
DRC	60.12	32.53	27.59	7.56%	\$ 39,683,609	\$ 2,999,114
PILS	60.12	3.75	56.37	15.44%	\$ 7,338,809	\$ 1,133,351
Interest	60.12	37.52	22.60	6.19%	\$ 20,283,401	\$ 1,255,973
Total					\$ 1,081,788,675	\$ 79,208,943
HST						\$ 3,230,475
Total - Including HST						\$ 82,439,418
Working Capital as a Percent of OM&A incl. Cost of Power						8.13%

Table 24: Hydro Distribution Working Capital Requirements (2020)

Description	Revenue Lag Days	Expense Lead Days	Net Lag Days	Working Capital Factor	Expenses	Working Capital Requirements
Cost of Power	60.12	34.91	25.21	6.89%	\$ 945,198,501	\$ 65,104,122
OM&A Expenses	60.12	18.94	41.18	11.25%	\$ 87,387,079	\$ 9,833,062
DRC	60.12	32.53	27.59	7.54%	\$ 40,416,577	\$ 3,046,163
PILS	60.12	3.75	56.37	15.40%	\$ 6,389,371	\$ 984,031
Interest	60.12	37.52	22.60	6.18%	\$ 21,270,309	\$ 1,313,485
Total					\$ 1,100,661,837	\$ 80,280,863
HST						\$ 3,271,026
Total - Including HST						\$ 83,551,888
Working Capital as a Percent of OM&A incl. Cost of Power						8.09%

Appendix A: Working Capital Methodology

Working capital is the amount of funds that are required to finance the day-to-day operations of a regulated utility and which are included as part of a rate base for ratemaking purposes. A lead-lag study is the most accurate basis for determination of working capital and was used by Navigant for this purpose.

A lead-lag study analyzes the time between the date customers receive service and the date that customers' payments are available to Hydro Ottawa (or "lag") together with the time between which Hydro Ottawa receives goods and services from its vendors and pays for them at a later date (or "lead")². "Leads" and "Lags" are both measured in days and are dollar-weighted where appropriate.³ The dollar-weighted net lag (lag minus lead) days is then divided by 365 (or 366 for leap years) and then multiplied by the annual test year expenses to determine the amount of working capital required. The resulting amount of working capital is then included in Hydro Ottawa's rate base for the purpose of deriving revenue requirements.

Key Concepts

Two key concepts need to be defined as they appear throughout the report:

Mid-Point Method

When a service is provided to (or by) Hydro Ottawa over a period of time, the service is deemed to have been provided (or received) evenly over the midpoint of the period, unless specific information regarding the provision (or receipt) of that service indicates otherwise. If both the service end date ("Y") and the service start date ("X") are known, the mid-point of a service period can be calculated using the formula:

$$\text{Mid-Point} = \frac{([Y-X]+1)}{2}$$

When specific start and end dates are unknown, but it is known that a service is evenly distributed over the mid-point of a period, an alternative formula that is generally used is shown below. The formula uses the number of days in a year (A) and the number of periods in a year (B):

$$\text{Mid-Point} = \frac{A/B}{2}$$

Statutory Approach

In conjunction with the mid-point method, it is important to note that not all areas of the study may utilize dates on which actual payments were made to (or by) Hydro Ottawa. In some instances, particularly for the HST, the due dates for payments are established by statute or by regulation with significant penalties for late payments. In these instances, the due date established by statute has been used in lieu of when payments were actually made.

Expense Lead Components

As used in the study, Expense Leads are defined to consist of two components:

1. Service Lead component (services are assumed to be provided to Hydro Ottawa evenly around the mid-point of the service period), and

² A positive lag (or lead) indicates that payments are received (or paid for) after the provision of a good or service.

³ The notion of dollar-weighting is pursued further in the sub-section titled "Key Concepts".

2. Payment Lead component (the time period from the end of the service period to the time payment was made and when funds have left Hydro Ottawa's possession).

Dollar Weighting

Both leads and lags should be dollar-weighted where appropriate and where data is available to accurately reflect the flow of dollars. For example, suppose that a particular transaction has a lead time of 100 days and has a dollar value of \$100. Further, suppose that another transaction has a lead time of 30 days with a dollar value of \$1 Million. A simple un-weighted average of the two transactions would give us a lead time of 65 days $((100+30)/2)$. However, when these two transactions are dollar weighted, the resulting lead time would be closer to 30 days which is more representative of how the dollars actually flow.

Methodology

Performing a lead-lag study requires two key undertakings:

1. Developing an understanding of how the regulated distribution business operates in terms of products and services sold to customers/purchased from vendors, and the policies and procedures that govern such transactions; and,
2. Modeling such operations using data from a relevant period of time and a representative data set. It is important to ascertain and factor into the study whether (or not) there are known changes to existing business policies and procedures going forward. Where such changes are known and material, they should be factored into the study.

To develop an understanding of Hydro Ottawa's operations, interviews with Hydro Ottawa staff were conducted. Key questions that were addressed during the course of the interviews included:

1. What is being sold (or purchased)? If a service is being provided to (or by) Hydro Ottawa, over what time period was this service provided;
2. Who are the buyers (or sellers);
3. What are the terms for payment? Are the terms for payment driven by industry norms or by company policy? Is there flexibility in the terms for payment;
4. Are any changes to the terms for payment expected? Are these terms driven by industry or internally? What is the basis for any such changes;
5. Are there any new rules or regulations governing transactions relating to distribution operations that are expected to materialize over the time frame considered in this report; and,
6. How are payments made (or received)? Payment types have different payment lead times (i.e., internet payments have shorter deposit times than cheque deposit times)

Appendix B: Detailed Data Tables

Other Revenues

Table 25: Summary of Other Revenues

Description	Amounts	Revenue Lag Time	Weighting Factor %	Weighted Lag Time
Duct Rental	\$ 983,162	-132.44	11.47%	-15.19
Miscellaneous	\$ 10,775	28.73	0.13%	0.04
Work for Others	\$ 3,521,456	0.66	41.07%	0.27
Pole Rental	\$ 1,348,695	231.75	15.73%	36.46
Property Rentals	\$ 912,327	15.55	10.64%	1.65
Service Level Agreements	\$ 1,796,857	37.91	20.96%	7.94
Total	\$ 8,573,272		100.00%	31.18

Payroll

Table 26: Summary of Payroll Expenses

Delivery Period (Pay Period)	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
06/28/2014 to 07/11/2014	7/17/2014	\$ 857,251	7.00	6.00	13.00	3.91%	0.51
07/12/2014 to 07/25/2014	7/31/2014	\$ 866,688	7.00	6.00	13.00	3.95%	0.51
07/26/2014 to 08/08/2014	8/14/2014	\$ 868,902	7.00	6.00	13.00	3.96%	0.52
08/09/2014 to 08/22/2014	8/28/2014	\$ 868,517	7.00	6.00	13.00	3.96%	0.51
08/23/2014 to 09/05/2014	9/11/2014	\$ 850,841	7.00	6.00	13.00	3.88%	0.50
09/06/2014 to 09/19/2014	9/25/2014	\$ 907,588	7.00	6.00	13.00	4.14%	0.54
09/20/2014 to 10/03/2014	10/9/2014	\$ 871,798	7.00	6.00	13.00	3.98%	0.52
10/04/2014 to 10/17/2014	10/23/2014	\$ 872,690	7.00	6.00	13.00	3.98%	0.52
10/18/2014 to 10/31/2014	11/6/2014	\$ 879,682	7.00	6.00	13.00	4.01%	0.52
11/01/2014 to 11/14/2014	11/20/2014	\$ 857,553	7.00	6.00	13.00	3.91%	0.51
11/15/2014 to 11/28/2014	12/4/2014	\$ 895,615	7.00	6.00	13.00	4.09%	0.53
11/29/2014 to 12/12/2014	12/18/2014	\$ 867,019	7.00	6.00	13.00	3.95%	0.51
12/13/2014 to 12/26/2014	1/1/2015	\$ 778,129	7.00	6.00	13.00	3.55%	0.46
12/27/2014 to 01/09/2015	1/15/2015	\$ 932,620	7.00	6.00	13.00	4.25%	0.55
01/10/2015 to 01/23/2015	1/29/2015	\$ 846,805	7.00	6.00	13.00	3.86%	0.50
01/24/2015 to 02/06/2015	2/12/2015	\$ 758,542	7.00	6.00	13.00	3.46%	0.45

Delivery Period (Pay Period)	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
02/07/2015 to 02/20/2015	2/26/2015	\$ 758,689	7.00	6.00	13.00	3.46%	0.45
02/21/2015 to 03/06/2015	3/12/2015	\$ 777,536	7.00	6.00	13.00	3.55%	0.46
03/07/2015 to 03/20/2015	3/26/2015	\$ 770,176	7.00	6.00	13.00	3.51%	0.46
03/21/2015 to 04/03/2015	4/9/2015	\$ 790,380	7.00	6.00	13.00	3.61%	0.47
04/04/2015 to 04/17/2015	4/23/2015	\$ 770,331	7.00	6.00	13.00	3.51%	0.46
04/18/2015 to 05/01/2015	5/7/2015	\$ 695,619	7.00	6.00	13.00	3.17%	0.41
05/02/2015 to 05/15/2015	5/21/2015	\$ 806,619	7.00	6.00	13.00	3.68%	0.48
05/16/2015 to 05/29/2015	6/4/2015	\$ 806,227	7.00	6.00	13.00	3.68%	0.48
05/30/2015 to 06/12/2015	6/18/2015	\$ 883,001	7.00	6.00	13.00	4.03%	0.52
06/13/2015 to 06/26/2015	7/2/2015	\$ 834,837	7.00	6.00	13.00	3.81%	0.50
01/01/2014 to 12/31/2014	3/12/2015	\$ 3,969	182.50	71.00	253.50	0.02%	0.05
01/01/2014 to 12/31/2014	4/9/2015	\$ 10,172	182.50	99.00	281.50	0.05%	0.13
01/01/2014 to 12/31/2014	5/7/2015	\$ 233,328	182.50	127.00	309.50	1.06%	3.29
01/01/2014 to 12/31/2014	6/4/2015	\$ 63	182.50	155.00	337.50	0.00%	0.00
01/01/2014 to 12/31/2014	7/2/2015	\$ 2,702	182.50	183.00	365.50	0.01%	0.05
Total		\$ 21,923,888				100.00%	16.37

Withholdings

Table 27: Summary of Withholdings Expenses

Delivery Period (Pay Period)	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighti ng Factor %	Weighte d Lead Time
06/28/2014 to 07/11/2014	7/24/2014	\$ 360,178	7.00	13.00	20.00	3.63%	0.73
07/12/2014 to 07/25/2014	8/6/2014	\$ 328,672	7.00	12.00	19.00	3.31%	0.63
07/26/2014 to 08/08/2014	8/19/2014	\$ 324,766	7.00	11.00	18.00	3.27%	0.59
08/09/2014 to 08/22/2014	9/4/2014	\$ 306,566	7.00	13.00	20.00	3.09%	0.62
08/23/2014 to 09/05/2014	9/17/2014	\$ 300,585	7.00	12.00	19.00	3.03%	0.57
09/06/2014 to 09/19/2014	10/3/2014	\$ 328,952	7.00	14.00	21.00	3.31%	0.70
09/20/2014 to 10/03/2014	10/17/2014	\$ 300,253	7.00	14.00	21.00	3.02%	0.63
10/04/2014 to 10/17/2014	11/5/2014	\$ 282,531	7.00	19.00	26.00	2.84%	0.74
10/18/2014 to 10/31/2014	11/12/2014	\$ 282,012	7.00	12.00	19.00	2.84%	0.54

Delivery Period (Pay Period)	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighti ng Factor %	Weighte d Lead Time
11/01/2014 to 11/14/2014	11/26/2014	\$ 275,161	7.00	12.00	19.00	2.77%	0.53
11/15/2014 to 11/28/2014	12/10/2014	\$ 285,990	7.00	12.00	19.00	2.88%	0.55
11/29/2014 to 12/12/2014	12/24/2014	\$ 283,904	7.00	12.00	19.00	2.86%	0.54
12/13/2014 to 12/26/2014	1/12/2015	\$ 425,513	7.00	17.00	24.00	4.28%	1.03
12/27/2014 to 01/09/2015	1/26/2015	\$ 484,917	7.00	17.00	24.00	4.88%	1.17
01/10/2015 to 01/23/2015	2/4/2015	\$ 498,369	7.00	12.00	19.00	5.02%	0.95
01/24/2015 to 02/06/2015	2/18/2015	\$ 426,803	7.00	12.00	19.00	4.30%	0.82
02/07/2015 to 02/20/2015	3/4/2015	\$ 415,365	7.00	12.00	19.00	4.18%	0.79
02/21/2015 to 03/06/2015	3/18/2015	\$ 440,226	7.00	12.00	19.00	4.43%	0.84
03/07/2015 to 03/20/2015	4/6/2015	\$ 426,656	7.00	17.00	24.00	4.30%	1.03
03/21/2015 to 04/03/2015	4/17/2015	\$ 427,012	7.00	14.00	21.00	4.30%	0.90
04/04/2015 to 04/17/2015	5/5/2015	\$ 428,306	7.00	18.00	25.00	4.31%	1.08
04/18/2015 to 05/01/2015	5/12/2015	\$ 459,540	7.00	11.00	18.00	4.63%	0.83
05/02/2015 to 05/15/2015	5/26/2015	\$ 424,042	7.00	11.00	18.00	4.27%	0.77
05/16/2015 to 05/29/2015	6/10/2015	\$ 417,514	7.00	12.00	19.00	4.20%	0.80
05/30/2015 to 06/12/2015	6/24/2015	\$ 446,542	7.00	12.00	19.00	4.50%	0.85
06/13/2015 to 06/26/2015	7/10/2015	\$ 390,132	7.00	14.00	21.00	3.93%	0.82
01/01/2014 to 12/31/2014	3/18/2015	\$ 2,247	182.50	77.00	259.50	0.02%	0.06
01/01/2014 to 12/31/2014	4/17/2015	\$ 5,495	182.50	107.00	289.50	0.06%	0.16
01/01/2014 to 12/31/2014	5/12/2015	\$ 154,141	182.50	132.00	314.50	1.55%	4.88
01/01/2014 to 12/31/2014	6/10/2015	\$ 33	182.50	161.00	343.50	0.00%	0.00
01/01/2014 to 12/31/2014	7/10/2015	\$ 1,263	182.50	191.00	373.50	0.01%	0.05
Total		\$ 9,933,689				100.00%	25.20

Pensions

Table 28: Summary of Pension Expenses

Delivery Period	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
Jul-14	8/29/2014	\$ 503,045	15.50	29.00	44.50	7.56%	3.36
Aug-14	9/30/2014	\$ 501,391	15.50	30.00	45.50	7.54%	3.43
Sep-14	10/31/2014	\$ 501,937	15.00	31.00	46.00	7.55%	3.47
Oct-14	11/28/2014	\$ 751,556	15.50	28.00	43.50	11.30%	4.91
Nov-14	12/31/2014	\$ 498,195	15.00	31.00	46.00	7.49%	3.44
Dec-14	1/30/2015	\$ 499,566	15.50	30.00	45.50	7.51%	3.42
Jan-15	2/27/2015	\$ 499,522	15.50	27.00	42.50	7.51%	3.19
Feb-15	3/31/2015	\$ 496,396	14.00	31.00	45.00	7.46%	3.36
Mar-15	4/30/2015	\$ 492,606	15.50	30.00	45.50	7.40%	3.37
Apr-15	5/29/2015	\$ 502,675	15.00	29.00	44.00	7.56%	3.32
May-15	6/30/2015	\$ 872,162	15.50	30.00	45.50	13.11%	5.97
Jun-15	7/31/2015	\$ 533,412	15.00	31.00	46.00	8.02%	3.69
Total		\$ 6,652,464				100.00%	44.94

Group Health Insurance

Table 29: Summary of Group Health Expenses

Delivery Period	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
Jul-14	7/1/2014	\$ 88,857	15.50	(30.00)	(14.50)	8.90%	(1.29)
Aug-14	8/1/2014	\$ 88,875	15.50	(30.00)	(14.50)	8.91%	(1.29)
Sep-14	9/1/2014	\$ 83,429	15.00	(29.00)	(14.00)	8.36%	(1.17)
Oct-14	10/1/2014	\$ 83,394	15.50	(30.00)	(14.50)	8.36%	(1.21)
Nov-14	11/1/2014	\$ 82,479	15.00	(29.00)	(14.00)	8.26%	(1.16)
Dec-14	12/1/2014	\$ 82,067	15.50	(30.00)	(14.50)	8.22%	(1.19)
Jan-15	1/1/2015	\$ 81,633	15.50	(30.00)	(14.50)	8.18%	(1.19)
Feb-15	2/1/2015	\$ 81,884	14.00	(27.00)	(13.00)	8.20%	(1.07)
Mar-15	3/1/2015	\$ 80,974	15.50	(30.00)	(14.50)	8.11%	(1.18)
Apr-15	4/1/2015	\$ 81,074	15.00	(29.00)	(14.00)	8.12%	(1.14)
May-15	5/1/2015	\$ 81,726	15.50	(30.00)	(14.50)	8.19%	(1.19)
Jun-15	6/1/2015	\$ 81,627	15.00	(29.00)	(14.00)	8.18%	(1.15)
Total		\$ 998,017				100.00%	(14.21)

Group Dental Insurance

Table 30: Summary of Group Dental Insurance Expenses

Delivery Period	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
Jul-14	7/1/2014	\$ 43,227	15.50	(30.00)	(14.50)	8.53%	(1.24)
Aug-14	8/1/2014	\$ 43,320	15.50	(30.00)	(14.50)	8.55%	(1.24)
Sep-14	9/1/2014	\$ 42,818	15.00	(29.00)	(14.00)	8.45%	(1.18)
Oct-14	10/1/2014	\$ 42,822	15.50	(30.00)	(14.50)	8.45%	(1.22)
Nov-14	11/1/2014	\$ 42,351	15.00	(29.00)	(14.00)	8.35%	(1.17)
Dec-14	12/1/2014	\$ 42,035	15.50	(30.00)	(14.50)	8.29%	(1.20)
Jan-15	1/1/2015	\$ 41,815	15.50	(30.00)	(14.50)	8.25%	(1.20)
Feb-15	2/1/2015	\$ 41,955	14.00	(27.00)	(13.00)	8.28%	(1.08)
Mar-15	3/1/2015	\$ 41,450	15.50	(30.00)	(14.50)	8.18%	(1.19)
Apr-15	4/1/2015	\$ 41,547	15.00	(29.00)	(14.00)	8.20%	(1.15)
May-15	5/1/2015	\$ 41,674	15.50	(30.00)	(14.50)	8.22%	(1.19)
Jun-15	6/1/2015	\$ 41,902	15.00	(29.00)	(14.00)	8.27%	(1.16)
Total		\$ 506,915				100.00%	(14.21)

Group Life Insurance

Table 31: Summary of Group Life Insurance Expenses

Delivery Period	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
Jul-14	7/1/2014	\$ 10,851	15.50	(30.00)	(14.50)	9.72%	(1.41)
Aug-14	8/1/2014	\$ 10,873	15.50	(30.00)	(14.50)	9.74%	(1.41)
Sep-14	9/1/2014	\$ 9,070	15.00	(29.00)	(14.00)	8.13%	(1.14)
Oct-14	10/1/2014	\$ 9,055	15.50	(30.00)	(14.50)	8.11%	(1.18)
Nov-14	11/1/2014	\$ 8,987	15.00	(29.00)	(14.00)	8.05%	(1.13)
Dec-14	12/1/2014	\$ 9,008	15.50	(30.00)	(14.50)	8.07%	(1.17)
Jan-15	1/1/2015	\$ 8,933	15.50	(30.00)	(14.50)	8.01%	(1.16)
Feb-15	2/1/2015	\$ 8,959	14.00	(27.00)	(13.00)	8.03%	(1.04)
Mar-15	3/1/2015	\$ 8,903	15.50	(30.00)	(14.50)	7.98%	(1.16)
Apr-15	4/1/2015	\$ 8,846	15.00	(29.00)	(14.00)	7.93%	(1.11)
May-15	5/1/2015	\$ 9,058	15.50	(30.00)	(14.50)	8.12%	(1.18)
Jun-15	6/1/2015	\$ 9,047	15.00	(29.00)	(14.00)	8.11%	(1.14)
Total		\$ 111,591				100.00%	(14.22)

Long-term Disability

Table 32: Summary of Long-term Disability Expenses

Delivery Period	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
Jul-14	7/1/2014	\$ 35,766	15.50	(30.00)	(14.50)	8.71%	(1.26)
Aug-14	8/1/2014	\$ 33,257	15.50	(30.00)	(14.50)	8.10%	(1.17)
Sep-14	9/1/2014	\$ 34,650	15.00	(29.00)	(14.00)	8.44%	(1.18)
Oct-14	10/1/2014	\$ 33,185	15.50	(30.00)	(14.50)	8.08%	(1.17)
Nov-14	11/1/2014	\$ 34,788	15.00	(29.00)	(14.00)	8.47%	(1.19)
Dec-14	12/1/2014	\$ 34,714	15.50	(30.00)	(14.50)	8.45%	(1.23)
Jan-15	1/1/2015	\$ 34,853	15.50	(30.00)	(14.50)	8.49%	(1.23)
Feb-15	2/1/2015	\$ 33,216	14.00	(27.00)	(13.00)	8.09%	(1.05)
Mar-15	3/1/2015	\$ 34,374	15.50	(30.00)	(14.50)	8.37%	(1.21)
Apr-15	4/1/2015	\$ 32,784	15.00	(29.00)	(14.00)	7.98%	(1.12)
May-15	5/1/2015	\$ 33,944	15.50	(30.00)	(14.50)	8.26%	(1.20)
Jun-15	6/1/2015	\$ 35,179	15.00	(29.00)	(14.00)	8.57%	(1.20)
Total		\$ 410,711				100.00%	(14.21)

EHT

Table 33: Summary of EHT Expenses

Delivery Period	Payment Date	Amounts		Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
Jul-14	8/15/2014	\$	50,919	15.50	15.00	30.50	7.73%	2.36
Aug-14	9/15/2014	\$	50,427	15.50	15.00	30.50	7.66%	2.34
Sep-14	10/15/2014	\$	51,283	15.00	15.00	30.00	7.79%	2.34
Oct-14	11/15/2014	\$	74,930	15.50	15.00	30.50	11.38%	3.47
Nov-14	12/15/2014	\$	50,163	15.00	15.00	30.00	7.62%	2.29
Dec-14	1/15/2015	\$	49,381	15.50	15.00	30.50	7.50%	2.29
Jan-15	2/15/2015	\$	50,382	15.50	15.00	30.50	7.65%	2.33
Feb-15	3/15/2015	\$	47,807	14.00	15.00	29.00	7.26%	2.11
Mar-15	4/15/2015	\$	48,413	15.50	15.00	30.50	7.35%	2.24
Apr-15	5/15/2015	\$	48,320	15.00	15.00	30.00	7.34%	2.20
May-15	6/15/2015	\$	84,454	15.50	15.00	30.50	12.83%	3.91
Jun-15	7/15/2015	\$	51,920	15.00	15.00	30.00	7.89%	2.37
Total		\$	658,400				100.00%	30.24

WSIB

Table 34: Summary of WSIB Expenses

Delivery Period	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
Jul-14	8/31/2014	\$ 40,276	15.50	31.00	46.50	12.61%	5.86
Aug-14	9/30/2014	\$ 25,511	15.50	30.00	45.50	7.99%	3.63
Sep-14	10/31/2014	\$ 24,661	15.00	31.00	46.00	7.72%	3.55
Oct-14	11/30/2014	\$ 21,205	15.50	30.00	45.50	6.64%	3.02
Nov-14	12/31/2014	\$ 16,909	15.00	31.00	46.00	5.29%	2.44
Dec-14	1/31/2015	\$ 12,145	15.50	31.00	46.50	3.80%	1.77
Jan-15	2/28/2015	\$ 40,932	15.50	28.00	43.50	12.81%	5.57
Feb-15	3/31/2015	\$ 26,187	14.00	31.00	45.00	8.20%	3.69
Mar-15	4/30/2015	\$ 26,537	15.50	30.00	45.50	8.31%	3.78
Apr-15	5/31/2015	\$ 26,483	15.00	31.00	46.00	8.29%	3.81
May-15	6/30/2015	\$ 30,630	15.50	30.00	45.50	9.59%	4.36
Jun-15	7/31/2015	\$ 27,942	15.00	31.00	46.00	8.75%	4.02
Total		\$ 319,419				100.00%	45.52

Employee Assistance Program

Table 35: Summary of Employee Assistance Program Expenses

Delivery Period	Payment Date	Amounts	Service Lead Time	Payment Lead Time	Total Lead Time	Weighting Factor %	Weighted Lead Time
Jul-14	7/31/2014	\$ 2,097	7.00	20.00	27.00	6.49%	1.75
Aug-14	8/31/2014	\$ 2,097	7.00	23.00	30.00	6.49%	1.95
Sep-14	9/30/2014	\$ 2,781	7.00	25.00	32.00	8.61%	2.76
Oct-14	10/31/2014	\$ 2,781	7.00	28.00	35.00	8.61%	3.01
Nov-14	11/30/2014	\$ 2,781	7.00	16.00	23.00	8.61%	1.98
Dec-14	12/31/2014	\$ 2,781	7.00	19.00	26.00	8.61%	2.24
Jan-15	1/31/2015	\$ 3,074	7.00	22.00	29.00	9.52%	2.76
Feb-15	2/28/2015	\$ 2,781	7.00	22.00	29.00	8.61%	2.50
Mar-15	3/31/2015	\$ 2,781	22.50	25.00	47.50	8.61%	4.09
Apr-15	4/30/2015	\$ 2,781	7.00	27.00	34.00	8.61%	2.93
May-15	5/31/2015	\$ 2,781	7.00	30.00	37.00	8.61%	3.19
Jun-15	6/30/2015	\$ 2,781	7.00	18.00	25.00	8.61%	2.15
Total		\$ 32,300				100.00%	31.30

Appendix C: Expert Information

Ralph Zarumba, Director in the Energy Practice at Navigant Consulting, specializes in Regulatory Matters. Mr. Zarumba oversees that part of Navigant's Energy Practices specializing in retail regulatory matters. Mr. Zarumba has appeared as an expert in several dozen regulatory proceedings in Canada and the United States.

Business address: 30 South Wacker Drive, Suite 3100, Chicago, IL 60606

Navigant has previously undertaken or supported numerous lead-lag studies across North America and for several of Ontario's electricity local distribution companies (LDCs) including Hydro One, Toronto Hydro, Horizon Utilities, Hydro Ottawa, London Hydro and others. Navigant lead-lag reports have been submitted by many of these other clients as evidence to support their rate submissions, and our approach and findings have been accepted, in large part, by the OEB and interveners. Some examples of recent lead-lag studies conducted by Navigant where Mr. Zarumba was the projected manager which have been filed with the OEB by Ontario utilities are outlined below.

Table 36: Recent Navigant Lead-Lag Studies (Ontario)

Utility	Reference
Toronto Hydro-Electric System Limited	EB-2014-0116 Exhibit 2A, Tab 3, Schedule 2
Hydro One Networks Inc. (distribution)	EB-2013-0141 Exhibit D1, Tab 1, Schedule 3
Hydro One Networks Inc. (transmission)	EB-2012-0031 Exhibit D1, Tab 1, Schedule 3, Attachment 1
Horizon Utilities	EB-2014-0002 Exhibit 2, Tab 4, Schedule 1
North Bay Hydro	EB-2014-0099, Correspondence
Entegrus Powerlines Inc.	EB-2015-0061, Exhibit 2, Attachment 2-B

Ralph Zarumba

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Director

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Professional History

- Director, Navigant Consulting
- Director, Science Applications International Corporation
- President, Zarumba Consulting
- Management Consultant, Sargent & Lundy Consulting Group
- President, Analytical Support Network, Inc.
- Manager, Pricing Practice, Synergic Resources Corporation
- Senior Analyst – San Diego Gas & Electric Company
- Senior Analyst – Wisconsin Electric Power Company
- Analyst 4 – Eastern Utilities Associates
- Analyst – Illinois Power Company

Education

- MA, Economics, DePaul University, Chicago, IL
- BS, Economics, Illinois State University, Normal, IL

Ralph Zarumba is a Director in the Energy Practice with 30 years of experience specializing in regulatory issues and economic analysis associated with energy utilities in North America, Europe and Asia. Mr. Zarumba has appeared as an expert witness in a number of regulatory and legal proceedings addressing electric generation, transmission and distribution issues, unregulated operations of utility holding companies, asset valuation and regulatory treatment of Smart Grid investments. He has also assisted clients in other matters including Depreciation Studies, Transfer Pricing Mechanisms and evaluation of the results of competitive bidding for electric generation services. These testimonies have been presented before the Nova Scotia Utility and Review Board, the Federal Energy Regulatory Commission (“FERC”), the Massachusetts Department of Public Utilities, the Rhode Island Public Utilities Commission, the Illinois Commerce Commission, the Wisconsin Public Service Commission, the Ontario Energy Board, the New York Public Service Commission, the New Mexico Public Regulation Commission, the Kansas Corporation Commission as well as a number of other venues. Mr. Zarumba has provided a number of papers and presentations on various regulatory and market analysis issues.

Recent Whitepapers

- » White Paper Prepared for the Ontario Energy Board on Approaches to Rate Mitigation for Transmitters and Distributors

http://www.ontarioenergyboard.ca/OEB/_Documents/EB-2010-0378/EB-2010-0378_Navigant_Report.pdf

- » White Paper Prepared for the Ontario Energy Board Cost addressing Distributor Efficiency

http://www.ontarioenergyboard.ca/OEB/_Documents/EB-2012-0397/Navigant_Report_Elect-Dist-Efficiency_20130225.pdf

- » White Paper Prepared for the Ontario Energy Board Cost addressing Cost Assessment Models for Regulators

http://www.rds.ontarioenergyboard.ca/webdrawer/webdrawer.dll/webdrawer/rec/319593/view/Cost%20Assessment%20Model%20Report_Jan%2013%202011_20120116pdf.PDF

- » Economic Issues Related to Tariff Development (with Thomas Welch)

<http://www.erranet.org/index.php?name=OE-eLibrary&file=download&id=6052&keret=N&showheader=N>

Recent Publications

Public Utilities Fortnightly “Pricing Social Benefits - Calculating and allocating costs for non-traditional utility services” Ralph Zarumba, Benjamin Grunfeld and Koby Bailey, August 2013

American Gas “Modernization: The Quest for 21st Century Utilities” Ralph Zarumba and Peter Haapaniemi, November 2012

Public Utilities Fortnightly “Pre-Funding to Mitigate Rate Shock” Sherman Elliot and Ralph Zarumba, September 2012

Cost of Service

- » Provided testimony in the proceedings reviewing the 2014 Nova Scotia Power Cost-of-Service study (NSPI-P-892-/M05473).
- » Prepared and sponsored before the FERC a cost-of-service filing supporting a Reliability Must-Run filing on the Cayuga Operating Company.
- » Managed a project team which completed a Remaining Life Study for the Western Minnesota Municipal Power Agency.
- » For a confidential client reviewed the cost-of-service application for a natural gas distributor in Central Canada.

Regulatory and Pricing

- » Assisted the Ontario Energy in formulating a regulatory process and pricing design for Revenue Decoupling.
- » Prepared a white paper on rate mitigation mechanisms for the Ontario Energy Board.
- » Prepared a white paper for the Ontario Energy Board on apportion of regulatory commission costs to various stakeholders.
- » Prepared a number of working capital studies for various distributors and transmitters in the Province of Ontario.
- » Prepare a functional cost separation study for a regulated electric utility in Ontario.
- » For a confidential client prepared a benchmarking analysis of the costs of regulatory proceedings associated with the introduction of new electric generation.
- » Prepared an analysis of the pricing of voluntary renewable energy products for a Midwestern public power association.
- » Led a team that prepared a cost of service, rate design, legal evaluation and financial analysis for the Puerto Rico Electric Power Authority.
- » Performed a Pricing Strategy for the South Carolina Public Service Company (Santee Cooper).
- » Prepared a financial plan, electric rate design and phase-in plan for a new electric generation plan for Fayetteville (North Carolina) Public Works Commission.
- » Assisted Commonwealth Edison Company in their Electric Rate Request (Illinois Commerce Commission Docket No. 10-467).
- » Prepared proposals for Retail Conjunctive Billing Pricing filed in Illinois and Wisconsin which were filed before the Illinois Commerce Commission and the Wisconsin Public Service Commission.

- » Developed the Wisconsin Electric Power Company's first Curtailable Electric Tariff available to commercial customers.
- » Negotiated complex service contracts with thermal energy customers which led to a major expansion of the Wisconsin Electric Steam System.
- » Assisted Indianapolis Power & Light in preparing a cost recovery plan for Energy Efficiency and Demand Side Management Expenditures.
- » Trained regulatory staffs in the Republic of Macedonia, Bosnia and Herzegovina, Croatia and Albania.
- » Prepared proposals for ancillary services pricing based upon market-based mechanisms for San Diego Gas and Electric Company.
- » Completed the development of wholesale and retail rate designs for a southeastern G&T, an analysis of stranded cost exposure for a northeastern utility, and prepared a strategic plan for a large municipal utility.
- » Developed a proposal for electric generation transfer pricing that would be used as a transition mechanism between the existing vertically integrated utility and a deregulated environment.
- » Filed testimony in Wisconsin proposing that state's first Demand Response Program.

Demand Response

- » Assisted the Building Owners and Managers of Chicago (BOMA/Chicago) develop a program where they can bid demand response based ancillary services into the PJM market.
- » Prepared a presentation for the Public Utilities Commission of Ohio on Commercial and Industrial Dynamic Pricing and Demand Response in an unregulated regulatory environment.

Electric Transmission

- » Assisted the Long Island Power Authority to purchase distribution, transmission and regulatory assets and prepared its non-jurisdictional open-access transmission tariff.
- » Prepared the pricing portion of a FERC open access tariff (Docket No. ER96-96-43.000) for San Diego Gas and Electric Company; testified on revenue requirements and pricing including opportunity costs.

Generation Market Analysis

- » For a major public power generation owner prepared a strategy of internal coal versus natural gas generation dispatch protocols including the treatment of liquidated damages.
- » Co-authored a report for Nalcor on the feasibility and economics of the proposed development of the Lower Churchill Hydroelectric project.

- » Prepared a number of electric market price forecasts for many regions of the United States and Central America.
- » Supported the electric pricing and infrastructure analysis for a Least-Cost Resource Plan for San Diego County.
- » Prepared an analysis of the saturation of coal-fired electric generation technology in the Western Electric Coordinating Council.
- » Developed a long-run electric expansion plan for the Railbelt System in Alaska.
- » Managed a team that prepared a long-term capacity and energy forecast for a medium-sized municipal utility.
- » For Manitowoc Public Utilities prepared a resource plan evaluating various generation expansion options.

Merger, Acquisition and Divestiture

- » On behalf of the Minnesota Public Service Commission, Mr. Zarumba co-authored an analysis of the merger savings associated with the proposed Primergy Merger (the proposed combination of Northern States Power and Wisconsin Energy). The analysis included a detailed review of cost savings that would emanate from the merger and regulatory commitments made by the companies to regulatory authorities in Minnesota.
- » The Ontario Energy Board desired to identify factors that potentially impede the combination of regulated distributors in that province. Mr. Zarumba co-authored a study which identified those factors and discussed policies in other jurisdictions.
- » For the Manitowoc Public Utilities prepared an analysis that evaluated the divestiture of its transmission assets to the American Transmission Company.
- » For a confidential client prepared a valuation to support a proposed acquisition of a Midwestern Electric and Natural Gas utility by a regional utility. The analysis included an analysis of a sale of the electric operations of the target utility to another regulated utility.

International

- » Currently assisting the Israel Public Utility Authority is electric tariff reviews for the Israel Electric Company and the Jerusalem District Electric Company.
- » Mr. Zarumba assisted the electric regulator in the Republic of Macedonia with various regulatory issues including pricing design, revenue requirements and privatization issues. Included in the assistance was the development of market designs for the electricity sector.
- » Completed a tariff implementation plan proposal for the privatization of the distribution companies of the Bulgarian Electric Utility.

- » Led a team to implement regulatory procedures and methodology for the electric power industry in Bosnia and Herzegovina.
- » Conducted a study of the electric power market in El Salvador including a quantification of the level of generation market power using the Lerner Index.